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**RUPRI Center for Rural Health Policy Analysis**

Availability and Use of Health Plan Choices in Rural America:  
Medicare+Choice, Commercial HMO, and Federal Employees Health  
Benefit Program Plans

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The mission of the RUPRI Center is to provide timely analysis to federal and state health policy makers, based on the best available research. The research of the RUPRI Center focuses on rural health care financing/system reform, rural systems building, and meeting the health care needs of special rural populations. Specific objectives include: conducting original research and independent policy analysis that provides policy makers and others with a more complete understanding of the implications of health policy initiatives, and disseminating policy analysis that assures policy makers will consider the needs of rural health care delivery systems in the design and implementation of health policy.

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## **Introduction**

The Balanced Budget Act of 1997 (BBA) included major reforms to the Medicare program that were designed to increase the long-run solvency of the program (Rural Policy Research Institute [RUPRI], 1997). The BBA also proposed the creation of a National Bipartisan Commission on the Future of Medicare to look further at the long-run solvency issue. The Commission met in 1998 and completed its final report and recommendations in March 1999 (National Bipartisan Commission, 1999). The Commission endorsed a “premium support” proposal for the reform of Medicare. The premium support approach, like many other proposals for the long-run reform of Medicare considered to date, is built on the “managed competition” framework for health reform.

Under the managed competition model, individuals have a choice of plans, so that plans will compete on premiums to lower costs (Enthoven, 1994). However, in contrast to the unregulated market approach, under managed competition, biased risk selection is managed and regulated, and insurance markets are structured to create price-elastic demand by:

- Not exceeding the lowest-cost plan’s premium for the sponsors contribution
- Standardizing the coverage contract
- Providing quality-related information to individuals
- Keeping the choice of plans at the individual level

In managed competition models, sponsors are often used to select plans for an area, thus managing risk selection, managing the enrollment process, and creating price-elastic demand.

Managed competition approaches remain at the forefront of proposals to reform Medicare. After the National Bipartisan Commission completed its work, Senators Breaux, Frist, Kerrey, and Hagel introduced S. 1895, a proposal largely built around the premium support or managed competition approach. While debate in the U.S. Congress now focuses on improving the benefits of the program (including prescription drugs), this debate is engaged within the context of overall reform of the program. Given electoral politics, there may not be major reforms of Medicare passed in this session of Congress. However, the intensity of debate over the issues of expanding access to Medicare benefits and insuring long-run solvency of the program guarantee that a continued focus on choice and managed competition in the Medicare program will remain an important topic for the foreseeable future.

This report, with reference to managed competition, presents evidence on the extent to which plan choice for Medicare currently exists, the variables that influence plan availability across counties in the U.S., and possible policy approaches that could be followed to reconfigure service areas, leading to greater plan choice.

## **Importance of Results**

The rural perspective on managed competition is needed as changes to Medicare are considered. This paper develops a framework for analysis of the managed competition model and presents a range of results to highlight the effects of the framework on the availability of plans to Medicare recipients across the U.S.

This analysis will aid in understanding the impact of service area design on the availability of Medicare services to rural beneficiaries, which will help policymakers understand the implications of changes to service areas and payment rate designations. Any change in Medicare policy could have an immediate effect on the delivery of health care services in rural areas and on the ability of rural Medicare beneficiaries to access needed services. The importance of Medicare financing is most obvious in the case of rural hospitals. Over 47% of all revenues for rural hospitals in 1997 were from the Medicare program, and Medicare represented 60% of all rural hospital inpatient acute care days in 1996 (Rural Health Research Center, 1999). Rural beneficiaries are less likely to have supplemental insurance, due to a combination of lower availability of managed care plans and less use of employer-based plans.

## **Literature Review**

The use of managed competition as a strategy for controlling health care expenditures while expanding access has been championed for over 20 years by some (Enthoven, 1994; Enthoven and Kronick, 1989a, b) and became a leading alternative during the health reform debates of the 1980s and 1990s (White House Domestic Policy Council, 1994). There have been published commentaries on the applicability of the competitive model to rural areas (Christianson & Moscovice, 1993; Rosenberg & Associates, 1994; Slifkin, Ricketts, & Howard, 1996). Other studies concluded managed competition would not be applicable to rural environments, based on assumptions regarding how many physicians would be needed to establish competition among them (Kronick et al., 1993). Proponents of the managed competition approach argued that it could be applied to rural areas, with modest adaptation (Jackson Hole Group, 1993).

Proponents of the premium support model tout the Federal Employees Health Benefits Program (FEHBP) as an illustration of access to choice among plans, even in such rural states as West Virginia and Nebraska. However, their claims are based on the total number of plans available in each state, not the number and types of plans active in the rural counties of those states. There have not been any published studies analyzing the choices of rural federal employees in the FEHBP.

If a competitive model depends on the viability of managed care options, published studies regarding the spread of managed care into rural areas are not encouraging (Serrato, Brown, & Bergeron, 1995; Fuchs, 1994; Ricketts, Slifkin, & Johnson-Webb, 1995). Enrollment data regarding Medicare managed care supports the conclusion that expansion is slow, albeit still present (Shay, McBride, & Mueller, 2000; RUPRI, 2001; Gold, 2001; Families USA, 1999). A study of six rural sites found very little interest in developing or participating in managed care plans (Mueller et al., 1999). However, some investigators have argued that managed care plans will, in the near future, expand service areas into rural counties (Moscovice, Casey, & Krein, 1998; Casey, 1999).

Two different means of aggregating rural beneficiaries to attract managed care plans may be possible. First, large metropolitan plans may expand service areas into adjacent rural counties. Second, rural plans may aggregate rural counties into larger geographic service areas. In previous work, the RUPRI research team has demonstrated the greater likelihood of enrollment of rural Medicare beneficiaries into managed care plans when counties of residence are adjacent to

metropolitan areas (McBride & Mueller, 1998). There have also been reported examples of the second strategy (Mueller, 2000). The next step is to determine if these strategies can meet the needs of rural America.

Encouraging expanded use of managed care and other options among rural Medicare beneficiaries requires understanding the dynamics of how those beneficiaries would make their choices from an array of possibilities. There is extensive literature analyzing beneficiary decision making, but very few studies focus specifically on rural beneficiaries. Using studies of beneficiary choices among options to purchase supplemental insurance, some relationships can be posited that might be different for rural versus metropolitan beneficiaries. Vistnes and Banthin (1997-98) found that attitudes about accepting risk influence the decision to purchase supplemental coverage. Davidson, Sofaer, and Gertler (1992) found that beneficiaries with more knowledge of coverage were more likely to purchase supplemental coverage. Previous experience with managed care can be a precursor to the willingness to consider different options. As pointed out by Jones (1998), many of the nation's elderly do not have previous experience with managed care and not much current knowledge. Physical access to providers participating in alternative plans can influence choices consumers make (Siddharthan, 1991). These findings may indicate less likelihood for rural Medicare beneficiaries to select alternatives to the present Medicare system, which would have two implications for the advocates of a managed competition approach: (1) efforts to educate beneficiaries about their options may be more challenging in rural versus metropolitan areas, and (2) if fewer beneficiaries are inclined to choose new plans, those plans may withdraw from rural areas.

## **Methodology**

### **Theoretical Assumptions**

The first step in this project was to examine underlying assumptions of the managed competition model as applied to the Medicare program. The model requires managing the problem of biased risk selection and creating price-elastic demand by (1) not exceeding the lowest-cost plan's premium for the sponsor's contribution, (2) standardizing the coverage contract, (3) providing quality-related information to individuals, and (4) keeping the choice of plans at the individual level (Enthoven, 1993). Reforms to the Medicare program would need to meet the following objectives: (1) provide access to care for the elderly, (2) provide a financially stable and viable program, (3) use incentives for the elderly to choose efficient plans and/or providers, (4) provide a comprehensive benefits package, and (5) meet a criteria of fairness for beneficiaries and society (taxpayers) (Wilensky & Newhouse, 1999).

Other projects in the RUPRI Center for Rural Health Policy Analysis' (RUPRI Center) portfolio specify where managed care organizations currently enroll Medicare beneficiaries and the decisions of health plans to include rural counties in their service areas. This project provides further means of assessing current competitive activities, defining rural market areas, and

understanding what might influence rural beneficiaries' choices. There are three operational definitions of choice of health plans to consider:

- Multiple plans are available in the county, and each plan uses local providers.
- Multiple plans are available in the county, but only one uses local providers.
- Residents or beneficiaries in the county are enrolled in multiple plans.

All three definitions suffer a common limitation because they reflect current activity, which would likely change when market characteristics change. If Medicare were to offer higher per beneficiary per month payments, and lower regulatory burden, service areas of plans would likely change. If beneficiaries were offered different choices, and if the financial incentives for beneficiaries changed, there would likely be a different pattern of enrollment. Nonetheless, since support for the managed competition approach in Medicare is based on the virtues of other models such as the FEHBP, a fair assessment starts with the status quo. We used three databases for this assessment: enrollment into Medicare managed care plans from the Centers for Medicare & Medicaid Services, availability and enrollment into commercial HMOs from InterStudy, and plan availability and enrollment in the FEHBP from the Office of Personnel Management.

The term "health plans" includes any unique combination of deductibles, premiums, use of provider networks, or use of health maintenance organizations. For example, there are two nationwide health plans operated by Blue Cross/Blue Shield, basic and standard.

The plan for analysis was to create substate regions, using urban influence codes. The data set created by the RUPRI Center for the analysis of Medicare+Choice (M+C) includes information needed for this procedure. County FIPS codes were available in each of the data sets to facilitate linking the files. Data from the Area Resource File was used to test hypotheses concerning the effects of different demographic characteristics of counties and regions. The following hypotheses were tested:

1. The range of choices available will decline as the rural-metropolitan classification of the county becomes increasingly remote.
2. Factors mitigating the effect of remoteness will include higher numbers of persons aged 65 and over, per capita income of the elderly, higher than average payment for M+C plans, percent of the elderly population under age 70, ratio of health care providers (physicians, hospital beds) to population, and population growth among the elderly population.

Previous analysis has included speculation that rural areas lack sufficient Medicare beneficiaries to support competition (Penrod, McBride, & Mueller, 2001). Certainly this is true for many rural counties when considered one county at a time and for many areas that include multiple counties. If alternative conceptualizations of rural markets are considered, it may be possible to encourage more development of competing plans. Doing so requires crossing county and state lines and has implications for Medicare payment policies that are currently set on a county-specific basis for risk contracts. This approach is not designed to identify areas with competing health care providers, as was done during the earlier debates about managed competition (Slifkin, Ricketts, & Howard, 1996), but rather to pose logical approaches to developing health plan service areas that encompass sufficient Medicare beneficiaries to entice multiple plans to compete for their enrollment. Using Geographic Information Systems analysis, three different conceptions of services areas were plotted:

1. Using the Dartmouth Atlas service areas (Wennberg & Cooper, 1998) and calculating the number of rural Medicare beneficiaries in each of them.
2. Developing concentric circles of counties contiguous to metropolitan areas.
3. Developing aggregations of rural counties in each state.

### **Descriptive Analysis of Plan Availability and Enrollment**

The first analysis was a descriptive analysis of the number of plans active in each county for each of the three categories (M+C, commercial HMO, and FEHBP). The data are reported as follows:

1. For M+C plans: (a) no plans available, (b) one plan available, and (c) multiple plans available.
2. For commercial HMOs: (a) no plans offered, (b) one plan offered, (c) two to nine plans offered, and (d) ten or more plans offered.
3. For FEHBP plans: (a) one to two plans with enrollment, (b) three to five plans with enrollment, (c) six to nine plans with enrollment, and (d) ten or more plans with enrollment.

The descriptive analysis generated the following:

1. Tables, using SAS output, indicating the percent of counties within each discrete category (e.g., three categories of M+C plans) for each classification of rural counties (from the urban influence codes).
2. Maps, created by using ArcView,<sup>®</sup> GIS software for each discrete category, including one national map and separate maps for each census division. (See Appendices A, B, and C.)

## **Multivariate Analysis of Plan Availability and Activity**

Next we used multivariate analysis to estimate three models, one for each plan type (M+C, commercial HMO, and FEHBP). For the M+C model, we used a multinomial logistic regression on a county level, and for the commercial HMO and FEHBP models we used ordinary least squares regression. For the M+C model, the dependent variable was coded as 0, 1, or 2, representing the choices available within each county. For the other models, plans were left as the number of plans in use in the county. This approach was followed because the number of plan options available in most counties was large, so that, although the data are discrete and truncated at zero, multivariate analysis of the data showed that estimation using approaches that accounted for the discrete and truncated nature of the data (e.g., Tobit) did not significantly impact the results. For simplicity of presentation, we used ordinary least squares regression techniques for those models. For the M+C models, however, a large percentage of counties in the U.S. have zero M+C plans to choose from, necessitating the use of the discrete model (Logit).

The independent variables used in the analysis included type of county, volatility in the AAPCC rate, population in county, percent change in county population from 1990-2000, population over age 64, per capita income, poverty rate, death rate, population per square mile, hospital beds per 1,000 people, physicians per 1,000 people, general physicians per 1,000 people, and percent employed in health services.

## **Descriptive Analysis of Service Area Redistricting**

The next analysis was descriptive analysis of service area redistricting. The first approach was to define market areas within each census region. Various assumptions were made and then varied to define different possibilities:

1. Set initial market areas as the metropolitan areas and adjacent counties; we then added the next set of adjacent counties until there were at least 100,000 beneficiaries (assumes 20% penetration of competing plans, such that two plans could have 10,000 enrollees each). The remaining rural counties were divided into contiguous counties, with each area containing approximately 100,000 beneficiaries.
2. Create aggregations of rural counties including those that were adjacent to metropolitan counties, to achieve the minimum of 100,000 Medicare beneficiaries. This process relied on a criteria of “reasonableness,” as determined by the investigators. For example, western rural Minnesota may be part of a service area surrounding Fargo, North Dakota (as is true for some health plans now).

The second approach was to use the service areas defined by the Dartmouth Health Atlas. These were constructed based on the patterns of access to care for tertiary services. Health plans seeking to be cost effective by influencing use of expensive services (e.g., tertiary care) might develop market areas parallel to natural patterns of care-seeking behavior. The number of rural Medicare beneficiaries in each of those areas was determined using Medicare enrollment data.

The output of both approaches was maps that display potential market areas and the number of beneficiaries involved. The maps can be used to support policy analysis that develops the following arguments:

1. Competition in the Medicare program will require aggregating multiple rural counties into large geographic market areas.
2. An overlay map of county and regional payment areas can demonstrate the need to rethink the policies of Medicare payment by showing the incongruence of service area and M+C pricing policies.
3. Creativity may be required to think in terms of Medicare market areas that ignore geopolitical boundaries.

### **Using Results of Multivariate Threshold Analysis to Redesign Service Areas**

The final analysis included using the results of the RUPRI Center's empirical estimation of the relationship between enrollment in M+C plans and payment rates needed to entice managed care plans into rural areas to test an assumption that aggregating counties would increase the likelihood that plans would enter these newly designed market areas. This enables the research to make a contribution to the discussion of how to approach rural beneficiaries about choices among plans, and to provide policymakers with a better understanding of what is possible for the M+C program if service areas are configured differently.

### **Data Sources**

The following data sources were used to complete this analysis:

Health Benefit Data File from the FEHBP. The Office of Personnel Management, Office of Actuaries, provided this file. The data are structured using the county as the unit of analysis. For each county, the data include which plans have enrollees (including postal, nonpostal, and annuitants) and the number of enrollees in each plan. These data permit analysis of plan activity in each county. In addition, the Office of Personnel Management web site provides summary information for plans offered in each state, including which plans are managed care and the definition of the plan's service area.

RUPRI Medicare Capitation Data Files maintained by the Rural Health Panel. This file is compiled from a number of sources, mostly provided by the Centers for Medicare & Medicaid Services in a series of periodic reports prepared by its Center for Health Plans & Providers. This is the official data on M+C plans, covering the following characteristics of M+C plans and the counties in which they operate: (a) The number of beneficiaries by county, and by M+C plan, collected quarterly; (b) M+C capitation rates at the county level, collected annually; and (c) characteristics of M+C plans, including name of plan, location of plan office, dates of contract, structure of plan, and profit status of plan, collected monthly; (d) benefits offered by plan, and the premium charged, collected annually; and (e) counties in the service areas of plans, collected quarterly.

Area Resource File from Quality Resource, Inc. The Area Resource File provides data about the number of elderly residing in the county, the per capita income, and presence of health care providers.

County Surveyor National Database from InterStudy. Enrollment data collected directly from HMOs indicate the percentage of their total enrollment that is located in each county of their service area. About 70% of all HMOs provide these data, and virtually all of the remaining HMOs have provided metropolitan area information. For those not reporting for all counties, the residual after metropolitan enrollment is subtracted and apportioned to the rural counties in the service area according to the relative size of county populations. The database accounts for slightly more than 98% of the total HMO enrollment in the country. Data elements include county population, total HMO enrollment, name and enrollment for each HMO in that market area, index of competition, and number of HMOs in the county.

The Dartmouth Atlas on CD-ROM from the American Hospital Association. This database allows us to manipulate the Dartmouth Atlas data, including converting zip codes to county codes using ArcView® GIS software.

## **Results**

### **Descriptive Analysis of Plan Availability and Enrollment**

There is great disparity between the availability of (and enrollment in) M+C plans, commercial HMOs, and FEHBP plans across counties in the United States.

#### ***M+C Plans***

As shown in Appendix A, Map 1, page 25, almost 80% of counties had no M+C plans available to them in August 2001, while only 10% had one plan available, and 10% had multiple plans (see Table 1). These results, displayed graphically by county urban influence code, are consistent with the MedPAC analysis of plan availability (MedPAC, 2001).

A closer examination of plan choice in counties by census division reveals considerable plan choice in portions of Census Division One (specifically in Massachusetts and Connecticut), Census Division Two (New York, Pennsylvania, and New Jersey) and Census Division Nine (Washington, Oregon, and California). However, plan availability throughout the country was clearly clustered around metropolitan areas. This supports the first hypothesis with respect to M+C plans: that the range of choices available will decline as the county is increasingly rural and remote.

Table 1. Medicare+Choice Availability by County, August 2001

	<b>Rural Counties</b>	<b>Metropolitan Counties</b>	<b>All Counties</b>
No plans	91%	50%	80%
1 plan	7%	18%	10%
Multiple plans	2%	32%	10%

Source: RUPRI Medicare County Capitation File. RUPRI Center for Rural Health Policy Analysis

### *Commercial HMOs*

Distribution of commercial HMOs in January 1999 is displayed graphically in Appendix B, Map 11, page 36. These maps present a story that is almost the inverse of the story for M+C plans: multiple plans were available in 84% of counties, one plan was available in 11% of the counties, and no plans were available in 5% of counties (see Table 2). The areas with the most limited availability of plans included portions of Census Division Four, particularly North Dakota, South Dakota, Nebraska, and Kansas; and Census Division Eight in Montana, Wyoming, and Nevada. All other areas had considerable availability of commercial HMOs.

Table 2. Commercial HMO Availability by County, January 1999

	<b>Rural Counties</b>	<b>Metropolitan Counties</b>	<b>All Counties</b>
No plans	7%	0%	5%
1 plan	14%	3%	11%
2-9 plans	77%	51%	70%
10 or more plans	2%	47%	14%

Source: County Surveyor National Database, InterStudy.

### *FEHBP Plans*

Appendix C, Map 21, page 47, shows the distribution of active FEHBP plans across the U.S. in 2001.

Table 3. FEHBP Plan Activity by County, 2001

	<b>Rural Counties</b>	<b>Metropolitan Counties</b>	<b>All Counties</b>
No plans	0%	0%	0%
1-2 plans	2%	2%	2%
3-5 plans	11%	2%	8%
6-9 plans	57%	12%	45%
10 or more plans	30%	86%	45%

Source: Office of Personnel Management, Office of Actuarial Data, based on enrollment by federal employees.

Table 4 presents the number of HMO plans offered by the FEHBP available by state in the year 2001 and further classifies the plans by their coverage for a state. ‘Statewide’ HMO’s are available in all cities and counties in the respective state. ‘Selected Area’ HMO’s are offered only in specified cities and counties for the respective state, as listed for each state in the FEHBP 2001 Plan Comparison, available at [www.opm.gov/insure/01/html/choose.html](http://www.opm.gov/insure/01/html/choose.html). ‘Most of State’ is a classification used to describe HMO plans that are offered in the whole state with the exception of a few areas, which may or may not be specified in the FEHBP 2001 Plan Comparison.

<b>Table 4. 2001 State HMO Plans Offered by Federal Employees Health Benefits Program, by Service Area</b>			
<b>State</b>	<b>Service Area</b>		
	<b>Statewide</b>	<b>Selected Areas</b>	<b>Most of State</b>
Alabama	0	2	0
Alaska	0	0	0
Arizona	0	3	1
Arkansas	0	0	0
California	0	10	4
Colorado	0	4	1
Connecticut	3	1	0
Delaware	2	0	0
Florida	0	14	0
Georgia	0	2	0
Hawaii	0	2	0
Idaho	0	2	0
Illinois	0	12	0
Indiana	0	11	2
Iowa	0	4	0
Kansas	0	6	0
Kentucky	0	4	0
Louisiana	0	3	0
Maine	0	0	0
Maryland	1	5	0
Massachusetts	0	3	0
Michigan	0	17	0
Minnesota	0	3	0
Mississippi	0	1	0
Missouri	0	9	0
Montana	0	0	0
Nebraska	0	0	0
Nevada	0	2	0
New Hampshire	0	0	0
New Jersey	5	1	0
New Mexico	2	0	1
New York	0	23	0
North Carolina	0	3	1
North Dakota	0	1	0
Ohio	0	13	1
Oklahoma	0	6	0
Oregon	0	3	0
Pennsylvania	0	13	0
Rhode Island	1	0	0
South Carolina	0	2	0
South Dakota	0	0	0
Tennessee	0	3	0
Texas	0	12	0
Utah	0	1	0
Vermont	1	0	0
Virginia	0	13	0
Washington	0	10	1
West Virginia	2	0	0
Wisconsin	0	10	0
Wyoming	0	0	0
<b>Total U.S.</b>	<b>17</b>	<b>234</b>	<b>12</b>

Source: U.S. Office of Personnel Management, Federal Employees Health Benefits Program: 2001 Plan Comparison.

## **Multivariate Analysis of Plan Availability and Activity**

The descriptive analysis and mapping demonstrated that plan availability will be more limited in more remote communities. Multivariate analysis allowed us to test this hypothesis further and explore whether other factors influence plan availability. The factors hypothesized to mitigate the effect of remoteness included a lower volatility in payment rates, higher than average payment to M+C plans, higher population, higher numbers of persons aged 65 and over, greater percent change in population, higher per capita income, lower poverty rate, lower number of deaths, population per square mile, county metropolitan/rural designation, hospital beds and physicians per 1,000 people, general physicians per 1,000 people, and the percent employed in health services. The average payment to M+C plans and the volatility in payment rates are only applicable to the M+C plan availability model.

A multinomial logistic regression was used for the M+C availability model because of the discrete nature of the dependent variable. In contrast, a standard ordinary least squares regression model was used in the commercial HMO and FEHBP models, because there was a fairly continuous distribution of plans.

### ***M+C Plans***

The results of the multivariate analysis are presented in Table 5. As expected, M+C plan availability was significantly associated with increases in the average payment to M+C plans, as has been found in previous analysis of Medicare payment policy. This indicates that plans are more likely to locate where they get a higher compensation from the Centers for Medicare & Medicaid Services. However, the results also showed that volatility in payment rates leads to lower plan availability, as has been shown in previous analysis. But other factors are also important, including the population in the county aged 65 and over and the percent change in population, because M+C plans will locate in areas with larger populations, on the theory that they need large populations to make their plans viable. M+C plans are found to be more likely to locate in metropolitan counties. Plan availability increased as the percent of population employed in health services increased in the county, indicating that to some extent plan availability is supply-driven. Plan availability decreased with higher poverty rates, indicating that plans are responsive to demand factors, such that plans may not wish to locate where their population may be adversely-selected.

### ***Commercial HMOs***

Commercial HMOs were likely to be available in areas with higher populations (and areas with positive changes in the population) and metropolitan and rural-adjacent areas, indicating that plans were responding to economies-of-scale issues. Commercial HMOs were more likely to be available in areas with higher per capita incomes or lower poverty rates, indicating that they were seeking a favorably-selected population. Commercial HMOs were less likely to be available in areas with more hospital beds per 1,000 or general physicians per 1,000. This counter-intuitive result indicates, perhaps, that HMOs are reluctant to locate where there is a great deal of excess capacity, which might result in greater utilization once the HMO locates there, driving up costs.

**Table 5. Predictors of Having an M+C Plan**

Variable	Mean	Std Dev	Hypothesized sign	M+C		Probability (Coeff.=0)
				Coefficient	Std Err.	
<b>M+C</b>						
AAPVOL <sup>1</sup>	0.0358	0.0203	Negative	-14.4969	4.4889	0.0010
M+C Rate <sup>2</sup>	496.3729	47.9883	Positive	0.0132	0.0012	0.0000
<b>Demographics</b>						
Population, 1998 (thousands) <sup>3</sup>	90691.7800	327390.0400	Positive	-0.0006	0.0006	0.2600
Population aged 65 and over (thousands) <sup>4</sup>	10416.1000	34181.8800	Positive	0.0267	0.0054	0.0000
Percent Change in Population 1990-2000	11.0940	16.0446	Positive	0.0086	0.0036	0.0160
Per Capita Income <sup>5</sup>	19692.6200	4669.2100	Positive	0.0000	0.0000	0.8550
Percent Poverty <sup>6</sup>	16.7313	7.9221	Negative	-0.0624	0.0122	0.0000
Deaths <sup>7</sup>	770.3637	2446.5500	Negative	-31.1105	29.4312	0.2900
<b>Geographic</b>						
Population per Square Mile	209.2685	1438.3800	Positive	0.0000	0.0000	0.5120
Central Urban County <sup>8</sup>	0.2675	0.4427	Positive	2.4111	0.3001	0.0000
Other Urban County <sup>9</sup>	0.2109	0.4080	Positive	-1.2025	0.2142	0.0000
Rural Adjacent County <sup>10</sup>	0.3205	0.4668	Negative	-0.8042	0.1775	0.0000
<b>Health Services</b>						
Hospital Beds per 1,000 <sup>11</sup>	0.0684	0.0905	Negative	-5.2398	1.6161	0.0010
Physicians per 1,000 <sup>12</sup>	1.4871	1.6356	Positive	-0.0242	0.0399	0.5450
General Physicians per 1,000 <sup>13</sup>	0.0009	0.0006	Positive	-1800.2030	1409.7880	0.2020
Percent Health Services <sup>14</sup>	76.4855	25.5357	Positive	0.0099	0.0027	0.0000

SOURCE: RUPRI Medicare County Capitation Files.

<sup>1</sup>Volatility in AAPCC, M+C payment rates

<sup>2</sup>M+C Payment Rate, in hundreds of dollars

<sup>3</sup>Population in County, 1998

<sup>4</sup>Population over age 64 in County, 1998

<sup>5</sup>Per Capita Income, 1997

<sup>6</sup>Percent below poverty in county

<sup>7</sup>Three-year total deaths

<sup>8</sup>Central urban county (1=central urban)

<sup>9</sup>Other urban county (1=other urban)

<sup>10</sup>Rural adjacent county (1=rural adjacent). Rural nonadjacent is the reference category.

<sup>11</sup>Number of Hospital Beds per 1,000 people

<sup>12</sup>Number of MDs 1998 per 1,000 people

<sup>13</sup>Number of General Practice, Family Practice, and General Internal Medicine Physicians per 1,000 people

<sup>14</sup>Percent of population employed in health services

Table 6. Predictors of Multiple Plans

Variable	Mean	Std Dev	Hypothesized sign	Commercial HMOs			FEHBP		
				Coefficient	Std Err.	Probability (Coeff.=0)	Coefficient	Std Err.	Probability (Coeff.=0)
<b>Demographics</b>									
Population, 1998 (thousands) <sup>1</sup>	90691.7800	327390.0400	Positive	0.0039	0.0006	0.0001	-0.0029	0.0011	0.0001
Population aged 65 and over (thousands) <sup>2</sup>	10416.1000	34181.8800	Positive	-0.0101	0.0064	0.1129	0.1011	0.0107	0.0001
Percent Change in Population 1990-2000	11.0940	16.0446	Positive	0.0428	0.0037	0.0001	0.0310	0.0063	0.0001
Per Capita Income <sup>3</sup>	19692.6200	4669.2100	Positive	0.0001	0.0000	0.0004	0.0001	0.0000	0.0001
Percent Poverty <sup>4</sup>	16.7313	7.9221	Negative	-0.0283	0.0083	0.0007	0.0001	0.0140	0.9971
Deaths <sup>5</sup>	770.3637	2446.5500	Negative	100.7688	23.7183	0.0001	-1.4286	39.9027	0.9714
<b>Geographic</b>									
Population per Square Mile	209.2685	1438.3800	Positive	0.0000	0.0000	0.9457	0.0004	0.0001	0.0001
Central Urban County <sup>6</sup>	0.2675	0.4427	Positive	7.7436	0.2998	0.0001	10.3429	0.5044	0.0001
Other Urban County <sup>7</sup>	0.2109	0.4080	Positive	-3.6969	0.2745	0.0001	-6.7094	0.4618	0.0001
Rural Adjacent County <sup>8</sup>	0.3205	0.4668	Negative	1.1862	0.1187	0.0001	1.2884	0.1998	0.0001
<b>Health Services</b>									
Hospital Beds per 1,000 <sup>9</sup>	0.0684	0.0905	Negative	-3.9820	0.6161	0.0001	-4.4177	1.0365	0.0001
Physicians per 1,000 <sup>10</sup>	1.4871	1.6356	Positive	0.0019	0.0428	0.9653	0.8675	0.0719	0.0001
General Physicians per 1,000 <sup>11</sup>	0.0009	0.0006	Positive	-976.8617	246.2748	0.0001	-2296.5913	414.3225	0.0001
Percent Health Services <sup>12</sup>	76.4855	25.5357	Positive	-0.0010	0.0023	0.6677	-0.0029	0.0039	0.4666
Intercept				1.5197	0.4973	0.0023	4.61747	0.83667	0.0001
Adjusted R-Square				0.5843			0.6189		

SOURCE: RUPRI Medicare County Capitation Files.

<sup>1</sup>Population in County, 1998

<sup>2</sup>Population over age 64 in County, 1998

<sup>3</sup>Per Capita Income, 1997

<sup>4</sup>Percent below poverty in county

<sup>5</sup>Three-year total deaths

<sup>6</sup>Central urban county (1=central urban)

<sup>7</sup>Other urban county (1=other urban)

<sup>8</sup>Rural adjacent county (1=rural adjacent). Rural nonadjacent is the reference category.

<sup>9</sup>Number of Hospital Beds per 1,000 people

<sup>10</sup>Number of MDs 1998 per 1,000 people

<sup>11</sup>Number of General Practice, Family Practice, and General Internal Medicine Physicians per 1,000 people

<sup>12</sup>Percent of population employed in health services

### ***FEHBP Plans***

The multivariate results indicated that the number of FEHBP plans with enrollment was also positively associated with the size of the population in the area, the percent change in population, population per square mile, and metropolitan county designation, again reflecting the economies of scale that population size affords. In addition, FEHBP plans were more likely to locate in areas with higher per capita incomes, reflecting the favorable selection of the persons living in these locations. But plans were less likely to locate in areas with higher hospital beds per 1,000 and general physicians per 1,000, indicating that plans were concerned about the pent-up demand that might be associated with the excess capacity represented by these figures.

### **Descriptive Analysis of Service Area Redistricting**

In order to evaluate the argument that competition is not possible in rural areas because there are too few Medicare beneficiaries and that alternative conceptualizations of rural market areas might encourage development of competing plans, service area redistricting was examined. As noted in the methodology section, two methods of redistricting are reported here:

1. Set initial market areas as the metropolitan areas and adjacent counties; we then added the next set of adjacent counties until there were at least 100,000 beneficiaries (assumes 20% penetration of competing plans, such that two plans could have 10,000 Medicare enrollees each). The remaining rural counties were divided into contiguous counties, with each area containing approximately 100,000 beneficiaries.
2. The second approach is to use the service areas defined by the Dartmouth Health Atlas.

The maps in Appendix D, pages 57-77, depict the number of plans, Medicare beneficiaries, and M+C enrollees currently in these new service areas for census regions. The final map in each set shows the M+C payment rates in each new service area by county. These maps demonstrate the effect of the redistricting on county Medicare payment rates. This is a crucial issue, because the point of the redistricting is to create service areas that will be large enough to support M+C plans, accomplished through merging lower rate areas with higher rate areas so that the resulting higher payment rate will be enough to attract an M+C plan to the area.

The maps in Appendix E, pages 78-81, show the Dartmouth Hospital Referral Regions, constructed as described in the methodology section. These constructed regions can be compared to the service area redistricting in Appendix D, pages 57-77, and the county M+C rates in each referral region for the feasibility of each region as an area that could support an M+C plan.

### **Using Results of Multivariate Threshold Analysis to Redesign Service Areas**

In this final section, we present the results of an analysis of Medicare payment rates needed to entice M+C plans to enter service areas—a threshold analysis. For this purpose, we used a regression model presented elsewhere (Penrod, McBride, Mueller, 2001; RUPRI, 2001) that describes the relationship between M+C enrollment and M+C payment rates to simulate the M+C payment rate that would be needed to support M+C plans in a particular region. As shown by

Penrod et al. and RUPRI, this rate will be a function of the characteristics of the county (percent in poverty, percent age 65-74, Medicare beneficiaries, hospitals per capita, physicians per capita).

The maps in Appendix F, pages 82-86, contrast the difficulty plans face under the current structure of the M+C program with how the program could be structured if the service areas were redesigned. Map 56 shows the threshold payment rates at which an M+C plan would enter the market under the current structure of the M+C program, where rates are paid on a county-by-county basis. Note that in the vast majority of counties in the U.S.—especially rural counties—the threshold rates would need to be \$700 or more to entice M+C plans to enter the marketplace. For the most part, M+C is financially viable only in metropolitan counties, on the West Coast, in the Northeast, and in Florida. This reflects the large numbers of Medicare beneficiaries living in these areas, significant existing managed care penetration, and other favorable conditions. Map 57 shows the payment rates currently paid on a county-by-county basis under the M+C program. Note that in the vast majority of the country, the payment rates are well below the threshold rate shown in Map 57. For the most part, 2001 M+C payment rates are higher than the threshold payment rates only in the areas with low threshold rates in Map 56, and these are the areas with significant levels of M+C enrollment

Map 31 begins the presentation of alternative scenarios for service areas that could be used to structure the M+C program. Maps 31-50 use the service areas based on a minimum of 100,000 Medicare beneficiaries and shows the probability that these service areas would have M+C enrollment, based on the characteristics of these expanded service areas. It is important to keep in mind what this simulation scenario has done. By combining counties into larger service areas, some variables that were unfavorable towards M+C enrollment growth (e.g., population density, managed care penetration) can be mitigated by combining service areas. Thus, the larger service area may be more favorable for an M+C plan, as compared to the current county-by-county designation.

Map 54 shows the probability that the larger service area would have an M+C plan given the aggregated conditions in the service area. Note that a majority of the service areas in the country would have M+C plans with a probability of between 25% and 50%, according to the model we used. Conditions are even more favorable on the West Coast, in the Northeast, and in Florida. Map 55 shows the threshold rates for the new service areas of at least 100,000 Medicare beneficiaries. A comparison of Map 55 with Map 56 shows that combining the service areas does slightly improve the conditions for M+C enrollment growth, because the number of service areas requiring relatively higher payment rates drops. However, the policy of combining service areas seems to be most effective in the Northeast, industrial Midwest, South, West Coast, and Southwest, while it does not seem to be that effective in the Plains States, where most of the service areas still require threshold rates above \$700.

Thus, this analysis shows how combining service areas could marginally improve the probability that M+C plans would be offered across the U.S.

