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ECONOMIC RESTRUCTURING IN THE NONMETROPOLITAN NORTHEAST: ADAPTATION TO TRANSITIONS

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INTRODUCTION

Fifty years ago, rural areas were dominated by extractive industries - agriculture, forestry and mining. Rural generally meant farm, and farm policies were often appropriate rural policies. Today, however, we can no longer assume a homogeneous economic structure in rural America, and we most certainly cannot equate rural with farm. Farm policies today affect only a minority of the rural population, and have a negligible impact on the majority of rural people (Browne et al. 1992). Manufacturing and, more recently, service industries have surpassed extractive industries as the dominant employers in rural areas (Brown and Deavers 1988; ERS 1993). Today, more than sixty percent of nonmetro employment is in services, and ninety percent of nonmetro employment growth during the 1980s was in the service sector (ERS 1993). Not only have the economic bases of rural areas shifted, their social and demographic profiles have changed as well. Today rural areas are as diverse in social and economic structure as are urban areas.

Employment in agriculture has been declining in rural areas since the 1940s. Technological changes in the industry have drastically changed the structure of agriculture. Herbicides, pesticides, and new seed varieties increased per acre yields, and machinery technology decreased the labor requirements on farms. The number of farms and farmers decreased, while average farm size increased dramatically. Between 1950 and 1986, the number of farms fell by half (from 5.65 million to 2.21 million), and average farm size more than doubled from 213 acres to 455 acres (Riemund and Petrulis 1988). The result was a large displacement of rural workers, many of whom left rural areas in search of job opportunities in cities.

Mining, a key industry in West Virginia and Pennsylvania, also suffered severe economic downturns during this period. Early technological advancements reduced employment in the industry, and the development of alternative energy sources reduced the demand for coal. The oil crisis of the 1970s sparked a renewed interest in coal, and employment rebounded. This was short-lived, however, and mining employment decreased again during the 1980s and 1990s.

As rural economies experienced drastic changes in their primary economic base, the ability to adjust to the accompanying decline in employment became an issue of continuing concern. Rural areas, particularly those dependent on natural resources, have had significant difficulties adjusting to declining

extractive industry employment. There are often few, if any, alternatives to extractive industry employment in such rural areas (Krannich and Luloff 1991). As a result, resource-dependent rural areas often experience heavy outmigration as employment opportunities in these sectors decline. Often the most educated population leaves, reducing human capital in the area, and thus reducing the area's attractiveness for new industries.

After World War II, manufacturing began decentralizing from cities to rural areas. A high demand for goods, plus competition within the industry, forced firms to look for ways to expand production at lower costs. The answer was found in rural America, where land and labor costs were lower, and business climates were more favorable than in cities. Manufacturing firms began to construct their branch plants in rural areas, where mass production of the goods would occur. Firm headquarters remained in the cities, where they were in close proximity to their competitors, as well as to necessary information and business services.

This trend lasted, however, only until the late 1970s. Increased competition from foreign countries, particularly Asia, required that American manufacturing firms again look for ways to reduce production costs. Many firms relocated within the United States, often to the South and then to the West, and many moved out of the country, toward areas with cheaper labor and lower operating costs. These adjustments in manufacturing were particularly great in the 1980s, when the closing of production plants idled large portions of the rural work force. The nature of the rural economy had changed sufficiently enough that the principal cause of economic stress in much of nonmetropolitan America was attributed to the poor performance of rural manufacturing (Brown and Deavers 1988; Reid and Long 1988).

While the decentralization of manufacturing offered workers in many rural areas alternatives to lost extractive industry employment, this was not a panacea. The types of manufacturing industries locating in rural areas are characterized by routine, labor-intensive occupations, and pay lower wage than managerial and technical occupations, which often locate in metro areas. In addition, labor-intensive branch plants are especially sensitive to business cycles, and often are the first to close during recessions. Thus, rural areas with large percentages of their workforce in labor-intensive manufacturing industries are particularly susceptible to business cycles.

Another transformation of the rural economy began in the 1960s, as employment in the service sector began to increase rapidly. By 1989, service-producing industries accounted for 66.3 percent of nonmetro employment (Smith 1993). Some argue, however that the shift to a service-producing economy has benefited metro areas more than nonmetro areas (Miller and Bluestone 1988; McGranahan 1988). Wages within the service sector are highest among producer services, which require highly skilled workers and advanced technology. Many rural areas cannot support these producer services, and the workforces are not suited to the occupations. McGranahan (1988) found that all types of producer services tend to be urban. The result is that nonmetro areas have a disproportionate share of low-wage, low-skilled service jobs, such as retail trade, restaurants, and auto repair shops (McGranahan 1988). Williams (1991) found that the retail trade and private household sectors were characterized by high poverty rates. Dupuy and Schweitzer (1994) found that although wage opportunities in the goods- and service-producing sectors were similar for the population as a whole, wages in the goods-producing sector were higher among workers with only a high school education.

The Northeast provides a particularly good case study of these adjustments. The region began the transition from an agricultural base earlier, and has undergone the range of structural change more completely than other regions. Following World War II, extractive industries were replaced by manufacturing as the dominant employer of the rural Northeast. By the 1970s, no Northeast nonmetro counties were dependent on agriculture (Bender et al. 1985). Manufacturing employment declined dramatically between 1970 and 1990, while service sector industries grew and became the primary employers in the rural Northeast. These transitions affected rural areas in different ways; some rural communities adapted to these changes, while others experienced continuous economic stress.

The purpose of this study is to document the types of economic transitions that occurred in the Northeast between 1950 and 1990, and to examine related changes in population characteristics over the time period. Data were obtained from the 1950, 1960, 1970, 1980 and 1990 Censuses of Population. The focus is primarily at the county level, but also includes a brief review of labor market areas.

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METHODS

The states included in the analysis are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia. There are 299 counties in this region. The study focuses primarily on the 177 nonmetropolitan counties, using 1974 Beale codes to designate those counties. Beale codes assign a code (0 through 9) to counties based on the following definitions.

Metropolitan Counties

0 = Central counties of metro areas of one million population or more

1 = Fringe counties of metro areas of one million population or more

2 = Counties in metro areas of 250,000-1,000,000 population

3 = Counties in metro areas of less than 250,000 population

Nonmetropolitan Counties

4 = Urban population of 20,000 or more; adjacent to a metro area

5 = Urban population of 20,000 or more; nonadjacent to a metro area

6 = Urban population of 2,500-19,999; adjacent to a metro area

7 = Urban population of 2,500-19,999; nonadjacent to a metro area

8 = Completely rural; adjacent to a metro area

9 = Completely rural; nonadjacent to a metro area

In addition to these codes, nonmetro counties also were categorized as being adjacent to either a large metro area (Beale code of zero or one), a medium metro area (Beale code of two), a small metro area (Beale code of three), or nonadjacent. Two criteria are used to establish adjacency status: (1) location and (2) at least two percent of the nonmetro population must commute to the metro area for employment. The distribution of the Northeast counties by these Beale codes is presented in Table 1.

GENERAL EMPLOYMENT TRENDS IN NORTHEAST COUNTIES

Changes in total employment in Northeast nonmetro counties are shown in Table 2. From 1950 to 1990, employment increased in all but 28 nonmetro counties, and the mean employment increase was 75.4 percent. Sixty-seven nonmetro counties (38 percent) had employment increases greater than the mean of

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all nonmetro counties. The mean employment increase among counties above the mean was 162.4 percent. The remaining 110 nonmetro counties (62 percent) had employment change less than the mean. The mean employment change among these counties was 22.4 percent.

Trends in employment change from 1950 to 1970, and from 1970 to 1990 also are shown in Table 2. There are distinct differences in the patterns of population change between these two time periods which influence total employment. The first two decades of the time period were characterized by the movement of population out of rural areas toward cities, while the 1970s were characterized by population retention and the relatively rapid movement of population into rural areas. These trends are reflected in the mean employment change in Northeast nonmetro counties. From 1950 to 1970, the mean employment change was 11.4 percent, and 54 counties experienced declines in total employment. Eighty-five counties (48 percent) had employment changes above the mean, and their mean employment change was 34.6 percent. Among the 92 counties (52 percent) that had employment change below the mean, the mean employment change was a decrease of 10.2 percent.

From 1970 to 1990, the overall mean employment increase was 50.1 percent, and only six counties experienced employment decreases. Among the 71 nonmetro counties (40 percent) with employment change greater than the mean, the mean employment increase was 85.4 percent. Among the 106 counties (60 percent) with employment change below the mean, the mean employment change was an increase of 26.4 percent. Thus, the 1970-1990 period was characterized by generalized employment growth in nonmetro counties.

INDUSTRY EMPLOYMENT TRENDS IN NORTHEAST COUNTIES

These overall employment changes are examined by industry types. Employment in each county is divided into five industry sectors: 1) agriculture, forestry and fisheries; 2) mining; 3) manufacturing; 4) producer services, which include finance/insurance/real estate, business and repair services, and professional and related services; and 5) ubiquitous services, which include wholesale and retail trade, personal/entertainment/recreation services, health services, educational services, and transportation/communications/public utilities. The Census of Population employment data does not allow a further dissagregation of the extractive industry sectors (agriculture, forestry and fisheries and mining), or

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of the manufacturing sector beyond durable and nondurable manufacturing. The service sector has been aggregated into two groups.

The mean employment concentrations in each industry in Northeast metro and nonmetro counties are shown in Table 3. As expected, employment concentrations in agriculture, forestry and fisheries, and mining have declined significantly since the 1950s. Mean employment in these industries declined from 18.1 percent in 1950 to 3.9 percent in 1990 in the nonmetro counties of the Northeast. The largest agricultural employment declines were in the 1950s. Agricultural employment declined in every county in the Northeast during this decade, and the majority of counties lost between 25 and 50 percent of their agricultural employment. Several counties in the region did experience increases in the percent of employment in agriculture, forestry and fisheries over the next few decades. However, no county regained the employment share of 1950, and by 1990 no county had more than 12 percent of total county employment in agriculture, forestry and fisheries.

