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ABSTRACT

Rural areas' population growth, location, level of economic activity and social well-being depend less on natural resource endowments than on such factors as transportation, communication, labor force characteristics, and urbanization. General causes of the 1970's urban-to-rural migration included fewer changes in the structure of agriculture, decentralized nonextractive economic activities, modernized rural life, and a rural residential preference. This migration has accelerated changes in the nonmetro employment structure which is becoming increasingly diverse and decreasingly agricultural. Despite a narrowing of metro-nonmetro income differences, rural America continues to have a disproportionate share of poverty which falls mostly on Blacks and Hispanics. A recent comparison of demographic, income distribution, economic structure, and human capital differences was made among counties classified as being directly concerned with natural resources. Intercounty variations were explained by investigating the effect of all factors considered. Findings indicated that 42% of all rural counties are natural resource dependent, only farming dependent counties trailed all nonmetro counties in median family income, and what differentiates persistently low income counties is their population profile and location, not economic base. Given these findings, no single sectoral policy will be appropriate in assisting rural development. Welfare reform would greatly benefit these areas. (PM)

United States Department of Agriculture

Economic Research Service

Rural Development Research Report Number 48

Natural Resource Dependence, Rural Development, and Rural Poverty

Kenneth L. Deavers and David L. Brown

Natural Resource Dependence, Rural Development, and Rural Poverty. By Kenneth L. Deavers and David L. Brown. Economic Development Division, Economic Research Service, U.S. Department of Agriculture. Rural Development Research Report No. 48.

Abstract

Rural poverty and population decline are now only weakly connected with a rural county's economic dependence on agriculture, mining, or Federal landownership. Thus natural resource dependent counties are not the principal target for programs designed to relieve population decline and low-income problems in rural America. This report examines the influence of natural resource dependence on rural income levels and recent population growth.

Keywords: Population, income, poverty, natural resources, mining, Federal lands, agriculture, rural policy.

Acknowledgments

This work could not have been accomplished without the efforts of several of our colleagues in EDD. Peggy Ross and Bernal Green have major responsibility for developing the data base for the county classification scheme which is the key analytical construct used in this paper. Bob Hoppe leads the EDD project on the geography of poverty and gave freely of his time and knowledge in our analysis of persistently low-income areas. Calvin Beale's insightful review of an earlier draft is appreciated. Mary Haygood did a superb job in typing the manuscript. This study was originally prepared for the Resources for the Future Conference on Rural Development, Poverty and Natural Resources held at the Airlie House in July 1983.

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Summary

Contrary to our expectations, rural counties that are economically dependent on farming, mining, or have a high proportion of federally owned land have not grown more slowly and are not poorer than all nonmetro counties. But, dependence on agriculture continues to be a strong negative factor in their population growth. This study examines the influence of natural resource dependence on recent population growth and rural income levels. A county is natural resource dependent if at least 20 percent of its labor and proprietors' income is derived from farming or mining or if at least 33 percent of its land is federally owned.

Because our analysis provided no convincing evidence that a county's dependence on farming, mining, or federally owned land affected community income, we chose to focus directly on persistently poor rural counties regardless of their natural resource dependence. While these poor counties do not differ from the nonmetro average in their industrial profile, they do differ in their location and population profile. They have comparatively low levels of schooling, high levels of work-limiting disability, and a high rate of age dependency (children and the elderly as a fraction of the total population). They also have a very high percentage of blacks and are located principally in the South. Highlights of the study include:

- Among all nonmetro counties, and in most natural resource dependent counties, 1970-80 population growth was higher in areas that had previously been growing, that are classified as retirement areas, that have access to a metro area and an interstate highway, and are located in the South or West.

- Among all nonmetro counties, population growth was lower in highly urbanized nonmetro counties; in areas heavily dependent on manufacturing, agriculture, and mining; and in areas in which blacks are a large proportion of the population.

- Of the natural resource counties, only those dependent on farming trailed nonmetro counties in median family income as of 1980. And, they trailed by less than $1,000.

- The poverty rates of the natural resource dependent counties were comparable to all rural counties.

Natural Resource Dependence, Rural Development, and Rural Poverty

Kenneth L. Deavers and David L. Brown*

Introduction

Rural areas' population growth, location, level of economic activity, and social well-being depend less on natural resource endowments than on such factors as transportation, communication, labor force characteristics, and urbanization. Nevertheless, many rural areas continue to be much more dependent than the Nation as a whole on natural resource based activities, such as farming and mining.

First we look at the changes rural America experienced in the 1970's. Then, within this framework we consider how natural resource related activities influenced rural development.[1] Understanding the economic and social viability of rural areas requires an understanding of the changing role of their natural resource base in development. We measure rural development by population change and current income level. We examine these and other measures of structure and change among rural areas and compare areas dependent on natural resource based activities to all rural counties. We question whether natural resource dependence contributed importantly to recent rural population change and what its role is in explaining geographic differences in the incidence of rural poverty.

The 1970's In Perspective

The enormous change rural America has experienced in the past 25 years culminated in the 1970's: the population growth rate of nonmetropolitan areas exceeded that in metropolitan areas, reversing a century of net outmigration from rural areas; the overall industrial mix of metro and nonmetro areas became very similar as a result of the long-term decline in resource-based employment and increases in manufacturing, services, and government; and rural poverty and disadvantage were reduced. However, chronic poverty continued in selected areas and for some population groups, and overall progress in reducing rural/urban income differences ceased in the mid-1970's.