## Conclusion

The purpose of this project was to examine Medicare plan choice, the factors that influence plan availability, and the implications of service area redesign as it relates to the managed competition model. This work is relevant to current policy discussions because the managed competition model approach is being considered as one approach for reforming the Medicare program.

The results of the descriptive analysis show that very few (approximately 10%) of the counties in the U.S. have M+C plans, and a majority of those counties with plans are in metropolitan areas, leaving most rural areas without an M+C plan. In contrast, commercial HMOs have much more widespread availability—only 5% of counties have no HMOs available, primarily rural areas in the Great Plains states (Census Division Four and Eight). Finally, in 98% of U.S. counties, there are at least two FEHBP plans with enrollment.

The multivariate analysis identified factors related to the availability of M+C and commercial HMOs. The findings demonstrate that both M+C and commercial HMOs increase in availability with either an increase in population or metropolitan designation and decrease in availability with the remoteness of the community.

With these results in mind, we focused on the possible redesign of service areas according to: (1) service areas that had at least a population of 100,000 Medicare beneficiaries, and (2) Dartmouth Atlas service areas. Redistricting service areas into larger service areas clearly increased the likelihood that these service areas would be conducive to the availability of M+C plans. Although there are still many areas with no M+C plans, there are many counties that when aggregated gain a plan they would not be likely to have before. The number of Medicare beneficiaries in the Dartmouth Hospital Referral Regions in many cases is above 100,000, also implying that if this is the necessary number of beneficiaries to attract a plan, under these service areas more counties would potentially have a plan available.

Finally, to understand what would happen to availability in the redistricted areas, we used threshold analysis to determine the new AAPCC payment rate that would be necessary to attract an M+C plan. We found that redistricting would give some areas previously not covered access to M+C plans; however, rates in excess of \$700 would still be necessary in many areas. A combination of new service areas and more generous payment would make M+C more feasible. To see this, consider areas with threshold payment rates of less than \$899—currently with service areas at the county level, only 40% of counties have threshold payment rates below \$899, but with the newly redesigned service areas, 78% of the service areas would have payment rates below \$899. This demonstrates a clear lowering of rates necessary to facilitate plan availability.

Our results demonstrate that plan availability is limited (the choices do not include managed care plans) and that redesigning service areas may increase plan availability by aggregating county characteristics and lowering the capitation rates necessary to attract plans.

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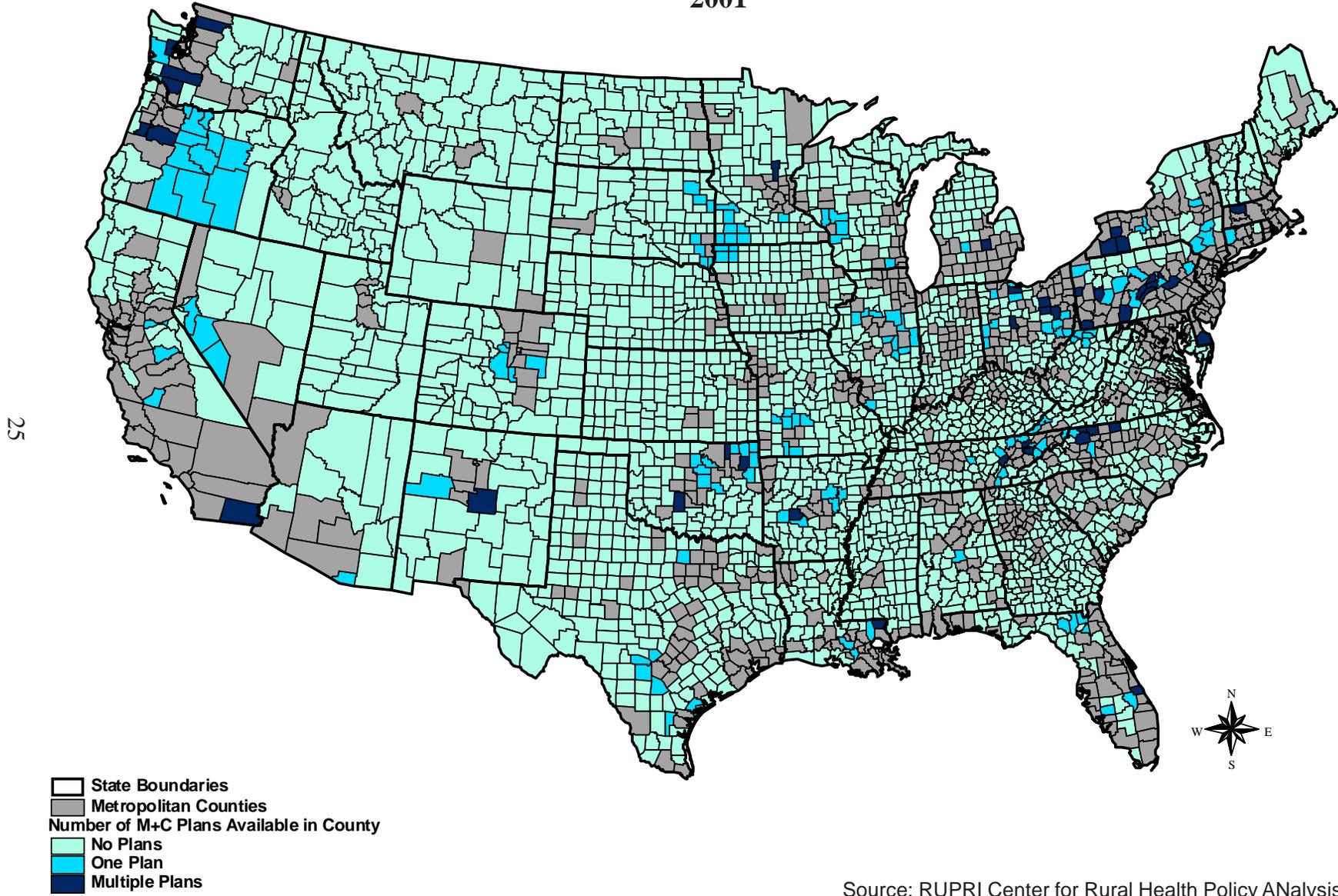
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## Appendix A. Maps of Plan Choice: Medicare+Choice

**Map 1. Number of M+C Plans Available in Rural Areas  
2001**



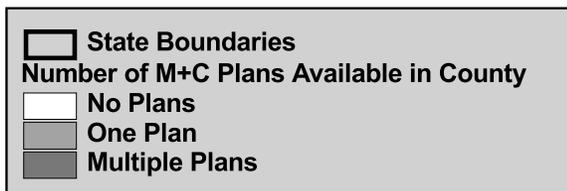
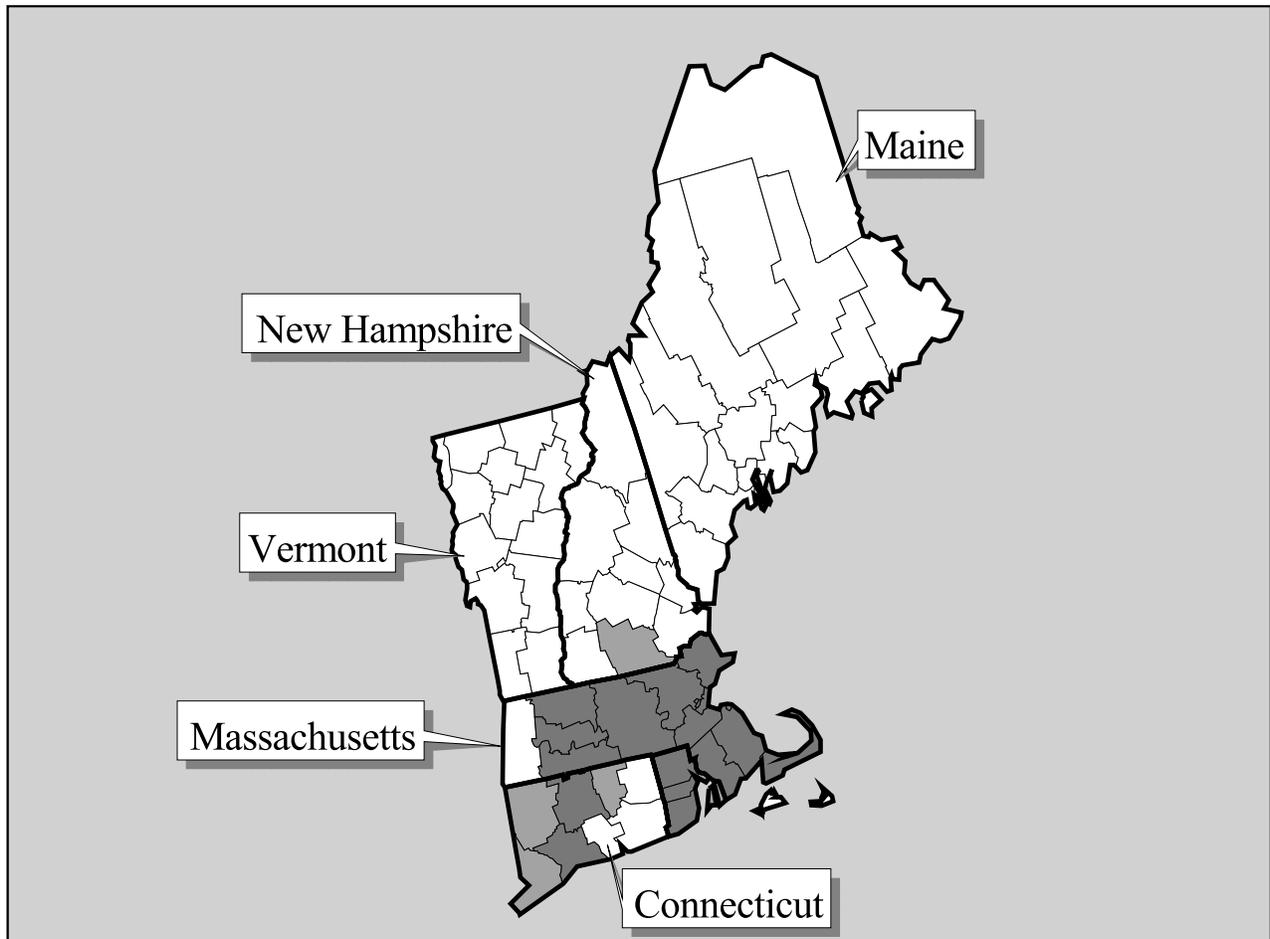
Source: RUPRI Center for Rural Health Policy Analysis

# Map 2

## Availability of M+C Plans

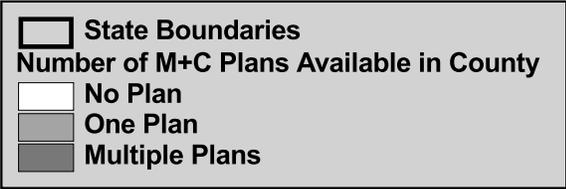
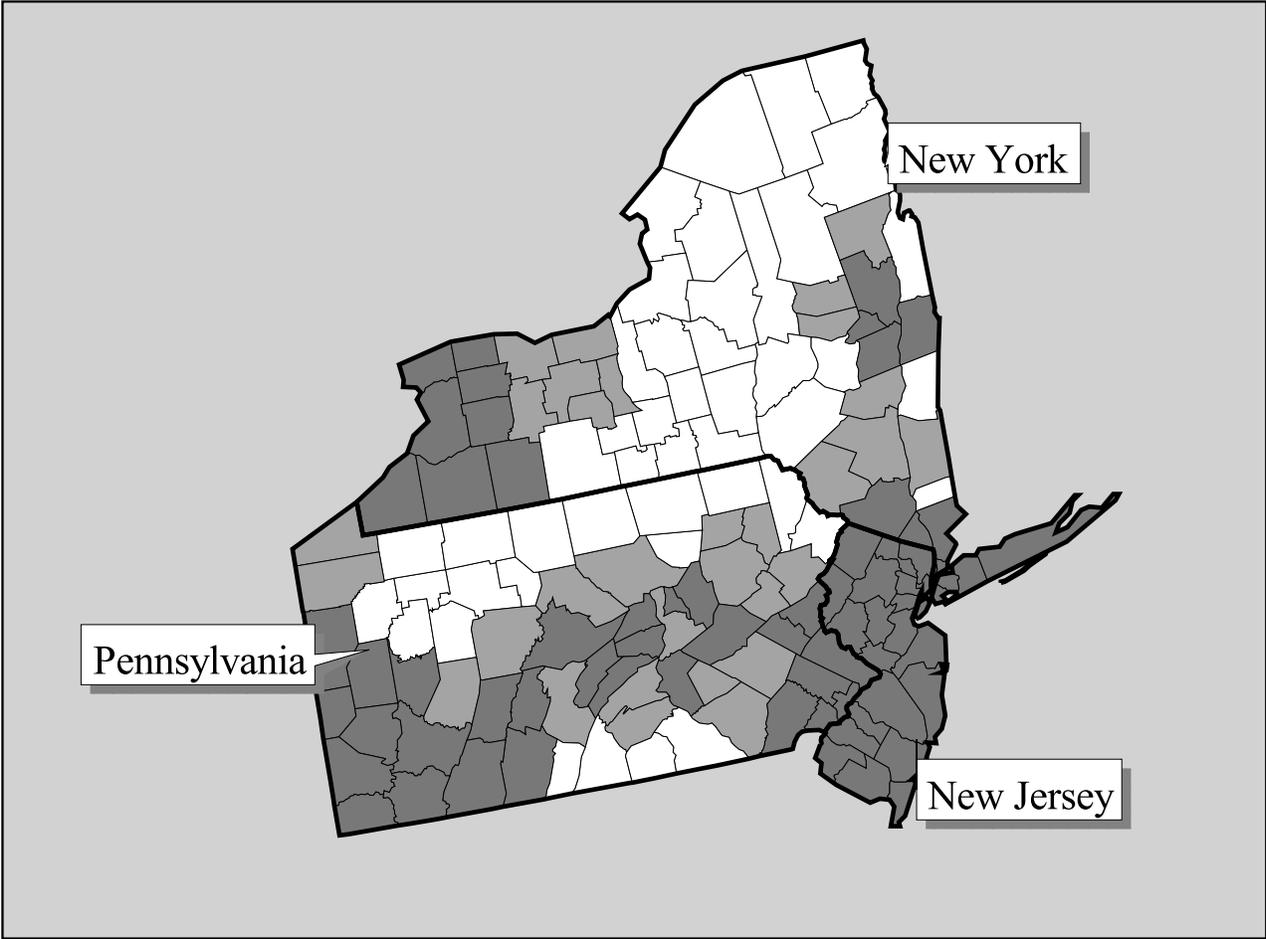
### Census Division One

#### August 2001



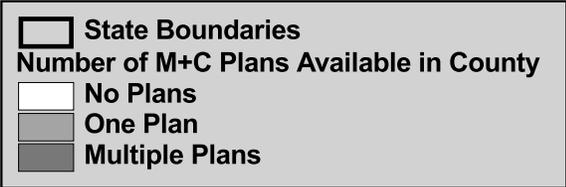
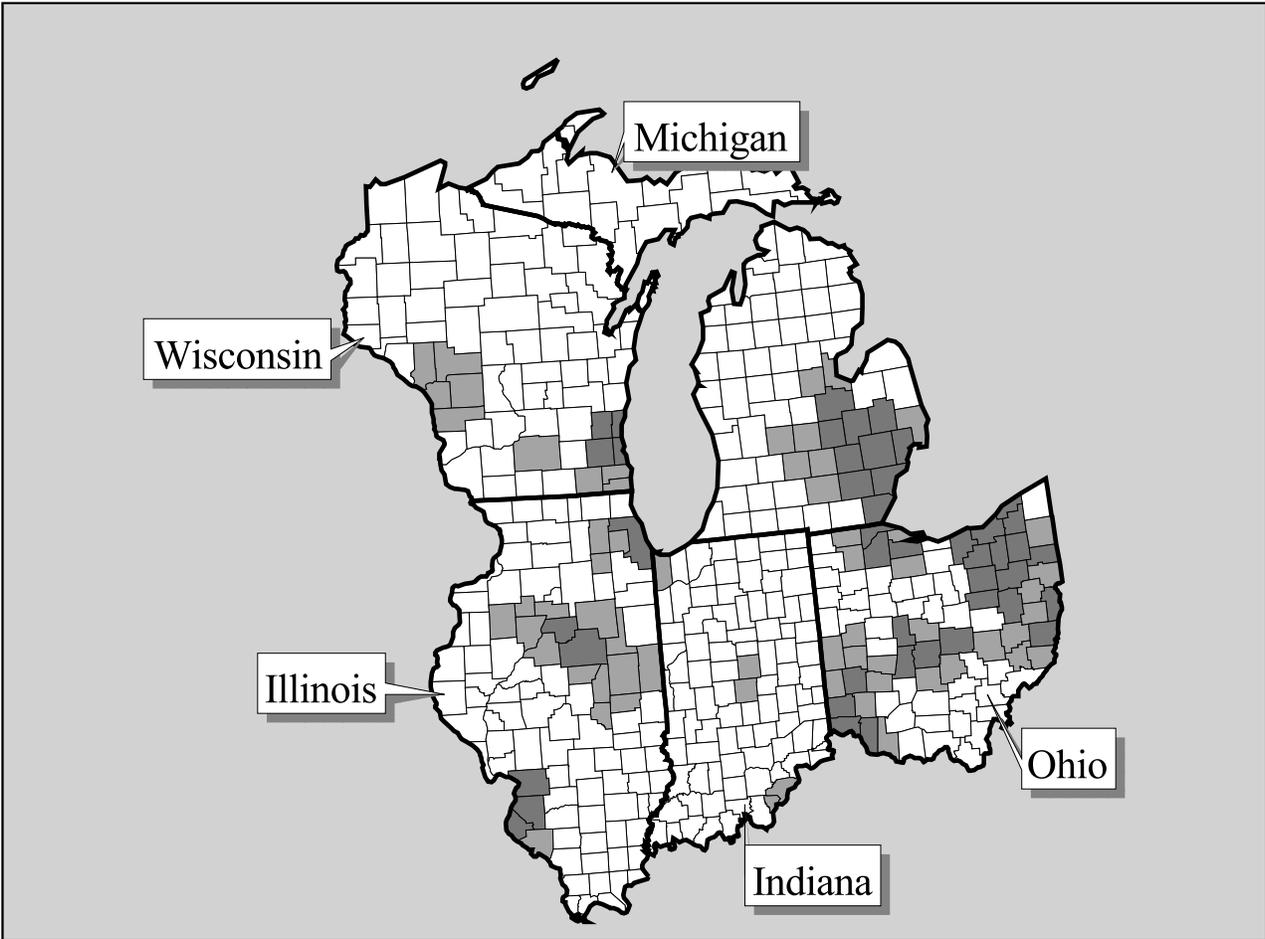
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 3 Availability of M+C Plans Census Division Two August 2001



Source: RUPRI Center for Rural Health Policy Analysis.

# Map 4 Availability of M+C Plans Census Division Three August 2001



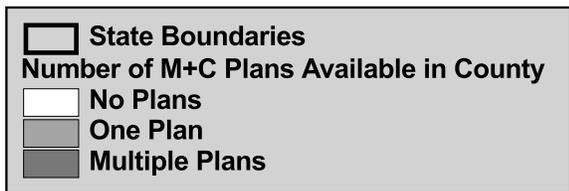
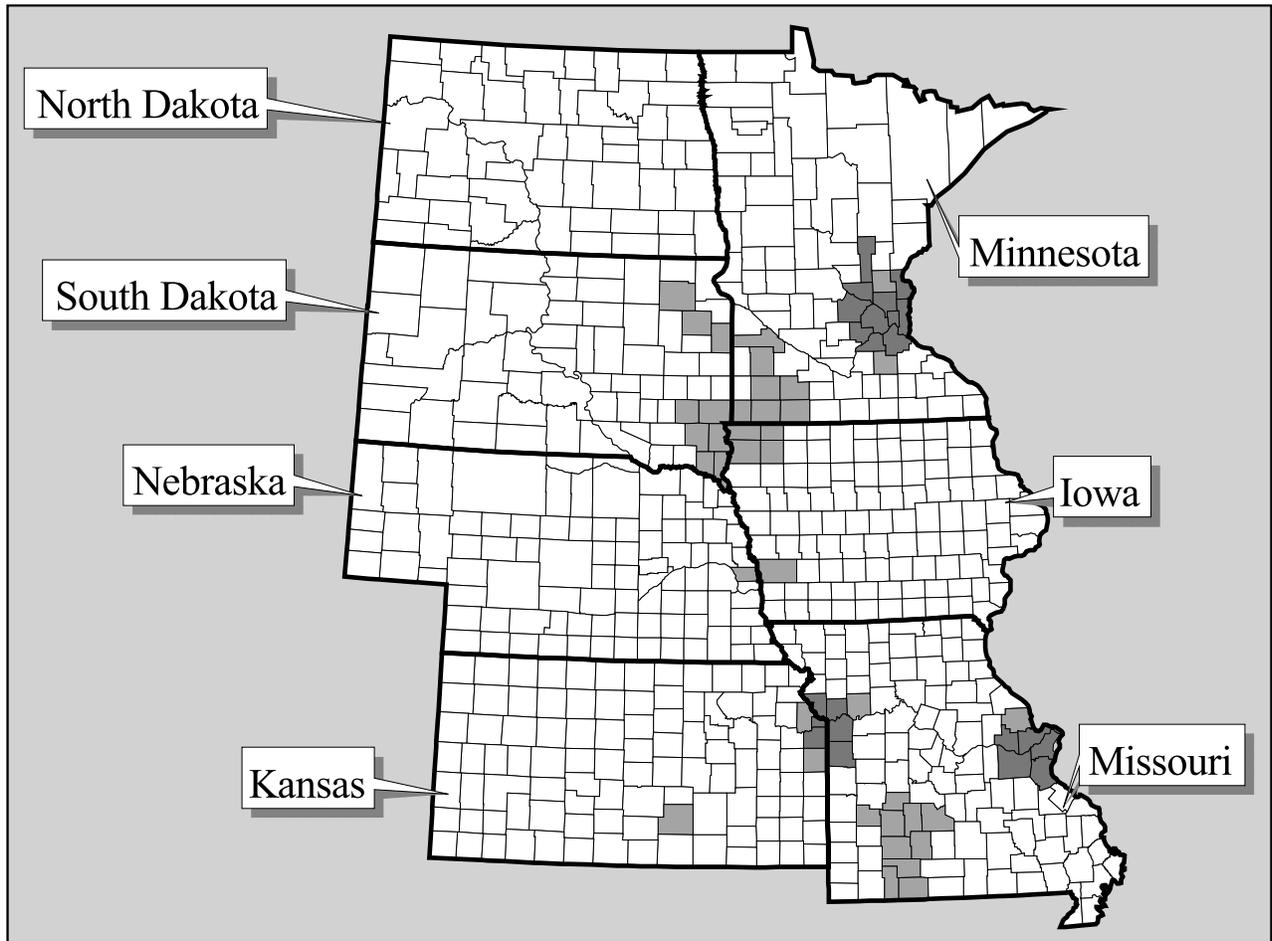
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# Map 5

## Availability of M+C Plans

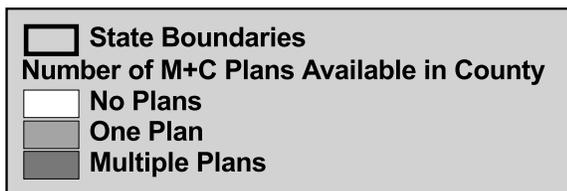
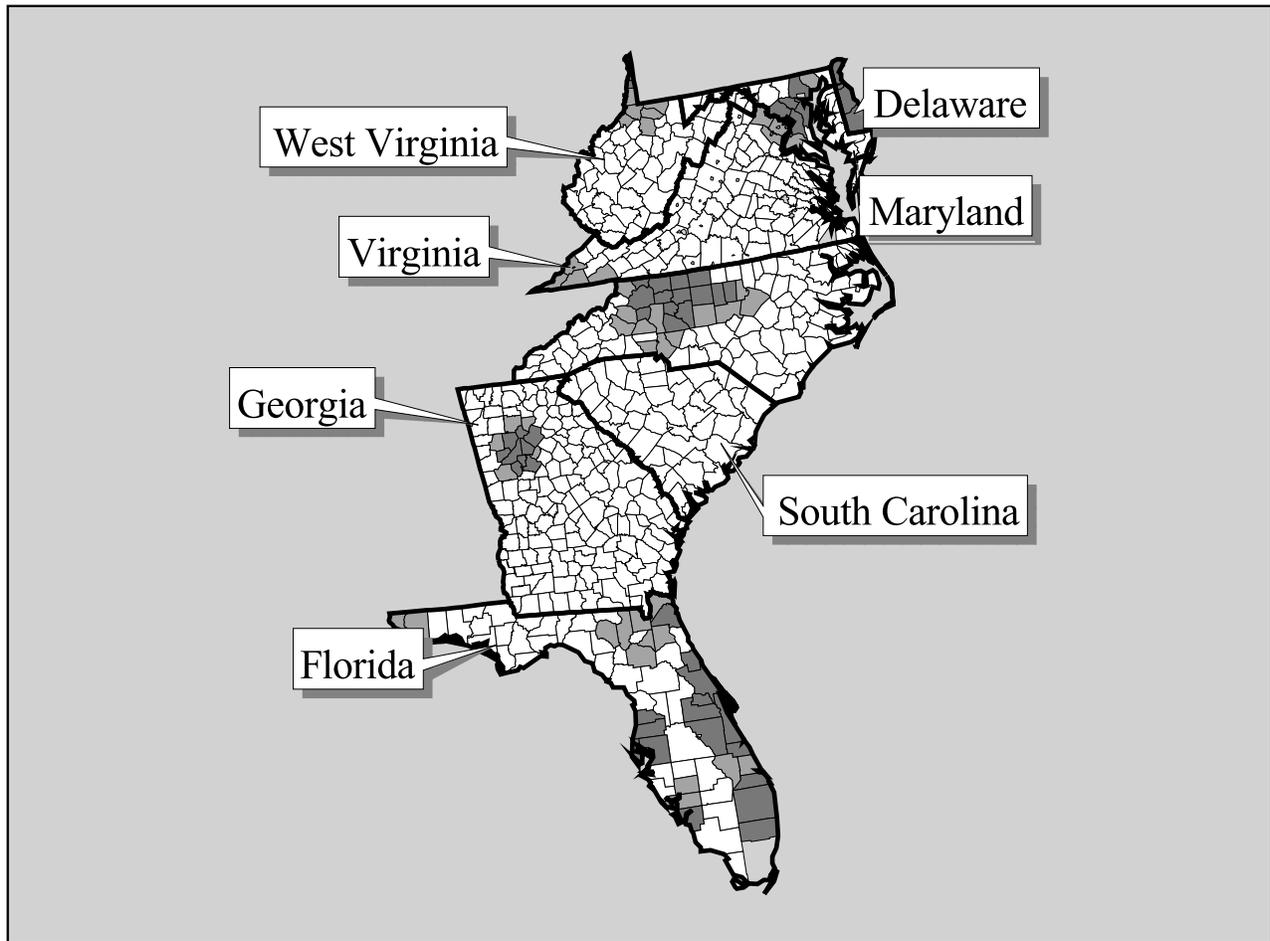
### Census Division Four

#### August 2001



Source: RUPRI Center for Rural Health Policy Analysis.

# Map 6 Availability of M+C Plans Census Division Five August 2001



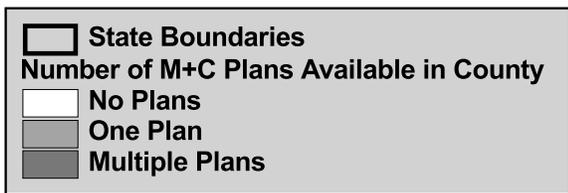
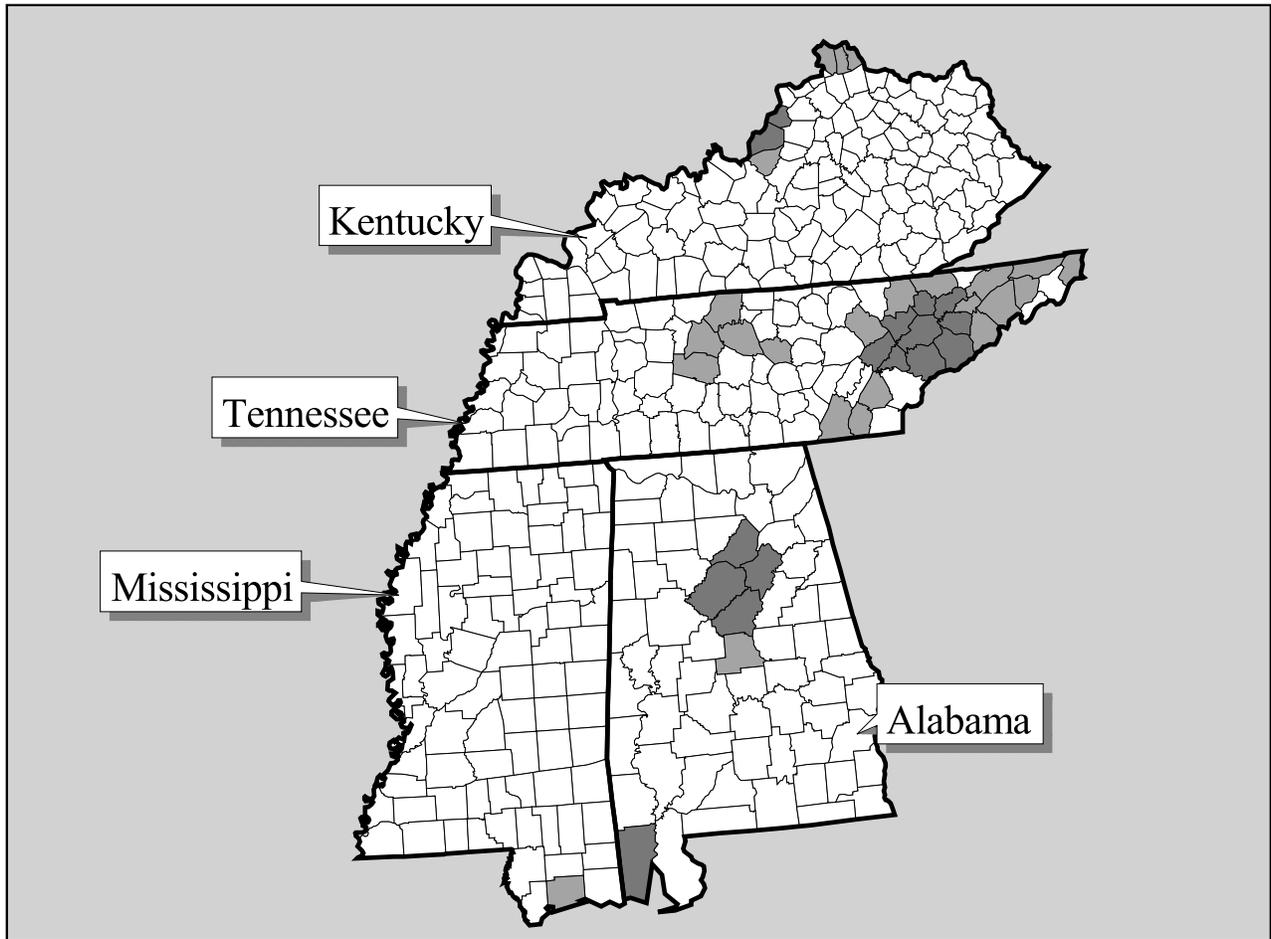
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 7

## Availability of M+C Plans

### Census Division Six

#### August 2001



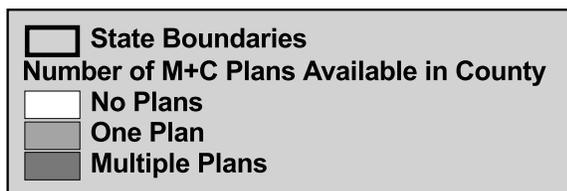
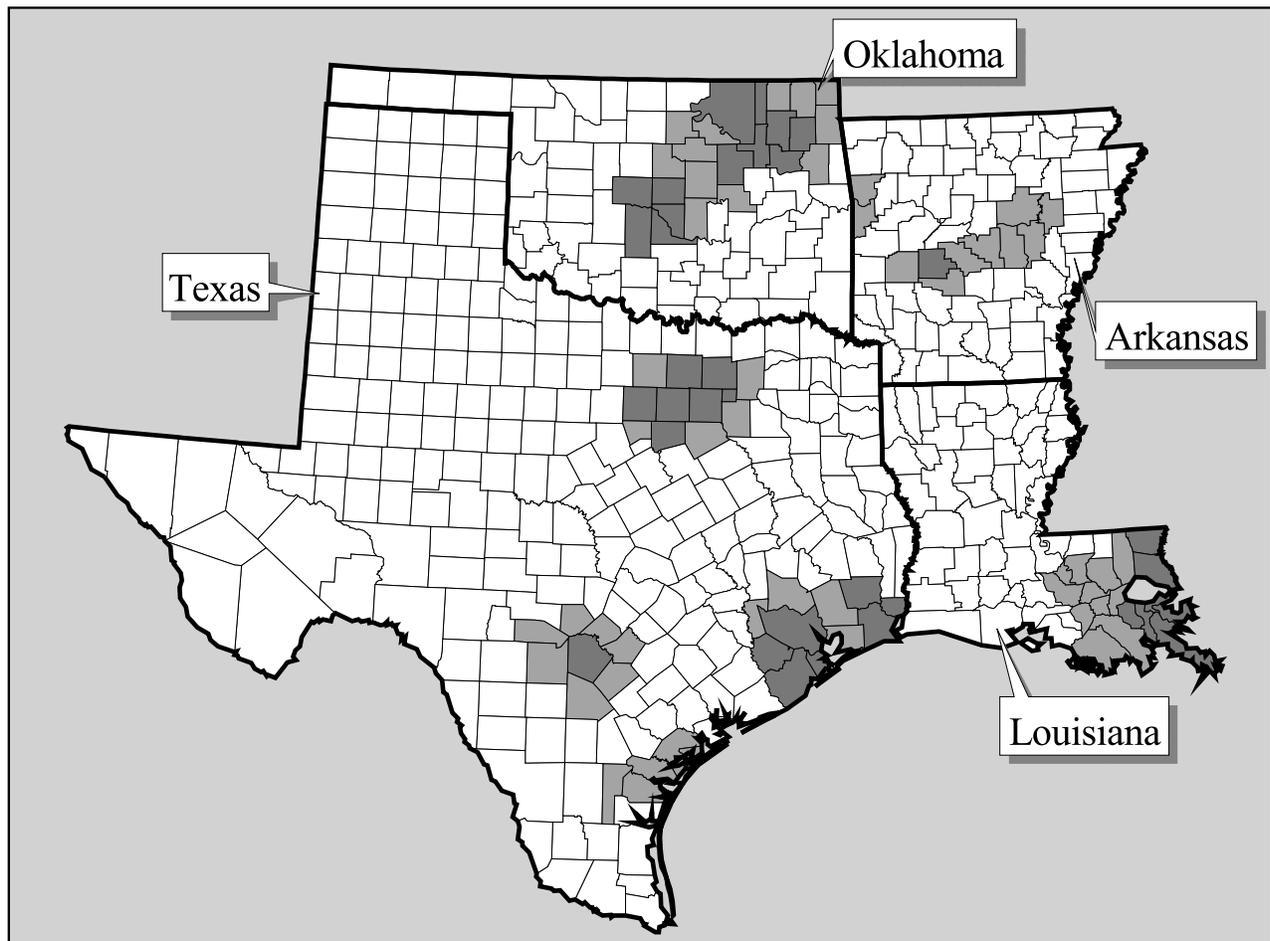
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 8

## Availability of M+C Plans

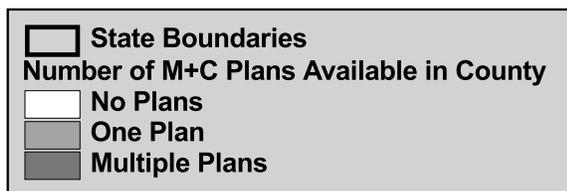
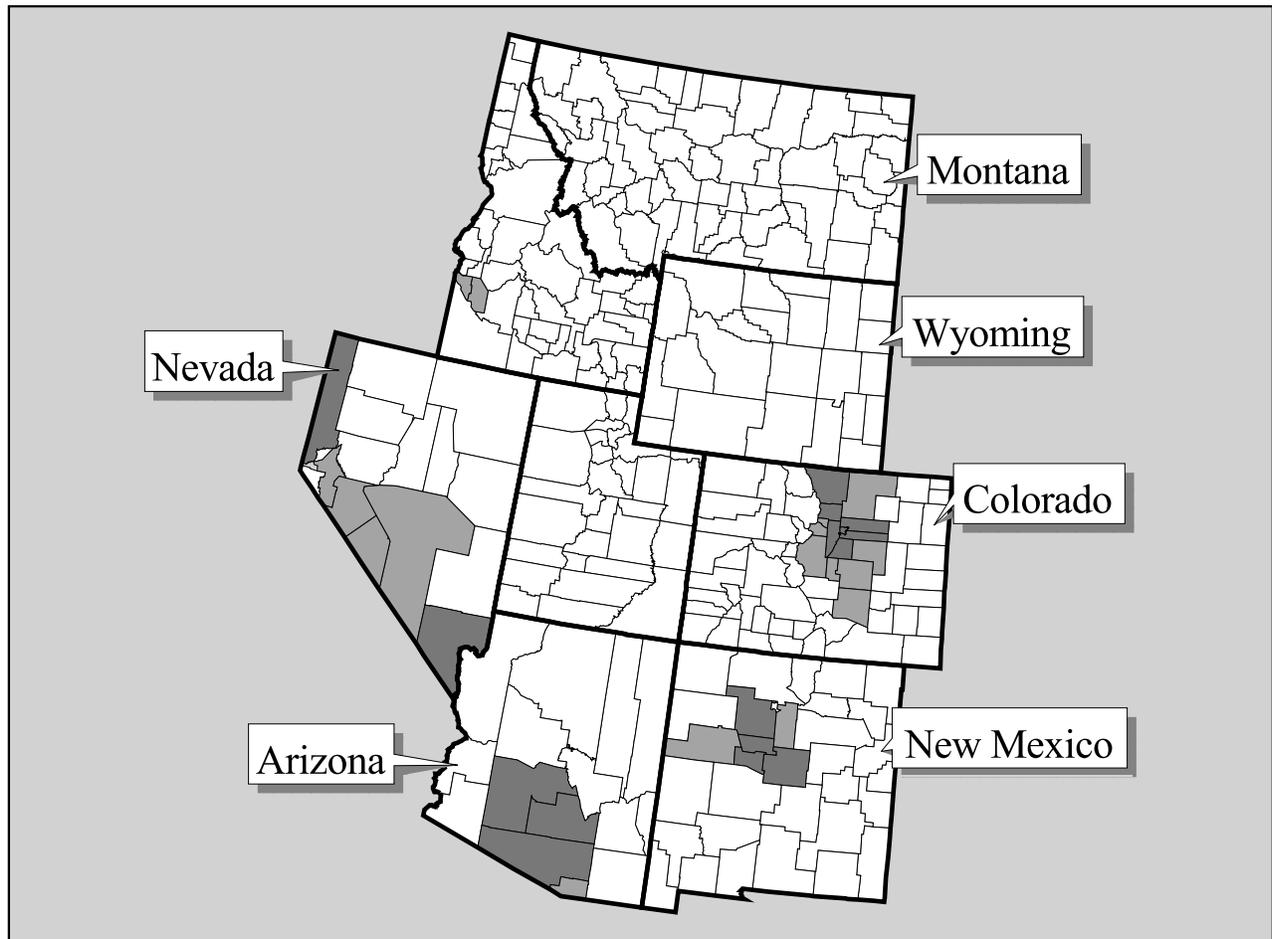
### Census Division Seven

#### August 2001



Source: RUPRI Center for Rural Health Policy Analysis.