The mean county percentage employed in mining decreased in nonmetro counties from 7.4 percent in 1950 to 2.5 percent in 1990. However, these figures mask the extreme declines that occurred in counties with very high mining employment in 1950. Among counties that in 1950 had over 20 percent of total employment in mining, the mean mining employment concentration was 39 percent in 1950, but only 12 percent in 1990. In 1950, nine counties had more than 40 percent of their total employment in mining, but by 1990 only one county had over 30 percent employed in mining.

The decentralization of manufacturing industry from urban to rural areas during the 1950s and 1960s is reflected in the metro and nonmetro manufacturing employment trends. Metro counties showed little increase in manufacturing employment during the 1950s. Manufacturing employment peaked in metro counties in 1960 (35.0 percent), and then began to decline. In nonmetro counties, manufacturing employment increased during the 1950s and 1960s, and peaked in 1970 (27.3 percent). Interestingly, employment concentrations in metro counties remained higher than in nonmetro counties in all years, although they were almost equal in 1990.

In the late 1970s, as a result of increased competition, manufacturing industry began to move out of the Northeast toward regions with cheaper labor, especially the South and overseas. This process

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accelerated in the 1980s, and is reflected in the large decreases in both metro and nonmetro manufacturing employment concentrations during this decade. Between 1970 and 1990, manufacturing employment decreased an average of 14 percent in metro counties, but increased an average of about six percent in nonmetro counties. Seventy-eight of the 177 nonmetro counties (44 percent) had manufacturing employment increases between 1970 and 1990, and 99 nonmetro counties (56 percent) had manufacturing employment decreases during this time. During the 1980s, 45 nonmetro counties (25 percent) had increases in manufacturing employment. Thus, although the general trend during the 1970s and 1980s was a movement of manufacturing out of the Northeast, many rural counties maintained their manufacturing base.

Employment concentrations in producer and ubiquitous services have been increasing over the entire time period. Producer service employment in nonmetro counties increased from 5.2 percent in 1950 to 12.8 percent in 1990, and in metro counties from 7.2 percent in 1950 to 18.2 percent in 1990. The percent of total employment in producer services in nonmetro counties has been below that of metro counties in all years, with the gap increasing over time. This reflects the tendency of producer services to agglomerate in urban areas where information costs are lower and telecommunications systems are more advanced.

Employment concentrations in ubiquitous services increased in nonmetro counties from 34.1 percent in 1950 to 49.3 percent in 1990, and in metro counties from 37.3 percent in 1950 to 49.5 percent in 1990. The largest increases in ubiquitous services employment occurred in the 1960s. These types of services tend not to be tied to particular locations, as there are no large gaps between metro and nonmetro areas in ubiquitous services employment concentrations.

THE CHANGING ECONOMIC STRUCTURE OF NORTHEAST COUNTIES

To further examine these changes, the industry specialization of each county, and changes in the specializations were determined. Counties are classified as specialized in one of the above five industry sectors, or as diversified. Specialization is based on the percent of total employment in each of the five sectors. Employment specialization levels were selected with three criteria in mind. First, the employment level had to be sufficiently high to ensure that the county was indeed specialized in that industry. Second,

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there had to be a sufficient number of counties specialized in the industry to permit statistical analysis.

Third, overlaps between industries were to be minimized. The employment specialization cutoffs are

defined as follows:

Agriculture, forestry, fisheries	20 percent of total employment
Mining	20 percent of total employment
Manufacturing	25 percent of total employment
Ubiquitous Services	50 percent of total employment
Producer Services	20 percent of total employment

Counties that did not meet any of these requirements were classified as diversified. Counties which met

the requirement for more than one industry were classified as specialized in the industry with the higher

employment.

The total number of metro and nonmetro counties specializing in each industry sector in each year

is shown in Table 4. The number of extractive industry counties declined dramatically between 1950 and

1990. In 1950, 79 counties were specialized in either agriculture, forestry, and fisheries, or mining. By

1970, only eight counties were specialized in mining, and one in agriculture, forestry and fisheries. In

1990, only three counties were specialized in mining, and none in agriculture, forestry and fisheries.

The total number of manufacturing-specialized counties increased from 167 in 1950 to 191 in

1970. The number of nonmetro manufacturing counties increased from 74 to 100 during that time. By

1990, however, the total number of manufacturing specialized counties had dropped to 60, 39 of which

were nonmetropolitan. Interestingly, 46 of these counties were specialized in manufacturing in 1950,

indicating that counties with a longer history of manufacturing employment were more likely to maintain

their economic base, despite movement of manufacturing out of the region.

In 1950, only nine counties were specialized in ubiquitous services, and none in producer services.

By 1970, the number of service industry counties had increased to 42, and by 1990 to 156. Only seven of

the 31 producer services counties in 1990 were nonmetro, indicating that producer services tend to

agglomerate in metro areas.

Figures 1, 2 and 3 show the employment structure of Northeast counties in 1950, 1970 and 1990,

respectively. Even in 1950 (Figure 1), the Northeast was dominated by manufacturing. Fifty-six percent

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of Northeast counties (167 counties) were specialized in manufacturing in 1950. Twenty-six percent of counties (79 counties) were specialized in either agriculture, forestry and fisheries (57 counties) or in mining (22 counties). Mining counties were concentrated in West Virginia and western Pennsylvania. Counties specializing in agriculture, forestry and fisheries were not as concentrated, with counties in Maryland, Pennsylvania, New York, Vermont and Maine specializing in agriculture, forestry and fisheries. It is apparent in Figure 1 that services had not yet begun to dominate local economies, even in metropolitan centers. Only nine counties (three percent) were specialized in services in 1950. The remaining 44 counties (15 percent) were diversified in 1950.

Figure 2 shows the economic structure of Northeastern counties in 1970. The declines in extractive industry employment during the 1950s and 1960s are apparent in the decrease in the number of extractive-industry counties by 1970. Only nine counties (three percent) were specialized in extractive industries in 1970. Eight of these counties were mining-specialized and located in West Virginia. The ninth county was in Vermont, and specialized in agriculture, forestry and fisheries. The growth in manufacturing that occurred during the 1950s and 1960s is apparent, as the large majority of counties (191 counties, 64 percent) were specialized in manufacturing by 1970. Services had also begun to increase, with 42 counties (14 percent) so specialized in 1970. The remaining 57 counties (19 percent) were diversified.

Many changes took place in the Northeast between 1970 and 1990. Figure 3 shows the economic structure of Northeast counties in 1990. It is apparent that by 1990 the Northeast was best characterized by service counties (156 counties, 52 percent). In 1990, only 60 counties (20 percent) were specialized in manufacturing. Most of these were located in Pennsylvania, New York, Maine and New Hampshire. Only three counties (one percent) were specialized in mining, and all were located in West Virginia. No counties were specialized in agriculture, forestry and fisheries, and the remaining 80 counties (27 percent) were diversified.

Economic Transitions in Northeast Counties

Tables 5 through 7 show the transitions of counties specializing in extractive, manufacturing and diversified industries in 1950. Each table shows the number of specialized counties in each sector in each year, of the total specialized in a particular industry in 1950. For example, Table 5 shows the number of

counties specialized in each industry in 1960, 1970, 1980 and 1990 of the 79 counties that were specialized in extractive industries (agriculture, forestry and fisheries or mining) in 1950. This table includes only those 79 counties.

During the 1950s and 1960s nearly all of the counties initially specialized in extractive industries - agriculture, forestry, and fisheries or mining - shifted to other industries. Of the 79 extractive industry specialized counties in 1950, only nine were still specialized in extractive industries in 1970, and only three in 1990. Twenty-nine extractive industry counties became diversified by 1970. Many of these extractive industry counties experienced little growth in other industries as employment in extractive industries declined, so the classification of many of these counties as diversified is likely the result of a lack of employment opportunities rather than an overall diversification of the economy. Thirty-two extractive industry counties shifted to manufacturing between 1950 and 1970. By 1990, 13 of the extractive industry counties were specialized in manufacturing, 28 were specialized in services, and 35 were diversified.

During the 1950s, only three of the 167 manufacturing specialized counties shifted out of manufacturing, and only 12 more counties shifted out of manufacturing during the 1960s (Table 6). However, many counties did shift out of manufacturing during the 1970s and 1980s, and by 1990, only 46 of the 167 manufacturing specialized counties were still specialized in manufacturing (18 metro counties and 28 nonmetro counties). In 1990, 86 of the 167 manufacturing specialized counties were specialized in services, and 35 were diversified.

Table 7 shows that, in 1950, 44 of the 299 counties were diversified (no dominant industry). The most common shifts of 1950 diversified counties were to services. In 1990, 34 of the 44 original diversified counties were specialized in either producer or ubiquitous services. Although a few diversified counties shifted into manufacturing, only one was still specialized in manufacturing by 1990. Only three nonmetro counties remained diversified throughout the entire 40 years.

Another view of transitions is to examine the industries in which counties specialized before making a shift; that is, to examine the initial specialization of a group of counties specialized in a given industry in 1990. For example, in 1990, 156 counties were specialized in either producer or ubiquitous services. Thus, examining the past economic structures of service counties is particularly relevant. The

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transition patterns of counties specialized in services in 1990 are presented in Table 8. The table shows the number of specialized counties in each industry sector in each year, of the 156 counties that were specialized in either producer or ubiquitous services in 1990.

Shifts to services were most common among Northeast counties in the 1970s and 1980s. Of the 44 counties classified as diversified in 1950, 34 (77 percent) shifted to services by 1990. Eighty-six of the 167 1950 manufacturing counties (51 percent), and 28 of the 79 1950 extractive industry counties (35 percent) shifted to services by 1990. Thus, the counties most likely to become service-specialized were those with a more diversified structure. Counties least likely to become specialized in services were initially extractive-industry dominated.

POPULATION CHARACTERISTICS IN NORTHEAST COUNTIES

Along with the changes in the economic base of Northeast counties, the social and demographic characteristics have changed as well. Differences in population characteristics were compared across counties that were specialized in different industries in 1950, 1960, 1970, 1980 and 1990. Changes in population characteristics were compared across counties based on their adjacency to metro areas and the size of their urban populations, and based on the economic transitions in the county.