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[1]The terms rural and nonmetropolitan are used interchangeably in this report; however, all data presented are by nonmetropolitan-metropolitan (SMSA) county status as announced in 1974 based on the results of the 1970 Census. We use the Standard Metropolitan Statistical Area (SMSA) definition rather than the more current Metropolitan Statistical Area (MSA) delineation because our interest is in change during the decade of the 1970's, not current status. The new MSA delineation includes numerous counties as metro which were nonmetro in 1974, thus affecting measures of decade change.

Population Distribution

For the first time in this century, the rate of population growth of nonmetro areas exceeded that of metro areas (table 1). Between 1970 and 1980, nonmetro counties grew by 15.7 percent compared with 9.9 percent for SMSA counties. The reverse was true between 1960 and 1970 when metro areas grew by 17 percent and their nonmetro counterparts grew by only 4.3 percent. Remote and completely rural areas shared the 1970-80 nonmetro growth advantage with areas that are partly urban or dominated by nearby cities.

This dramatic turnaround is principally a product of changes in migration behavior; both reduced rural outmigration and increased inmigration. Also, women in rural areas had substantially fewer children during the 1970's, making the rural birthrate more similar to that of urban areas. Consequently, differential fertility was less of a force in creating differences in population growth rates between the residential sectors. Previously, natural increase (births minus deaths) had been a more important determinant of differential growth between urban and rural areas.

The term "turnaround" means that for the first time in the 20th century the rate of population growth of the entire nonmetro sector exceeded that of the metro category. It does not mean that all nonmetro counties previously had declining population, or that all those that had declining population are now growing. Almost 1,100 nonmetro counties grew during the 1960's, and 446 nonmetro counties that lost population during the

1960's also lost population during the 1970's. The rural turnaround occurred because many previously growing nonmetro counties increased their rates of growth, and 850 counties with previously declining populations slowed their rates of decline or reversed to population gain (*4*).[2] The reasons for the metro-nonmetro turnaround are diverse and hard to generalize, but some root causes are identifiable:

- *Changes in the structure of agriculture have slowed.* More than 40 years of outmovement, totaling about 30 million people, have greatly reduced the potential for further farm outmigration as a source of urban growth.
- *Nonextractive economic activities have decentralized.* The economic character of rural life has diversified. Trade, services (including government), and manufacturing have become the primary employers. This transformation of the rural economy has retained many workers in rural areas who otherwise might have migrated to urban jobs, and it has attracted urban workers to rural work and residence.
- *Rural life has modernized.* The stereotype of rural areas as backward and isolated is no longer accurate. Electricity, telephone service, all-weather roads, cable television, and centralized water and sewer systems have modernized rural life.
- *Residential preferences have been realized.* Economic and community changes have made it feasible for many citizens to achieve their goal of a more rural lifestyle. Residential preference surveys have consistently demonstrated a substantial discontinuity between the size of current community of residence of many Americans and the size of place they prefer (*25*).

Other highly industrialized and urbanized nations shared in the U.S. experience of population decentralization during the 1970's. This has led many social scientists to hypothesize that population decentralization is part of a natural process of convergence between urban and rural areas in advanced societies (*2, 22, 23*). It seems unlikely that the 1970's were an aberration, or should be interpreted as a break in long-term rural development trends. However, post-1980 data suggest that metro and nonmetro areas are now growing at about the same rate, with metro areas having a slightly higher rate (*9, 19*).

Economic Structure

The movement of people and jobs to nonmetro counties has accelerated changes the rural economy has undergone in recent decades. Since World War II, the structure of nonmetro employment has become increasingly diverse and decreasingly agricultural. In fact, the percentage of employment in farming has been declining since 1920 when over 70 percent of all U.S. workers were employed in agriculture. By 1920, this figure had fallen to a little over 25 percent, and by 1940, only 17 percent of the labor force was in farming. By 1979, the

[2]Italicized numbers in parentheses refer to items listed in the References section at the end of this report.

Table 1—Population change by metropolitan status and size of largest city

Area	Population				
	1980	1970	1960	1970-80	1960-70
	Thousands			*Percentage change*	
Total	226,505	203,301	179,323	11.4	13.4
Metro[1]	163,503	148,877	127,191	9.8	17.0
Nonmetro	63,002	54,424	52,132	15.8	4.4
Adjacent counties[2]	32,901	28,031	26,113	17.4	7.0
Nonadjacent counties	30,101	26,394	26,019	14.0	1.4
With city of 10,000 or more[3]	13,642	11,910	11,132	14.5	7.0
With no city of 10,000	16,458	14,484	14,887	13.6	−2.7

[1]Metropolitan status as of 1974.
[2]Nonmetropolitan counties adjacent to SMSA's.
[3]Counties with a city of 10,000 or more population in 1970.

Source: Tabulated from 1970 and 1980 Census computer tapes.

most inclusive definition of agricultural workers (wage and salary, self-employed, and unpaid family) totaled only 3.4 percent of the U.S. work force. Even in nonmetro areas, this percentage dropped from almost 14 percent in 1950 to 8 percent in 1979.