# Map 9 Availability of M+C Plans Census Division Eight August 2001



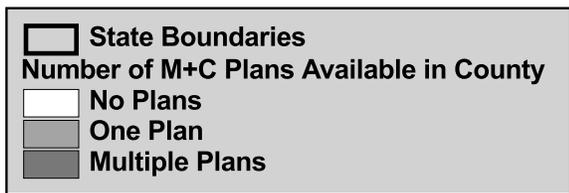
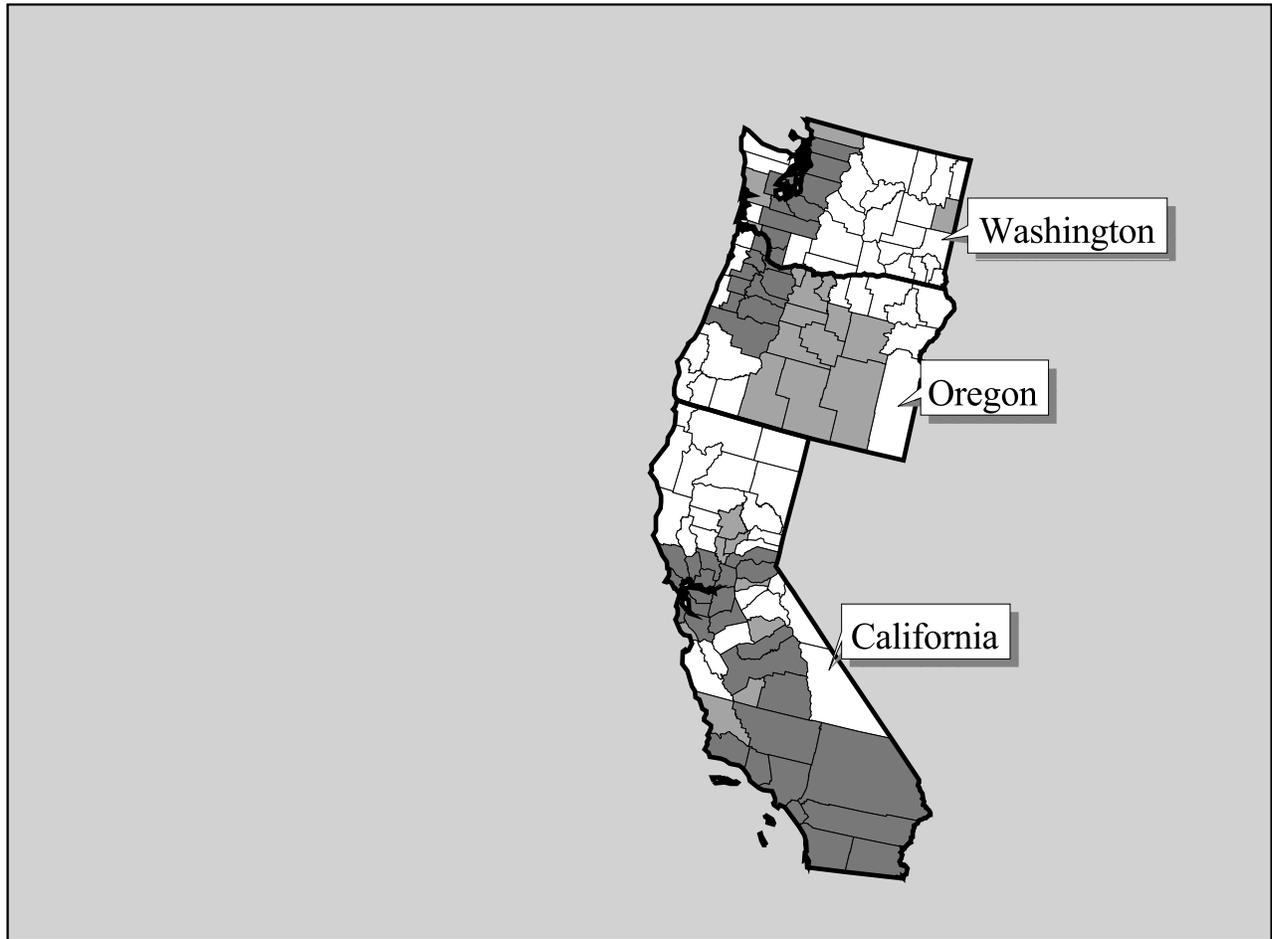
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 10

## Availability of M+C Plans

### Census Division Nine

#### August 2001

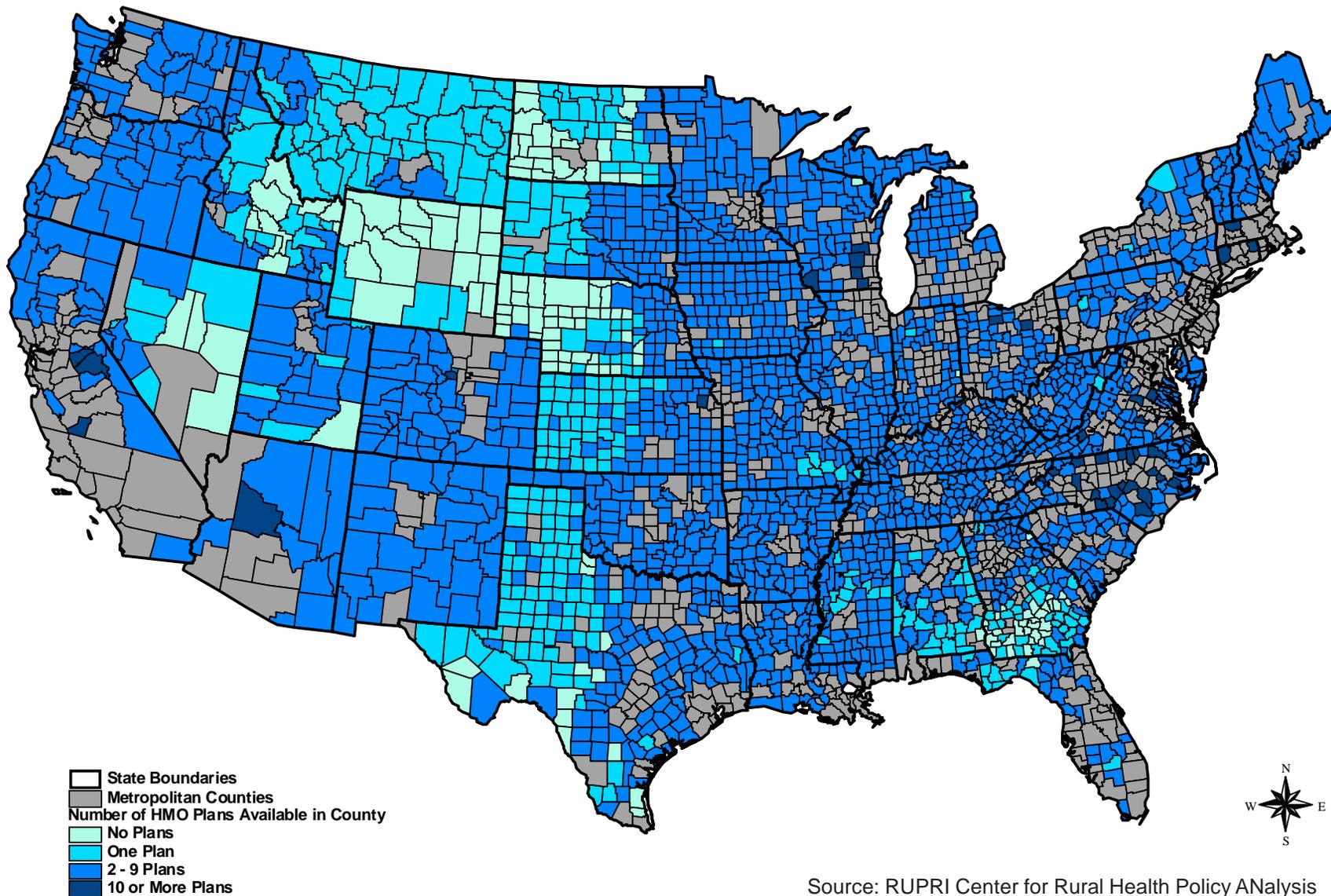


Source: RUPRI Center for Rural Health Policy Analysis.

Appendix B. Maps of Plan Choice: Commercial HMOs

**Map 11. Number of Commercial HMO Plans Available in Rural Areas  
January 1999**

36



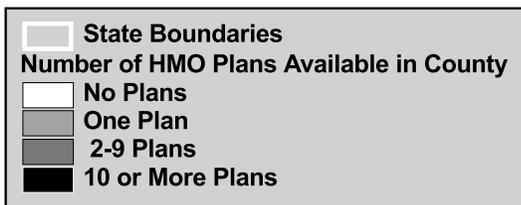
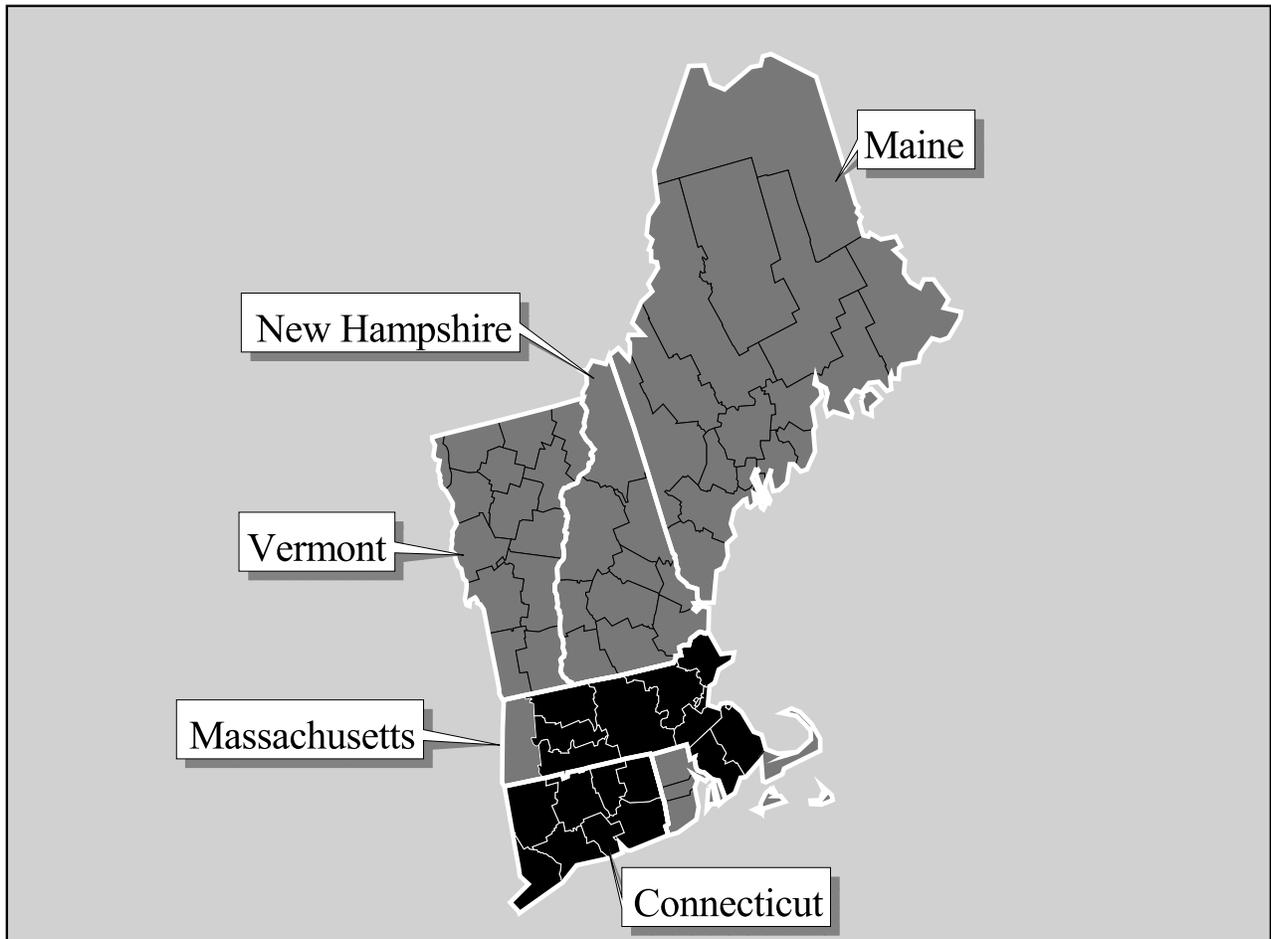
Source: RUPRI Center for Rural Health Policy Analysis

# Map 12

## Availability of Commercial HMO Plans

### Census Division One

#### January 1999



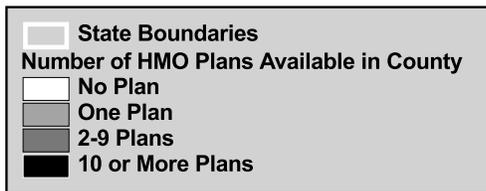
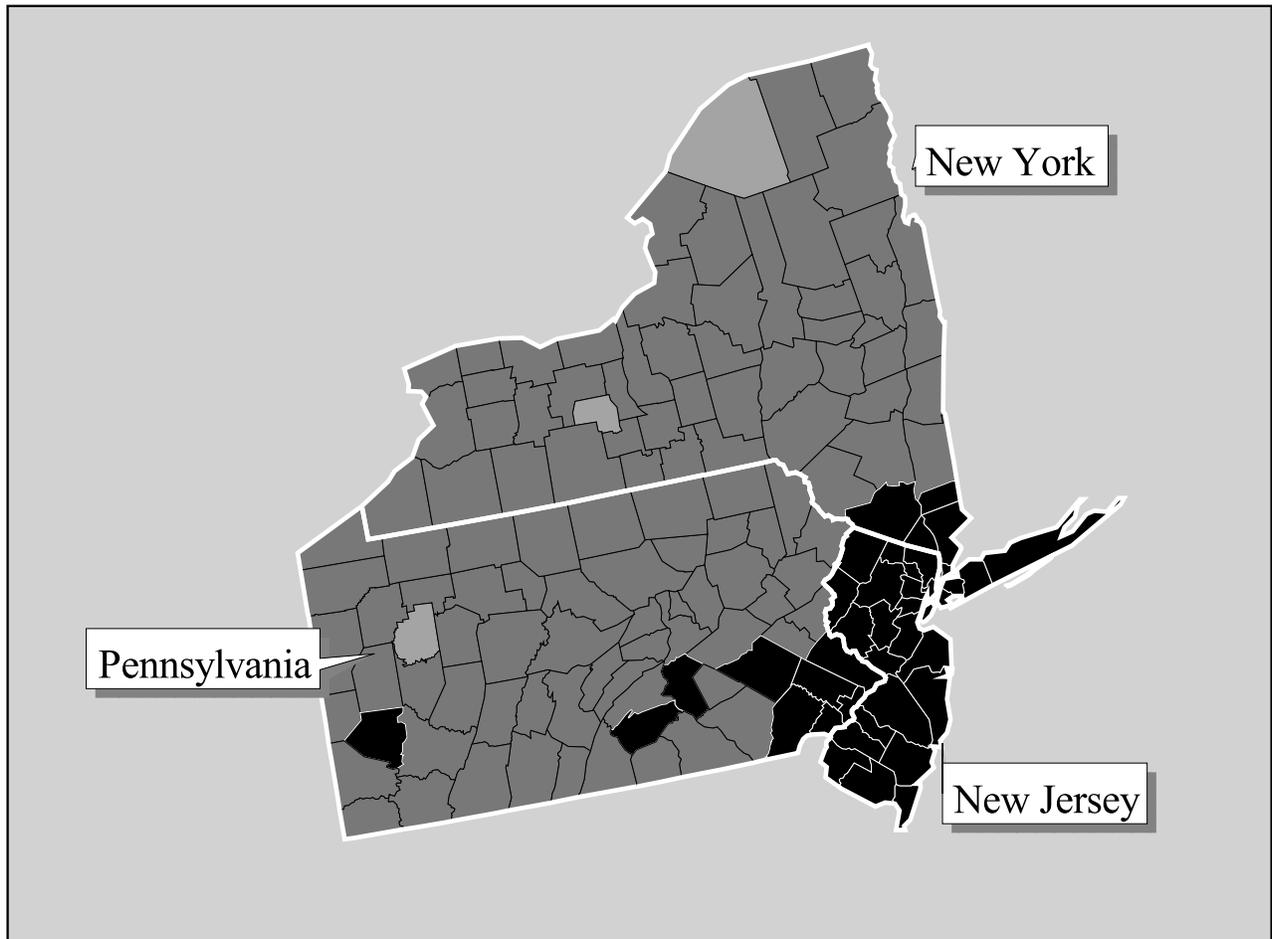
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 13

## Availability of Commercial HMO Plans

### Census Division Two

#### January 1999



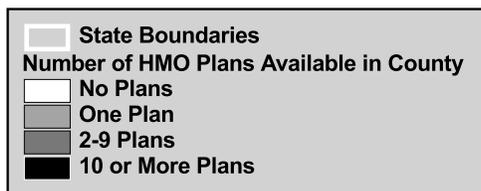
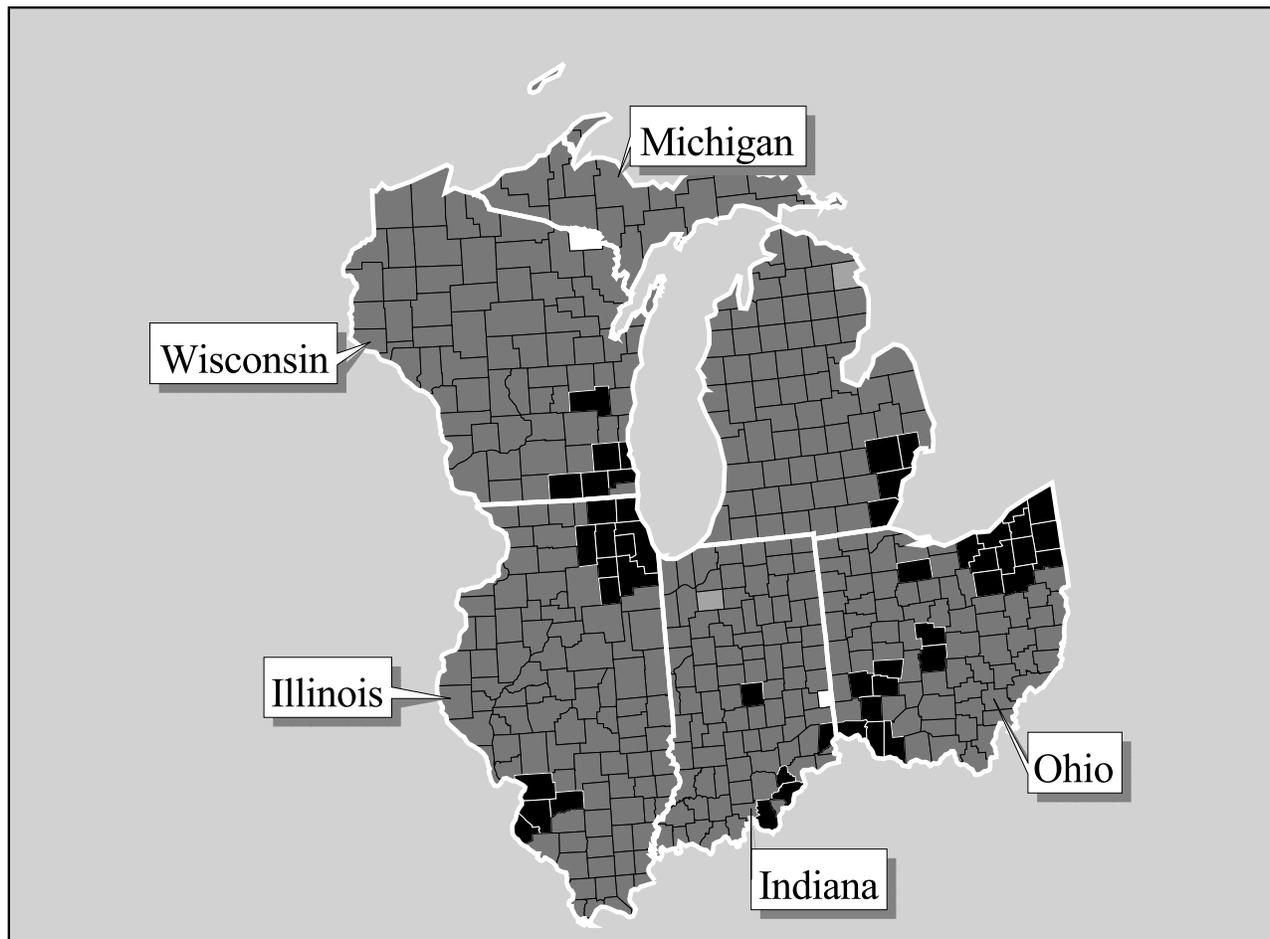
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 14

## Availability of Commercial HMO Plans

### Census Division Three

#### January 1999



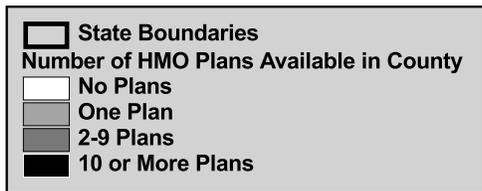
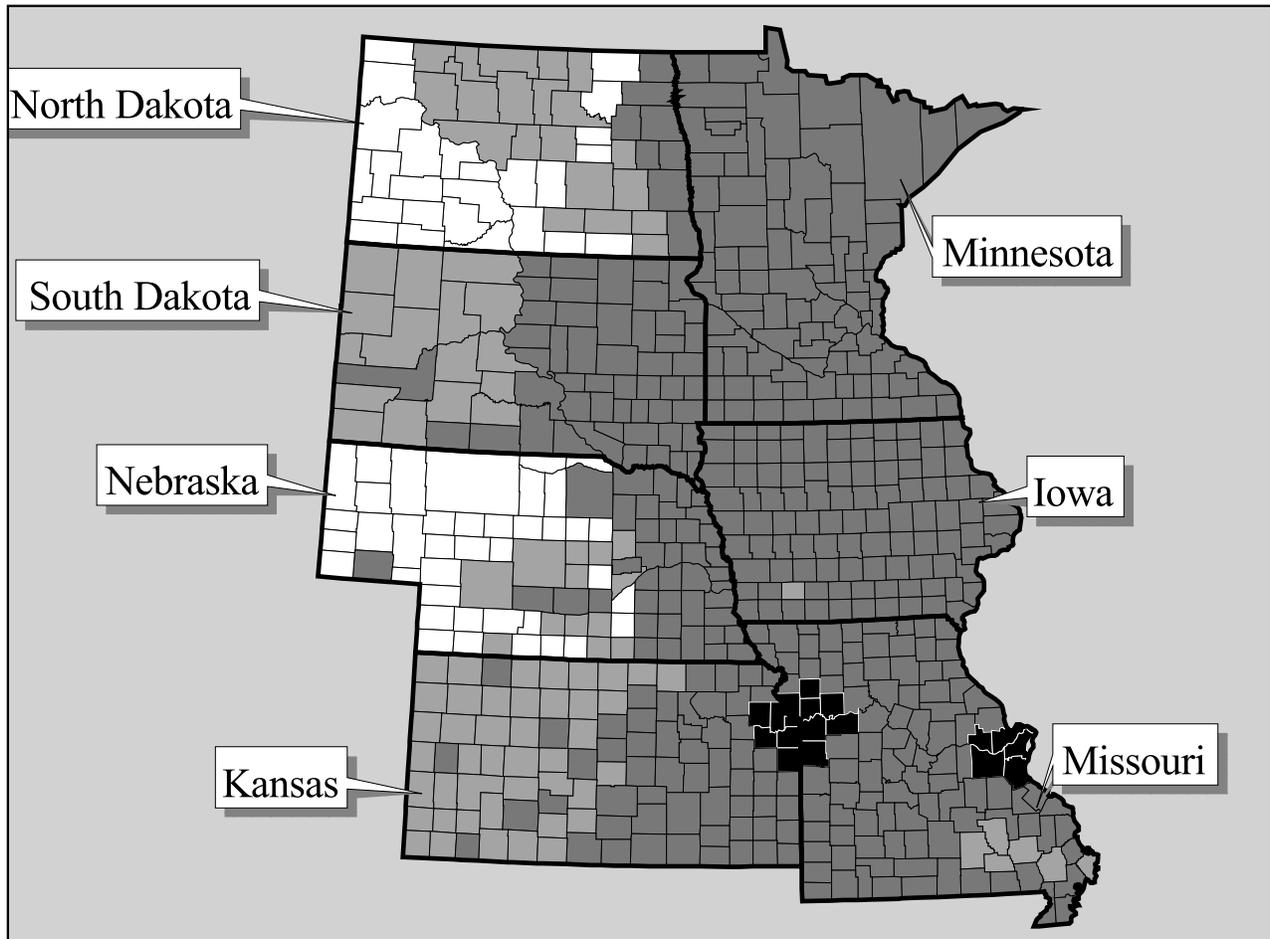
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 15

## Availability of Commercial HMO Plans

### Census Division Four

#### January 1999



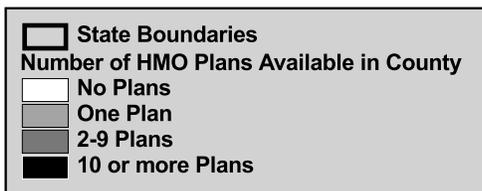
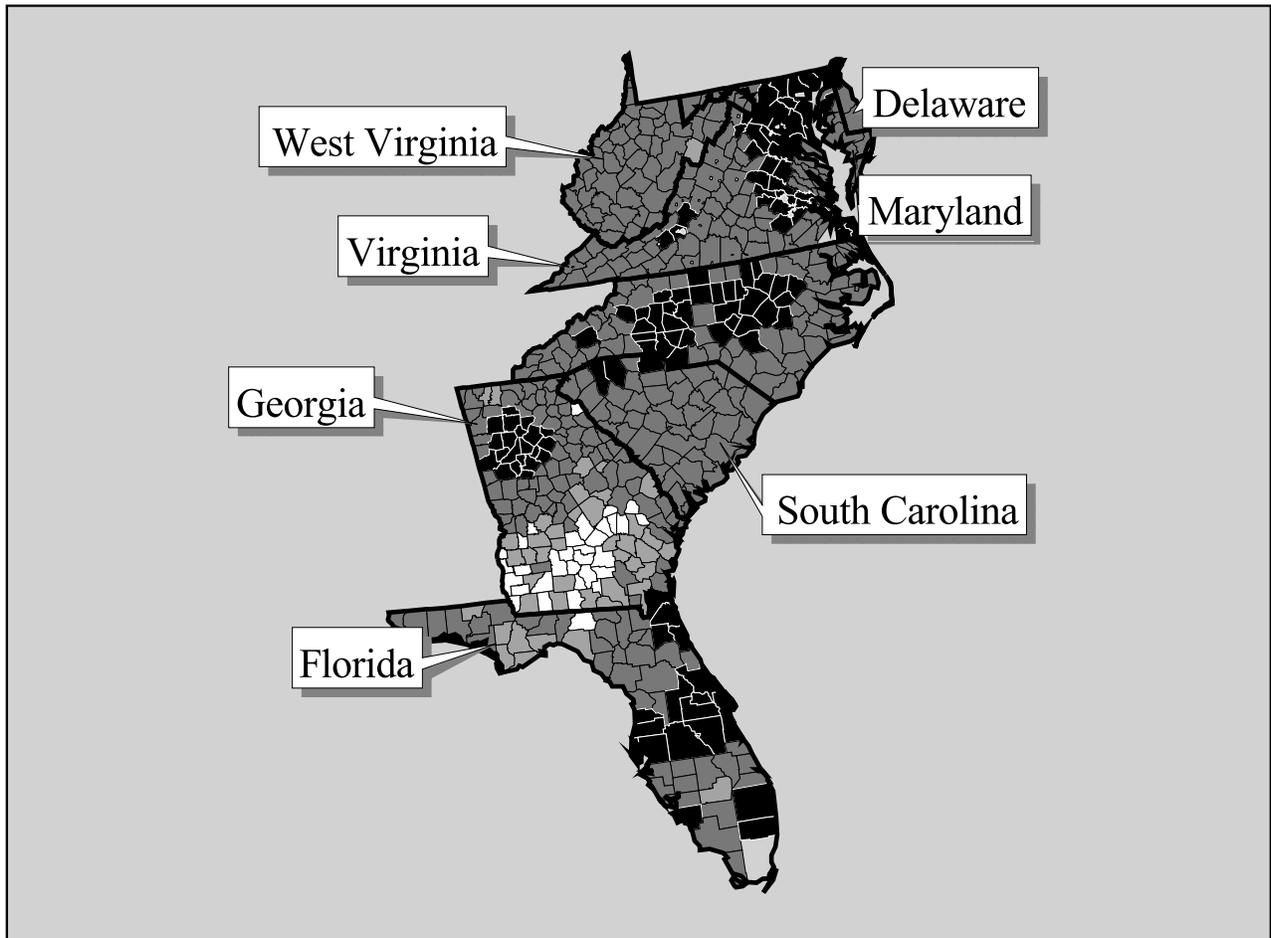
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 16

## Availability of Comercial HMO Plans

### Census Division Five

### January 1999



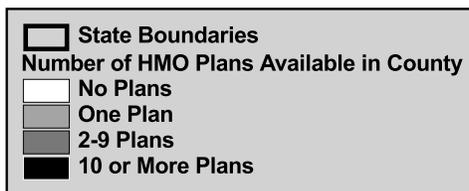
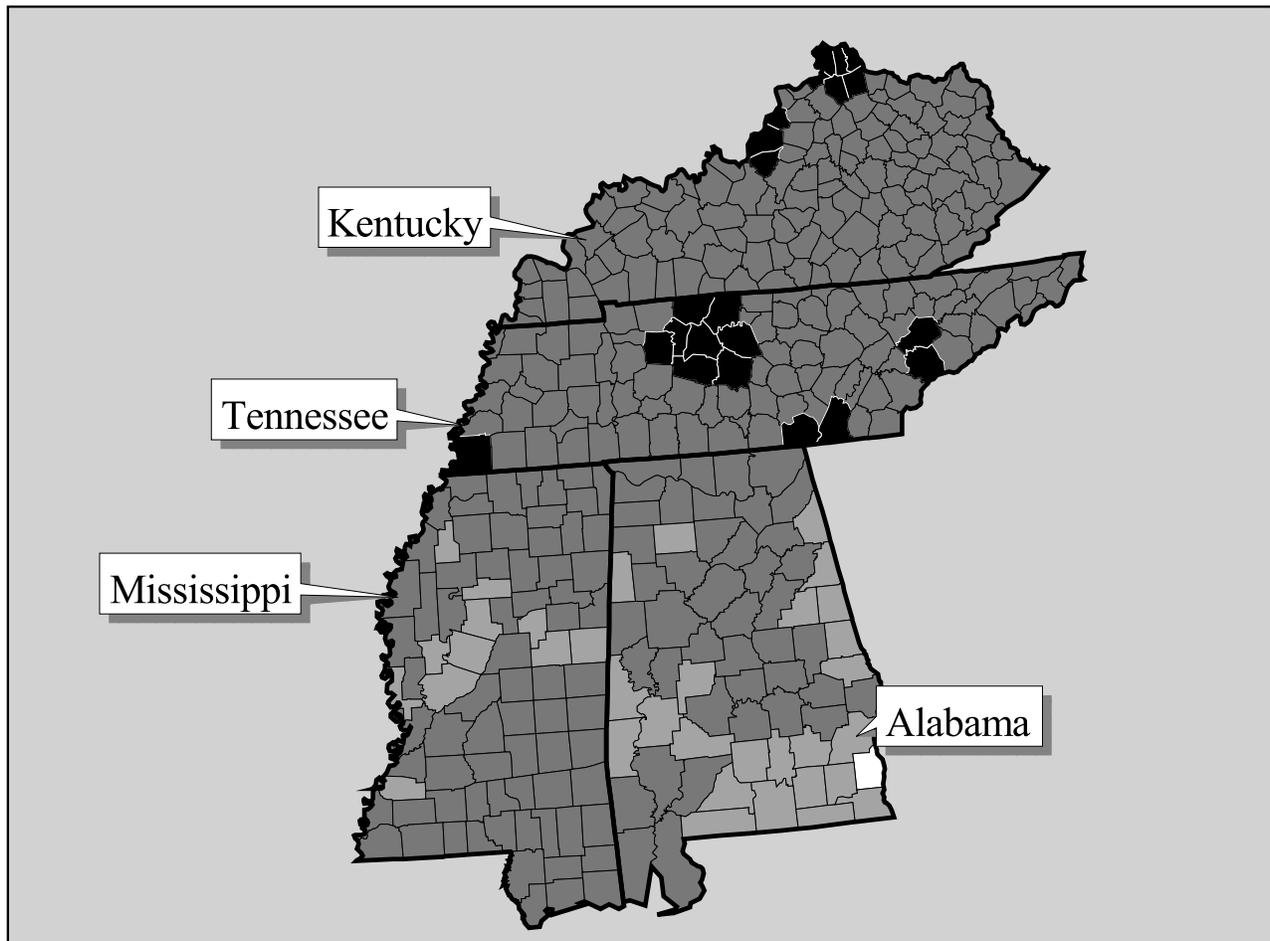
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 17