The population characteristics compared are total population, total employment, median age of the population, median education of the population age 25 and over, median family income, and the percent of families in poverty. The poverty line used for this analysis is defined as one-half the median family income. Comparisons were made using the Duncan's Multiple Range Test. This test is a multiple comparisons procedure for obtaining all pairwise comparisons among groups of sample means (see Ott 1988).

Changes in Population Characteristics - Type of County

Comparisons were made for the percent change from 1950 to 1990 for each population characteristic. First, all nonmetro counties were compared to all metro counties. Second, metro counties were compared to nonmetro counties based on the size of metro area to which they were adjacent. Third, metro counties are compared to nonmetro counties based on the size of the urban population in the

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nonmetro county. Results of the Duncan's Multiple Range Tests for significant differences are shown in Table 9.

All but 70 counties (20 of the 122 metro counties, and 50 of the 177 nonmetro counties) had population increases between 1950 and 1990. Percent changes in population were significantly higher in metro counties than in nonmetro counties as a whole, but not significantly higher than in nonmetro counties with large urban populations (urban population 20,000 or more). Nonmetro counties adjacent to large metro areas had significantly higher population growth than metro counties. Nonmetro counties adjacent to a medium or small metro area, or not adjacent to a metro area all had significantly lower population growth than nonmetro counties adjacent to large metro areas, but not were not significantly different from metro areas. Population percent change in nonmetro counties with small urban populations (urban population 2,500-19,999) or completely rural were not significantly different from each other, but were significantly lower than in metro counties and nonmetro counties with large urban population.

Total employment increased in all but 40 counties, 28 of them nonmetro, between 1950 and 1990. Percent employment gains in metro counties were significantly higher than in nonmetro counties as a whole, but not significantly different from those adjacent to large metro areas or with large urban populations. Interestingly, percent employment changes in completely rural counties also were not significantly different than in counties with large urban populations, but counties with small urban populations did have significantly lower percentage employment growth than those with large urban populations. Nonmetro counties adjacent to a medium or small metro area, or not adjacent, all had significantly lower percentage employment gains than metro counties and nonmetro counties adjacent to large metro areas.

Percent changes in the median age of the population were significantly higher among nonmetro counties than metro counties (23.8 percent increase in nonmetro counties versus a 14.5 percent increase in metro counties). Percent changes in median age in nonmetro counties with large urban populations were not significantly different from either metro counties, or nonmetro counties adjacent to large metro areas. Nonmetro nonadjacent counties and completely rural counties experienced the highest percent increase in median age. This reflects the outmigration of working age population as employment opportunities in

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extractive and manufacturing industries declined. Many rural areas also have experienced increases in median age because of the inmigration of retirement population.

Percent change in the median years of school completed by the population age 25 and over did not differ significantly between metro and nonmetro counties as a whole, nor among nonmetro counties based on the size of urban population. The percent change in median education in nonmetro counties adjacent to large metro areas was significantly higher than in all other types of counties.

Percent change in median family income did not differ significantly between all metro and nonmetro counties. Nonmetro counties adjacent to large metro areas, however, had significantly higher percentage changes in median family income than all other types of counties. Completely rural counties had significantly higher percentage increases in median family income than counties with large or small urban populations, and metro counties.

The percent change in the percent of families in poverty was significantly higher in metro counties than in nonmetro counties. The percent of families in poverty actually decreased in nonmetro counties adjacent to both large and small metro areas. The percent change in the percent of families in poverty was not significantly different among metro counties, nonmetro counties adjacent to medium metro areas, or nonadjacent nonmetro counties. Also, the percent change in the percent of families in poverty did not differ significantly between metro counties and nonmetro counties with large or small urban populations. The percent of families in poverty decreased considerably in completely rural counties (13.3 percent).

Examining the percent change in median family income in a group of counties may be misleading. A large percent change in median family income in a group of counties does not imply that income in those counties is higher than in other groups of counties. Often, counties with the smallest incomes in 1950 experienced the largest percent increase in income. Therefore, when examining changes in median family income, it is useful also to look at the differences in median family income in the base year (1950) and the final year (1990). The differences in real median family income in 1950 and 1990 among different types of counties are presented in Table 10.

Metro counties had statistically significant higher median family incomes than nonmetro counties as a whole in both 1950 and 1990. In addition, the real dollar gap (in constant 1983 dollars) between metro

and nonmetro areas increased from $3,471 to $8,514, although the percentage gap remained almost the same. Real incomes in nonmetro counties adjacent to large metro areas, however, were not significantly different from incomes in metro counties in 1990, while they were in 1950.

The mean median family income values of 1950 show that the smaller the metro area to which a nonmetro county is adjacent, and the smaller the urban population within the nonmetro county, the lower the median family income, and the greater the percentage gap between metro counties. Although completely rural counties had the largest increases in median family income over the time period, they still had the lowest median family incomes in 1990. Nevertheless, the percentage gap between these counties and metro counties narrowed considerably from 1950 to 1990. Thus, the only improvements among nonmetro counties relative to metro counties were in adjacent counties with a large urban population and completely rural counties.

Differences in County Population Characteristics by Industry Specialization

Selected population characteristics were compared among nonmetro counties specializing in each industry in each year using the Duncan's Multiple Range Test (Table 11). The results show interesting changing relationships among the manufacturing, diversified, and service-specialized counties over time.

Counties specialized in extractive industries have consistently had the lowest real median family incomes, particularly in the early years when agriculture was more dominant. More interesting is the change in relationship of manufacturing-specialized counties to the service and diversified counties. In 1950 and 1960, manufacturing counties had the statistically significantly highest level of median family income, a difference which increased between 1950 and 1960. This early influence of manufacturing is seen in the change in the real dollar gap between extractive and manufacturing counties, which increased from $2,616 to $4,254 from 1950 to 1960. By 1970, however, service-specialized counties almost equaled manufacturing, and by 1980 both types of counties were at the same level. In 1990, services and diversified counties had the highest median family income levels, and manufacturing counties for the first time had statistically significant lower median family incomes. Median family incomes in nonmetro manufacturing counties did not increase as rapidly as in nonmetro service counties. The percent increase in

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median family income from 1970 to 1990 was 4.6 percent in manufacturing counties, and 15.5 percent in service counties.

The peculiar nature of diversified counties was pointed out earlier. The diversification may result from growth of new industry sectors, or from a decline in the initial specialization with no replacement. It appears that the lower income level of diversified counties in earlier years may be attributed to their original specialization in extractive industries. For example, of the 42 nonmetro diversified counties in 1970, 28 were specialized in either agriculture, forestry and fisheries, or mining in 1950. Incomes in these extractive industry counties were the lowest among all nonmetro counties.

The relationships among types of counties in the percent of families in poverty show changes similar to median family income. The percent of families in poverty was highest in extractive industry counties, and lowest in manufacturing counties through 1970. The low incomes in extractive industry counties, particularly those specialized in agriculture, forestry and fisheries, and the unionized wages paid in the manufacturing sector could contribute to this difference. The percent of families in poverty also was significantly lower in manufacturing counties than in diversified or service specialized counties. By 1980 and 1990, however, the percent of families in poverty did not differ significantly between manufacturing and service counties, and in 1990 manufacturing, service, and diversified counties were at the same level. The notion that the service sector jobs which are replacing manufacturing employment in rural areas are low paying and contribute to poverty is not supported here.

The median age of the population has been significantly lower in extractive industry counties than in the other types of counties, particularly in the earlier years. The median age did not differ significantly among manufacturing, service, and diversified counties in any of the years.

The median education of the population was significantly lower in extractive industry counties than in the other types of counties throughout the 1950-1990 period. Median education of the population did not differ significantly between manufacturing-specialized and diversified counties in 1950 or 1960. Median education in service-specialized nonmetro counties was highest in 1970, 1980 and 1990, although not significantly higher than manufacturing counties in 1970 or from diversified counties in 1990. Median

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education was lowest in diversified counties from 1970 to 1990, but not significantly different from manufacturing in 1970 or 1990.

Change in County Population Characteristics by Economic Transitions

Percent changes in population characteristics were compared over the periods 1950 to 1970 and 1970 to 1990 based on the type of economic transitions that occurred in nonmetro counties during those years. The results of the Duncan's Multiple Range Tests are shown in Tables 12 and 13.

Percent change in population during 1950 to 1970 was highest among nonmetro counties that remained diversified over the twenty years (37 percent increase), counties that shifted from diversified economies to services (22.9 percent increase), and counties experiencing other transitions (27.8 percent increase). Population decreased 29 percent in nonmetro counties that remained specialized in either agriculture, forestry and fisheries or mining over the twenty years. Total population also declined in nonmetro counties shifting from extractive into manufacturing, or from extractive into services. This illustrates the extensive migration of population out of resource-dependent rural areas during these twenty years.

Differences in employment change from 1950 to 1970 are similar to those for population change. Nonmetro counties remaining diversified, shifting from diversified economies to services, or experiencing other transitions had the highest percent employment gains during 1950 to 1970 (38 percent, 28.1 percent, and 27.8 percent increase, respectively), while nonmetro counties remaining specialized in extractive industries experienced the largest employment declines during this time (34 percent decrease). This reflects the substantial declines in extractive industry employment during the 1950s and 1960s.

Increases in the median age of the population were highest among counties remaining specialized in extractive industries from 1950 to 1970, perhaps a result of the outmigration of working-age population as employment declined in extractive industries. Median age declined in counties remaining specialized in manufacturing or diversified economies, or experiencing other transitions.

Changes in the median education of the population did not differ significantly based on the economic transitions that occurred between 1950 and 1970. Increases in the median education ranged from

10.7 percent (counties remaining extractive) to 15.0 percent (counties shifting from extractive to diversified).

The mean percent change in median family income was positive in all groups of nonmetro counties. Increases in median family income were highest among nonmetro counties experiencing extractive-manufacturing, extractive-diversified, other transitions, and those remaining diversified. Increases in median family income were lowest in counties remaining specialized in extractive industries from 1950 to 1970.

The percent of families in poverty increased dramatically (62 percent) in nonmetro counties remaining specialized in extractive industries from 1950 to 1970. The only other group of counties to have an increase in the percent of families in poverty were those shifting from extractive industries to services (7.8 percent increase). The percent of families in poverty declined in all other types of counties. The largest decrease in the percent of families in poverty was in counties remaining diversified (18.2 percent decrease), although not significantly different from other counties experiencing decreases in poverty.