Although agriculture is not the primary rural employer nationwide, in nearly 700 counties located mainly in the Great Plains and Corn Belt, 20 percent or more of labor and proprietors' income was derived from agriculture in 1977-79. No other single industry is as important a source of labor and proprietors' income in as large a grouping of rural counties. However, the decline in the relative role of agriculture is dramatically illustrated by the fact that in 1950 over 2,000 counties had a similar dependence on agricultural income (*13*).

In contrast, manufacturing accounts for nearly 25 percent of all nonmetro employment, trade and government each account for about 16 percent, and services account for 11 percent. While these nontraditional industrial categories now make up a larger proportion of nonmetropolitan employment than before, the change has been a gradual evolution, not a recent and dramatic shift. In 1950 for instance, manufacturing was already a major rural employer, accounting for 20 percent of all nonmetro jobs (*24*).

Most observers view these changes as diversifying the industrial structure of rural America. That characterization is accurate for rural areas taken as a whole. But it can be seriously misleading when applied to individual rural areas. Rural economies are sufficiently small that the process of development does not lead typically to diversification in particular communities. At the county level, for example, few rural economies have a balance of agriculture, mining, manufacturing, services, and government; instead, these activities tend to concentrate in separate locations. The extent to which rural areas specialize in particular economic activities provides an important insight into the possible direction of rural policy. We will return to this point later.

Broad industrial classification summaries, such as manufacturing, hide many important compositional differences. Unpublished data from the Bureau of Economic Analysis show that in 1979 low-wage, labor-intensive industries such as textiles, apparel, leather, and lumber products accounted for about 33 percent of nonmetro manufacturing employment nationally, but nearly 50 percent of nonmetro manufacturing employment in the South. Although these percentages are lower than a decade earlier, they do suggest that the future performance of rural manufacturing employment may differ significantly among regions. The South is especially likely to face serious foreign competition in its efforts to sustain a significant portion of the industrial employment it successfully attracted in the past 30 years.

Income and Poverty

The ratio of nonmetro to metro income has increased significantly from previous decades, when dramatic differences in economic status were a major explanation of rural outmigration. In 1950, nonmetro median family income was 33 percent below the metro median. By 1973, nonmetro median family income had increased to $16,000, only 20 percent below the metro figure. This ratio of nonmetro to metro income continues, and there has been no subsequent narrowing of the gap. Nonmetro income has improved because of increased formal educational attainment, industrial growth and diversification, off-farm employment by farm family members, increased labor force participation by rural women, reduced discrimination against racial minorities, and the growth of government transfer programs (*5, 6, 10, 18*).

Despite the narrowing of metro-nonmetro income differences, rural problems persist. Rural America continues to have a disproportionate share of the poverty; 34 percent of the Nation's poor people reside in nonmetro counties compared with only 28 percent of the Nation's total population (*21*).

A dramatic indicator of the persistent gap between metro and nonmetro income is that nearly all of the Nation's poorest counties are nonmetro, and poverty is a persistent condition in these areas. In fact, of the lowest income quintile in 1950, less than 20 percent of the counties had escaped that low-income category by 1979 (*12*).

Rural poverty is not uniformly distributed among regions or subgroups of the rural population. Nearly 60 percent of the rural poor live in the South where 21 percent of the rural population failed to earn incomes above the official poverty level in 1981. The incidence of southern rural poverty is like that in older, large cities such as Detroit, Chicago, Boston, and Baltimore. However, rural poverty is not restricted to the South. A large number of rural counties in the Northeast have substantial poor populations. But, because their overall populations are large, they do not have a high incidence of poverty (*8*).

Rural poverty falls disproportionately on minorities. Forty-two percent of rural blacks (more than 10 percentage points higher than for metro blacks) and 28

percent of rural Hispanics were poor in 1981 compared with 13 percent of whites. However, whites, because they are a majority population, constitute a numerical majority of the rural poor. The incidence of rural poverty is almost 20 percent among elderly households and over 40 percent for female-headed households with no husband present.[3]

Despite workforce participation, many rural families are unable to earn enough income to rise from poverty. This fact is often neglected. In 1981, almost 70 percent of nonmetro poor households contained at least one worker, and almost 33 percent had two or more members in the work force. Work-limiting disability contributes importantly to low rural income. Over 10 percent of working age rural people report they have a disability that limits their ability to work, and the proportion increases to almost 15 percent in persistently low-income counties.

In most post-World War II recessions, rural workers have fared somewhat better than their urban counterparts. For example, during the recession of 1974-75, nonmetro workers had consistently lower unemployment rates than did workers in metro areas, although the nonmetro rate did exceed the metro rate at the recession's peak for one quarter in 1975. During the 1980-83 recession, however, the nonmetro unemployment rate consistently exceeded the metro rate. In the winter quarter of 1983, at the height of the recession, the nonmetro unemployment rate was 12 percent compared with 10.8 percent in SMSA counties. Adjustments for discouraged and part-time workers, both of whom are a larger percentage of the rural labor force, would increase the nonmetro disadvantage even more. This reversal is doubtless related to the continuing evolution of the rural economy, and its increasingly close ties with the U.S. and world economies.