## Availability of Commercial HMO Plans

### Census Division Six

#### January 1999



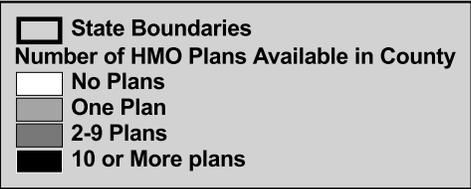
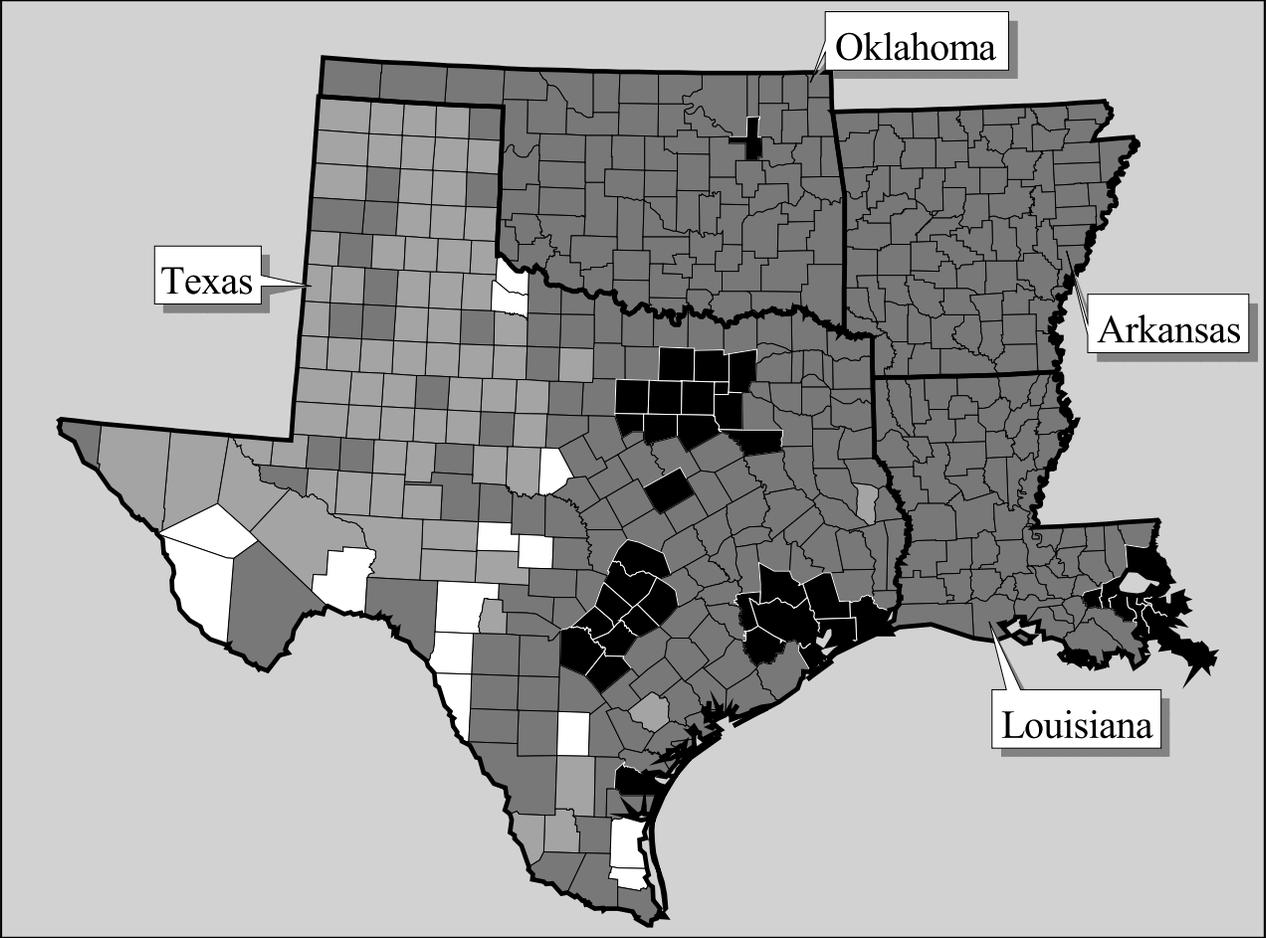
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 18

## Availability of Commercial HMO Plans

### Census Division Seven

#### January 1999



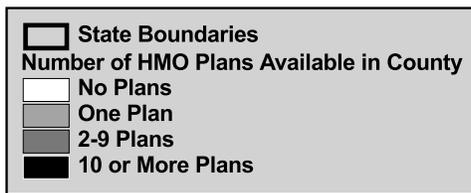
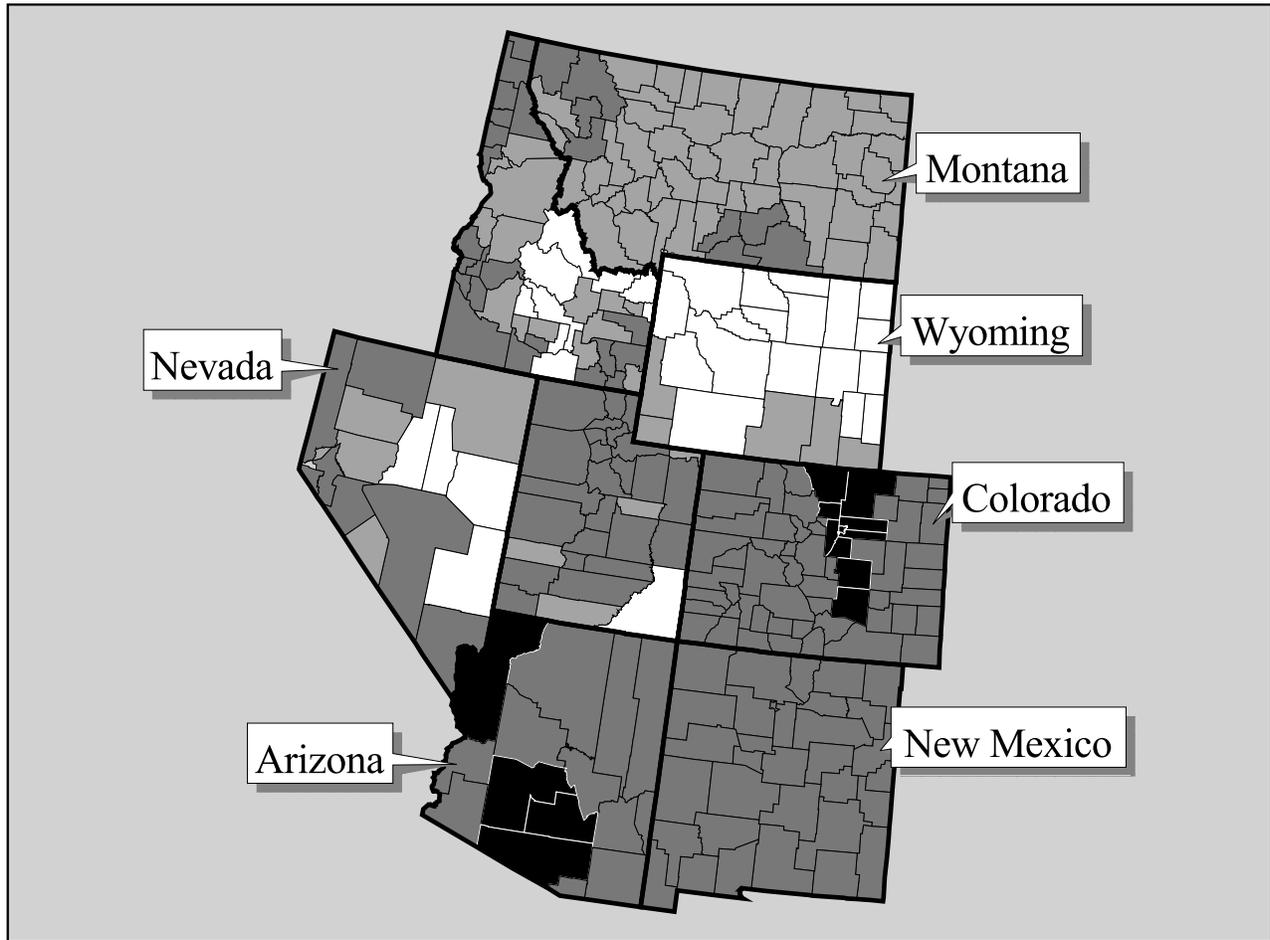
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 19

## Availability of Commercial HMO Plans

### Census Division Eight

#### January 1999



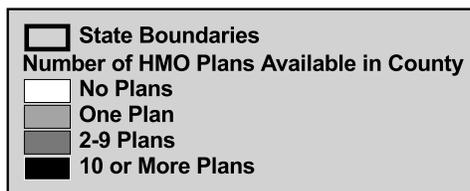
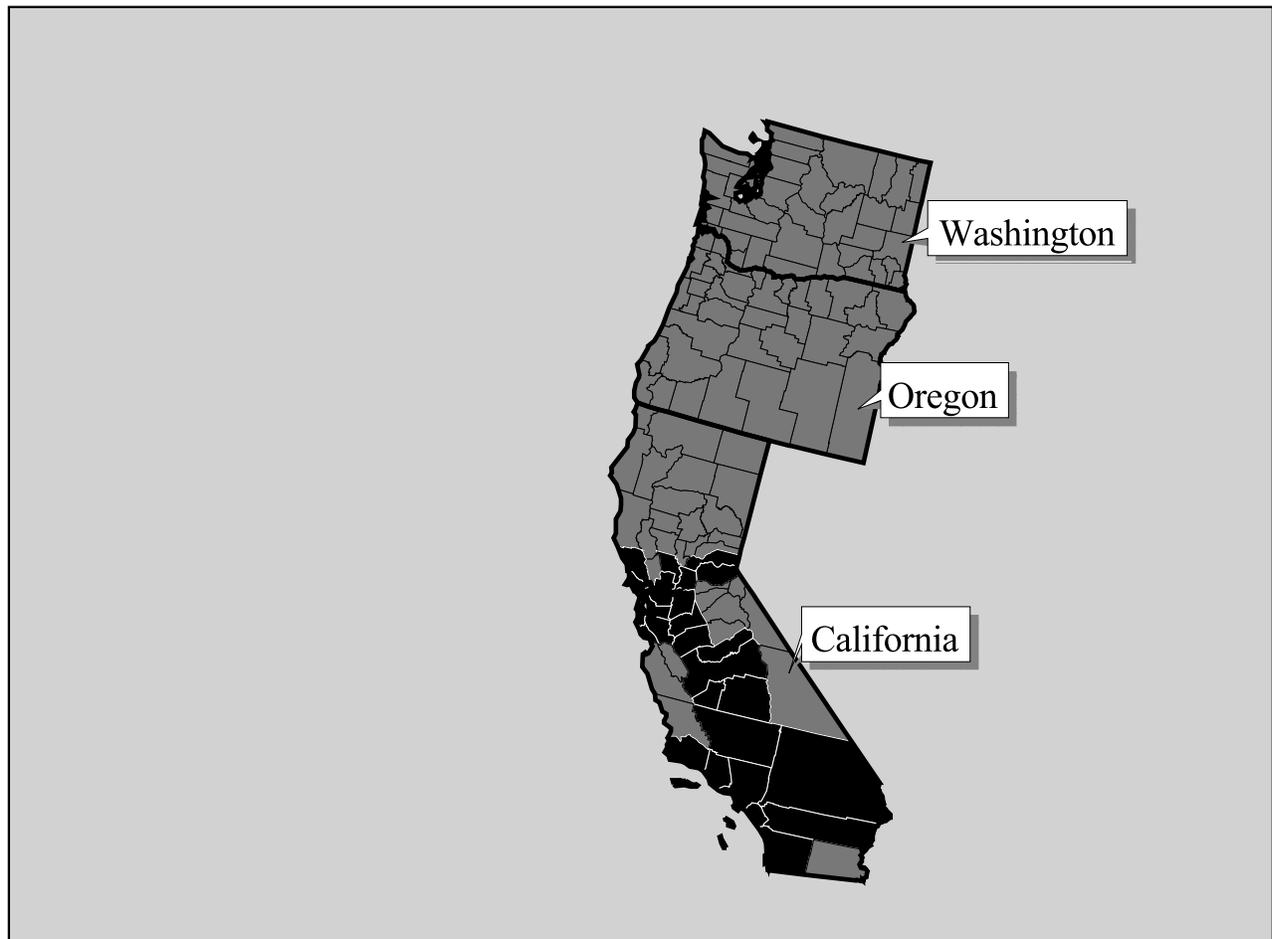
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 20

## Availability of Commercial HMO Plans

### Census Division Nine

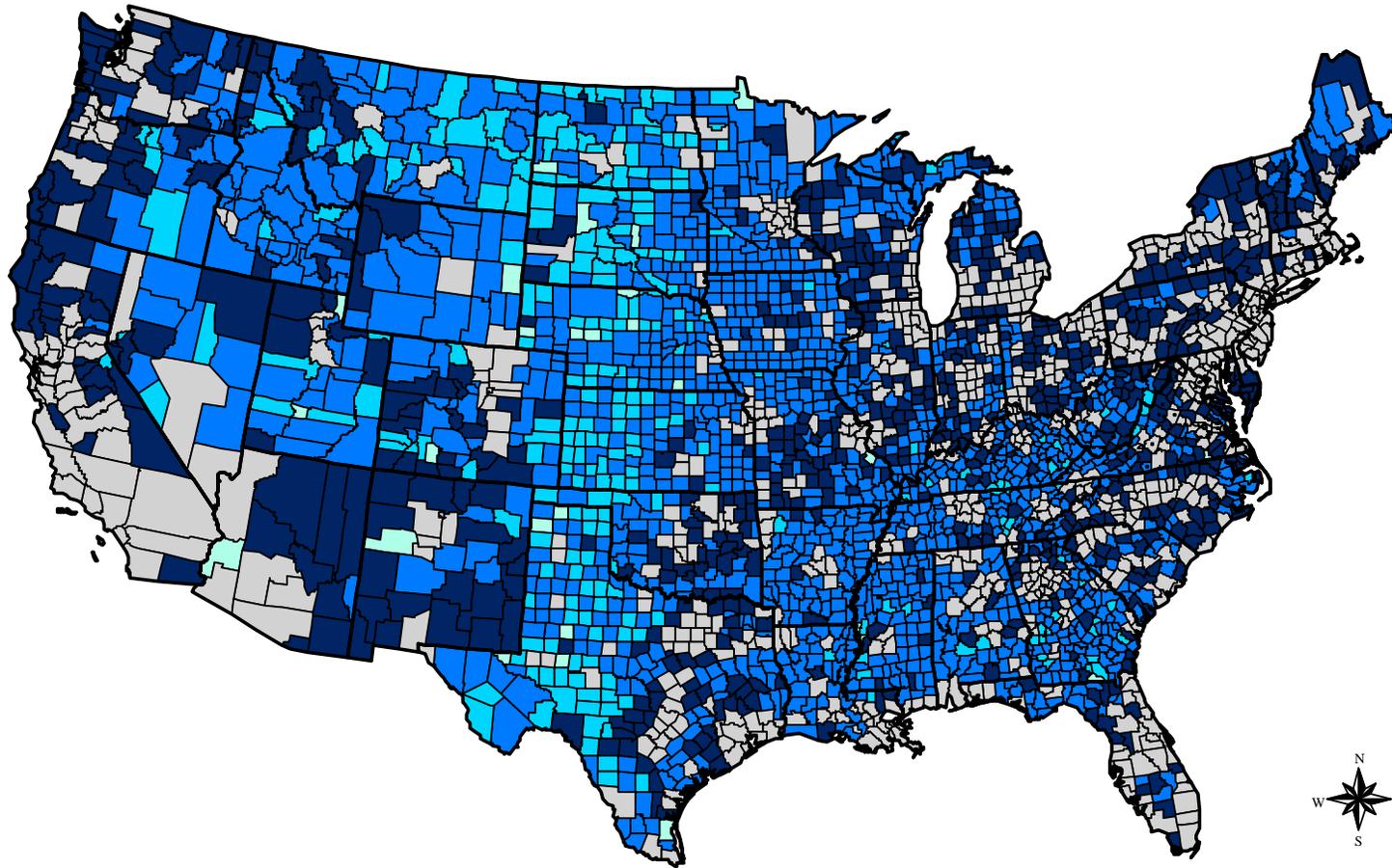
#### January 1999



Source: RUPRI Center for Rural Health Policy Analysis.

## Appendix C. Maps of Plan Enrollment: Federal Employees Health Benefits Program

Map 21  
Number of FEHBP Plans With Enrollment in Rural Areas  
2001



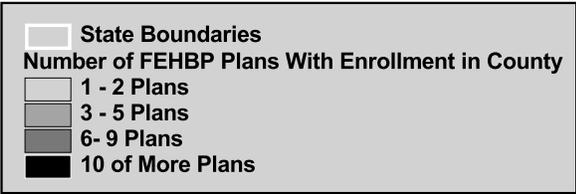
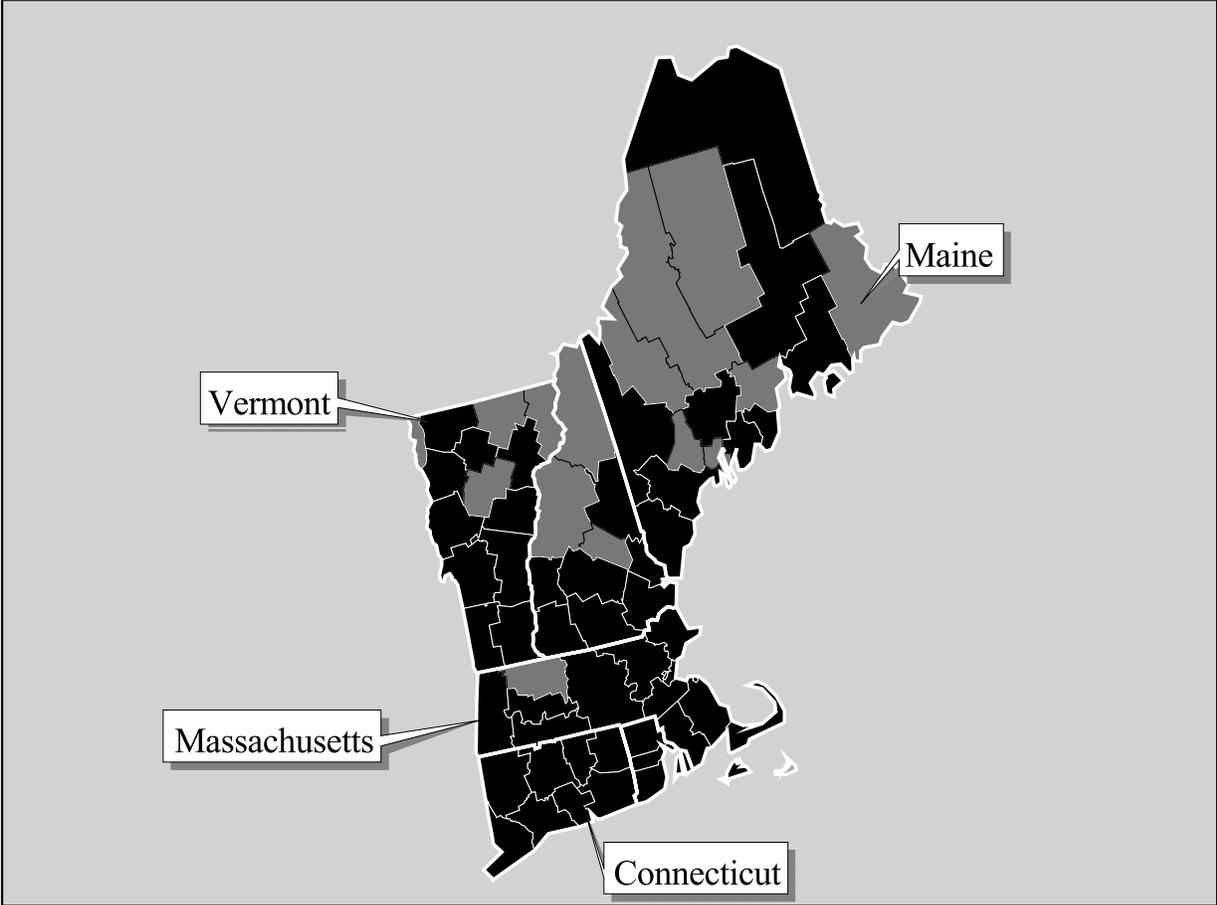
-  State Boundaries
-  Metropolitan Counties
- Number of FEHBP Plans With Enrollment in County**
-  1 - 2 Plans
-  3 - 5 Plans
-  6 - 9 Plans
-  10 or More Plans

# Map 22

## Enrollment in FEHBP Plans

### Census Division One

### 2001



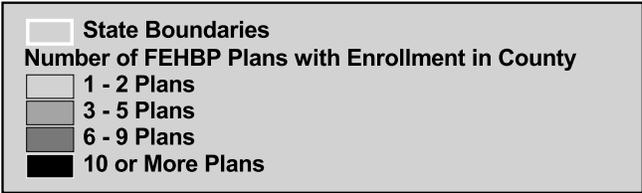
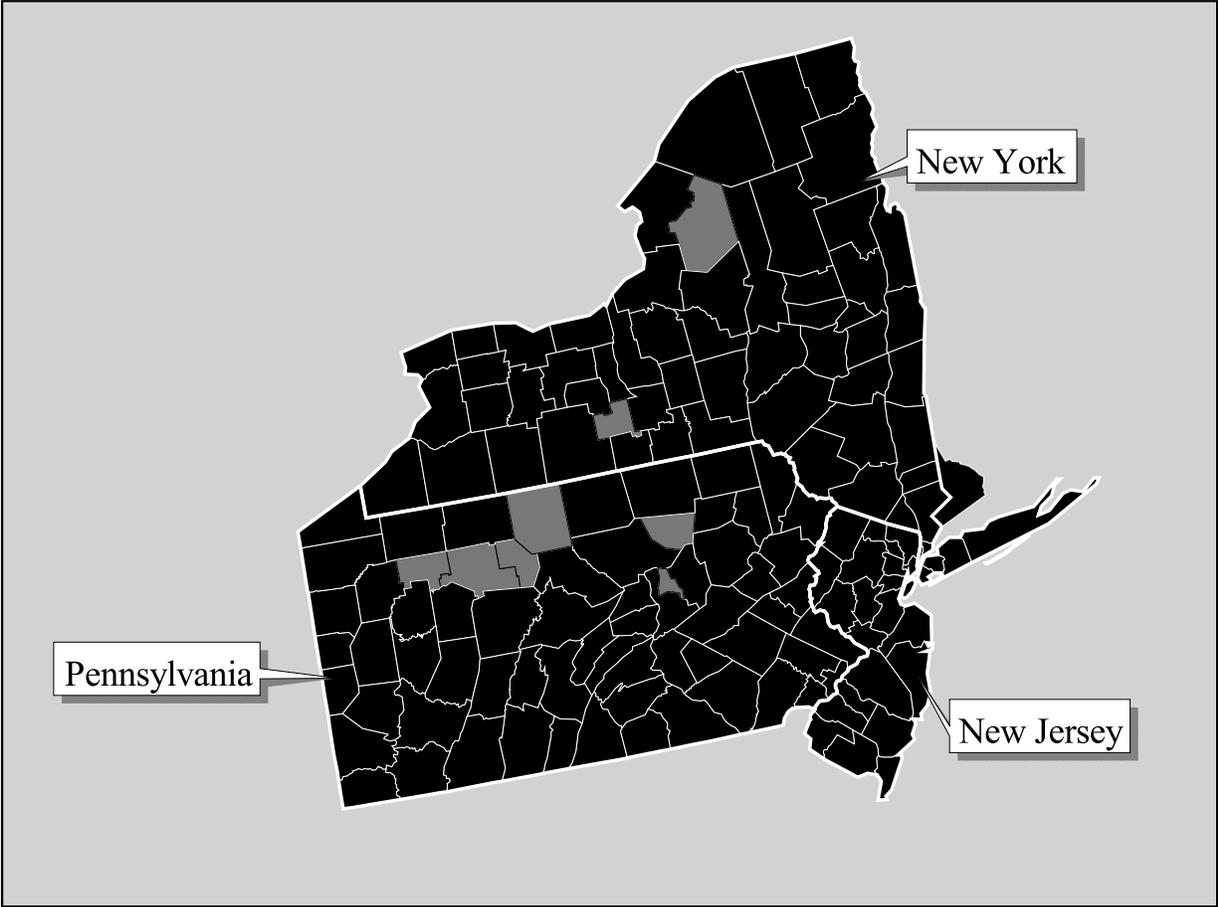
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 23

## Enrollment in FEHBP Plans

### Census Division Two

#### 2001



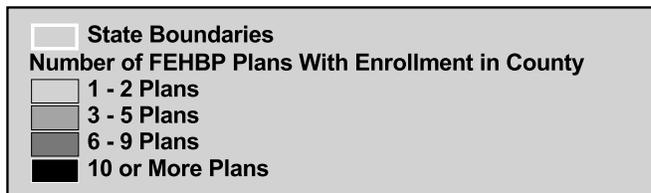
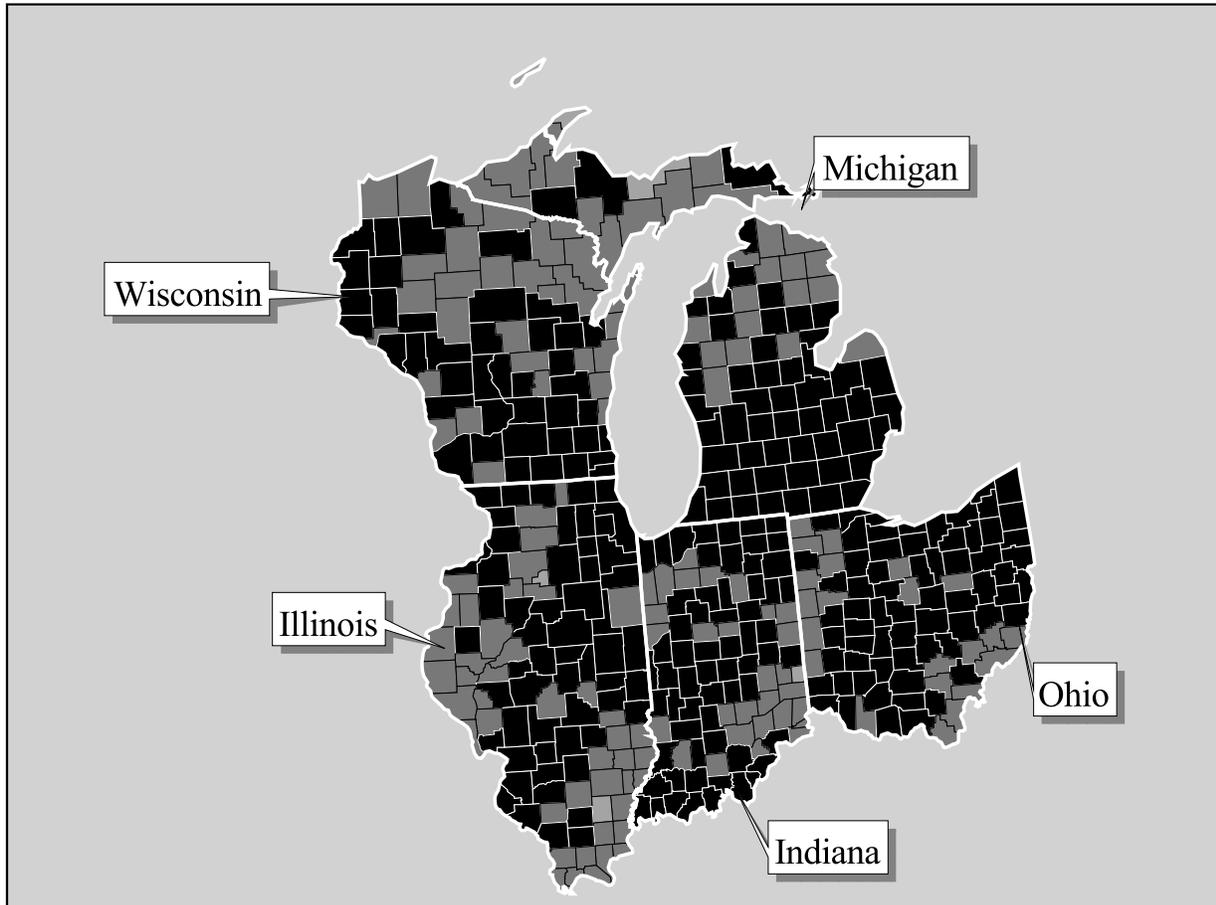
Source: RUPRI Center for Rural Health Policy Analysis.

# Map24

## Enrollment in FEHBP Plans

### Census Division Three

#### 2001



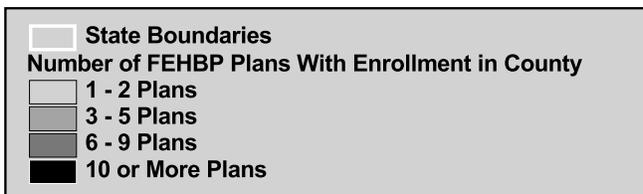
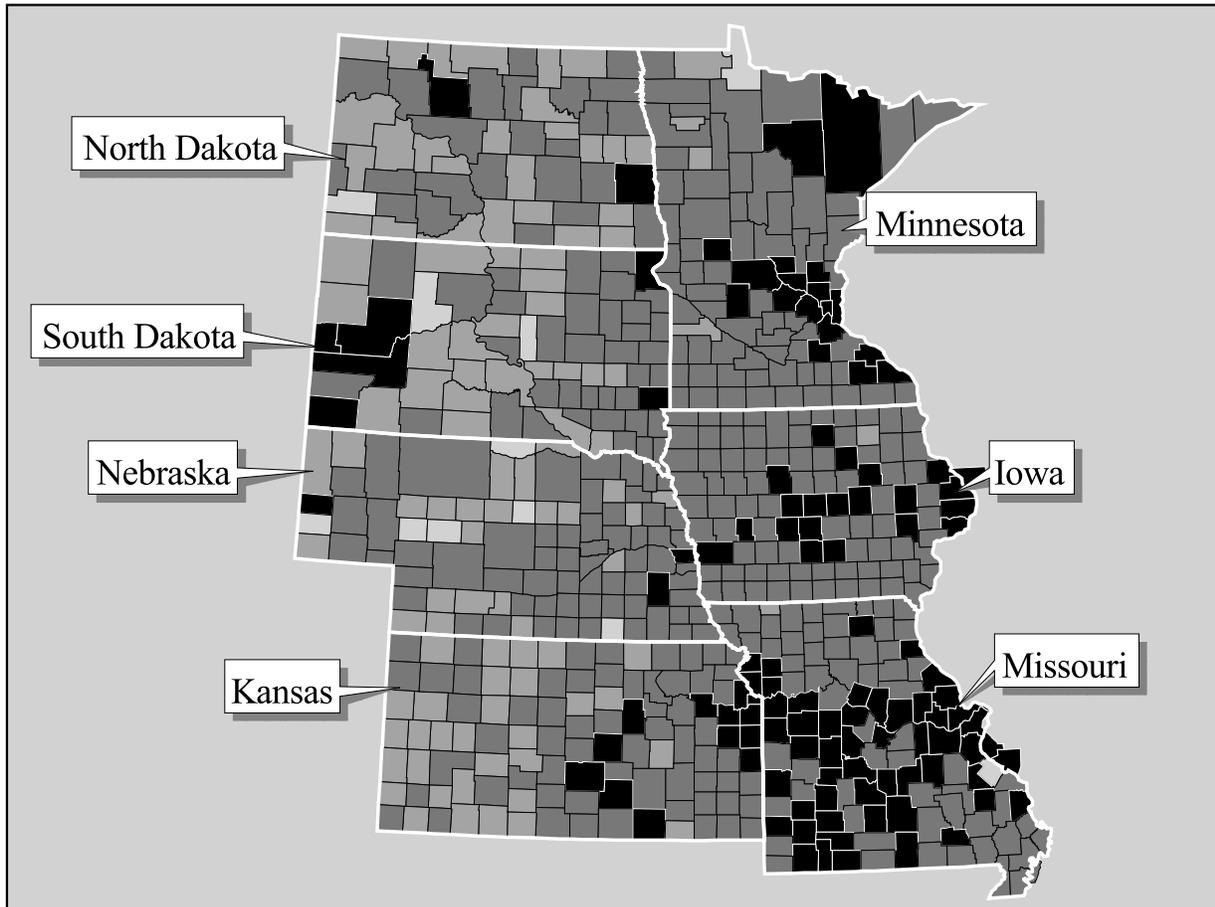
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 25