A shift from extractive industries to any other industry apparently ameliorated the impacts of the declining extractive industry sector within the county. Population and employment increased from 1950 to 1970 in extractive industry counties that became diversified, and the decreases in population and employment were much lower in extractive industry counties shifting to manufacturing or services, compared to those remaining in extractive industries. Among 1950 extractive industry counties, the largest income increases were in the counties that shifted to manufacturing or diversified economies. Likewise, the number of families in poverty decreased in extractive industry counties shifting to manufacturing or diversified economies, and the increase in poverty in extractive industry counties shifting to services was significantly lower than in counties remaining extractive.

Table 13 shows the changes in population characteristics in nonmetro counties from 1970 to 1990, based on the economic transitions that took place during that time. The mean percent change in population from 1970 and 1990 was positive in each group of counties, reflecting the general population growth in rural areas during the 1970s. The largest population increase was in counties remaining diversified from 1970 to 1990 (42.4 percent), and was significantly higher than in any other group of counties. Population

change was lowest among counties experiencing 'other transitions', which were primarily transitions out of extractive industries (7.5 percent) and those remaining in manufacturing (11.7 percent). Among 1970 manufacturing counties, population change did not differ significantly based on the type of transition.

Results for percent change in total employment are similar to those for population change. All groups of counties had a mean increase in total employment. Counties remaining diversified from 1970 to 1990 had the highest employment growth (89.9 percent). Again, counties experiencing other transitions and those remaining in manufacturing had the lowest employment increases (27.8 percent and 34.0 percent, respectively). Employment change did not differ significantly among 1970 manufacturing counties based on the economic changes that took place over the next twenty years.

Changes in the median age of the population from 1970 to 1990 did not differ significantly among counties experiencing different economic transitions. Changes in the median age of the population ranged from 19.9 percent (manufacturing-services and counties remaining diversified) to 24.8 percent (counties remaining in services). Changes in the median education were highest among counties experiencing other transitions (22.5 percent); again, these consist primarily of counties shifting out of extractive industries. Changes in the median education were lowest among counties remaining in manufacturing (14.7 percent), shifting from manufacturing to services (15.4 percent), and remaining in services (16.3 percent).

Percent increases in real median family income were several times lower from 1970-1990 than 1950-1970. This likely reflects the large decline in manufacturing employment in the 1980s. Increases in median family income were highest in counties remaining diversified (22.7 percent), and counties shifting from diversified to services (16.4 percent). The lowest increases in median family income were in counties experiencing other transitions (2.2 percent). The percent of families in poverty decreased only in counties with the largest income increases, those remaining diversified (10.6 percent decrease) and those shifting from diversified to services (2.0 percent decrease). The percent of families in poverty increased in all other groups of counties.

The percent change in median family income did not differ significantly among counties remaining in manufacturing, shifting from manufacturing to services or to diversified economies, or remaining in services. Thus the notion that the types of services that are replacing traditional

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manufacturing in rural areas are low-wage and contribute to lower incomes is not supported in the changes in median family income. The increase in the percent of families in poverty also was not significantly different among these counties. Shifting to services is not associated with a larger increase in poverty than remaining in manufacturing, as is often suggested.

NORTHEAST LABOR MARKET AREAS

Because data in the Census of Population is by residence, commuting patterns by workers into and out of counties may mask the true economic structure of counties. In order to control for this problem, Northeast counties were aggregated into labor market areas as defined by the United States Department of Agriculture in 1987. Northeast counties were aggregated into 42 Labor Market Areas. Forty-four Northeast counties were excluded from Labor Market Areas because those labor markets cross into states not included in this study.

GENERAL EMPLOYMENT TRENDS IN NORTHEAST LABOR MARKETS

General employment trends in Northeast labor markets are shown in Table 14. Between 1950 and 1990, 39 of the 42 labor market areas experienced growth in total employment, and the mean employment change was 61.9 percent. Eighteen labor markets (43 percent) had employment increases greater than the mean, and the mean employment increase among those labor markets was 104.2 percent. Twenty-four labor markets (57 percent) had employment change below the mean, and the mean employment change among those labor markets was 30.1 percent.

Between 1950 and 1970, the mean percent change in employment was 19.4 percent, with four labor markets decreasing in employment. Twenty labor markets (48 percent) had employment change greater than the mean (34.2 percent mean increase), and 22 labor markets (52 percent) had employment change less than the mean (6.0 percent mean increase).

Between 1970 and 1990 all Northeast labor markets had increases in total employment, with a mean employment change of 33.6 percent. Fifteen labor markets (36 percent) had employment increases greater than the mean, averaging 56.2 percent, and 27 labor markets (64 percent) had employment increases less than the mean, averaging 21.0 percent.

INDUSTRY EMPLOYMENT TRENDS IN NORTHEAST LABOR MARKETS

Industry employment trends in Northeast labor markets are shown in Table 15. Similar to the county level trends, employment concentrations in extractive industries - agriculture, forestry and fisheries and mining - have decreased over time. The mean employment concentration in agriculture, forestry and fisheries fell from 8.4 percent in 1950, to 2.4 percent in 1990, and the mean employment concentration in

mining fell from 3.6 percent to 0.8 percent over the same time. This trend is even more dramatic when the maximum employment concentration in each industry is examined. In 1950, the highest employment concentration in agriculture, forestry and fisheries among labor markets was 27.3 percent, and only 6.6 percent in 1990. In 1950, the highest mining employment concentration among Northeast labor markets was 30.7 percent, and in 1990 it was 7.4 percent.

The mean manufacturing employment concentration was 32 percent in 1950, and rose to 32.4 percent in 1960. After 1960, the manufacturing concentration began to decline, and by 1990 it was only 19 percent. This trend is very similar to the county level employment trends, where employment in manufacturing declined as manufacturing industry moved out of the region.

Mean service employment concentrations steadily increased over the time period in Northeast labor markets. The mean employment concentration in producer services increased from 6.7 percent in 1950 to 15.7 percent in 1990, and the mean employment concentration in ubiquitous services increased from 38.4 percent to 50.8 percent over the time period. Like Northeast counties, Northeast labor markets are today characterized as heavily concentrated in service industries.

ECONOMIC TRANSITIONS IN NORTHEAST LABOR MARKETS

Using the same employment concentration levels as the county-level analysis, the economic structure of the 42 Northeast labor market areas in each year was determined. The number of labor markets specialized in each industry in each year is shown in Table 16. In 1950, only four of the 42 labor markets (10 percent) were specialized in extractive industries. Thirty-one labor markets (74 percent) were specialized in manufacturing, one (two percent) was specialized in services, and six (14 percent) were diversified. After 1950, there were no extractive-industry specialized labor markets. The number of manufacturing-specialized labor markets peaked in 1960 at 33 (79 percent), and then declined. In 1990, only six labor markets (14 percent) were specialized in manufacturing. The number of services-specialized labor markets increased from three in 1970 to 29 in 1990. The results of the labor market analysis show even more dramatically the shift to service sector dominance. This is particularly true of the key producer services industries.

The changing economic structure of Northeast labor markets in 1950, 1970, and 1990 is shown in Figures 4, 5 and 6, respectively. Even in 1950, only four labor markets were specialized in extractive industries, two in mining (West Virginia and Pennsylvania) and two in agriculture, forestry and fisheries (New York and Maine).

SUMMARY

The economic transitions that rural areas in the Northeast underwent between 1950 and 1990 have left a completely changed structure. From economies initially dominated by agriculture and other natural resource-based industries, and then by manufacturing, employment in nonmetropolitan counties is now primarily in service-sector industries or diversified. These transitions have given rise to concern about the success in adapting to the changes; about the effects on the overall well-being in rural areas. The commonly-held view is that these changes have not been positive; that the shift to a service-dominated economy has left rural areas less well-off than before, certainly relative to metropolitan areas. The purpose of this study was to document the economic transitions that took place in Northeast nonmetropolitan counties between 1950 and 1990, and to examine the relationship of these changes to their effects on such socioeconomic characteristics as population, employment, income and poverty.

In 1950, approximately 42 percent of the nonmetro counties were concentrated in agricultural and other extractive employment, and another 42 percent in manufacturing. The manufacturing concentrations increased to 56 percent in 1970, with extractive decreasing to five percent of the counties. By 1990, however, employment in 45 percent of the counties was concentrated in service-sector industries, and another 32 percent had diversified employment structures. Manufacturing-specialized counties made up only 22 percent of the nonmetro counties, and only 3 of the 177 counties were in extractive industries, all in mining. The counties most likely to shift to a service-dominated employment structure were those that previously had a diversified structure. Counties least likely to become specialized in services were those initially specialized in agriculture and other extractive industries.

The study found that for all nonmetro counties, on average, population, employment and income increased from 1950 to 1990, and poverty decreased. These changes, however, were related to the types industry transitions a county experienced. Counties that maintained extractive or manufacturing

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specializations fared considerably worse, on average, than counties that experienced shifts to service or diversified structures.

Inflation-adjusted median family incomes were statistically significantly lowest throughout the 1950-1990 period in counties specialized in extractive industries, particularly in the earlier years when agriculture was more dominant. Manufacturing-specialized counties had the highest income levels to 1970, but were equaled by service-specialized counties in 1980, and exceeded by service and diversified counties in 1990. Also, poverty levels were significantly higher in agriculture and extractive-specialized counties throughout the period.

Counties that were initially specialized in extractive industries, and/or remained so from 1950 to 1970, had average declines in population and employment, the lowest income increases, and increases in poverty. In the 1970 to 1990 period, counties that remained manufacturing-specialized had the lowest increases in population, employment and income, and the highest increases in poverty.

On the other hand, counties whose employment structures became service-specialized or diversified experienced higher increases in population, employment and income, and either greater declines or smaller increases in poverty. Thus, the perception that the types of services that are replacing traditional extractive and manufacturing jobs in rural areas contribute to lower income and welfare is not supported by the results of this study. On the contrary, shifts to more service and diversified economic structures appear to have had positive effects compared to counties that remained specialized in extractive or manufacturing.