The income effect of recession-related unemployment is dramatic. The nonmetro poverty rate dropped from 19.2 percent (11.9 million persons) in 1970 to 15.4 percent (8.6 million persons) in 1980, but increased to 18.3 percent (13.5 million persons) in 1983 (*21*).

In summary, metro-nonmetro income differences have diminished, but persistent gaps remain. Poor people in rural America have many forms of disadvantage: poor housing, low educational attainment, few marketable vocational skills, poorer health, and higher rates of work-limiting disability (*15*). In addition, they frequently live in isolated communities that lack enough local resources to support needed facilities and services. These communities chronically underinvest in human capital and facilities; inadequate educational opportunity, poor health care, substandard housing, lack of public water and sewer systems, and other such conditions are prevalent. The chronic underinvestment in human and community resources in poor rural areas constrains many individuals from improving their material well-being.

Classifying Rural Diversity

Some participants in the dialogue on rural policy have inappropriately concluded that every rural area is so different from every other rural area that there is no need for (and no real possibility of) national rural development policy and programming. The Economic Development Division of ERS has embarked on a research project aimed at providing new social, economic, and political content to our categorization. Rural America is enormously diverse, but recent research demonstrates that most rural areas can be aggregated into a relatively small number of "types" (*17*). This categorization contributes to a better understanding of what rural areas have in common as well as how they differ. This classification scheme allows a substantial comparison of rural social, demographic, and economic information. Because it focuses on a relatively small number of county types, rather than on the full range of individual rural conditions, the classification scheme increases understanding of the sociodemographic and economic setting within which particular public policies and programs are likely to be most important to rural development in particular environments.

We have aggregated rural areas into seven categories based on an area's dependence on broad classes of economic activities: agriculture, manufacturing, mining, and government. The categories also contain social dimensions: persistent poverty and growth of retirement population. The proportion of land in Federal ownership is also included.

These seven categories do not contain all nonmetro counties and they are not mutually exclusive. But nearly 75 percent of nonmetro counties (1,782) are included, and overlap among the county classes is not great (table 2). The largest pairwise overlap among the seven county types is the 43 agricultural counties that are also categorized as persistent poverty counties.

[3]Research at the Institute for Research on Poverty, University of Wisconsin, demonstrates that adjusting the money income of the elderly for durable assets, tax advantages, and household size and composition significantly reduces the differences in their economic status relative to that of younger persons (*7*).

Table 2—Pairwise overlaps among county classes

County pairs	Frequency
Farming and Federal lands	22
Farming and poverty	43
Farming and mining	10
Farming and government	32
Federal lands and poverty	5
Federal lands and farming	36
Federal lands and government	39
Poverty and government	24
Mining and government	3
Total overlaps	228