## Enrollment in FEHBP Plans

### Census Division Four

### 2001



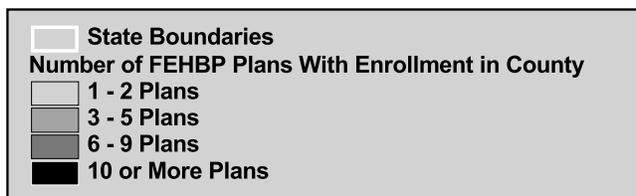
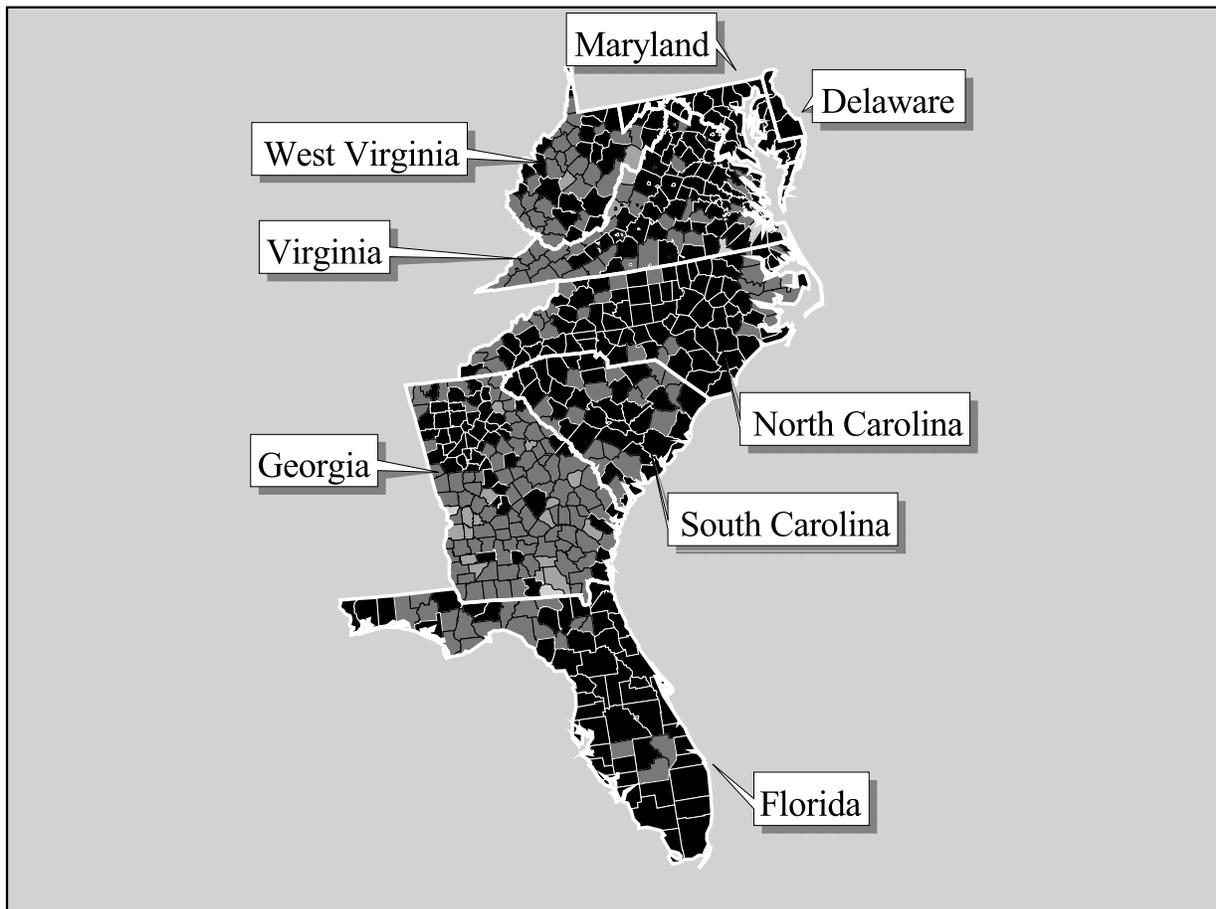
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 26

## Enrollment in FEHBP Plans

### Census Division Five

#### 2001



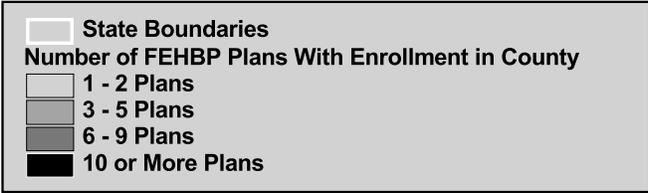
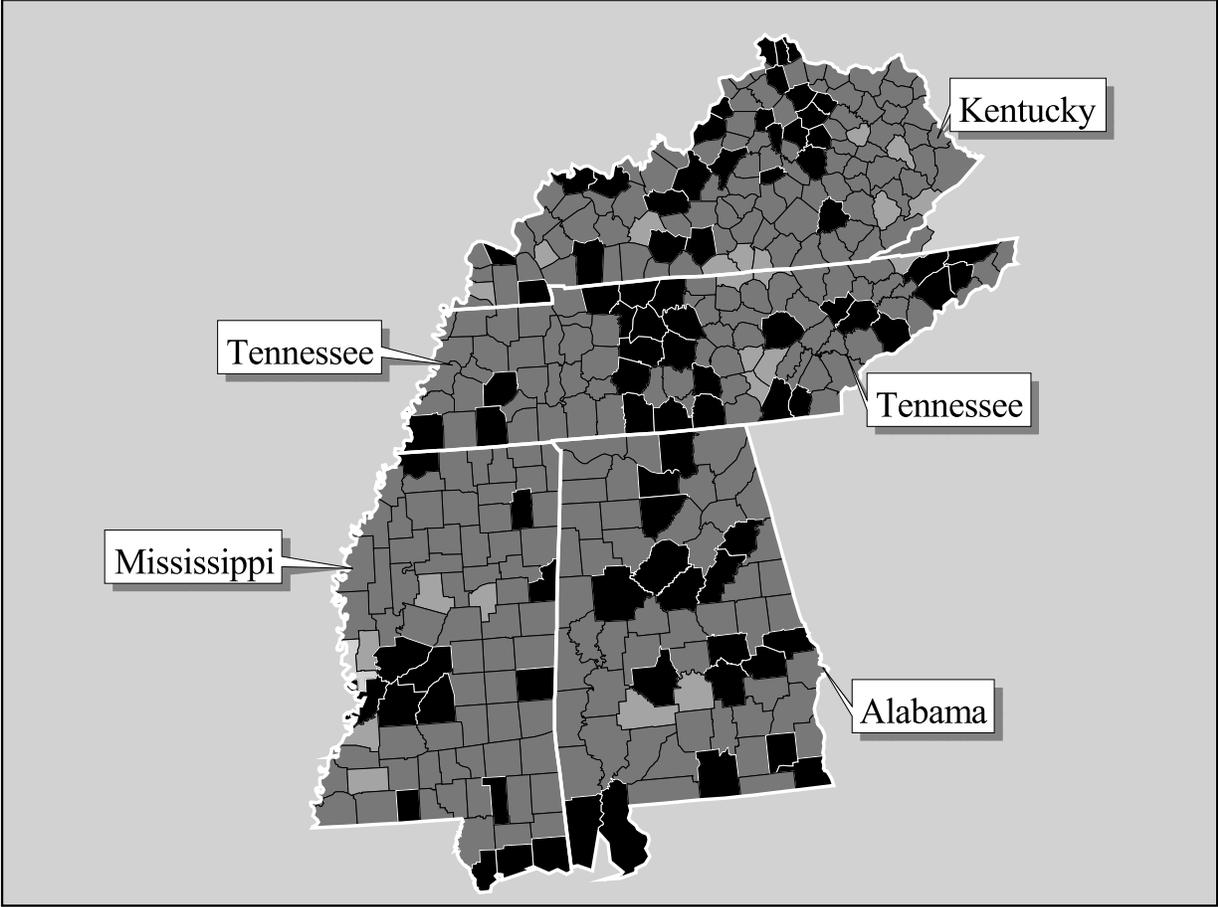
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 27

## Enrollment in FEHBP Plans

### Census Division Six

### 2001



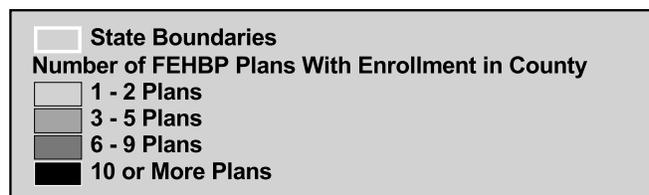
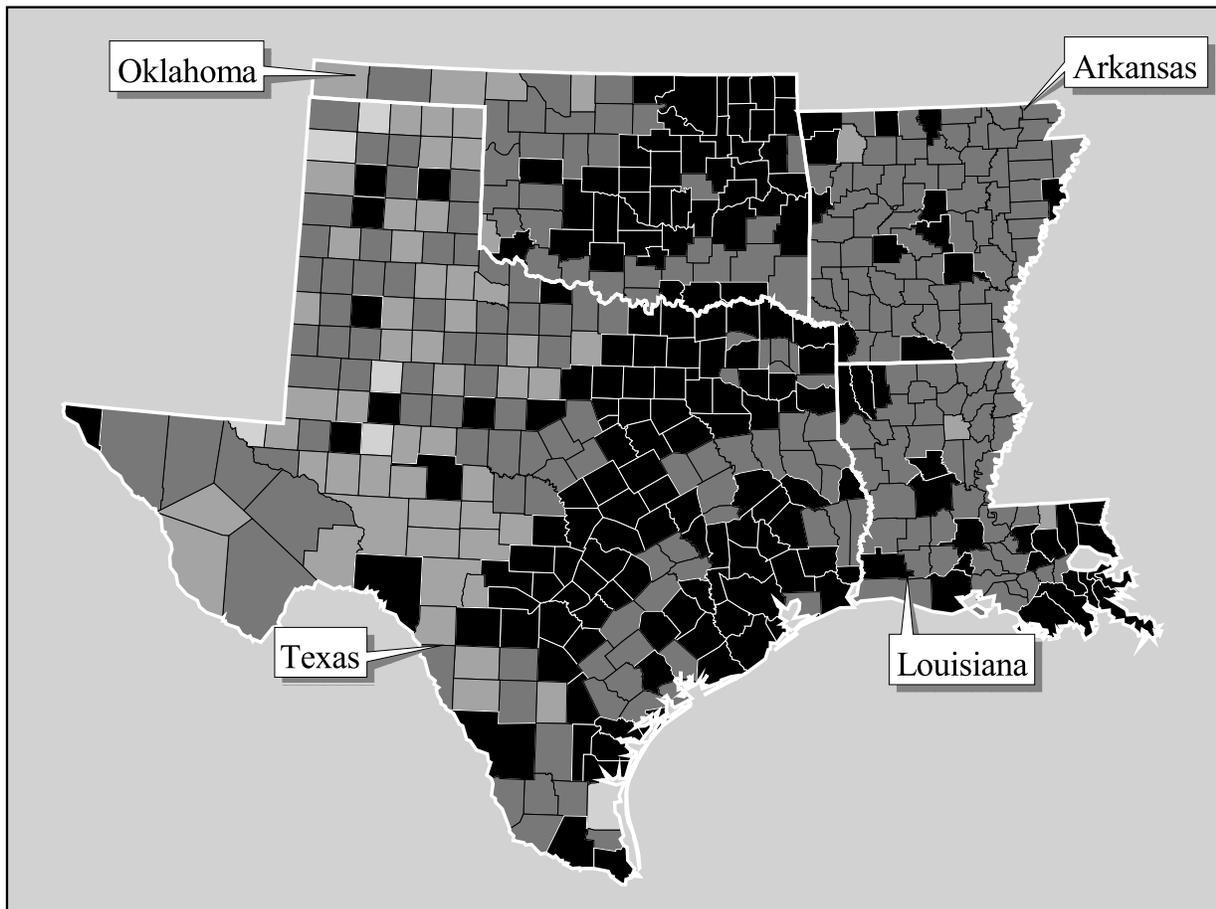
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 28

## Enrollment in FEHBP Plans

### Census Division Seven

#### 2001



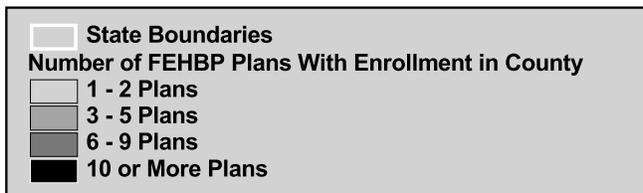
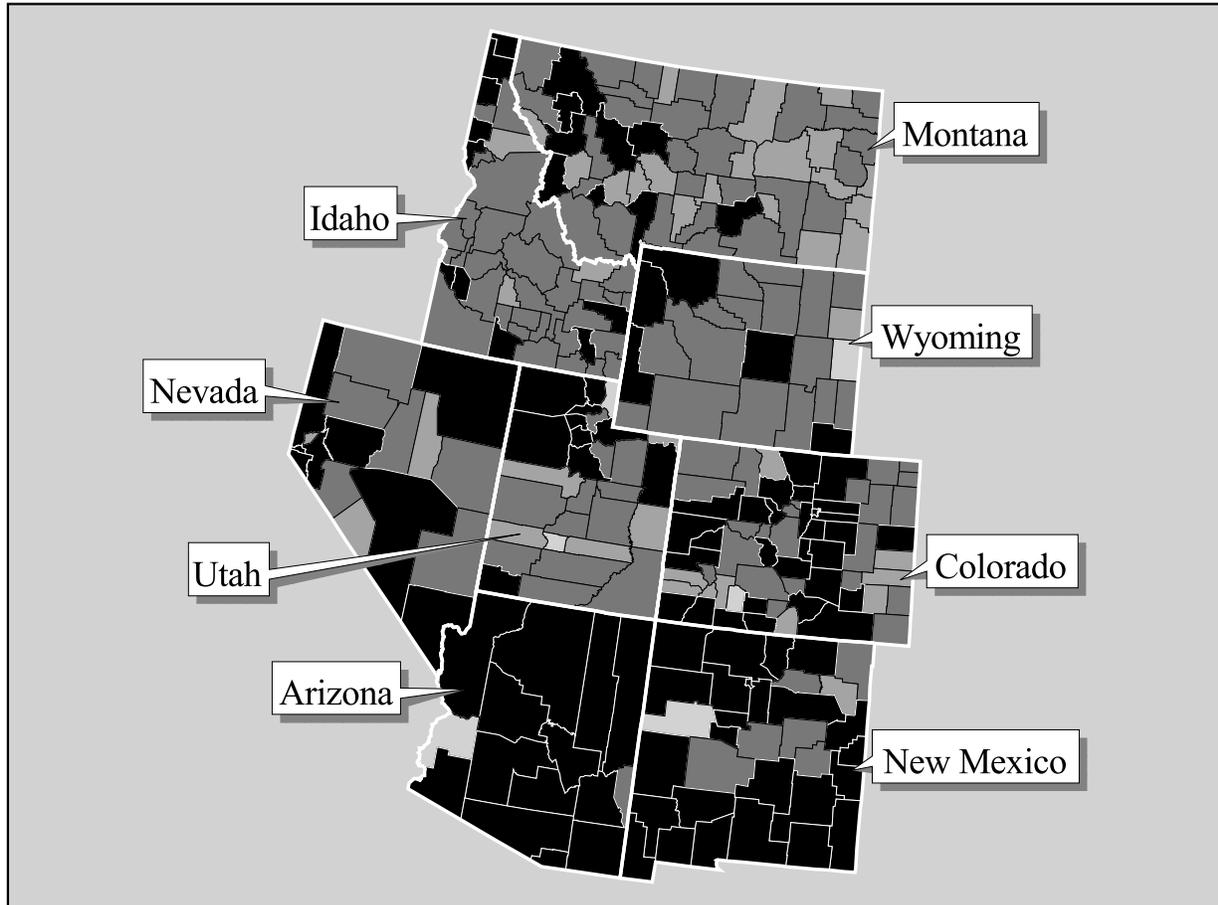
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 29

## Enrollment in FEHBP Plans

### Census Division Eight

#### 2001



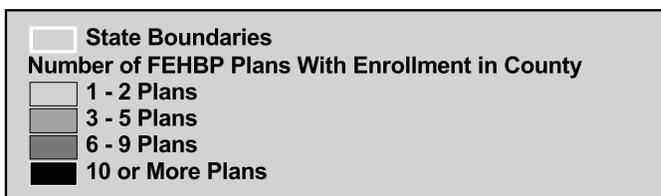
Source: RUPRI Center for Rural Health Policy Analysis.

# Map 30

## Enrollment in FEHBP Plans

### Census Division Nine

#### 2001



Source: RUPRI Center for Rural Health Policy Analysis.

Appendix D. Maps: Redistricting on the Basis of Medicare+Choice Beneficiaries

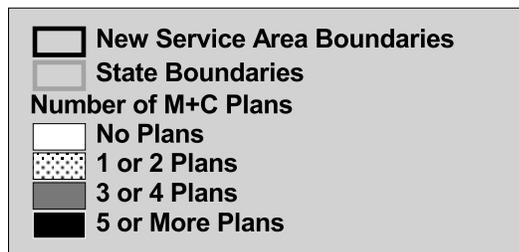
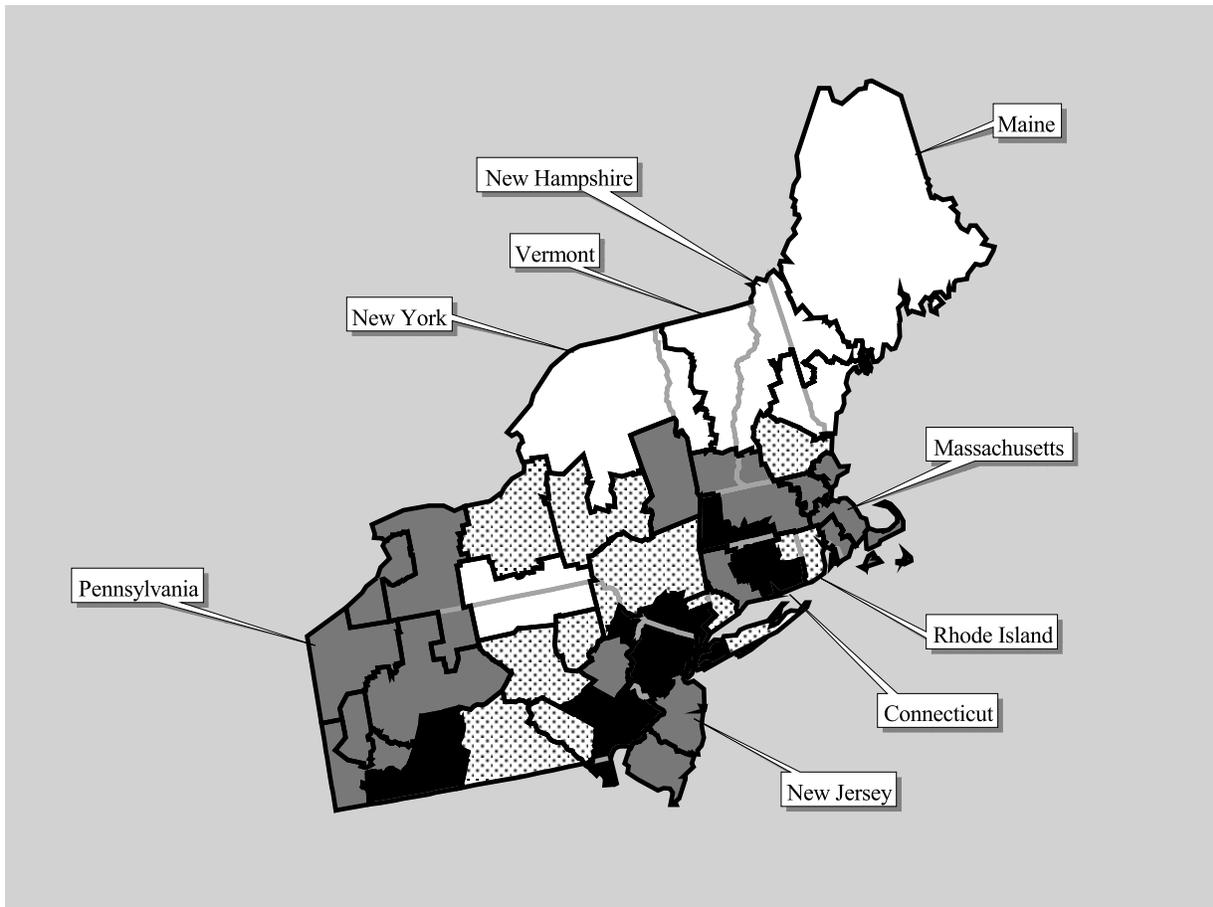
# Map 31

## Northeast Region

### New Service Areas 100,000+ Beneficiaries

### Number of M+C Plans Available by New Service Areas

### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

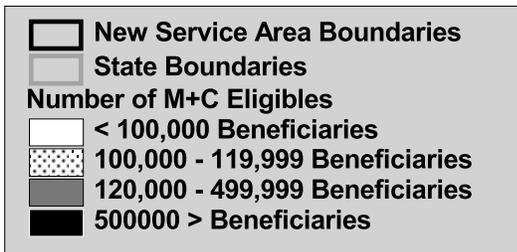
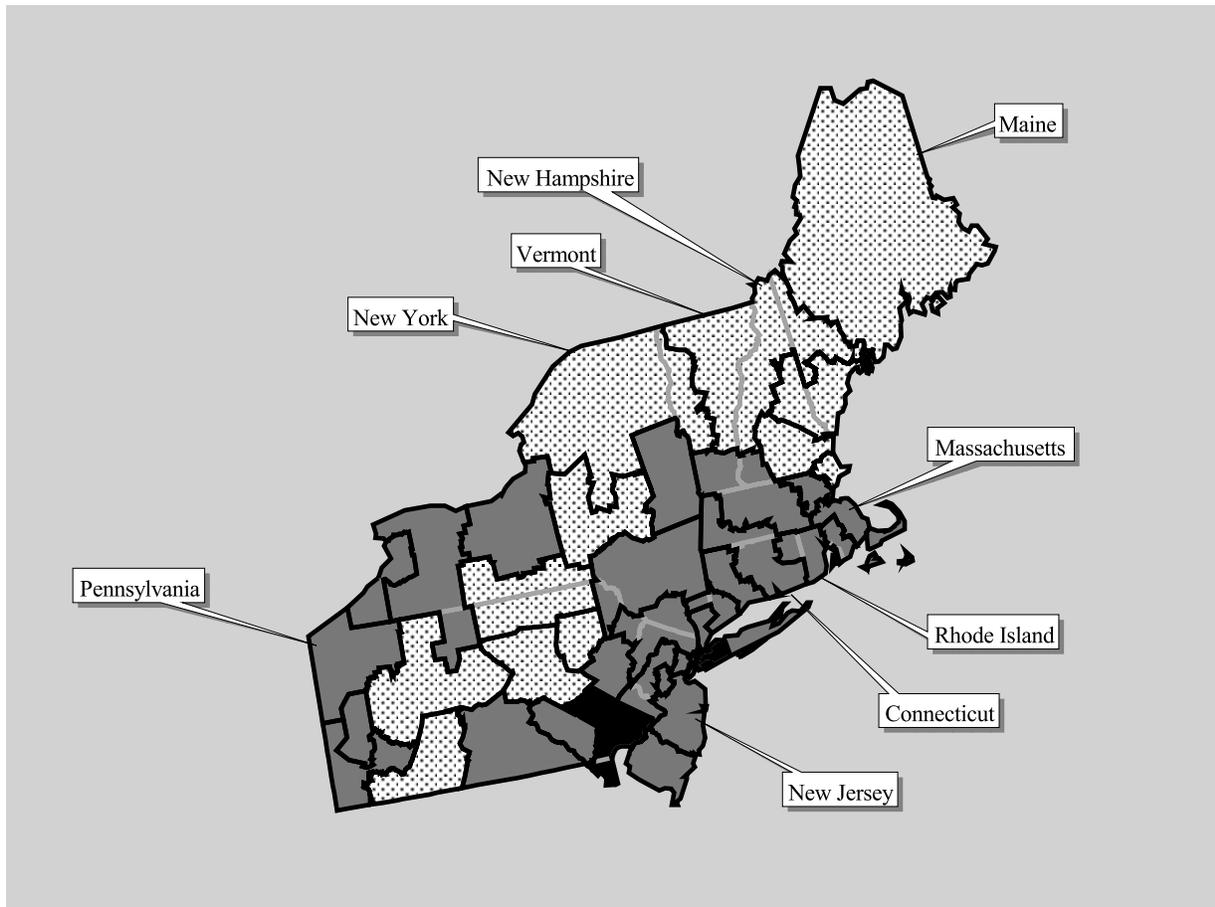
# Map 32

## Northeast Region

### New Service Areas 100,000+ Beneficiaries

#### Number of M+C Beneficiaries by New Service Areas

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

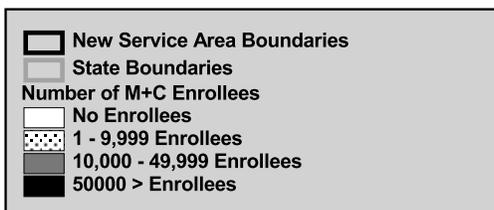
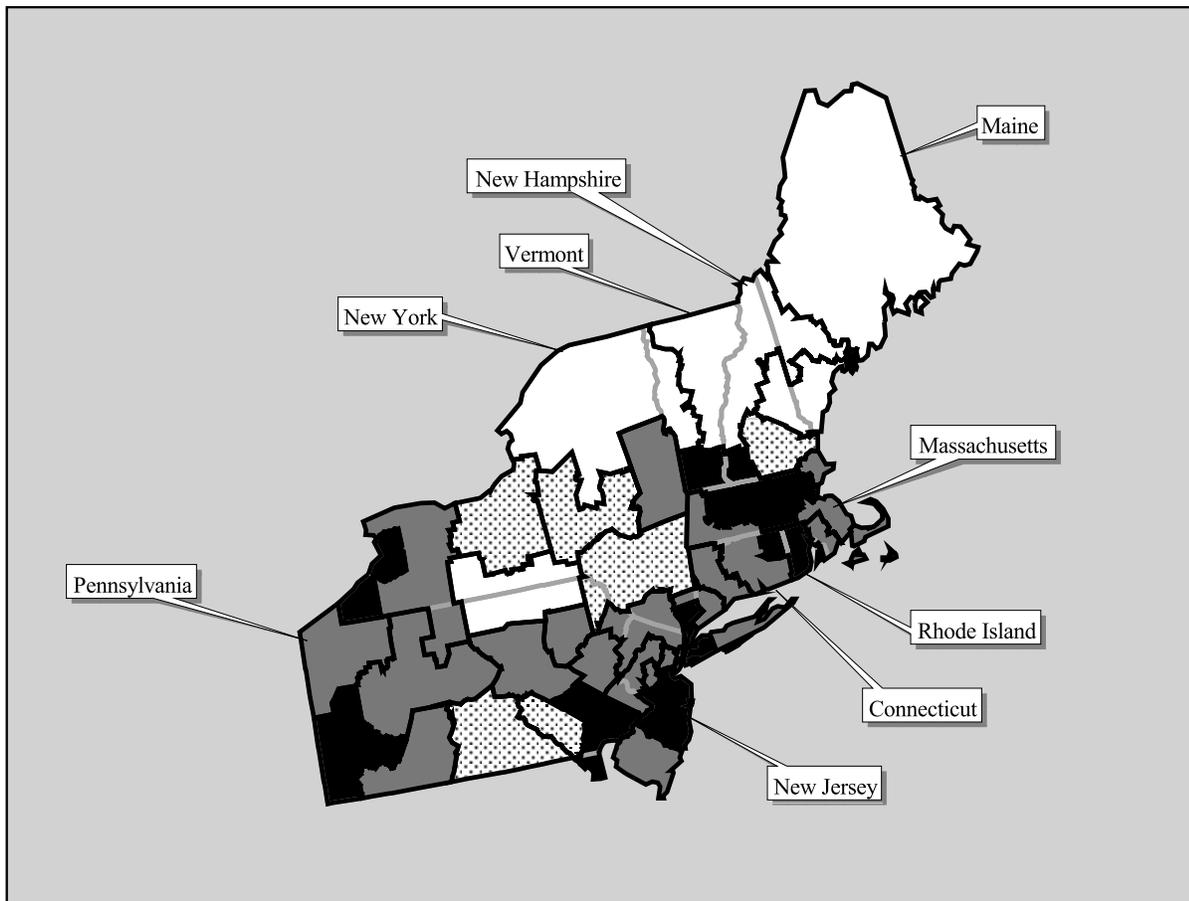
# Map 33

## Northeast Region

### New Service Areas 100,000+ Beneficiaries

#### Number of M+C Enrollees by New Service Areas

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

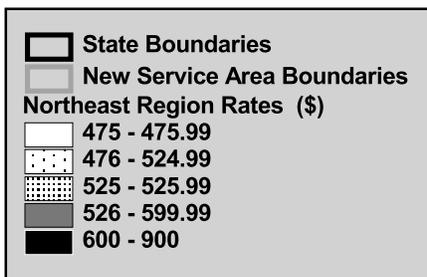
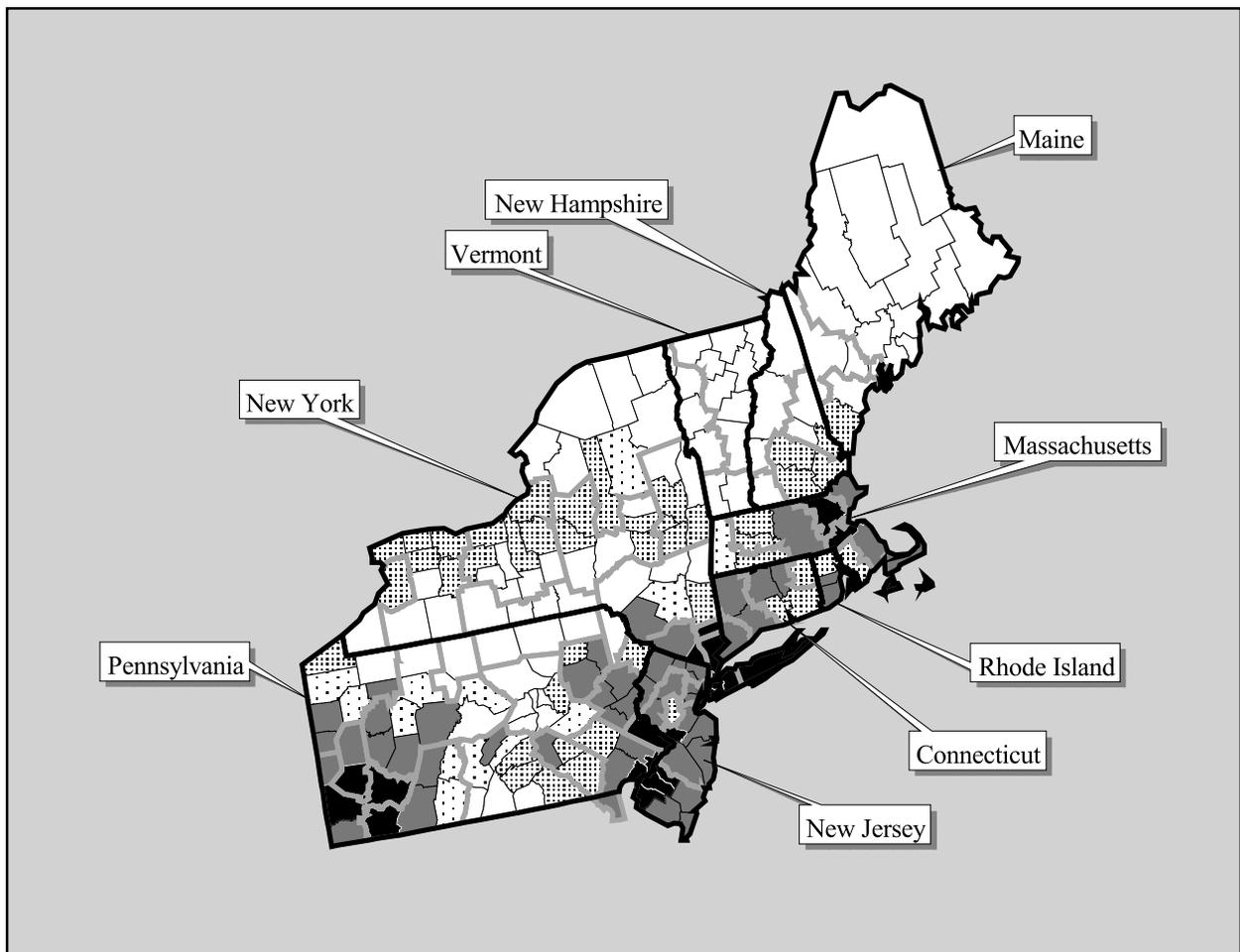
# Map 34

## Northeast Region

### New Service Areas 100,000+ Beneficiaries

### M+C Plan Rates by New Service Areas

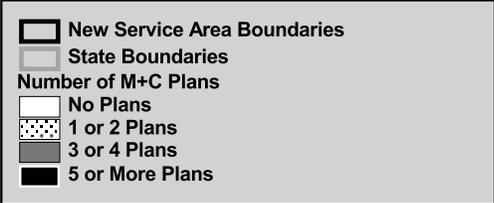
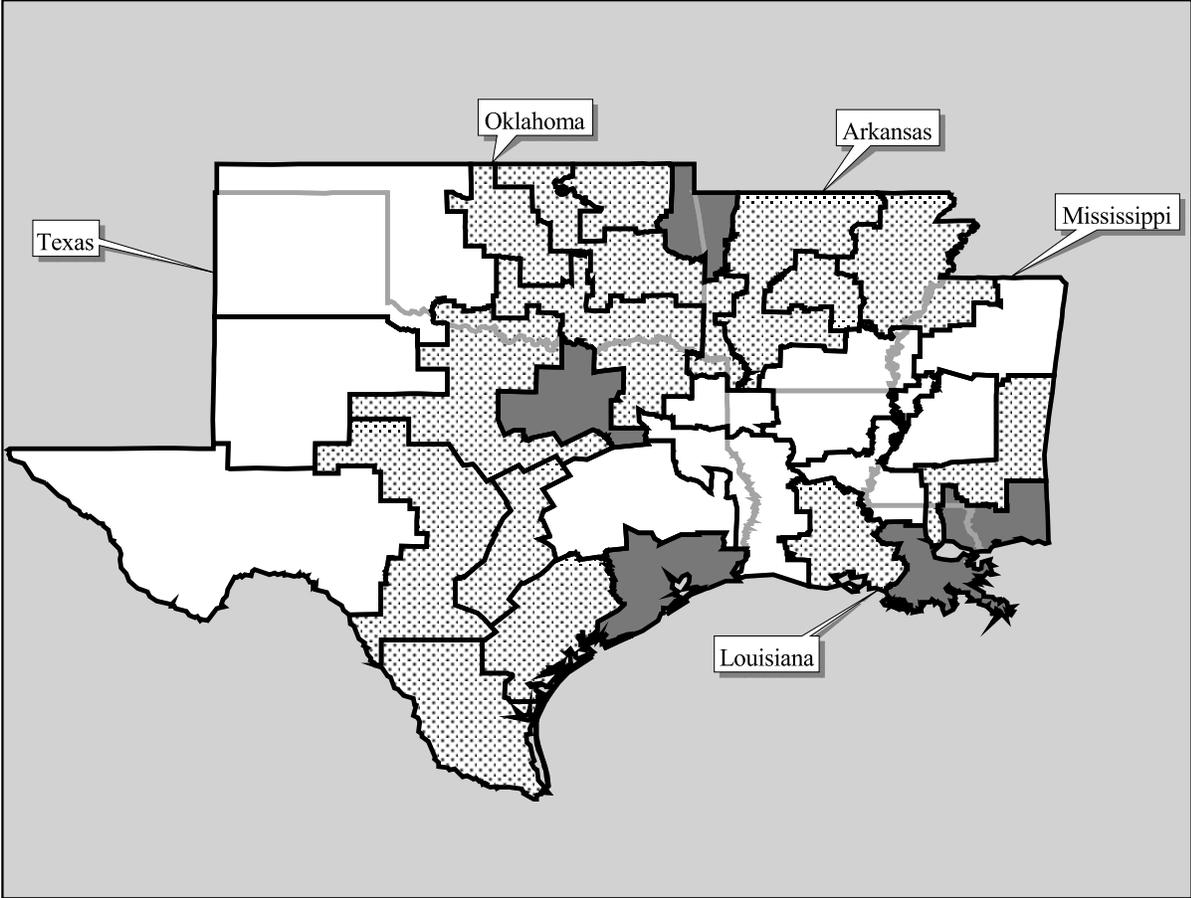
### Revised 2001



\*NOTE: Rates are mapped at the county level within the borders of the New Service Areas.