TABLES AND FIGURES

Table 1: Distribution of Northeast Counties by 1974 Beale Codes

Beale Code	Number of Counties	Percent of Counties
Central counties of large metro area	16	5.4
Fringe counties of large metro area	30	10.0
Counties in medium metro area	58	19.4
Counties in small metro area	18	6.0
Nonmetro counties with large urban population, adjacent to metro area	39	13.0
Adjacent to large metro area	15	5.0
Adjacent to medium metro area	19	6.3
Adjacent to small metro area	5	1.7
Nonmetro counties with large urban population, nonadjacent	16	5.4
Nonmetro counties with small urban population, adjacent to metro area	38	12.7
Adjacent to large metro area	7	2.3
Adjacent to medium metro area	21	7.0
Adjacent to small metro area	10	3.3
Nonmetro counties with small urban population, nonadjacent	42	14.0
Nonmetro counties, completely rural, adjacent to a metro area	16	5.4
Adjacent to large metro area	2	0.7
Adjacent to medium metro area	9	3.0
Adjacent to small metro area	5	1.7
Nonmetro counties, completely rural and nonadjacent	26	8.7
Total	**299**	**100%**

Source: Codes are based on those defined by Hines, Brown and Zimmer (1975) as modified by Beale. The size of metro areas to which nonmetro counties are adjacent was determined by examining a map of the region.

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Table 2:   Employment Change in Northeast Nonmetro Counties

| Time Period | Mean Percent Employment Change Among: | | |
	All Nonmetro Counties	Counties Above Mean	Counties Below Mean
1950 - 1990	75.4 (n=177)	162.4 (n=67)	22.4 (n=110)
1950 - 1970	11.4 (n=177)	34.6 (n=85)	-10.2 (n=92)
1970 - 1990	50.1 (n=177)	85.4 (n=71)	26.4 (n=106)

Source: Census of Population: 1950, 1970 and 1990

Table 3:   Mean Percent Employment Concentrations in Northeast Counties by Industry Sector

	1950	1960	1970	1980	1990
Agriculture, Forestry and Fisheries	13.2[1]	7.5	4.1	3.4	3.0
	18.1[2]	10.2	5.5	4.4	3.9
	6.3[3]	3.6	2.4	1.8	1.6
Mining	5.1	3.2	2.4	1.7	1.6
	7.4	4.7	3.6	2.6	2.5
	1.2	0.7	0.6	0.4	0.4
Manufacturing	28.0	29.8	29.1	25.2	18.8
	23.4	26.3	27.3	24.3	18.7
	34.7	35.0	31.8	26.8	18.8
Producer Services	6.1	8.2	9.2	10.9	15.0
	5.2	7.2	7.7	9.1	12.8
	7.2	9.9	11.3	13.5	18.2
Ubiquitous Services	35.4	37.2	43.0	46.3	49.4
	34.1	37.8	42.1	46.1	49.3
	37.3	36.2	42.7	46.5	49.5

[1]   Mean employment concentration among all counties in region (n=299)
[2]   Mean employment concentration among nonmetro counties in region (n=177)
[3]   Mean employment concentration among metro counties in region (n=122)

Source: Census of Population: 1950, 1960, 1970, 1980, and 1990

Table 4: Number of Metropolitan and Nonmetropolitan Northeast Counties Specialized in each Industry Sector

	1950	1960	1970	1980	1990
Agriculture, forestry,	53[1]	17	1	0	0
and fisheries	4[2]	1	0	0	0
Mining	21	13	8	5	3
	1	0	0	0	0
Manufacturing	74	97	100	78	39
	93	99	91	63	21
Ubiquitous Services	4	7	26	38	72
	5	2	10	30	53
Producer Services	0	0	0	0	7
	0	2	6	4	24
Diversified	25	43	42	56	56
	19	18	15	25	24
Total	**299**	**299**	**299**	**299**	**299**

[1] Number of Nonmetropolitan Specialized Counties
[2] Number of Metropolitan Specialized Counties

Source: Census of Population: 1950, 1960, 1970, 1980 and 1990

Figure 1: Industry Sector Specializations in Northeastern United States Counties, 1950

1950 Specialized Industry
- ⊠ Extractive
- ▨ Manufacturing
- ■ Services
- ☐ Diversified
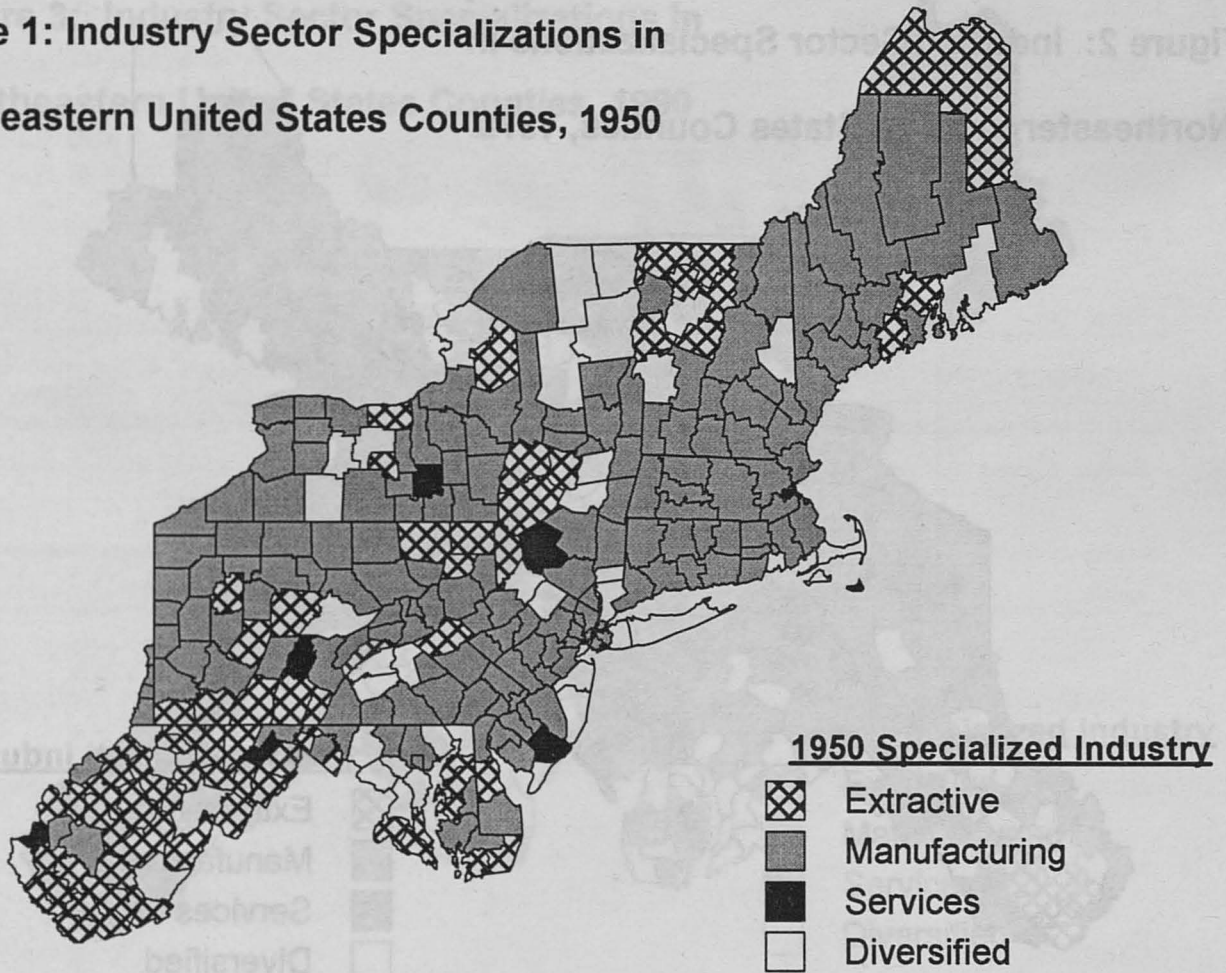
Figure 2: Industry Sector Specializations in Northeastern United States Counties, 1970

1970 Specialized Industry
⊠ Extractive
▨ Manufacturing
■ Services
☐ Diversified
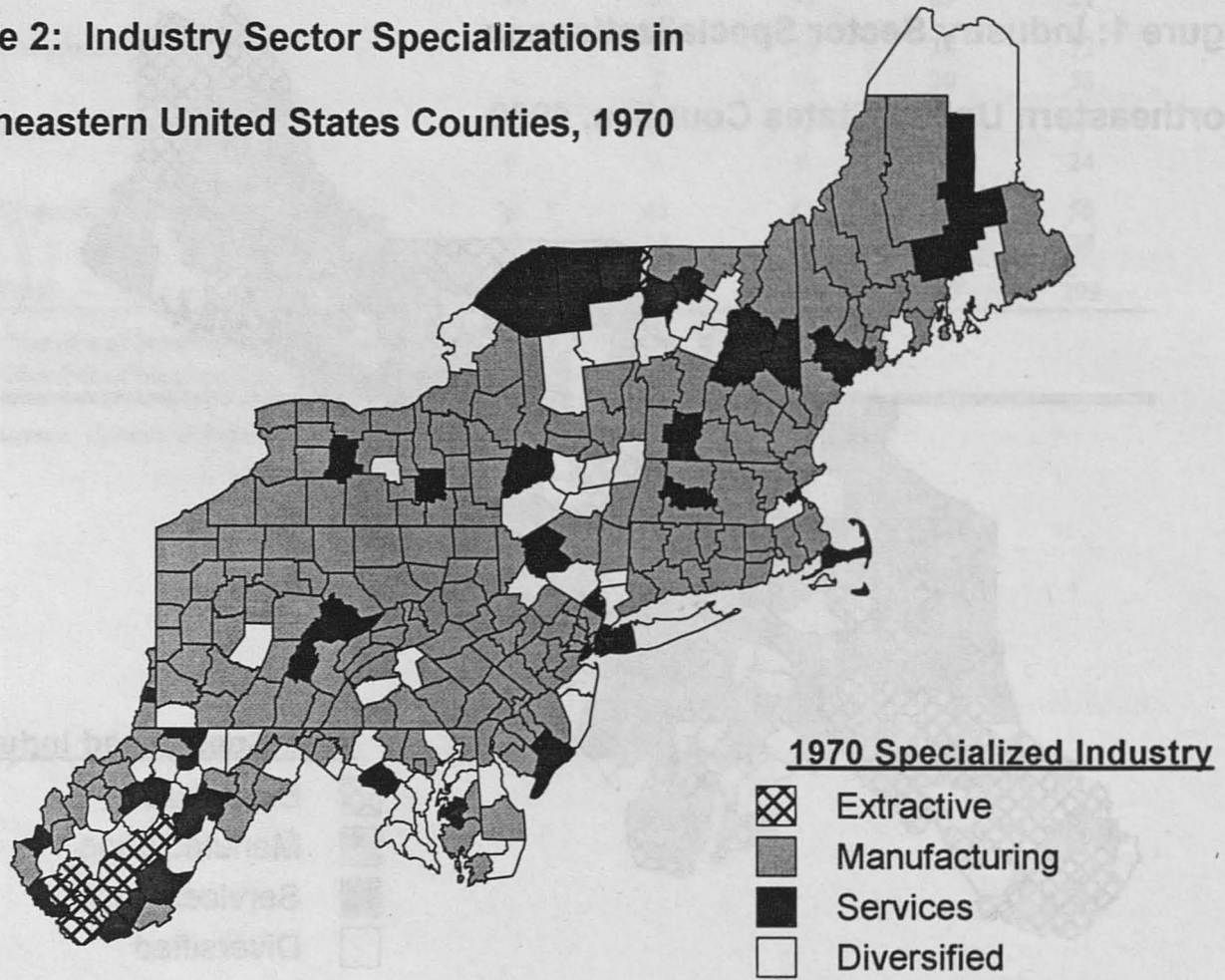
Figure 3: Industry Sector Specializations in Northeastern United States Counties, 1990