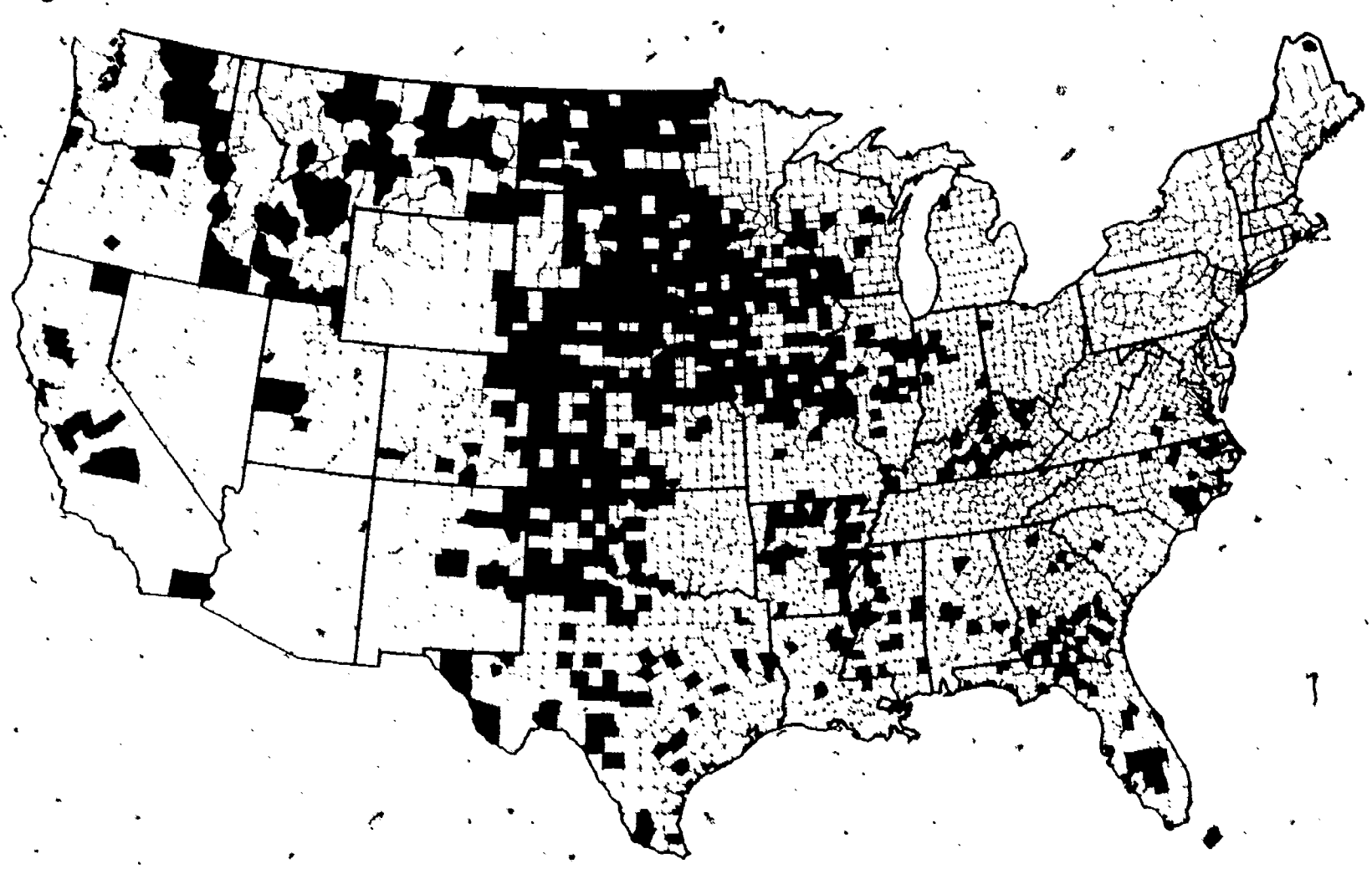
Definition and Geographic Location

We will focus on the four county types that are directly concerned with natural resource dependence (agriculture, mining, Federal lands), and on persistent poverty. The categories are defined as follows (see fig. 1-4 for geographic locations):

- *Agriculture:* Twenty percent or more of labor and proprietors' income derived from agriculture in 1977-79 and in selected time periods since 1950. This category contains 656 nonmetro counties.
- *Mining:* Twenty percent or more of labor and proprietors' income derived from mining. This category contains 199 nonmetro counties.

Figure 1

Agricultural Counties



- *Federal lands:* At least 33 percent of a county's land in Federal ownership. This category contains 245 nonmetro counties.

- *Persistently low-income:* In the lowest quintile of nonmetro income in 1949, 1959, 1969, and 1979. This category contains 242 nonmetro counties.

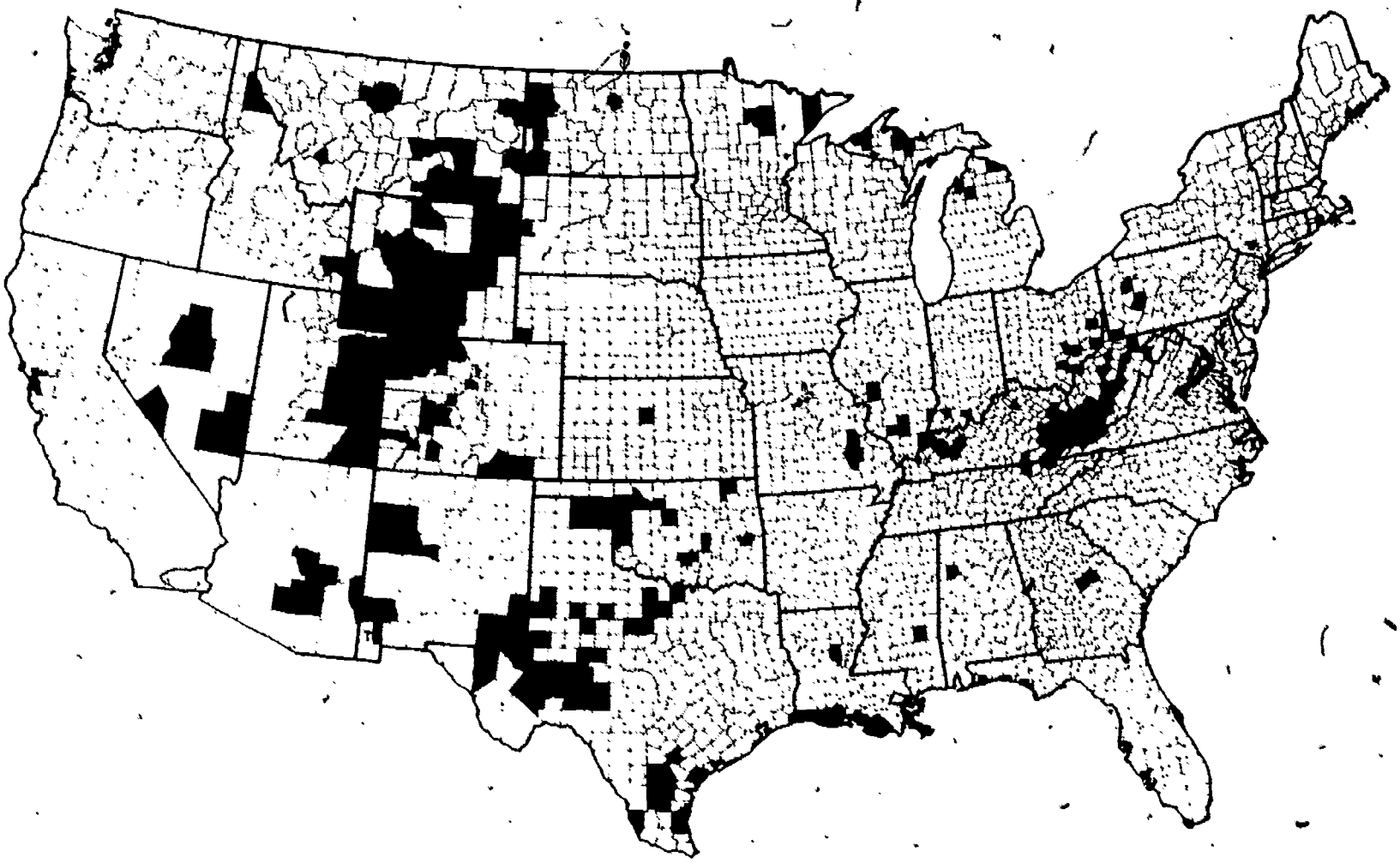
Agricultural counties are concentrated in the Great Plains (both northern and southern) and in the western Corn Belt. Smaller groupings are located in the Pacific Northwest and California, and in the Piedmont, Black Belt, Delta, and Ozark subregions of the South. Mining counties are concentrated in Appalachia, Texas, Oklahoma, the Louisiana Gulf Coast, the Northern Great Plains, the Rockies, and the Southwest. Most Federal land counties are located west of the Great Plains, although Federal ownership of land is notably low in Oregon and in Washington State, except for its northern tier of counties. A few Federal land counties are located in Appalachia and in the Ozarks. Ninety-two percent of persistently low-income counties are in the South. They are concentrated in Appalachia, the Black Belt, the Delta, and in the Ozark-Ouachita Plateau. A few low-income counties are scattered in the Southwest and the Northern Plains, reflecting the location of American Indian and Hispanic populations.