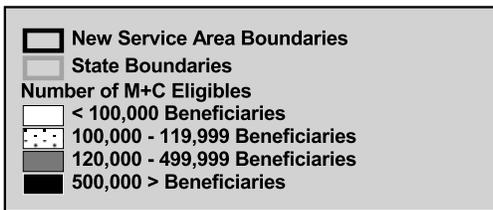
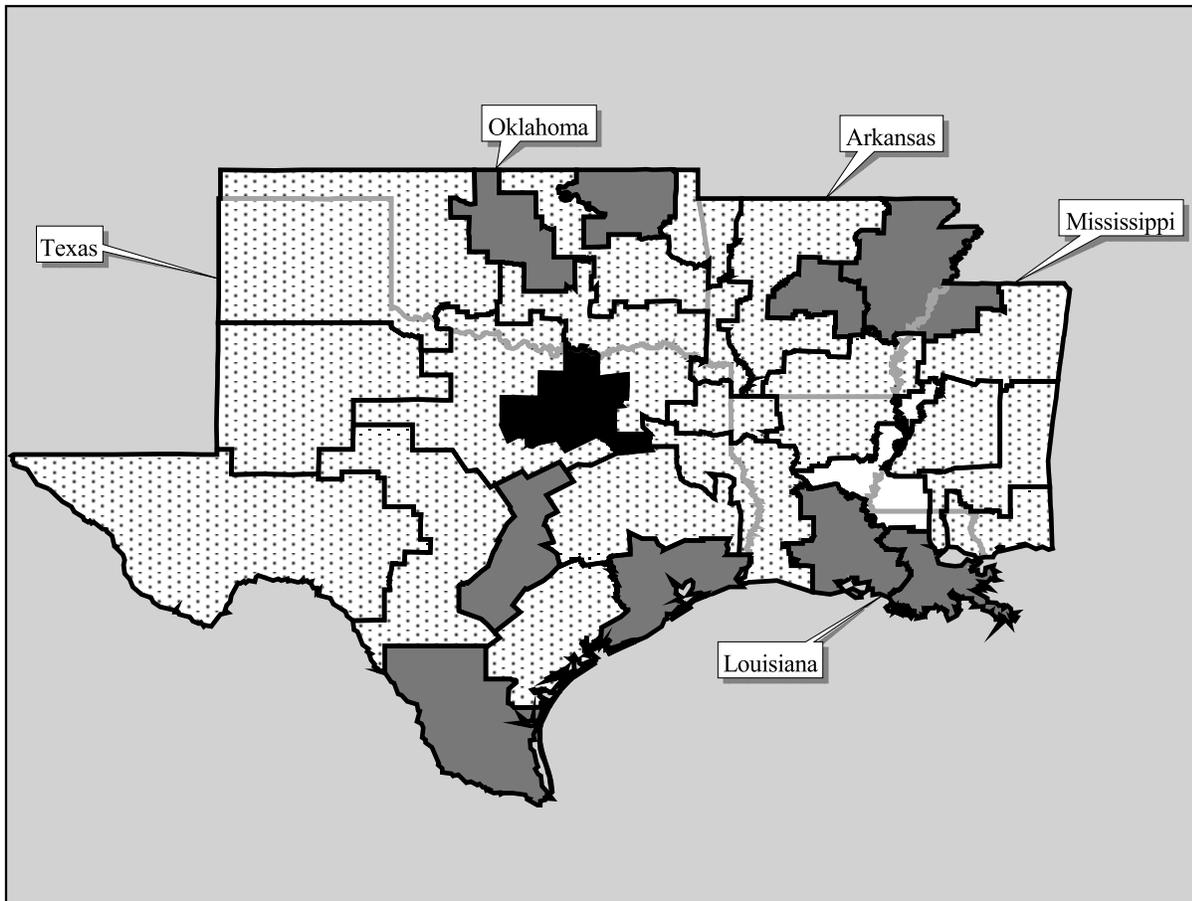
Source: RUPRI Center for Rural Health Policy Analysis

**Map 35**  
**South Region One**  
**New Service Areas 100,000+ Beneficiaries**  
**Number of M+C Plans Available by New Service Areas**  
**June 2001**



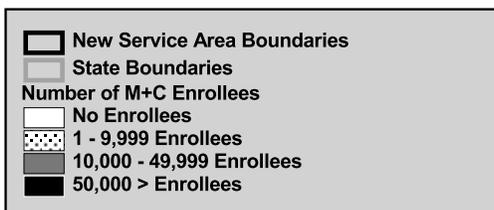
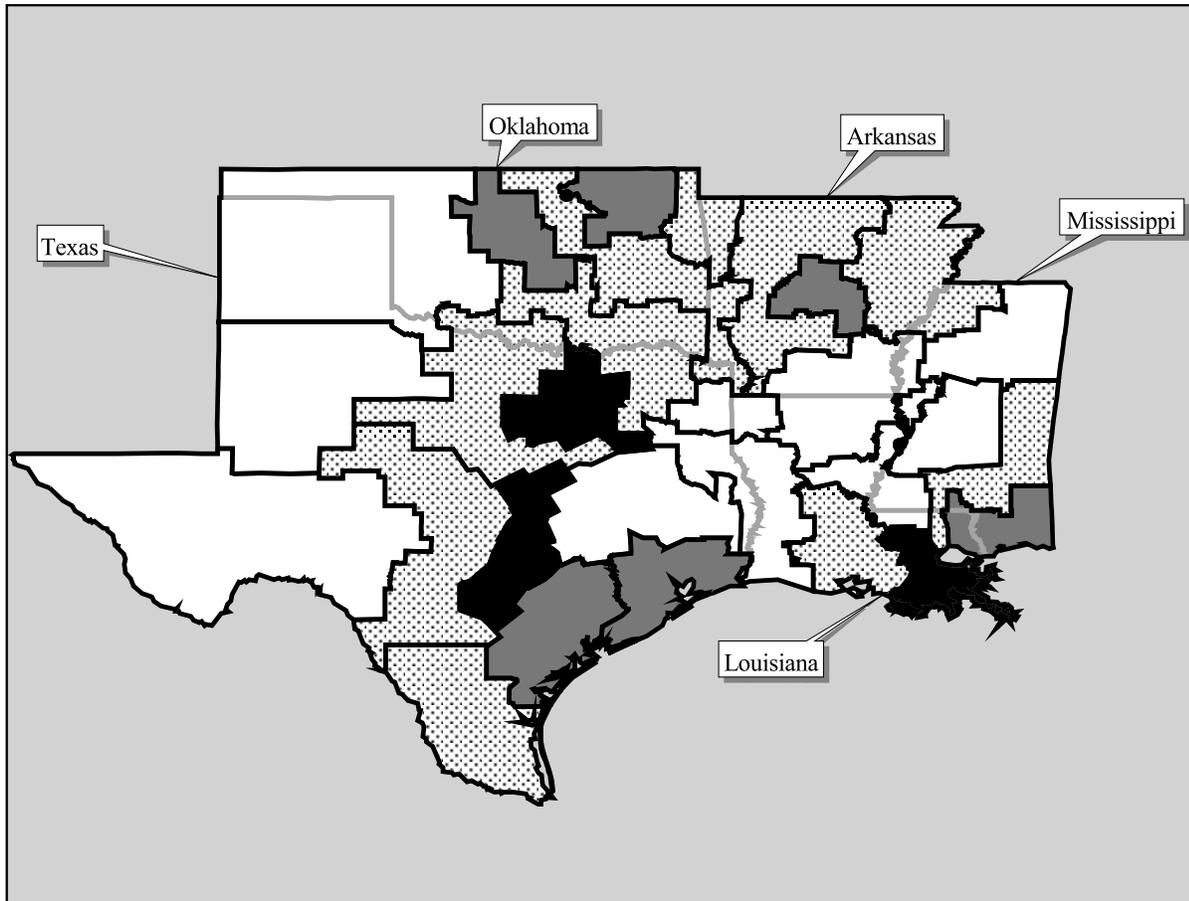
Source: RUPRI Center for Rural Health Policy Analysis

**Map 36**  
**South Region One**  
**New Service Areas 100,000+ Beneficiaries**  
**Number of M+C Beneficiaries by New Service Areas**  
**June 2001**



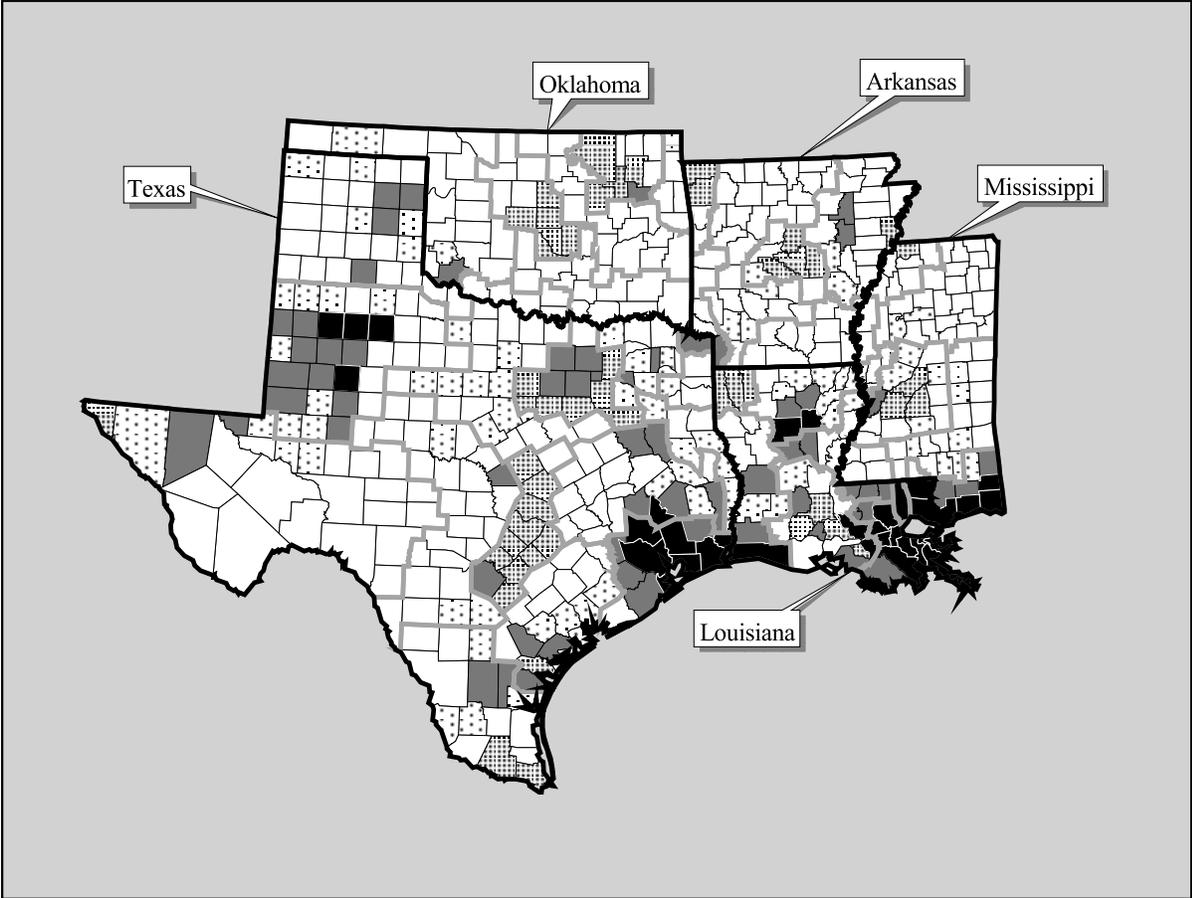
Source: RUPRI Center for Rural Health Policy Analysis

**Map 37**  
**South Region One**  
**New Service Areas 100,000+ Beneficiaries**  
**Number of M+C Enrollees by New Service Areas**  
**June 2001**



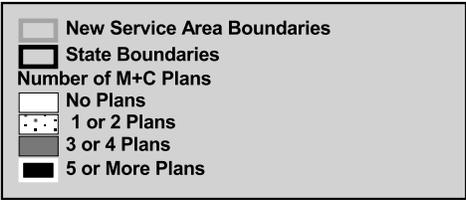
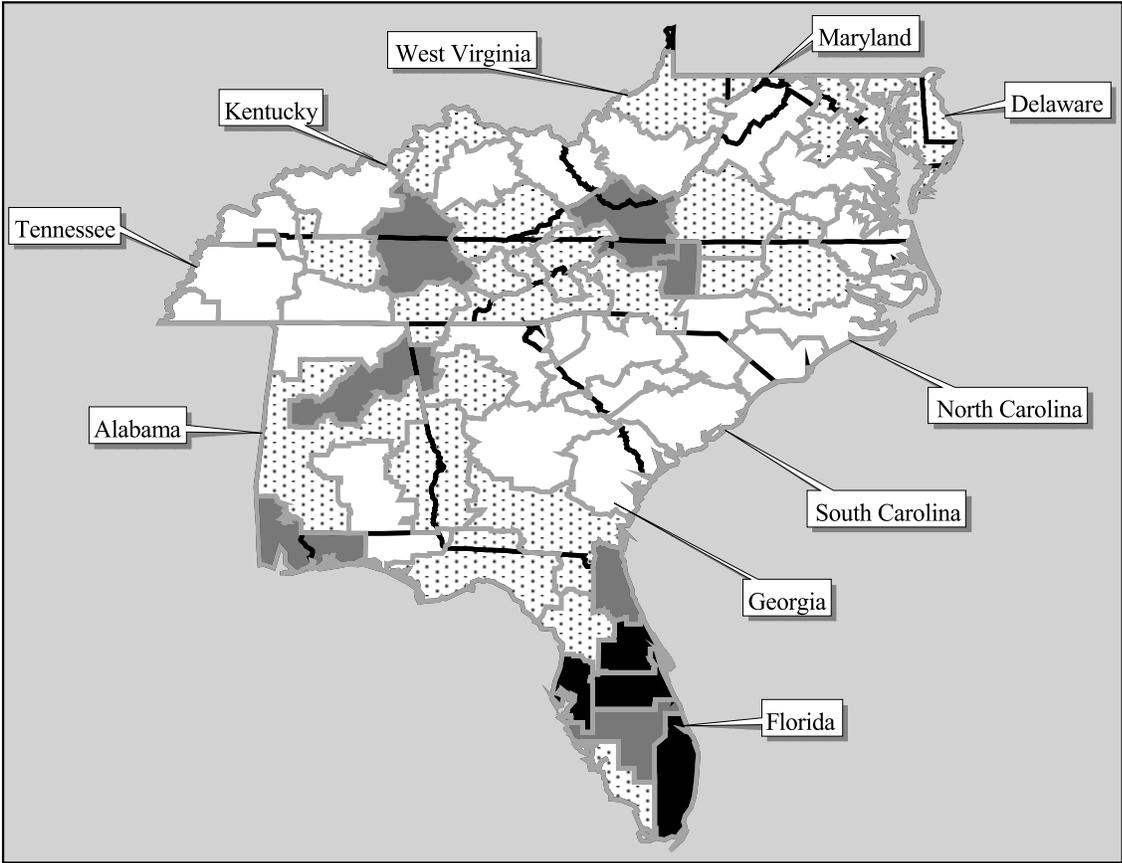
Source: RUPRI Center for Rural Health Policy Analysis

**Map 38**  
**South Region One**  
**New Service Areas 100,000+ Beneficiaries**  
**M+C Plan Rates by New Service Areas**  
**Revised 2001**



\*NOTE: Rates are mapped at the county level within the borders of the New Service Areas.  
 Source: RUPRI Center for Rural Health Policy Analysis

**Map 39**  
**South Region Two**  
**New Service Areas 100,000+ Beneficiaries**  
**Number of M+C Plans Available by New Service Areas**  
**June 2001**



Source: RUPRI Center for Rural Health Policy Analysis

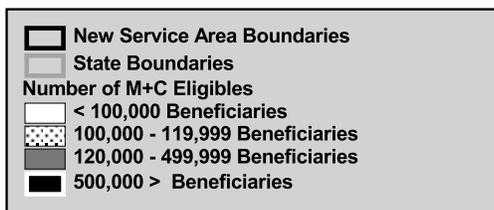
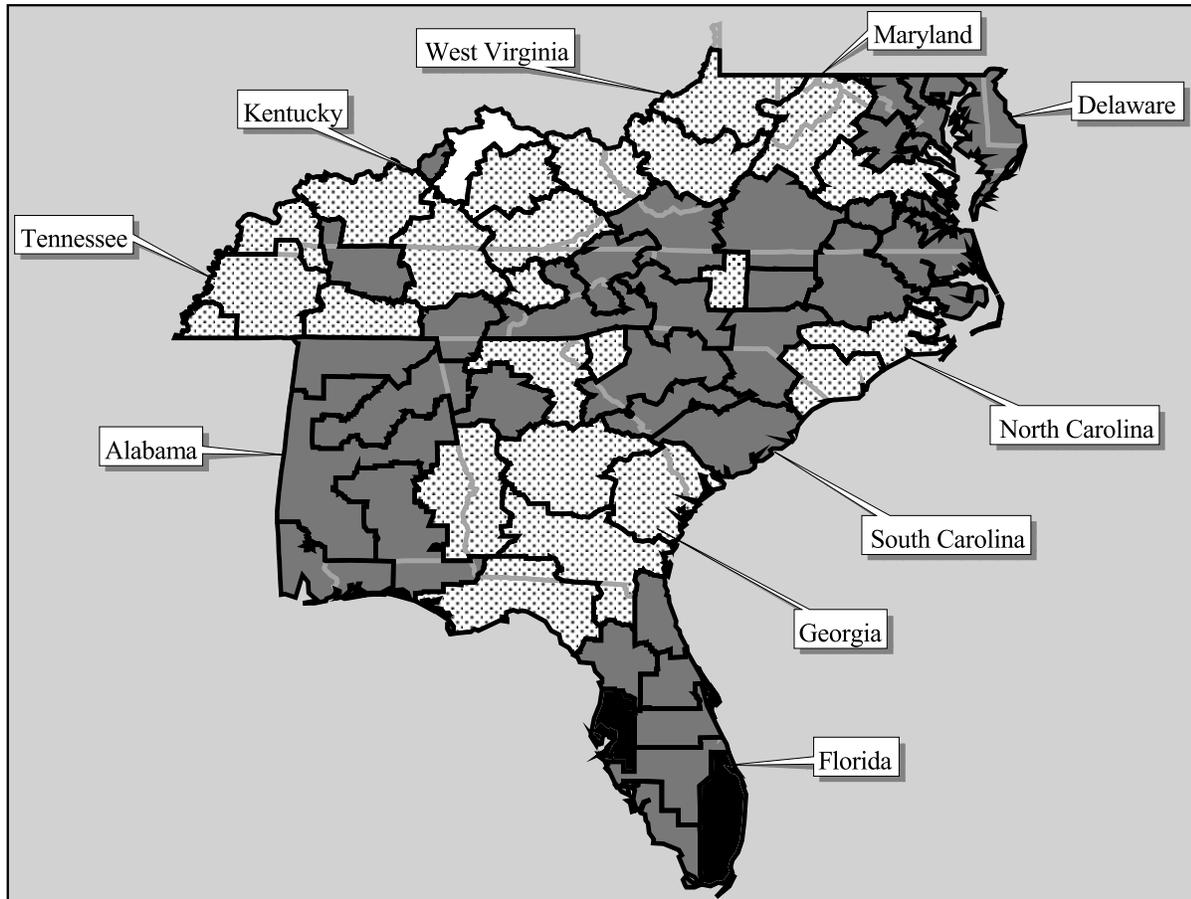
# Map 40

## South Region Two

### New Service Areas 100,000+ Beneficiaries

#### Number of M+C Beneficiaries by New Service Areas

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

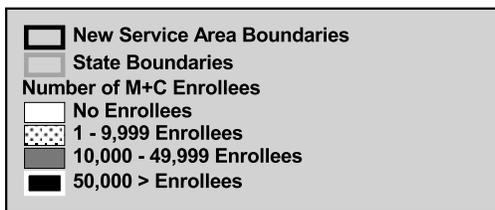
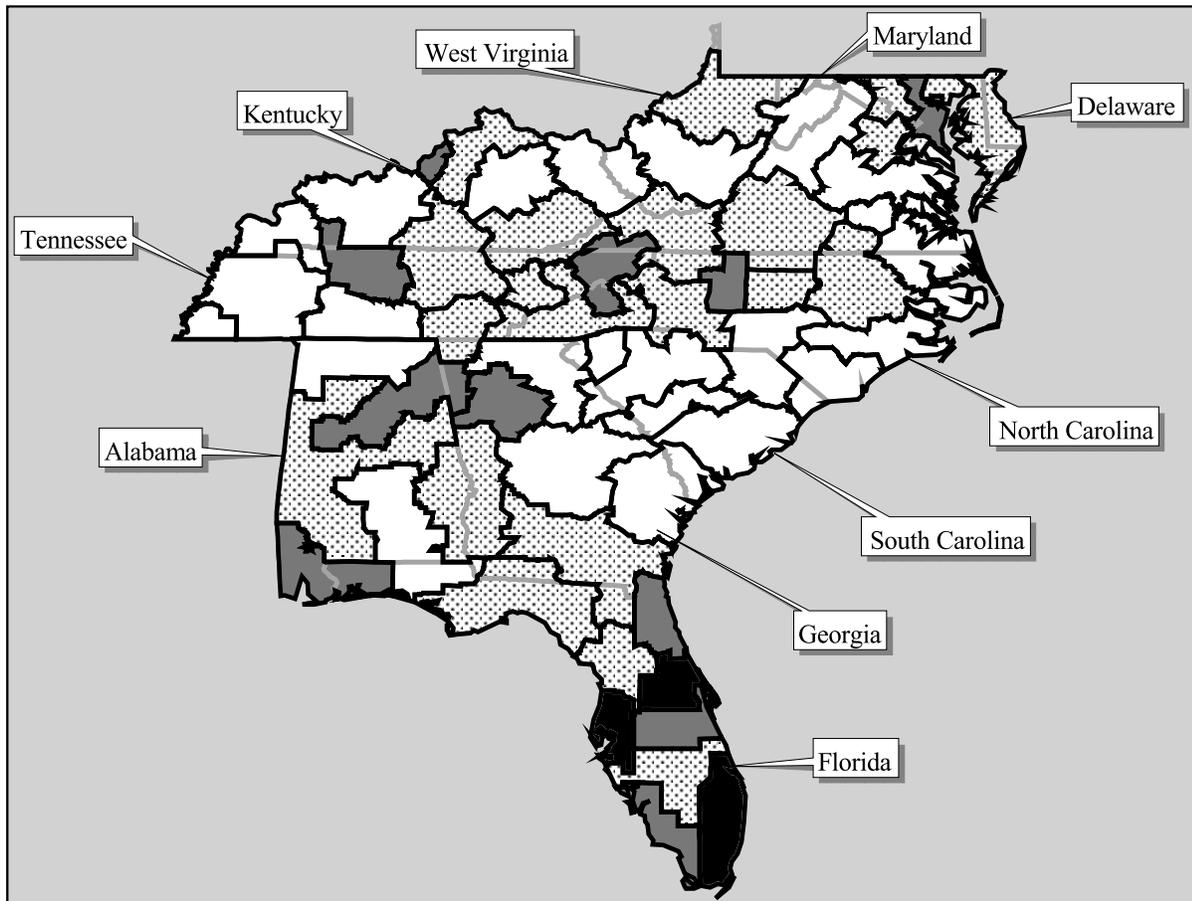
# Map 41

## South Region Two

### New Service Areas 100,000+ Beneficiaries

#### Number of M+C Enrollees by New Service Areas

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

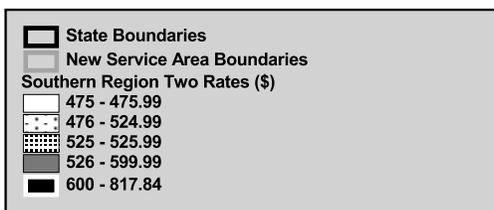
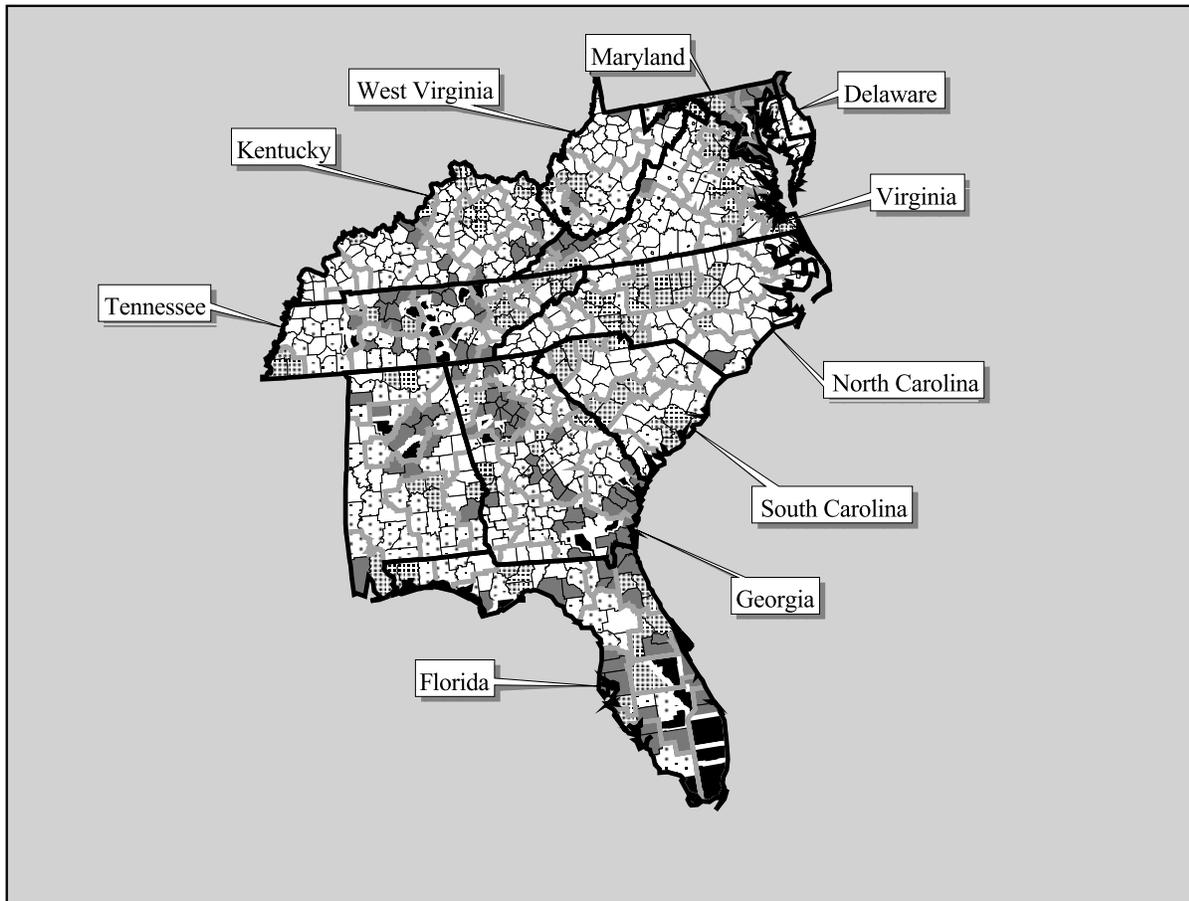
# Map 42

## South Region Two

### New Service Areas 100,000+ Beneficiaries

### M+C Plan Rates by New Service Areas

### Revised 2001



\*Note: Rates are mapped at the county level within the borders of the New Service Areas.  
 Source: RUPRI Center for Rural Health Policy Analysis

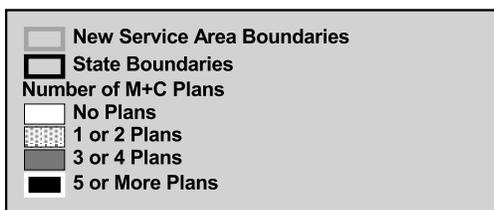
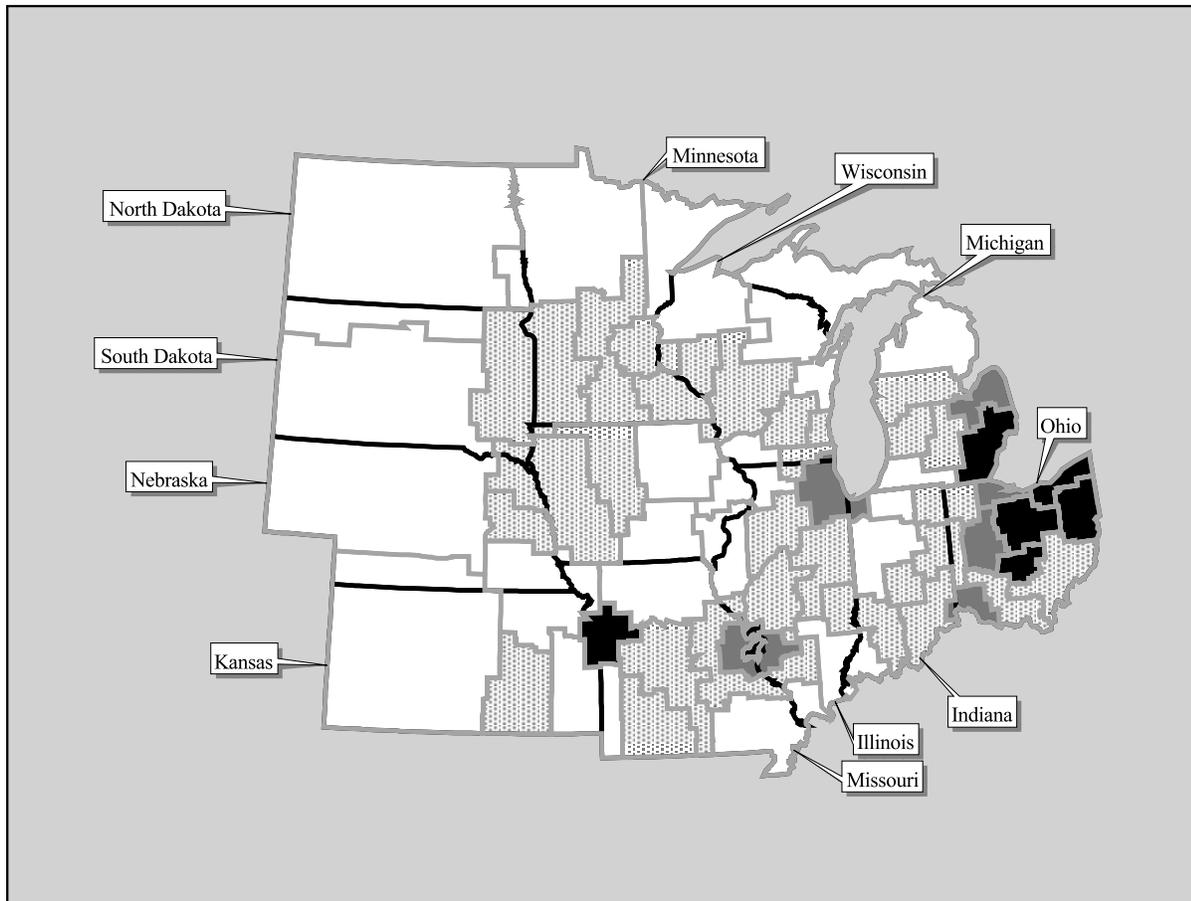
# Map 43

## Midwest Region

### New Service Areas 100,000+ Beneficiaries

### Number of M+C Plans Available by New Service Areas

### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

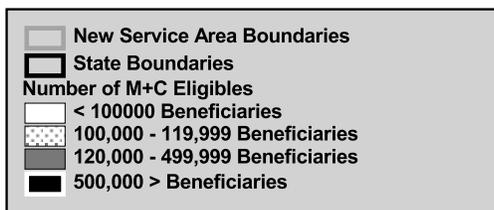
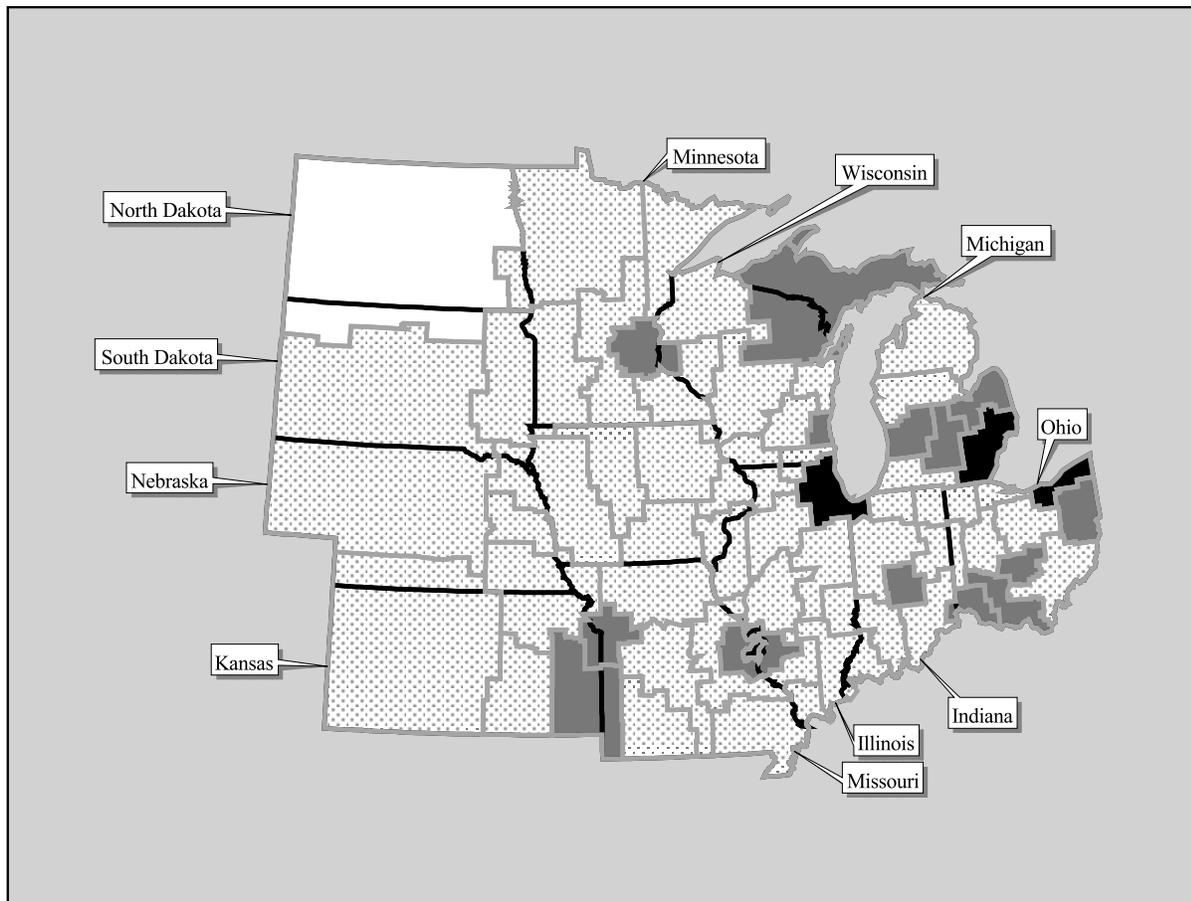
# Map 44