1990 Specialized Industry

⊠ Extractive

▨ Manufacturing

■ Services

☐ Diversified
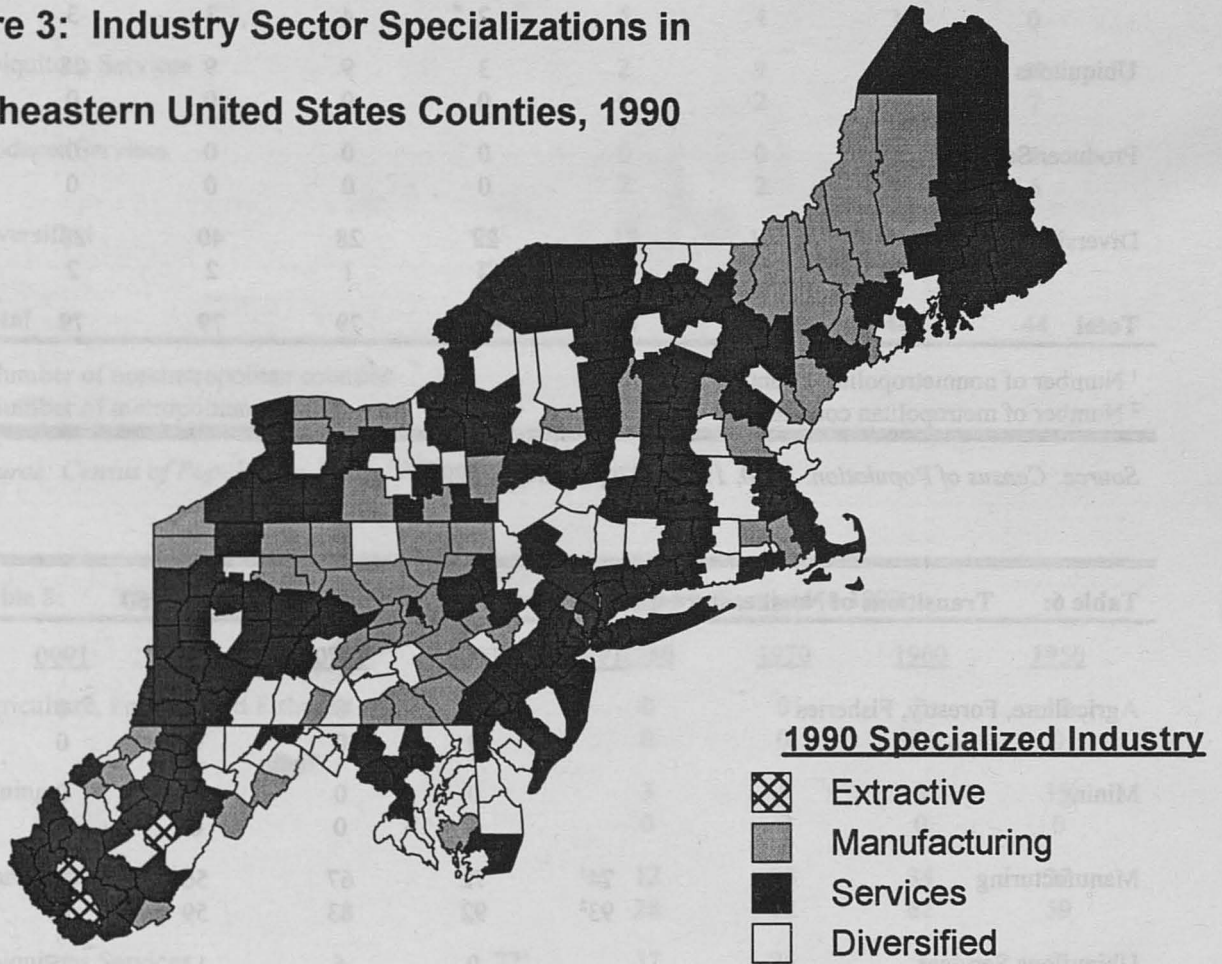
Table 5: Transitions of Northeastern Counties Specialized in Agriculture, Forestry and Fisheries or Mining in 1950

	1950	1960	1970	1980	1990
Agriculture, Forestry, Fisheries	53[1]	17	1	0	0
	4[2]	1	0	0	0
Mining	21	13	8	5	3
	1	0	0	0	0
Manufacturing		19	28	20	10
		2	4	3	3
Ubiquitous Services		3	9	9	28
		0	0	0	0
Producer Services		0	0	0	0
		0	0	0	0
Diversified		22	28	40	33
		2	1	2	2
Total	79	79	79	79	79

[1] Number of nonmetropolitan counties
[2] Number of metropolitan counties

Source: Census of Population: 1950, 1960, 1970, 1980 and 1990

Table 6: Transitions of Northeastern Counties Specialized in Manufacturing in 1950

	1950	1960	1970	1980	1990
Agriculture, Forestry, Fisheries		0	0	0	0
		0	0	0	0
Mining		0	0	0	0
		0	0	0	0
Manufacturing	74[1]	72	67	56	28
	93[2]	92	83	59	18
Ubiquitous Services		0	5	11	25
		0	4	19	42
Producer Services		0	0	0	2
		0	3	1	17
Diversified		2	2	7	19
		1	3	14	16
Total	167	167	167	167	167

[1] Number of nonmetropolitan counties
[2] Number of metropolitan counties

Source: Census of Population: 1950, 1960, 1970, 1980 and 1990

Table 7:   Transitions of Northeastern Counties Diversified in 1950

	1950	1960	1970	1980	1990
Agriculture, Forestry, Fisheries		0	0	0	0
		0	0	0	0
Mining		0	0	0	0
		0	0	0	0
Manufacturing		5	4	1	1
		5	4	1	0
Ubiquitous Services		2	9	15	17
		0	2	7	7
Producer Services		0	0	0	4
		2	2	2	6
Diversified	25[1]	18	12	9	3
	19[2]	12	11	9	6
Total	**44**	**44**	**44**	**44**	**44**

[1] Number of nonmetropolitan counties
[2] Number of metropolitan counties

Source: Census of Population: 1950, 1960, 1970, 1980, and 1990

Table 8:   Transitions of Northeastern Counties Specialized in Services in 1990

	1990	1980	1970	1960	1950
Agriculture, Forestry and Fisheries		0	0	2	13
		0	0	0	0
Mining		3	4	8	15
		0	0	0	0
Manufacturing		12	28	34	27
		28	52	62	59
Ubiquitous Services	72[1]	37	25	7	3
	53[2]	30	10	2	5
Producer Services	7	0	0	0	0
	24	4	6	2	0
Diversified		27	22	28	21
		15	9	11	13
Total	**156**	**156**	**156**	**156**	**156**

[1] Number of nonmetropolitan counties
[2] Number of metropolitan counties

Source: Census of Population: 1950, 1960, 1970, 1980, and 1990

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Table 9: Differences in Changes in Population Characteristics in Northeast Counties based on Metropolitan Status, Adjacency, and Urban Population, 1950-1990

Results of Duncan's Multiple Range Test [1] Comparing Mean Percent Change in Variable over 1950-1990

Type of County	Total Population	Total Employment	Median Age	Median Education	Median Family Income[2]	Percent of Families in Poverty
Metro (n=122)	74.0 A	132.3 A	14.5 B	33.1 A	141.4 A	17.8 A
Nonmetro (n=177)	36.5 B	75.4 B	23.8 A	33.2 A	143.6 A	5.7 B
Metro (n=122)	74.0 B	132.3 A	14.5 D	33.1 B	141.4 BC	17.8 A
Nonmetro:						
Adjacent Large (n=24)	105.1 A	172.0 A	17.0 CD	39.7 A	176.6 A	-6.6 B
Adjacent Medium(n=49)	32.3 B	64.6 B	23.1 AB	31.6 B	124.1 C	13.0 A
Adjacent Small (n=20)	35.0 B	76.0 B	20.8 BC	31.3 B	149.0 B	-5.6 B
Nonadjacent (n=84)	19.6 B	53.9 B	27.0 A	32.8 B	144.3 B	7.7 AB
Metro (n=122)	74.0 A	132.3 A	14.5 C	33.1 A	141.4 B	17.8 A
Nonmetro:						
Large Urban Pop.(n=55)	59.2 A	104.7 AB	118.1 C	32.2 A	130.6 B	12.9 A
Small Urban Pop.(n=80)	22.9 B	54.2 C	23.4 B	33.0 A	134.7 B	10.8 A
Completely Rural(n=42)	32.5 B	77.3 BC	32.2 A	34.9 A	177.8 A	-13.3 B