Comparative Profile of County Classes

A comparison of the four categories of counties that are either natural resource dependent and/or persistently poor reveals that although these counties differ in some ways from the average for all nonmetro counties, in other ways they are very similar.

Figure 2

Mining Counties



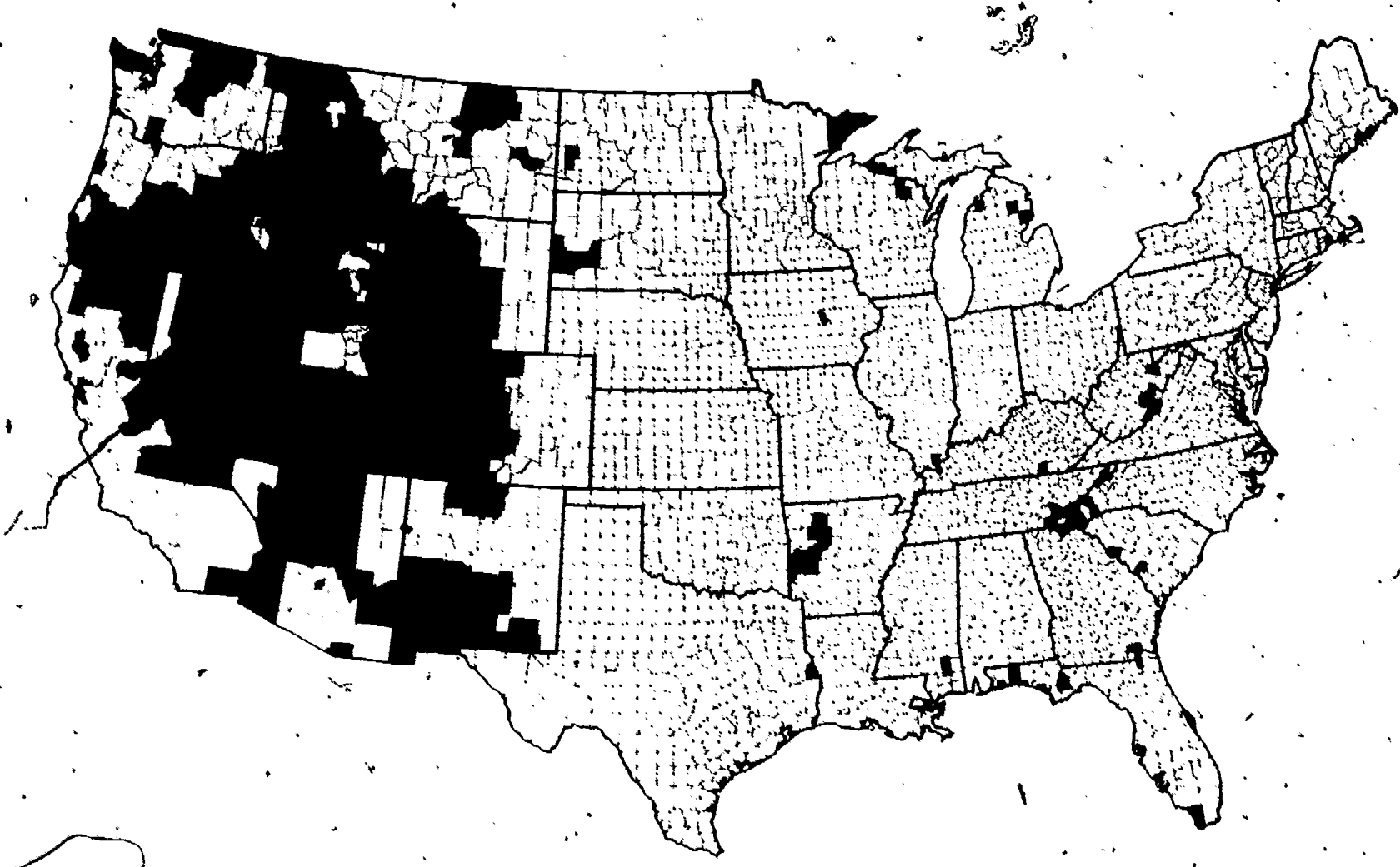
Demographic. The four categories of counties that are either natural resource dependent or persistently poor are smaller and less urbanized than all nonmetro counties taken together (table 3). Farm counties and persistently low-income counties have especially sparse populations. Not even 5 percent of these counties contain a place of 10,000 or more population. The mining and Federal lands categories are more highly urbanized, but still sparsely populated compared with the total nonmetro sector. The four county groups are also relatively isolated from nearby large population centers. Less than a quarter of Federal land counties and less than a third of farming and persistently low-income counties are adjacent to an SMSA. The figure for all nonmetro counties is almost 40 percent. Only the mining category comes close to the nonmetro level of adjacency. Similarly, all four categories have limited access to the interstate highway system when compared with the norm for all nonmetro counties.