## Midwest Region

### New Service Areas 100,000+ Beneficiaries

#### Number of M+C Beneficiaries by New Service Areas

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

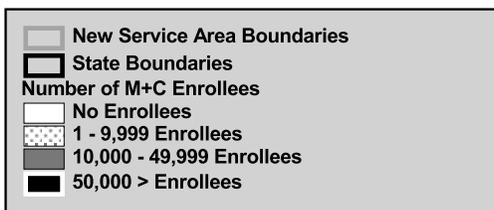
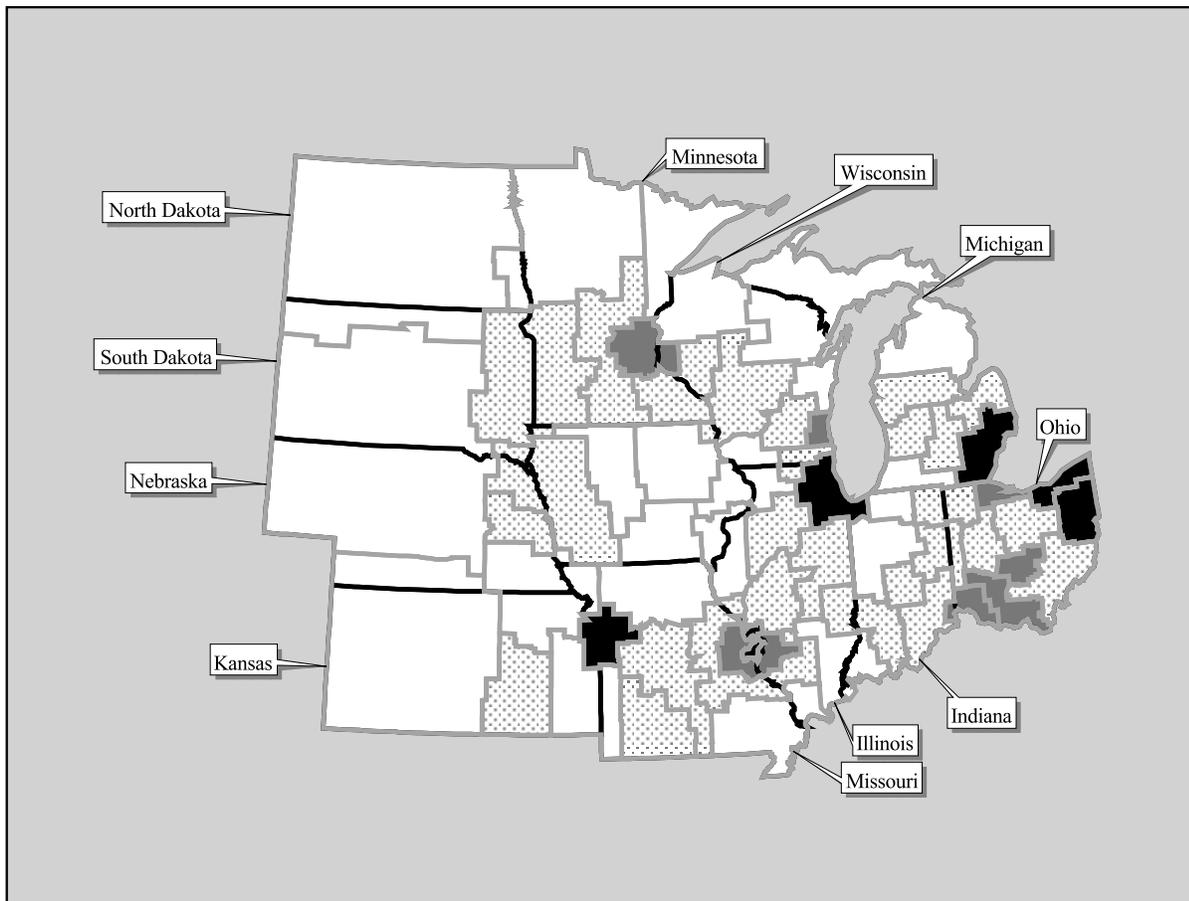
# Map 45

## Midwest Region

### New Service Areas 100,000+ Beneficiaries

#### Number of M+C Enrollees by New Service Areas

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

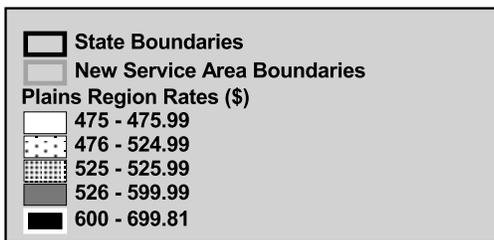
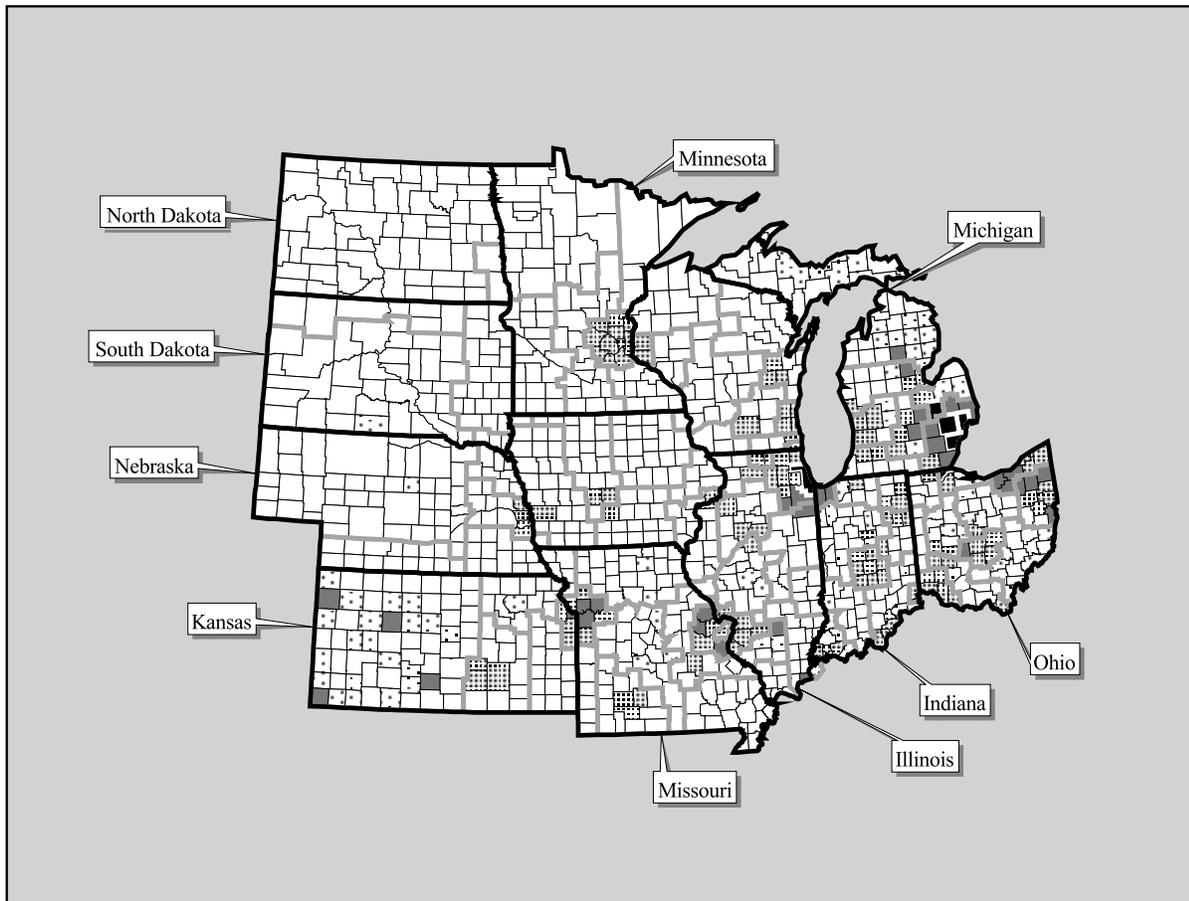
# Map 46

## Midwest Region

### New Service Areas 100,000+ Beneficiaries

### M+C Plan Rates by New Service Areas

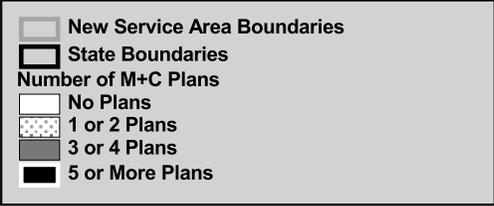
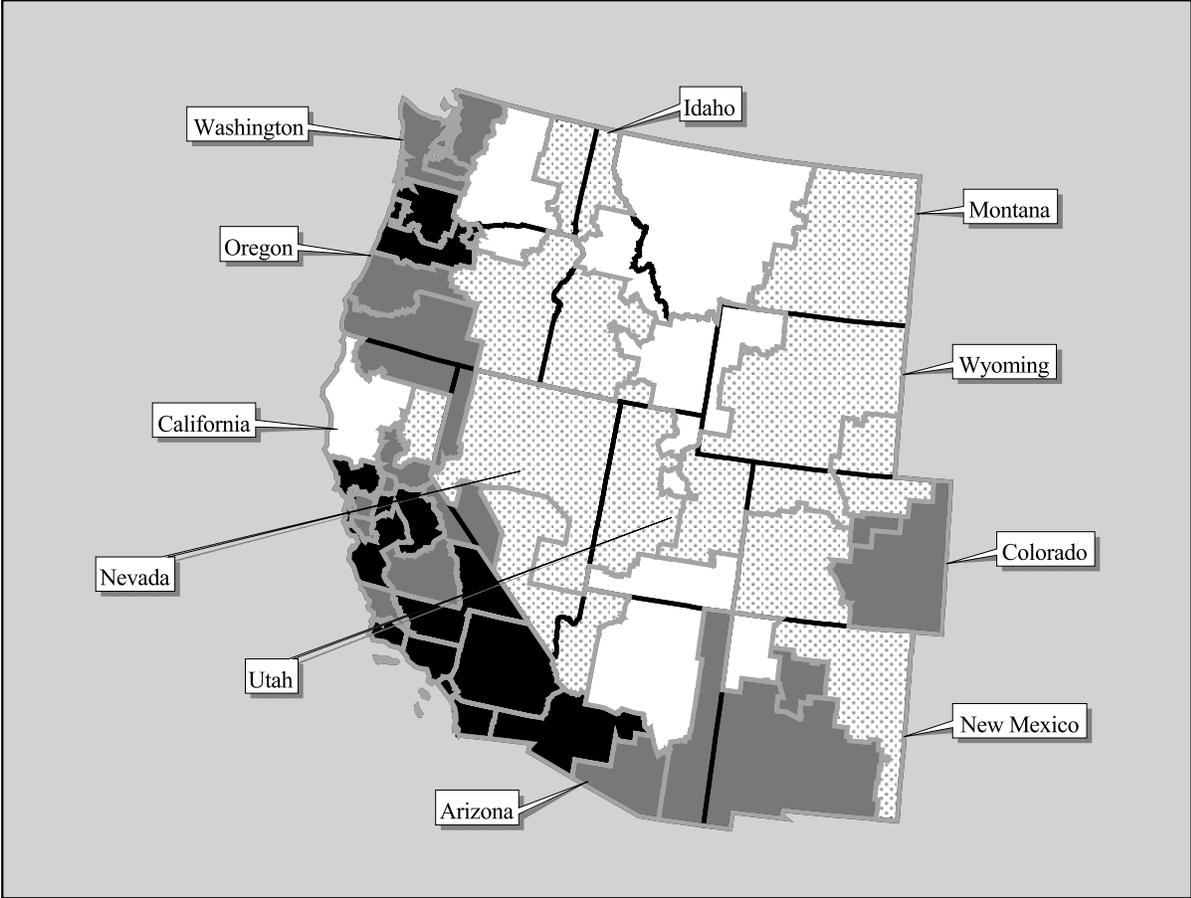
### Revised 2001



\*NOTE: Rates are mapped at the county level within the borders of the New Service Areas.

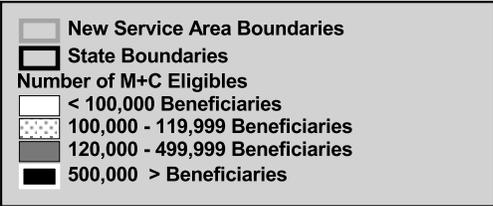
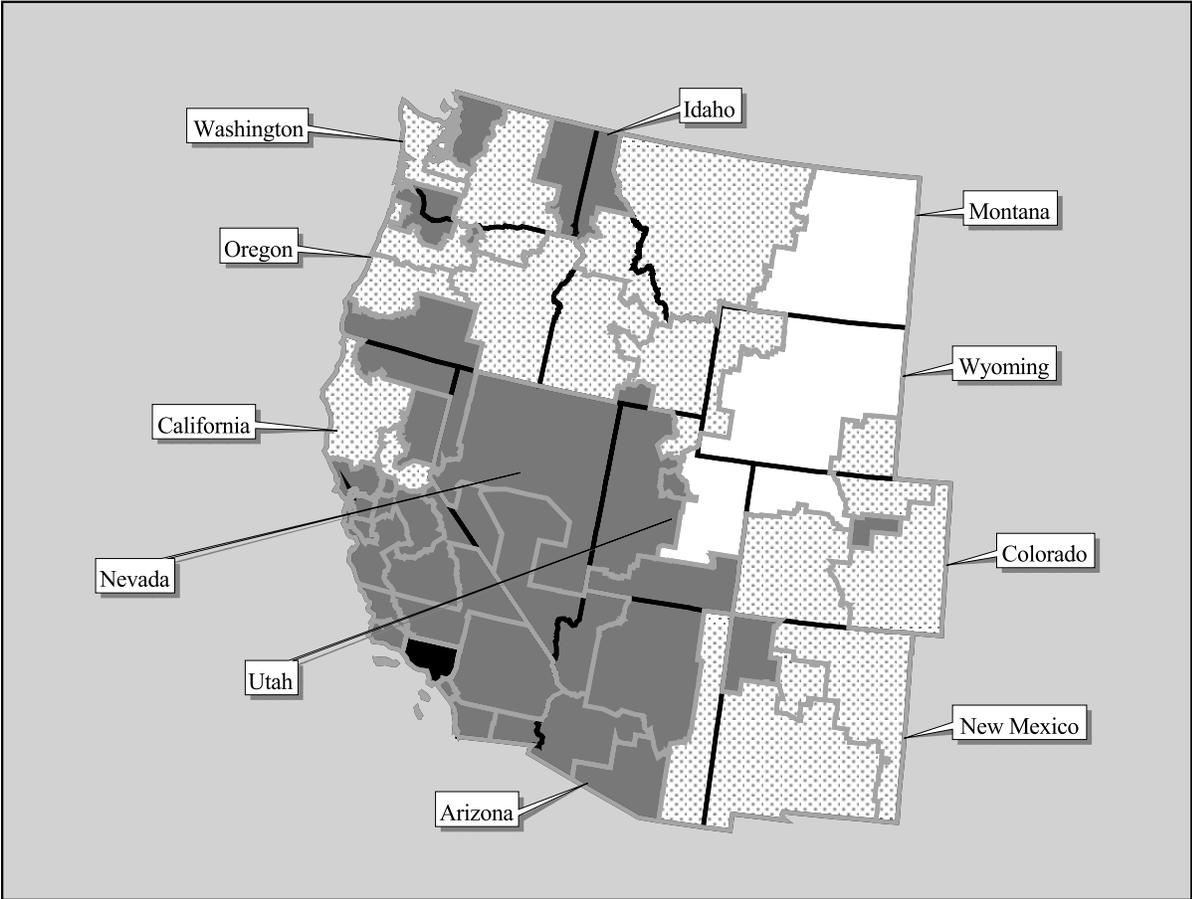
Source: RUPRI Center for Rural Health Policy Analysis

**Map 47**  
**West Region**  
**New Service Areas 100,000+ Beneficiaries**  
**Number of M+C Plans Available by New Service Areas**  
**June 2001**



Source: RUPRI Center for Rural Health Policy Analysis

**Map 48**  
**West Region**  
**New Service Areas 100,000+ Beneficiaries**  
**Number of M+C Beneficiaries by New Service Areas**  
**June 2001**



Source: RUPRI Center for Rural Health Policy Analysis

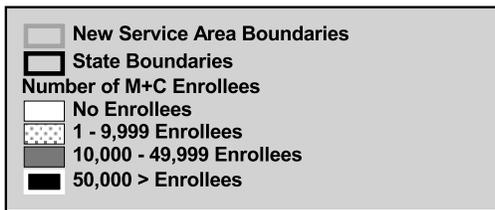
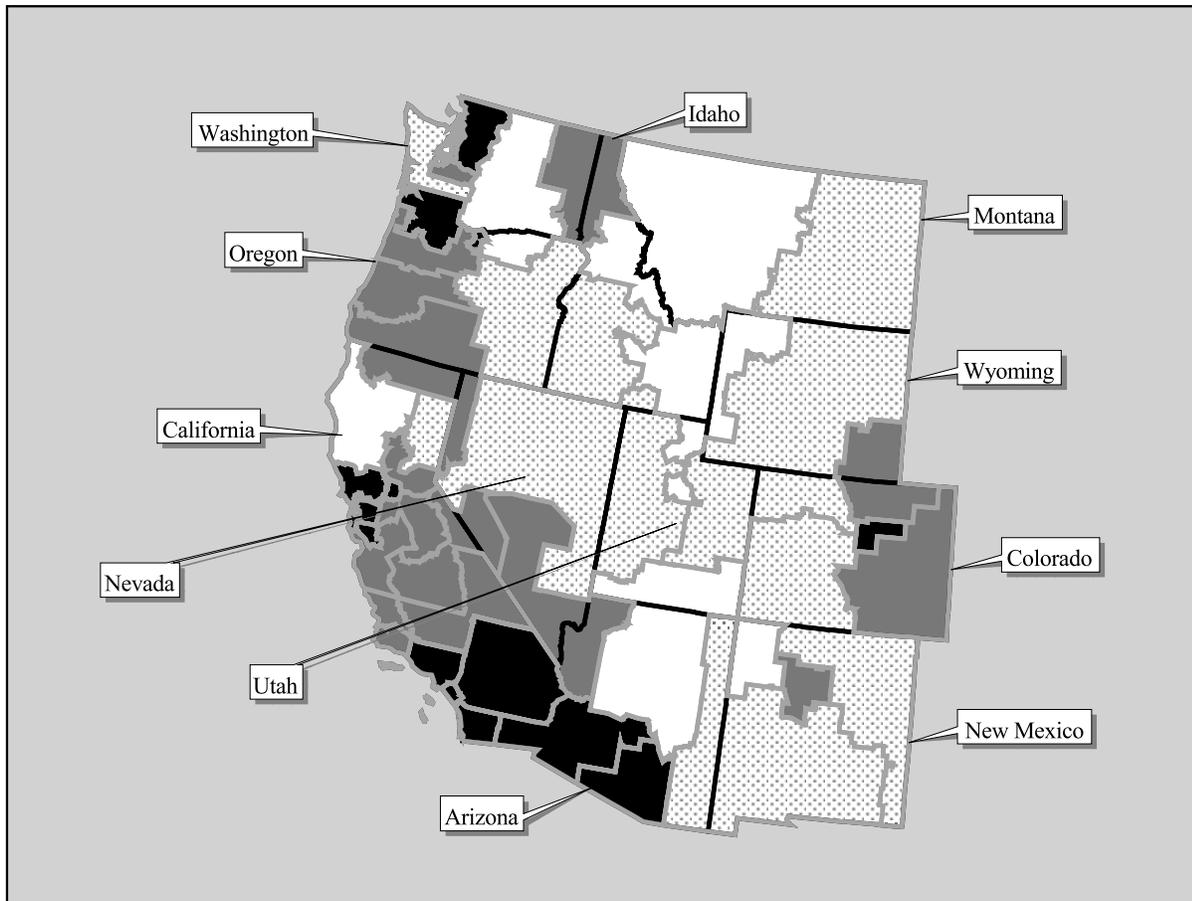
# Map 49

## West Region

### New Service Areas 100,000+ Beneficiaries

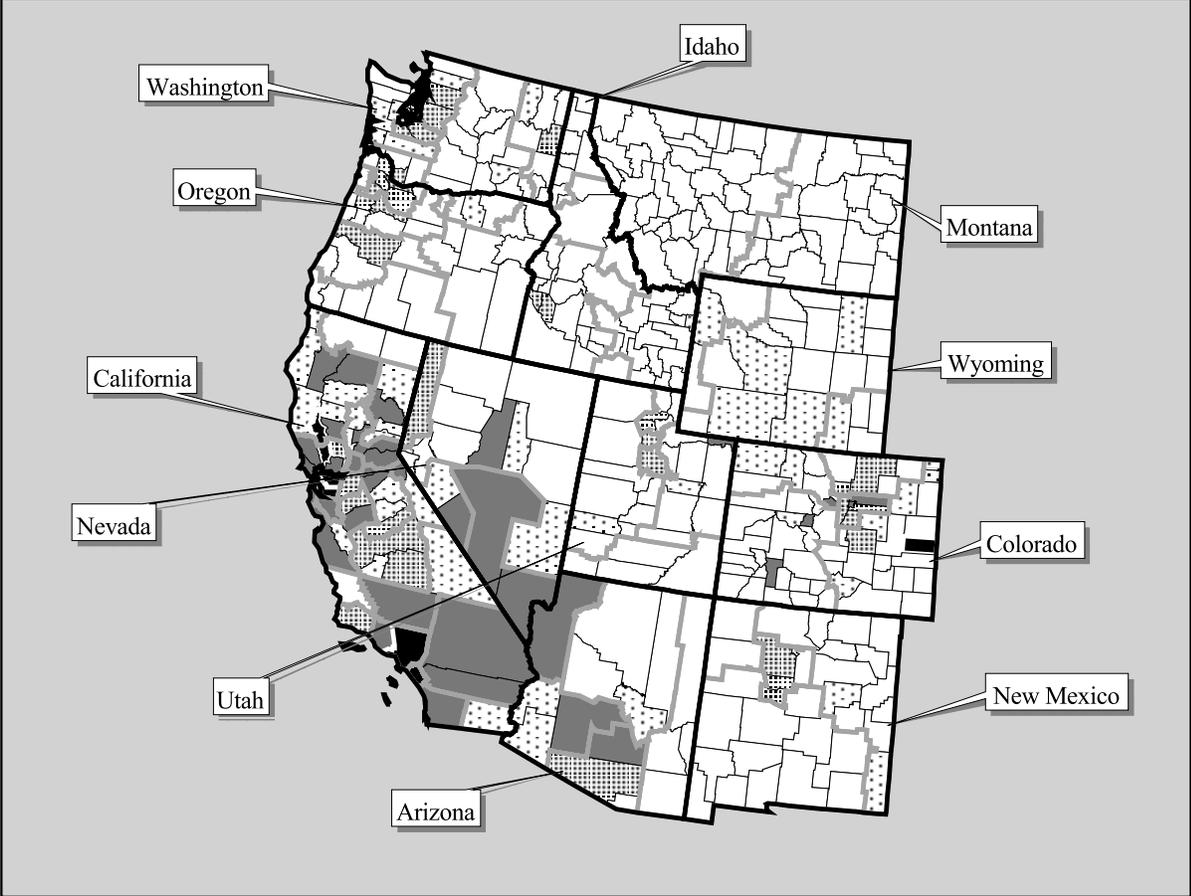
#### Number of M+C Enrollees by New Service Area

#### June 2001



Source: RUPRI Center for Rural Health Policy Analysis

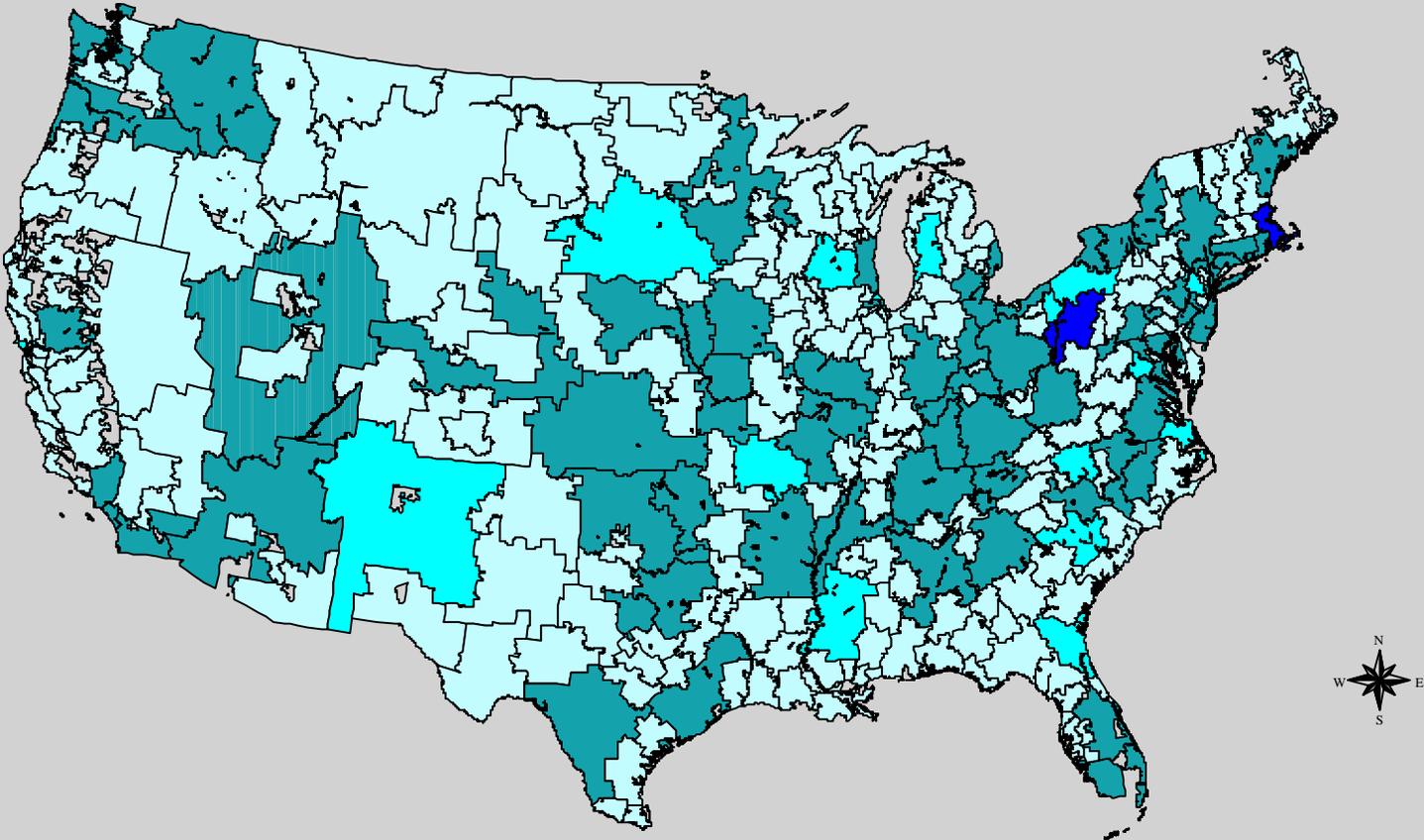
**Map 50**  
**West Region**  
**New Service Areas 100,000+ Beneficiaries**  
**M+C Plan Rates by New Service Areas**  
**Revised 2001**



\*NOTE: Rates are mapped at the county level within the borders of the New Service Areas.  
 Source: RUPRI Center for Rural Health Policy Analysis

Appendix E. Maps: Dartmouth Health Atlas Hospital Referral Regions

# Map 51. Dartmouth Hospital Referral Regions Number of Medicare Beneficiaries 1995

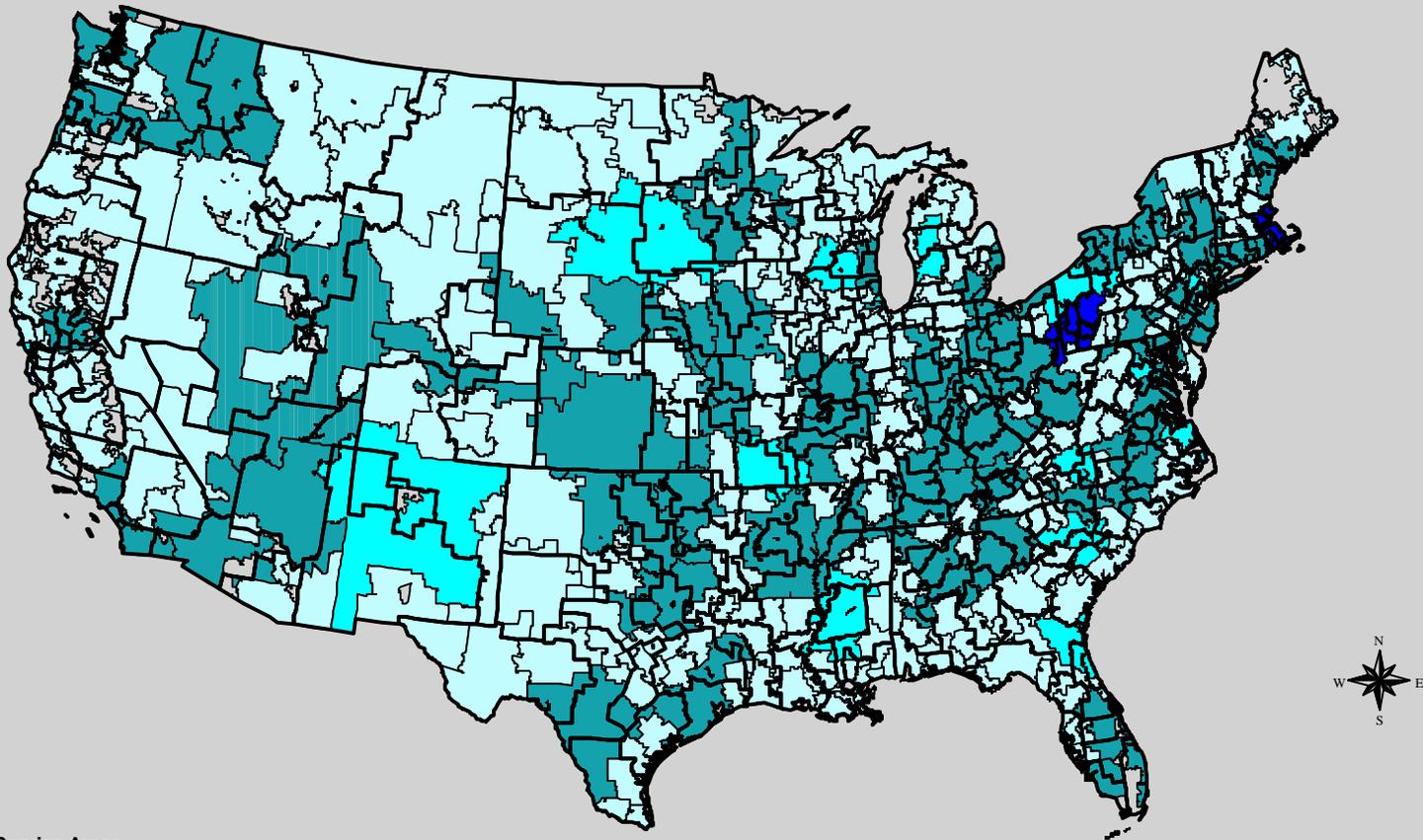


Number of Medicare Eligibles in Dartmouth Service Areas

- <100,000 Beneficiaries
- 100,000 - 119,999 Beneficiaries
- 120,000 - 499,999 Beneficiaries
- 500,000 > Beneficiaries
- No Data

Source: RUPRI Center for Rural Health Policy Analysis

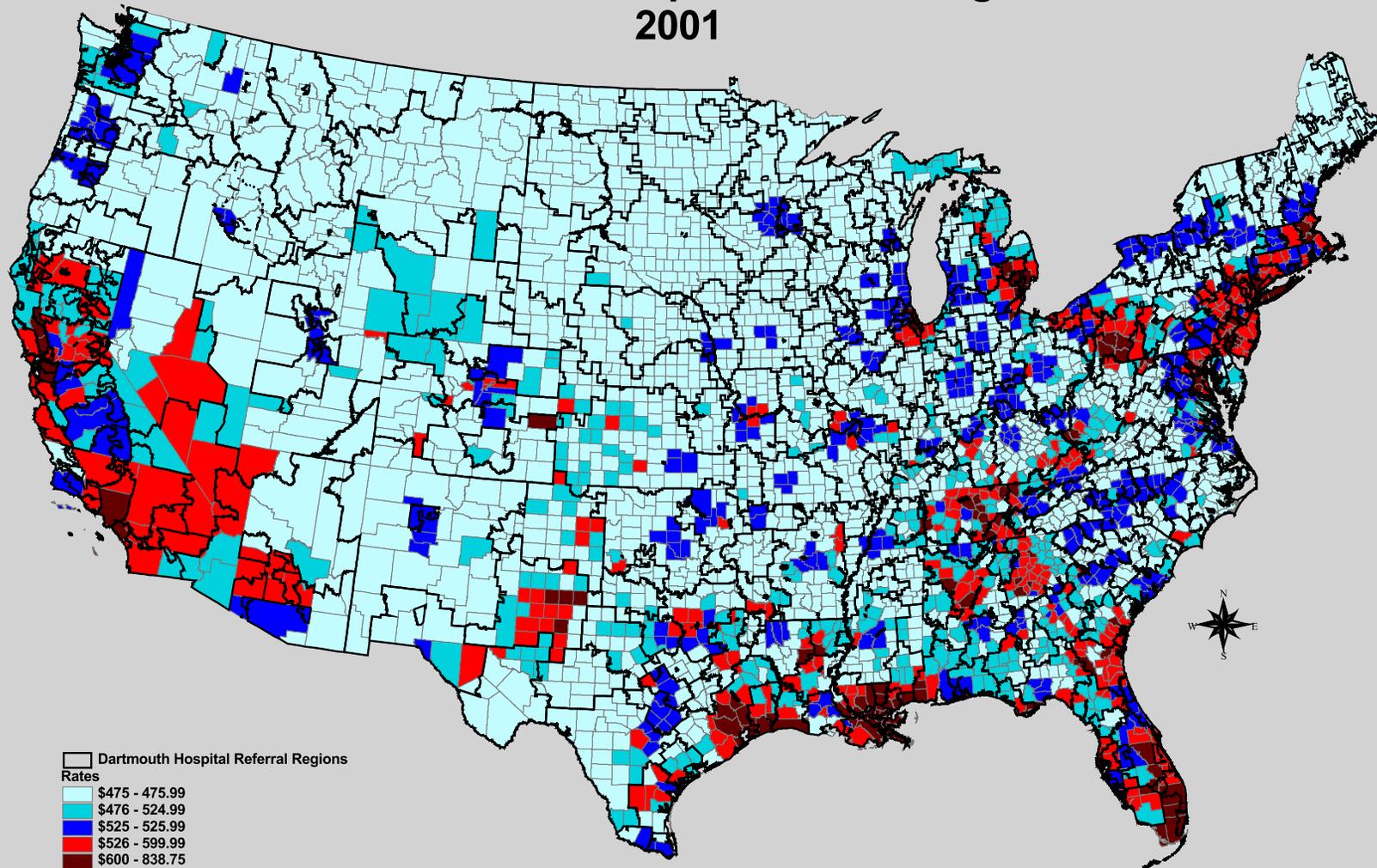
# Map 52. Service Areas Redistricted by 100,00+ Medicare+Choice Beneficiaries Compared to: Dartmouth Atlas Hospital Referral Regions



-  New Service Areas
- Number of Medicare Eligibles in Dartmouth Service Areas
-  <100,000 Beneficiaries
-  100,000 - 119,999 Beneficiaries
-  120,000 - 499,999 Beneficiaries
-  500,000 > Beneficiaries
-  No Data