[1] Alpha = 0.10; means with different letters are significantly different
[2] All income values were first deflated to 1983 dollars

Source: Census of Population: 1950 and 1990

Table 10: Differences in Real Median Family Income[1] in 1950 and 1990 in Northeast Counties based on Metro Status, Adjacency, and Urban Population

Type of County	Real Mean Median Family Income in 1950 and 1990 and Results of Duncan's Multiple Range Test[2]			
	Real Median Family Income, 1950	Percent Difference from Metro, 1950	Real Median Family Income, 1990	Percent Difference from Metro, 1990
Metro (n=122)	13,573 A		32,628 A	
Nonmetro (n=177)	10,102 B	34.3 %	24,114 B	35.3 %
Metro (n=122)	13,573 A		32,628 A	
Nonmetro:				
Adjacent Large (n=24)	11,420 B	18.8	30,509 A	6.9
Adjacent Medium (n=49)	10,614 C	27.9	23,601 B	38.2
Adjacent Small (n=20)	9,763 D	39.0	24,097 B	35.4
Nonadjacent (n=84)	9,506 D	42.8	22,589 B	44.4
Metro (n=122)	13,573 A		32,628 A	
Nonmetro:				
Large Urban Pop. (n=55)	11,785 B	15.2	27,067 B	20.5
Small Urban Pop. (n=80)	10,039 C	35.2	23,231 C	40.4
Completely Rural (n=42)	8,016 D	69.3	21,926 C	48.8

[1] Median family income values are in 1983 dollars
[2] Alpha = 0.10; Means with different letters are significantly different

Source: Census of Population: 1950 and 1990

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Table 11: Differences in Population Characteristics among Nonmetro Counties Specialized in Different Industry Sectors

| Specialized Industry | Population Characteristics and Results of Duncan Multiple Range Test [1] | | | |
	Median Family Income[2]	Percent of Families in Poverty	Median Age	Median Education
1950				
Extractive (n=74)	8,695 C	28.1 A	27.6 B	8.6 B
Manufacturing (n=74)	11,311 A	16.9 C	31.2 A	9.5 A
Diversified (n=25)	10,526 B	19.7 B	31.1 A	9.6 A
Services (n=4) *	11,076	17.5	31.3	10.4
1960				
Extractive (n=30)	12,680 C	31.5 A	27.0 B	8.8 B
Manufacturing (n=97)	17,034 A	16.4 C	31.1 A	10.1 A
Diversified (n=43)	15,014 B	22.6 B	30.3 A	9.8 A
Services (n=7) *	14,850	25.2	31.0	9.9
1970				
Extractive (n=9) *	17,810	30.7	26.6	9.0
Manufacturing (n=100)	22,197 A	17.5 B	30.3 A	10.5 AB
Diversified (n=42)	20,515 B	21.9 A	30.0 A	10.3 B
Services (n=26)	21,324 AB	20.7 A	29.4 A	10.7 A
1980				
Extractive (n=5) *	22,451	23.3	30.9	9.5
Manufacturing (n=78)	23,612 A	17.6 B	34.7 A	11.2 B
Diversified (n=56)	22,321 B	21.1 A	34.4 A	10.9 C
Services (n=38)	23,765 A	17.8 B	34.7 A	11.5 A
1990				
Extractive (n=3) *	15,451	40.2	35.4	10.5
Manufacturing (n=39)	23,213 B	19.9 A	36.7 A	12.0 B
Diversified (n=56)	24,634 A	21.0 A	36.2 A	12.1 AB
Services (n=79)	24,518 A	19.3 A	36.2 A	12.3 A

[1] Alpha = 0.10; Means with different letters are significantly different
[2] All median family income values are in 1983 dollars
* Counties were excluded from Duncan's Multiple Range Test because of insufficient number

Source: Census of Population: 1950, 1960, 1970, 1980, and 1990

Table 12: Differences in Percent Changes in Population Characteristics in Northeast Counties Based on Transition Patterns, 1950-1970

Transition	Results of Duncan's Multiple RangeTest [1] comparing Mean Percent Change in Variable over 1950 to 1970					
	Population	Total Employment	Median Age	Median Education	Median Family Income[2]	Percent of Families in Poverty
Ext (no shift) (n=9)	-28.8 E	-33.9 E	24.5 A	10.7 A	77.5 E	61.6 A
Ext-Mnfg (n=28)	-3.4 D	-0.7 CD	8.2 B	14.9 A	136.2 A	-16.5 C
Ext-Div (n=28)	5.2 CD	4.5 CD	6.5 B	15.0 A	126.6 AB	-14.1 C
Ext-Serv (n=9)	-6.6 D	-7.7 D	5.8 B	12.2 A	101.0 D	7.8 B
Mnfg (no shift) (n=67)	12.2 BCD	16.0 BC	-3.0 CD	13.5 A	108.4 BCD	-12.9 C
Div-Serv (n=9)	22.9 ABC	28.1 AB	4.0 BC	14.2 A	105.6 CD	-4.5 BC
Div (no shift) (n=12)	37.0 A	38.0 A	-2.6 CD	14.4 A	116.4 ABCD	-18.2 C
Other (n=15)	27.8 AB	33.3 AB	-8.5 D	13.4 A	123.0 ABC	-15.8

[1] Alpha = 0.10; Means with different letters are significantly different
[2] All income values are in constant 1983 dollars
Abbreviations: Ext=Extractive; Mnfg=Manufacturing; Div=Diversified; Serv=Services

Source: Census of Population: 1950 and 1970

Table 13: Differences in Percent Changes in Population Characteristics in Northeast Counties Based on Transition Patterns, 1970-1990

Transition	Results of Duncan's Multiple Range Test comparing Mean Percent Change in Variable over 1970 to 1990					
	Total Population	Total Employment	Median Age	Median Education	Median Family Income[2]	Percent of Families in Poverty
Mnfg (no shift) (n=39)	11.7 C	34.0 D	20.9 A	14.7 D	8.2 CD	18.8 A
Mnfg-Div (n=33)	20.1 BC	48.5 BCD	22.1 A	17.1 BC	11.4 BC	5.6 AB
Mnfg-Serv (n=28)	13.1 BC	39.3 CD	19.9 A	15.4 CD	10.3 BC	11.6 AB
Div-Serv (n=22)	26.6 B	60.3 B	22.3 A	18.8 B	16.4 AB	-2.0 BC
Serv (no shift) (n=25)	25.2 B	57.1 BC	24.8 A	16.3 CD	14.1 BC	5.4 AB
Div (no shift) (n=20)	42.4 A	89.9 A	19.9 A	19.0 B	22.7 A	-10.6 C
Other (n=10)	7.5 C	27.8 D	24.7 A	22.5 A	2.2 D	10.6 AB

[1] Alpha = 0.10; Means with different letters are significantly different
[2] All income values are in constant 1983 dollars
Abbreviations: Ext=Extractive; Mnfg=Manufacturing; Div=Diversified; Serv=Services

Source: Census of Population: 1970 and 1990

Table 14:   Employment Change in Northeast Labor Market Areas

	Mean Percent Employment Change Among:		
Time Period	All Labor Market Areas	Labor Market Areas Above Mean	Labor Market Areas Below Mean
1950-1990	61.9 (n=42)	104.2 (n=18)	30.1 (n=24)
1950-1970	19.4 (n=42)	34.2 (n=20)	6.0 (n=22)
1970-1990	33.6 (n=42)	56.2 (n=15)	21.0 (n=27)

Source: Census of Population: 1950, 1970 and 1990

Table 15:   Mean Industry Employment Concentrations in Northeast Labor Market Areas

|	1950	1960	1970	1980	1990
Agriculture, Forestry, Fisheries	8.4	5.1	3.1	2.7	2.4
Mining	3.6	1.6	1.2	0.9	0.8
Manufacturing	32.0	32.4	30.6	26.4	19.0
Producer Services	6.7	9.0	10.0	11.7	15.7
Ubiquitous Services	38.4	38.1	44.2	47.6	50.8