The population growth rate of all four categories during the 1970's was considerably faster than during the previous decade. In fact, population declined in three of the four county classes during the 1960's and is now growing. This reversal is particularly notable in the mining and persistently low-income classes. Population growth rates in farm counties improved from minus 7 percent during the 1960's to plus 5 percent during the 1970's, and the rate in Federal land counties improved from a modest 8 percent during the 1960's to an incredibly high 34 percent in the 1970's.

Income Distribution. Families in the three natural resource based county classes earned income near or

Figure 3

Federal Land Counties



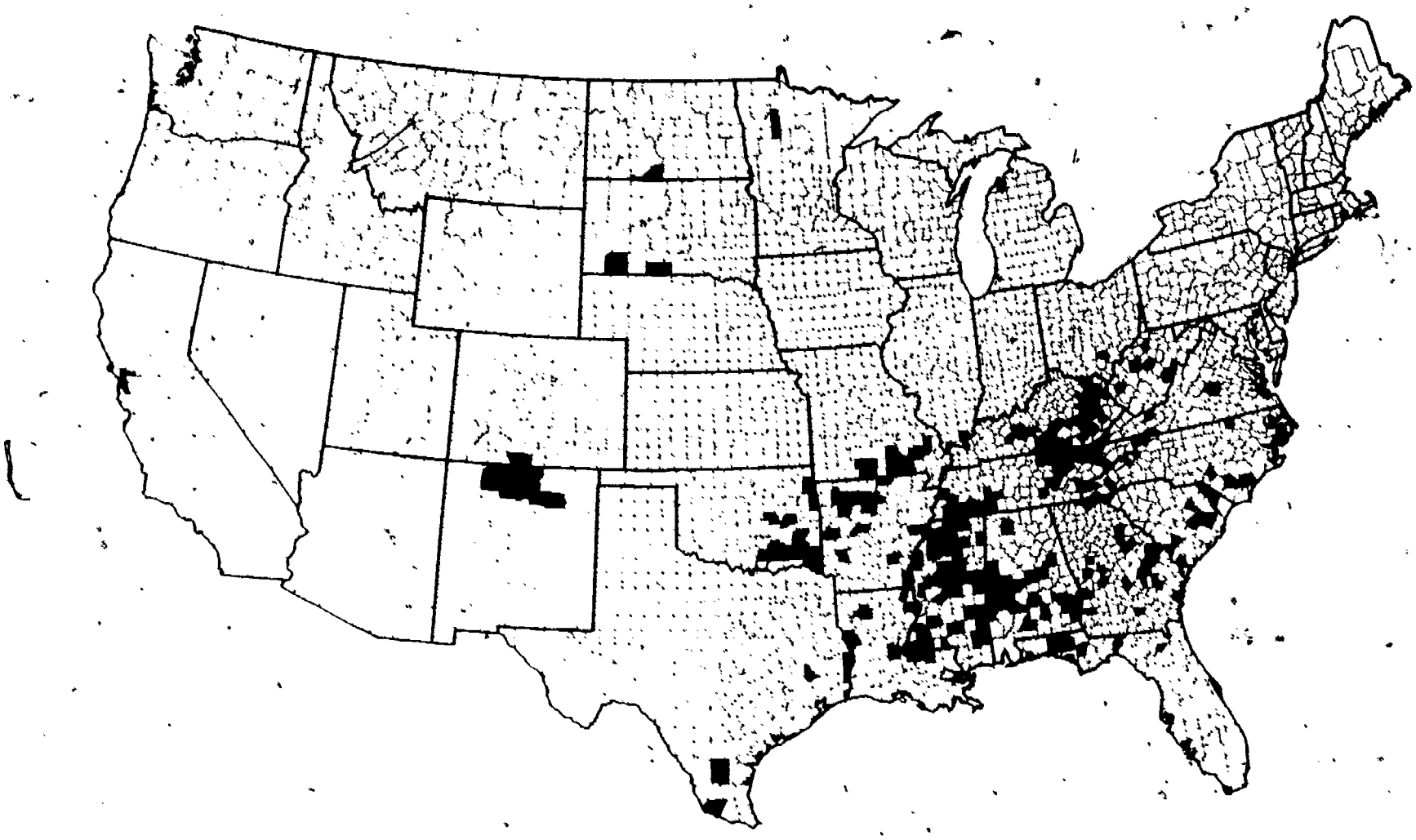
above the average for all nonmetro counties. Farm counties lagged slightly behind the nonmetro norm of $15,000, but mining and Federal land counties exceeded the norm by about $1,000. In contrast, persistently low-income counties lagged behind the nonmetro norm by about $4,000. The three natural resource based county groups generally have the same percentage of people in poverty as all nonmetro counties: about 14 to 18 percent. In contrast, over 25 percent of people in persistently low-income counties failed to earn enough income to exceed the official poverty line.