Source: RUPRI Center for Rural Health Policy Analysis

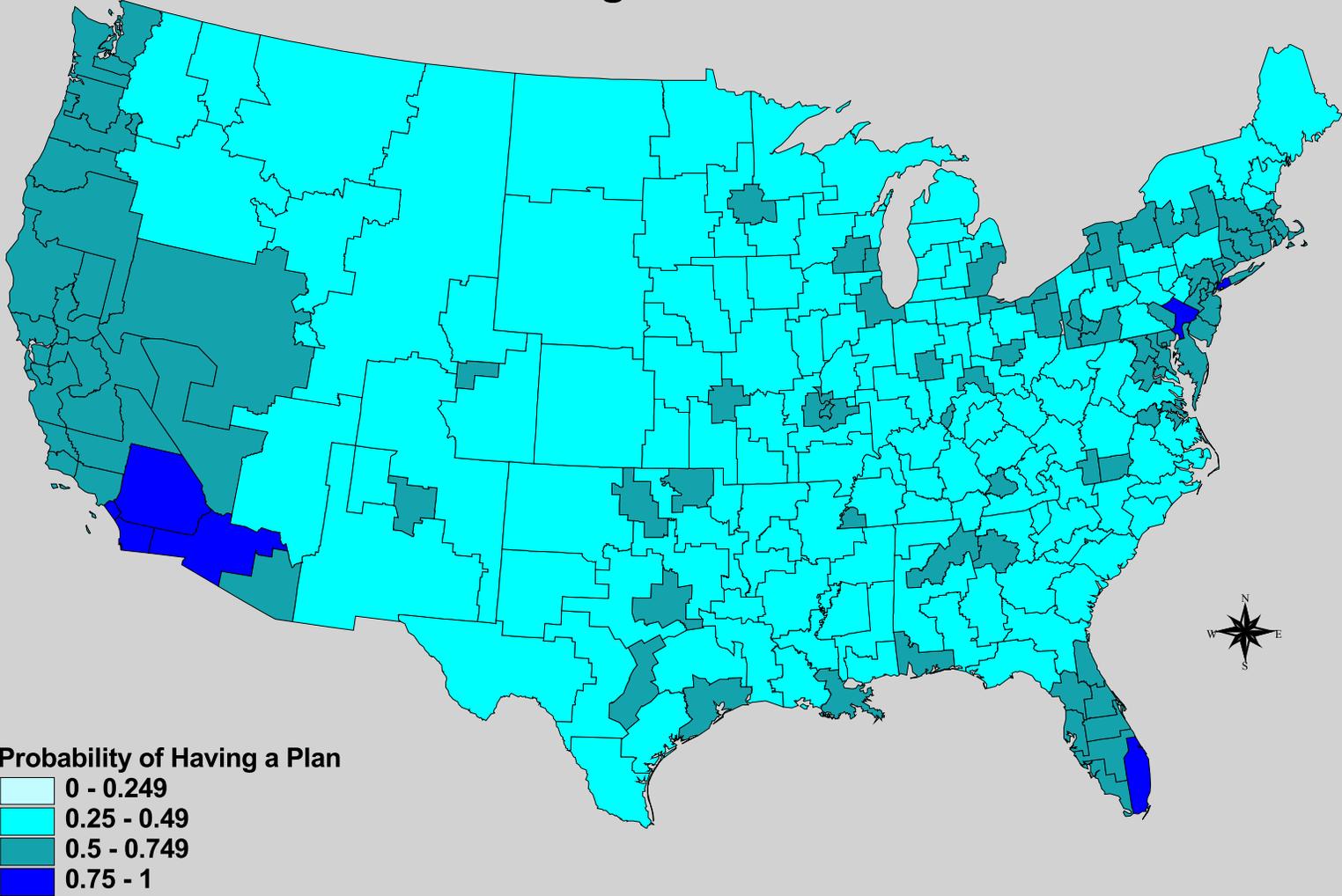
# Map 53. M+C Plan Rates by Dartmouth Atlas Hospital Referral Regions 2001



Source: RUPRI Center for Rural Health Policy Analysis

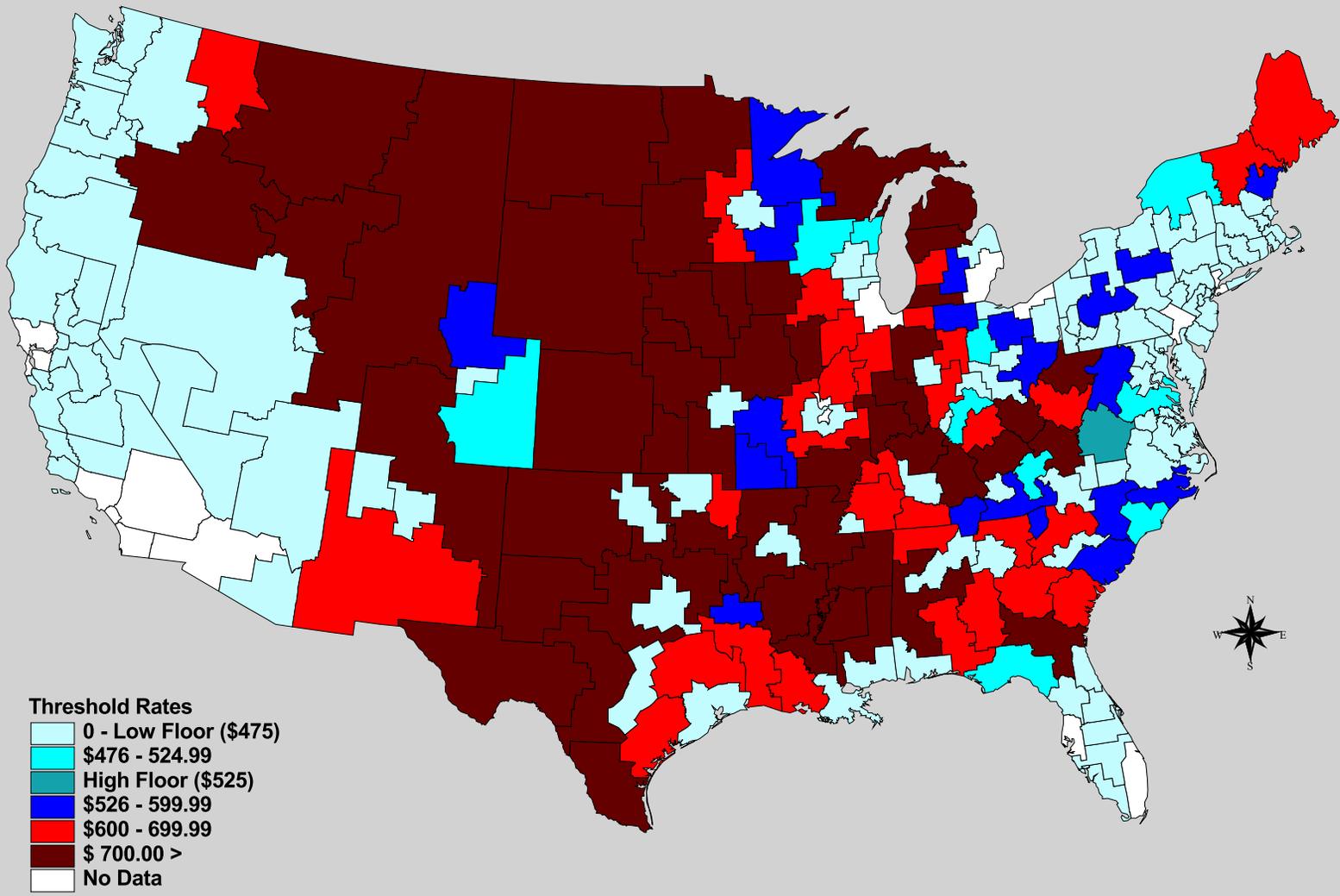
Appendix F. Maps: Multivariate Threshold Analysis of Redistricted Service Areas

# Map 54. Probability of Medicare+Choice Plan Availability in Areas Redistricted According to Minimum 100,000+ Beneficiaries August 2001



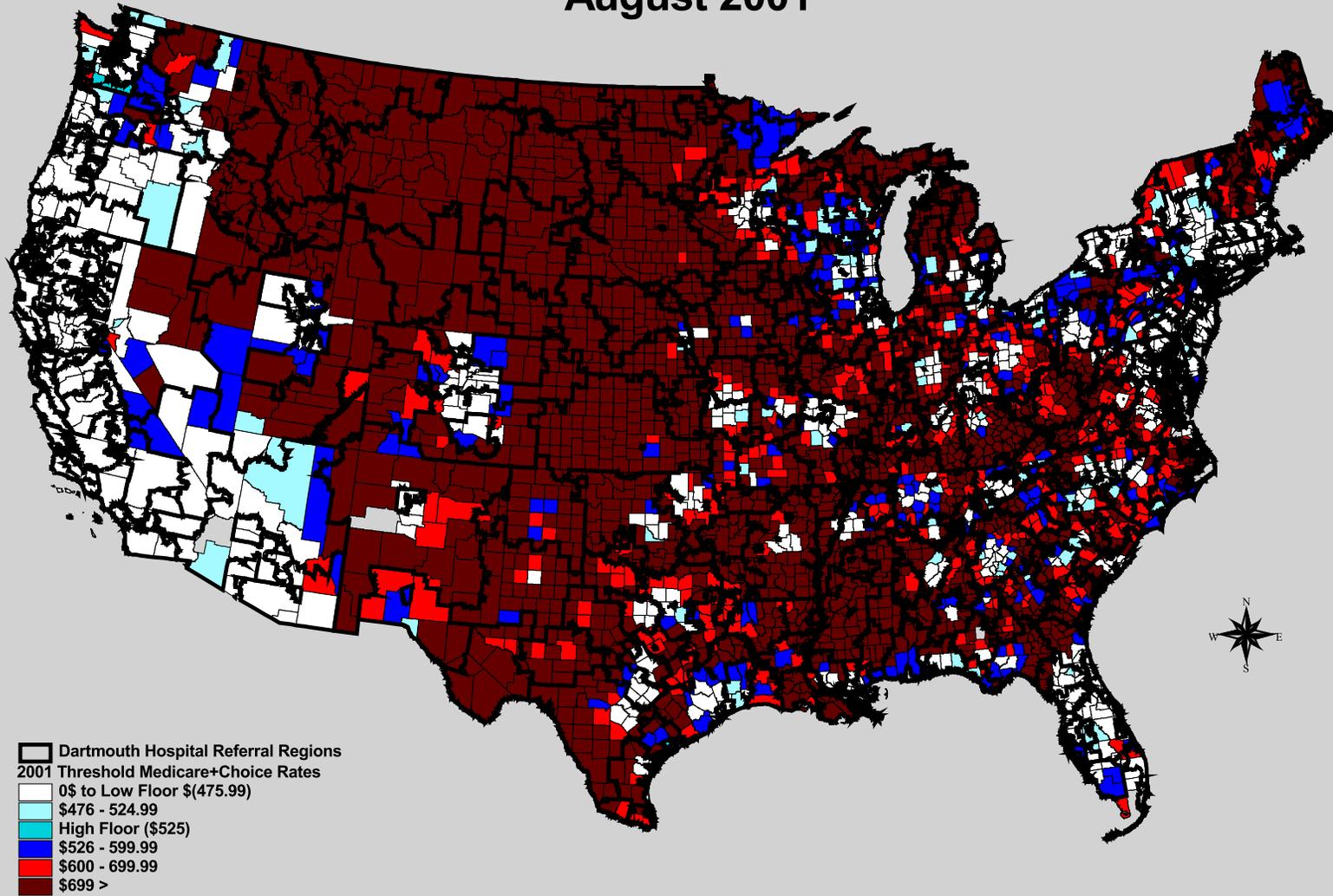
Source: RUPRI Center for Rural Health Policy Analysis

**Map 55. Threshold Rates Necessary to Facilitate Medicare+Choice Plan Availability  
in Areas Redistricted According to Minimum 100,00+ Beneficiaries  
August 2001**



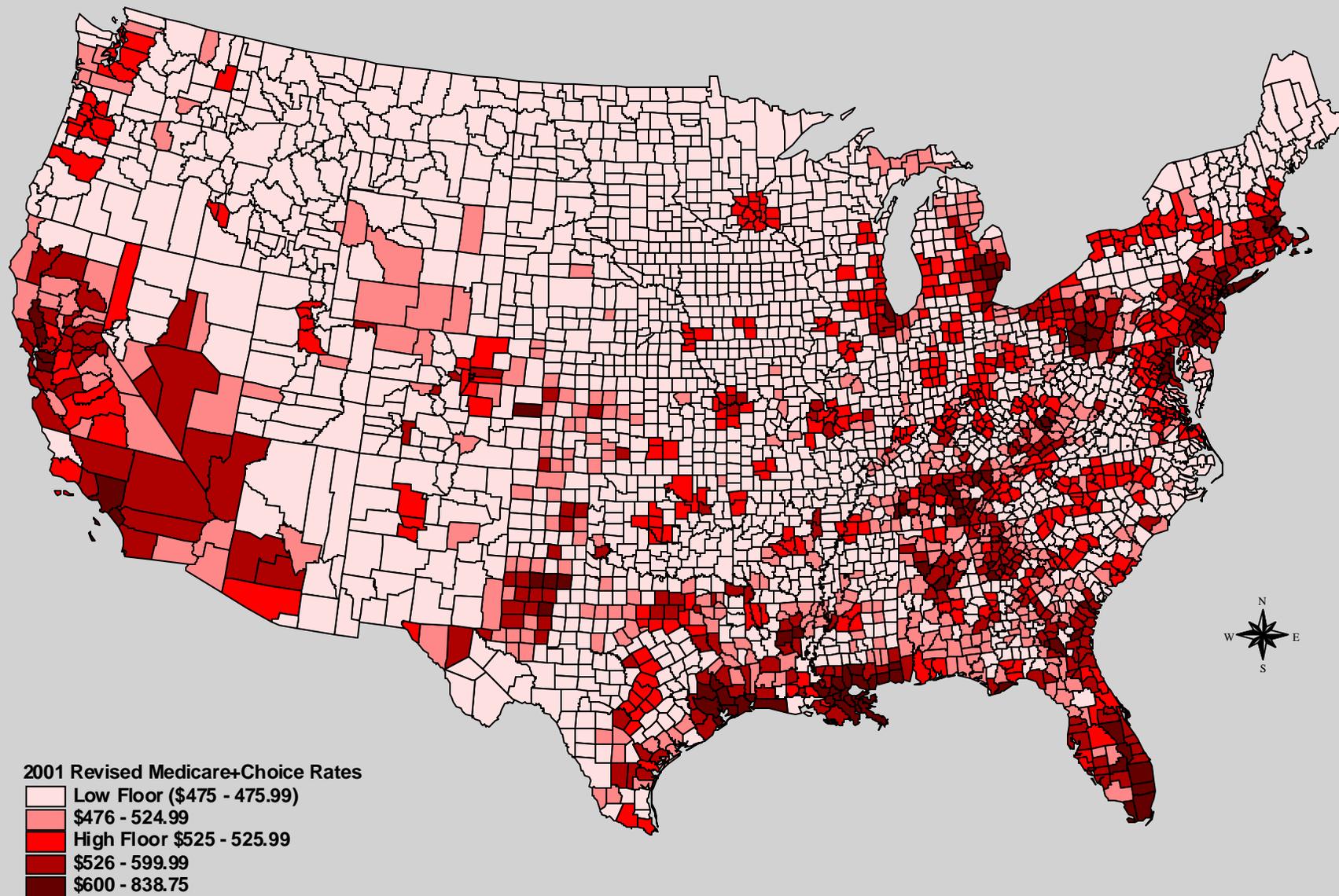
Source: RUPRI Center for Rural Health Policy Analysis

# Map 56. Threshold Rates necessary to Facilitate Medicare+Choice Plan Availability in Individual Counties August 2001



Source: RUPRI Center for Rural Health Policy Analysis

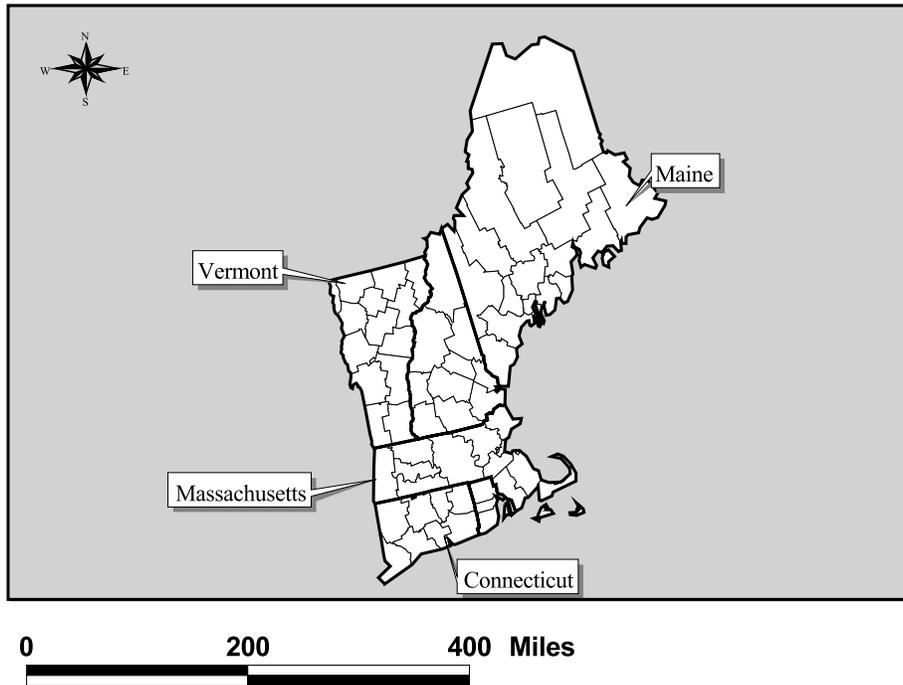
# Map 57. Medicare+Choice Revised Capitation Rates 2001



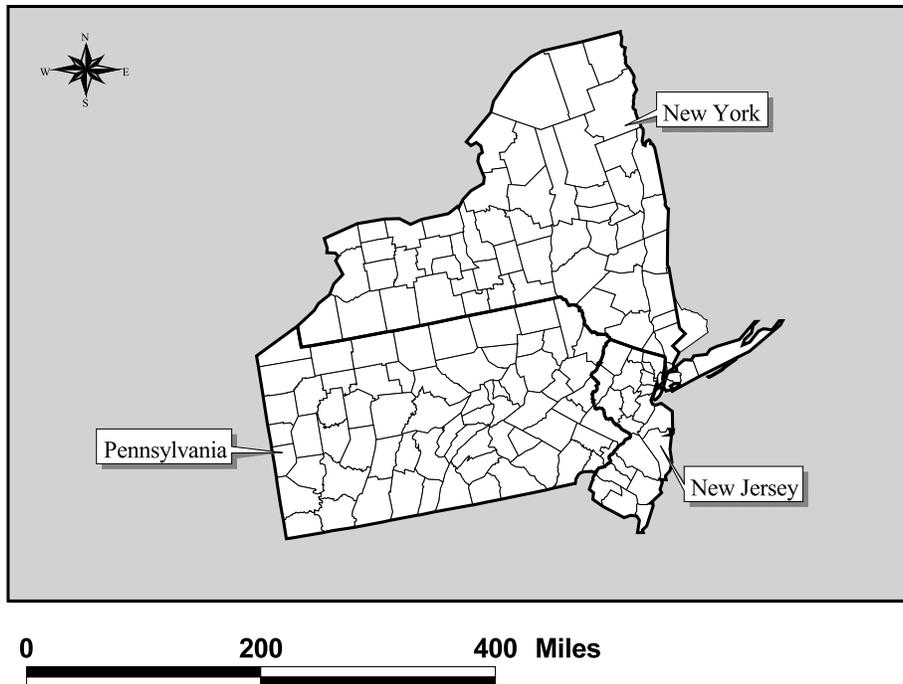
Source: RUPRI Center for Rural Health Policy Analysis

Appendix G. Census Division Mileage Maps

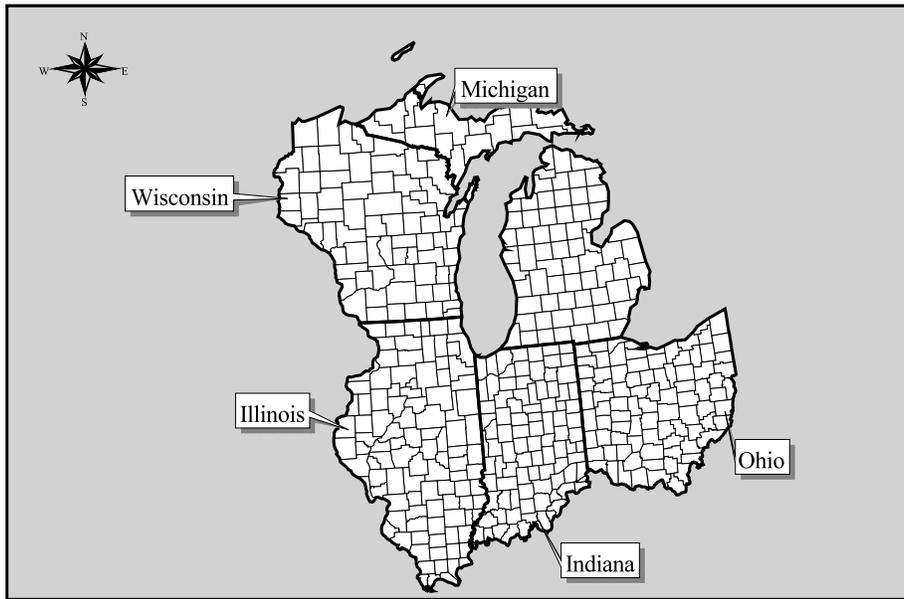
# Census Division 1



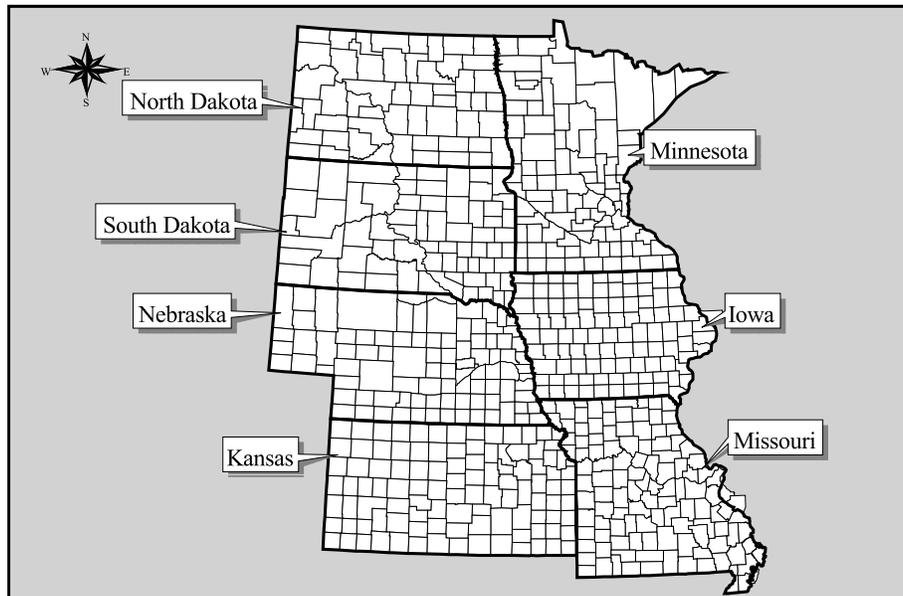
# Census Division 2



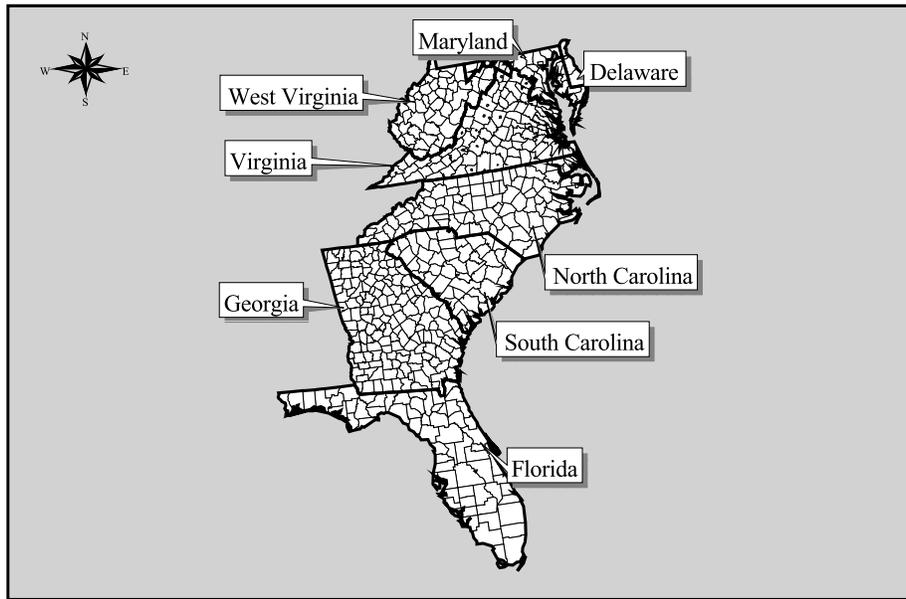
# Census Division 3



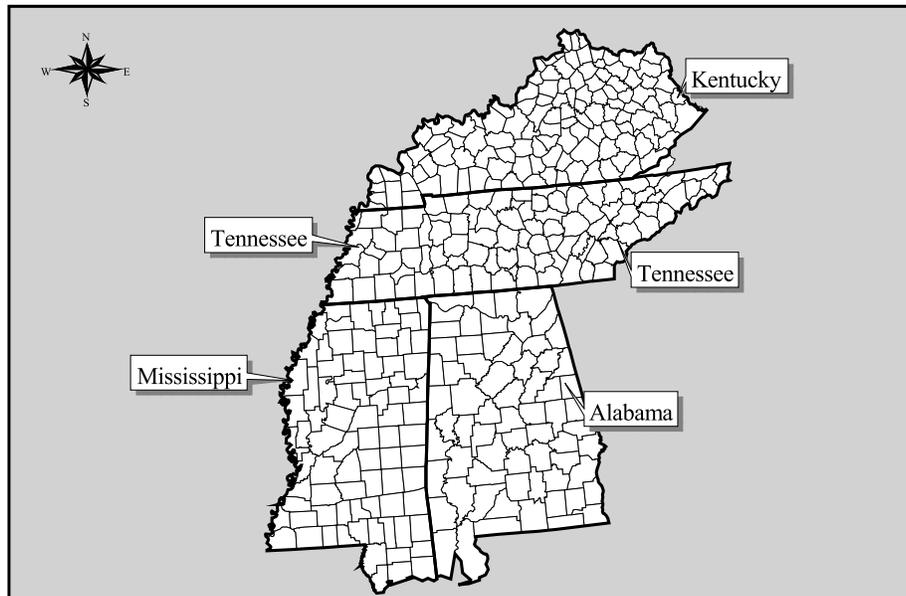
# Census Division 4



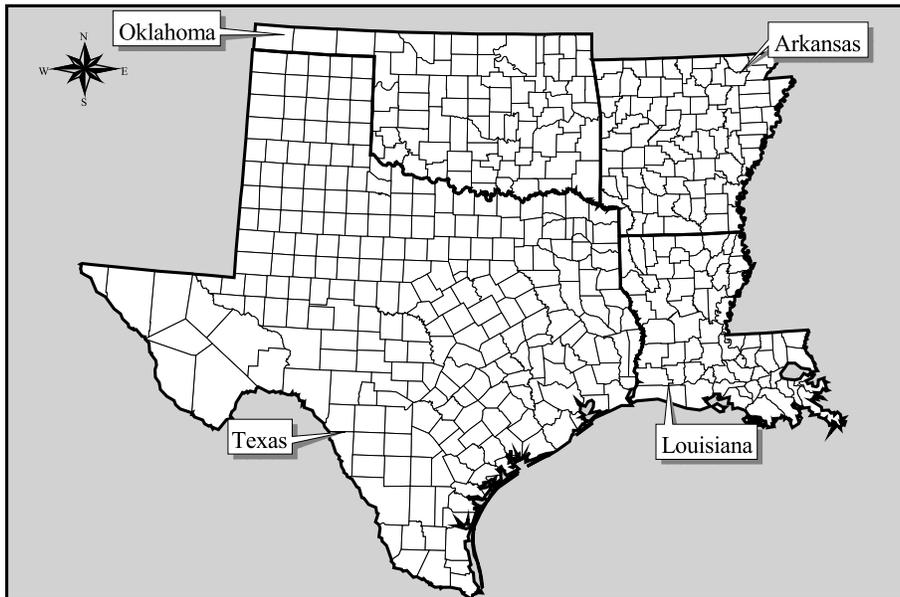
# Census Division 5



# Census Division 6

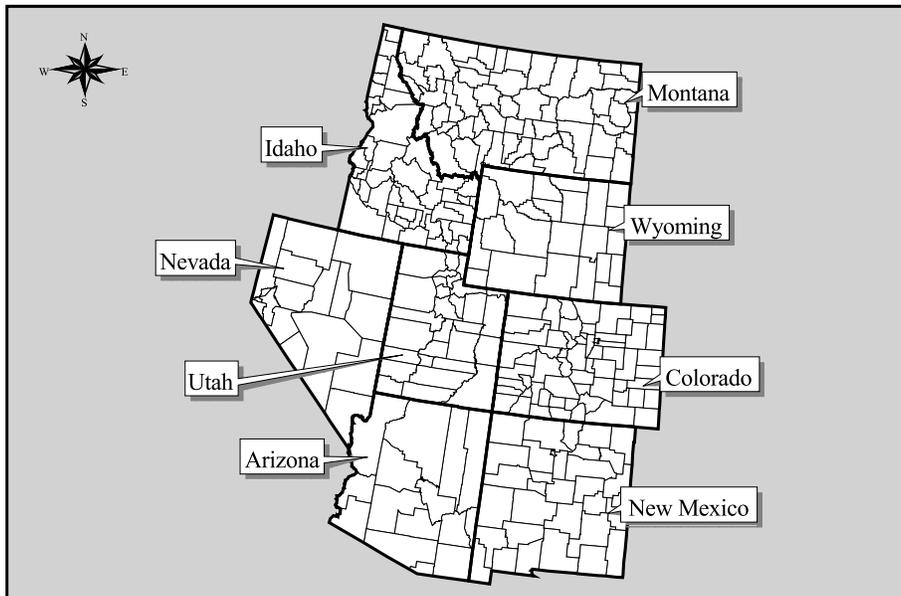


# Census Division 7



0 400 800 Miles

# Census Division 8



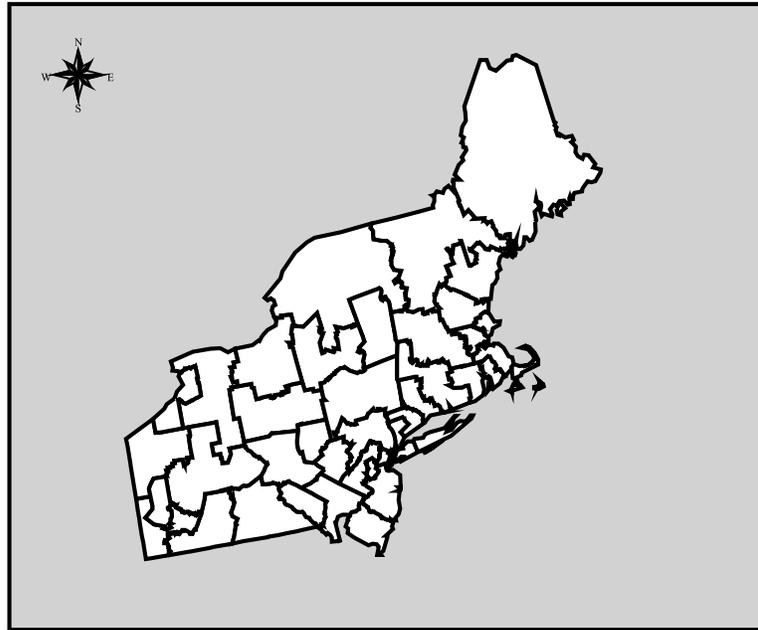
0 400 800 Miles

# Census Division 9



Appendix H. Census Region Mileage Maps

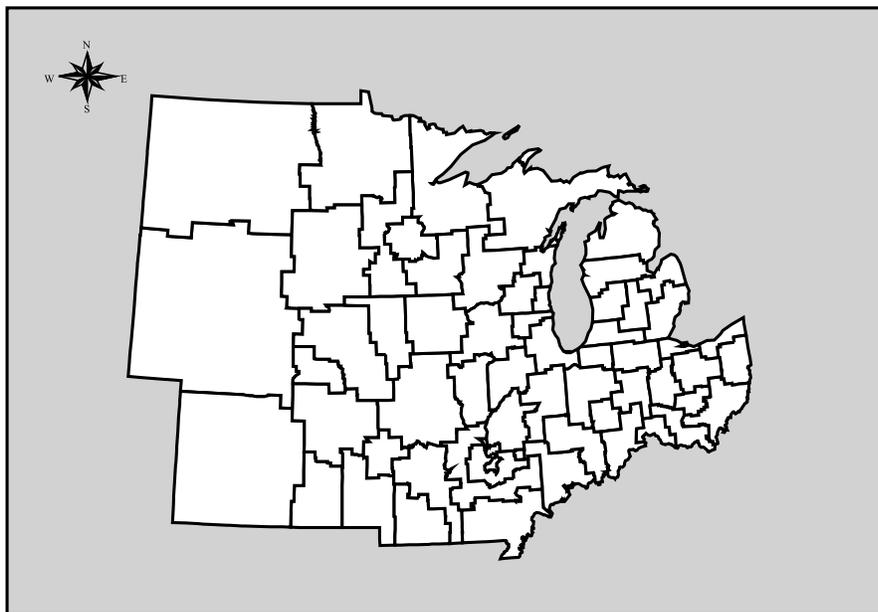
## Northeast Census Region



0 300 600 Miles

A horizontal scale bar with three segments. The first segment is labeled '0', the second '300', and the third '600 Miles'.

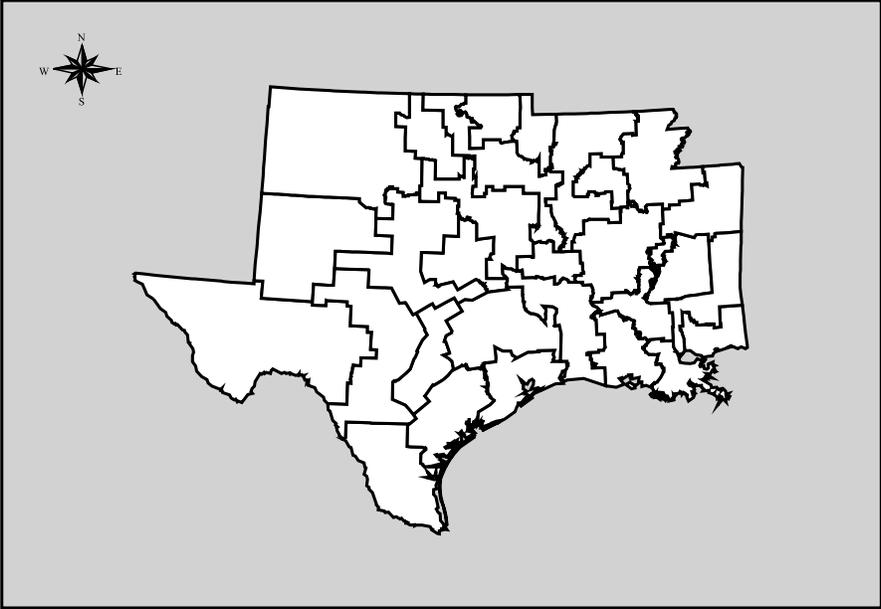
## Midwest Census Region



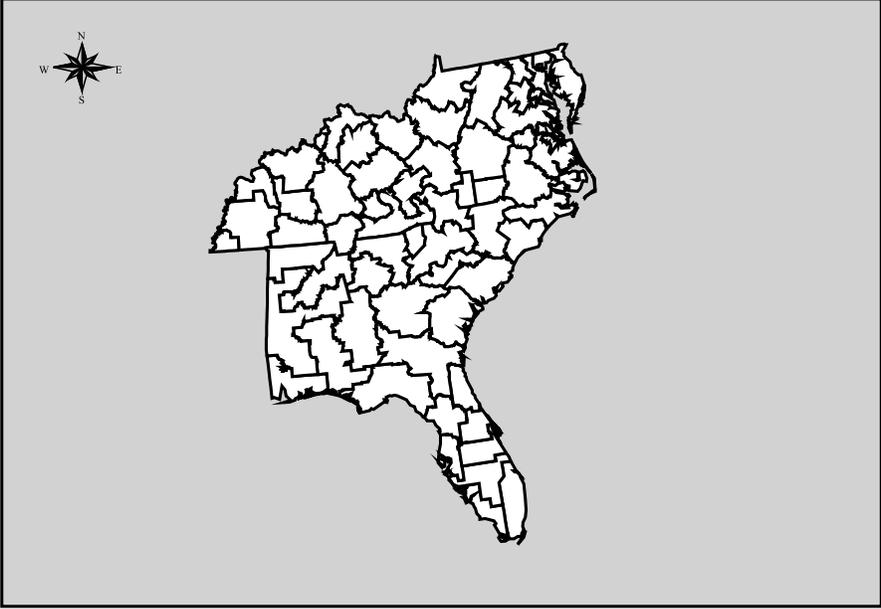
0 500 1000 Miles

A horizontal scale bar with three segments. The first segment is labeled '0', the second '500', and the third '1000 Miles'.

# South Census Region One



# South Census Region Two



# West Census Region