Source: Census of Population: 1950, 1960, 1970, 1980, and 1990

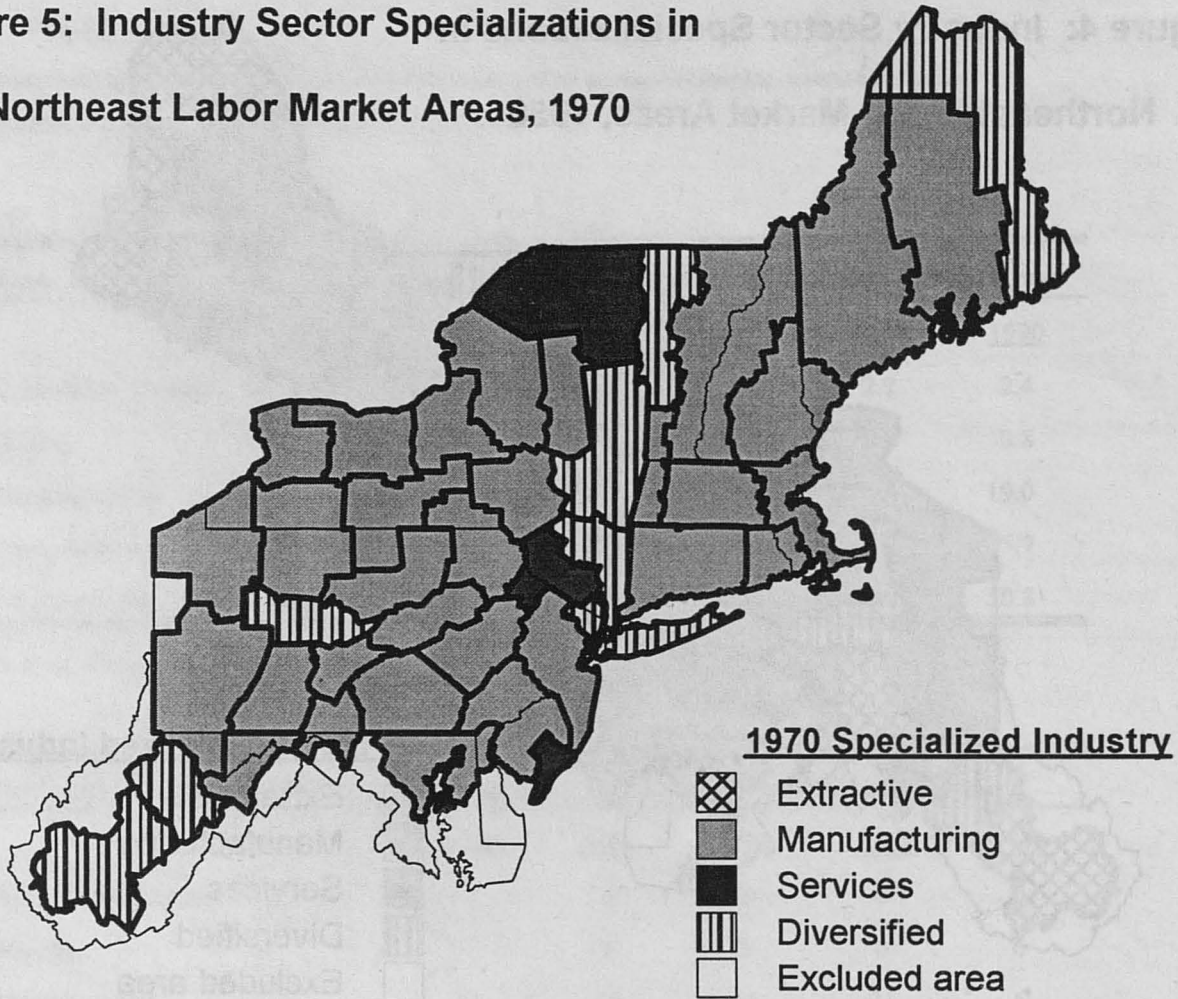**Table 16:   Number of Northeast Labor Markets Specialized in Each Industry Sector**

	1950	1960	1970	1980	1990
Agriculture, Forestry, Fisheries	2	0	0	0	0
Mining	2	0	0	0	0
Manufacturing	31	33	31	21	6
Ubiquitous Services	1	0	3	10	23
Producer Services	0	0	0	1	6
Diversified	6	9	8	10	7
Total	42	42	42	42	42

Source: Census of Population: 1950, 1960, 1970, 1980 and 1990

Figure 4: Industry Sector Specializations in Northeast Labor Market Areas, 1950

1950 Specialized Industry
- Extractive
- Manufacturing
- Services
- Diversified
- Excluded area
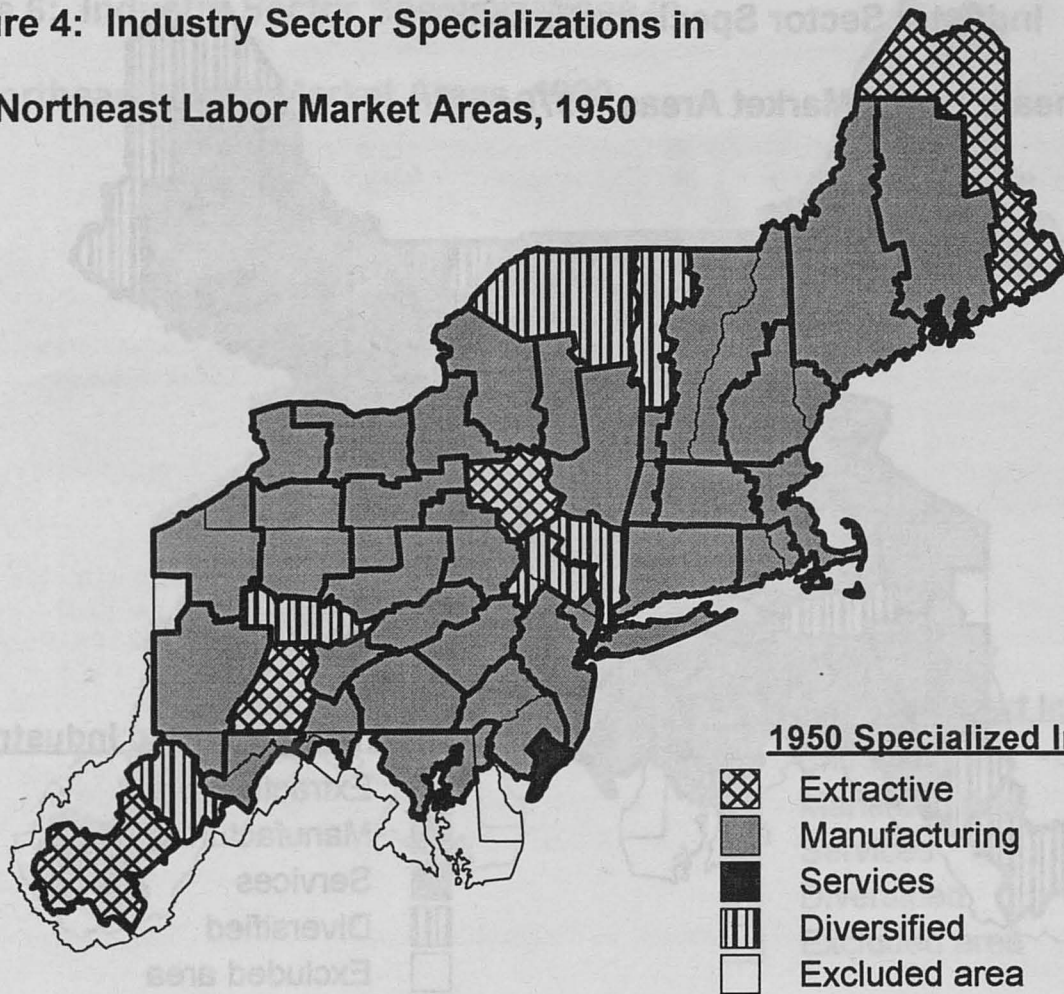
Figure 5: Industry Sector Specializations in Northeast Labor Market Areas, 1970

1970 Specialized Industry

Extractive
Manufacturing
Services
Diversified
Excluded area

Figure 6: Industry Sector Specializations in
Northeast Labor Market Areas, 1990

1990 Specialized Industry

⊠ Extractive
▨ Manufacturing
■ Services
|||| Diversified
☐ Excluded area
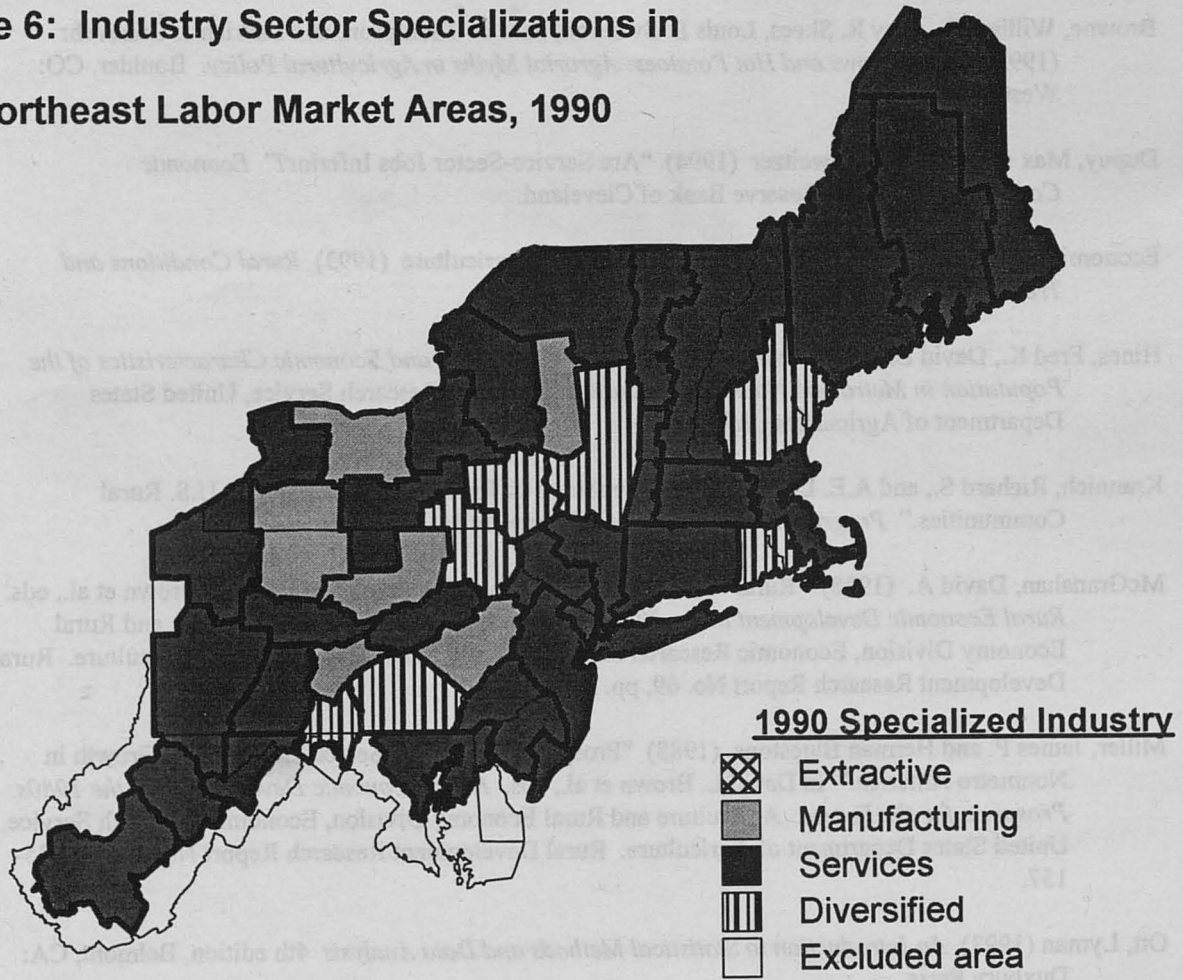
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