Economic Structure. Economic structure is measured here by dependence (proportion of labor and proprietors' income) on particular industrial sectors: agriculture, manufacturing, mining, and government. An average of about 33 percent of labor and proprietors' income is derived from agriculture in the 656 agricultural counties. This is twice the level of agricultural dependence of all nonmetro counties. In contrast, mining and Federal land counties are below the national norm in agricultural dependence. Persistently low-income counties are average in dependence on agriculture as a source of income.

The three natural resource county groupings are below the national average in dependence on manufacturing. However, mining and farming counties are especially low with only 8 and 11 percent of income from manufacturing, respectively, compared with the nonmetro average of 21 percent. Persistently low-income counties with 23 percent of income from manufacturing are slightly more dependent on manufacturing than are all nonmetro counties.

Figure 4

Persistently Low-Income Counties



Mining accounts for less than 5 percent of nonmetro income nationwide, but for over 35 percent of income in mining counties. While over 8 percent of income is from mining in counties with a high level of Federal ownership of land, mining accounts for only a very small proportion of income in farming and persistently low-income counties.

Government employment provides $1 out of every $6 of labor and proprietors' income in nonmetro America. Federal land and persistently low-income counties are particularly dependent on this source of income, with over 20 percent of their income from government employment. This dependence probably reflects the importance of Federal land, water, and other resource management activities in Federal land counties, and the management of social welfare programs in poverty counties. Farming and mining counties are only slightly less dependent on the government sector, with 16 percent of income from government employment.

Human Capital. The natural resource based county groups are similar in their socioeconomic composition. All have relatively high levels of formal educational attainment, about 60 percent of adults have completed high school; about 40 percent of the total population in each county class is employed; and about 10 percent of labor force age persons report a work-limiting disability. These figures are comparable to nonmetro areas taken as a whole. However, the natural resource classes are somewhat different than all nonmetro counties in age and race composition. The population is substantially younger in mining and Federal land counties and slightly older in farm counties than in the total nonmetro population. The percentage of nonwhites is below the nonmetro norm in all three natural resource categories. Overall, these population characteristics appear to contribute to the relatively high levels of family income in natural resource based counties.

Table 3—Comparative profile of county classes

County attributes	Units	County classes				
		Nonmetro total[1]	Farming	Mining	Federal land	Persistent poverty
Counties	No.	2,424	656	199	245	242
Total population, 1980	1,000	63,002	7,851	3,822	5,143	3,672
Demographic and locational:						
Mean population, 1980	Do.	26.0	12.0	20.0	22.1	15.1
Population change, 1970-80	Percent	14.6	4.1	21.6	33.9	14.3
Population change, 1960-70	Do.	1.2	−6.9	−3.3	8.3	−3.5
With city of 10,000 or more, 1970	Do.	21.4	3.8	11.6	17.1	1.7
Adjacent to SMSA	Do.	39.4	36.3	35.7	23.3	30.6
Access to interstate highway, 1970	Do.	21.3	13.6	14.1	17.1	14.5
Income distribution:						
Median family income, 1979	Dollars	15,778	15,010	17,019	16,716	11,923
Families in poverty, 1979	Percent	12.8	23.2	23.8	16.6	46.0
Economic structure, 1978:						
Income from—						
Agriculture	Do.	15.2	33.3	6.5	11.1	14.6
Manufacturing	Do.	20.5	10.5	7.9	15.7	22.7
Mining	Do.	4.8	2.2	35.7	8.4	4.3
Government	Do.	16.8	15.6	13.5	20.9	20.6
Human capital, 1980:						
Completed high school	Do.	57.6	58.3	56.0	68.6	41.9
Employment to population ratio	Do.	39.1	39.4	37.7	39.5	33.2
Work-limiting disability	Do.	10.3	9.6	10.7	9.7	14.6
Nonwhite	Do.	11.3	8.9	7.5	7.3	26.3
65 years and over	Do.	14.0	15.7	11.5	11.3	13.5

[1]Nonmetro status as of 1974.

Sources of data: Tabulated from 1970 and 1980 Censuses of Population; unpublished data from the Bureau of Economic Analysis.

In contrast, persistently low-income counties have a distinctly different population profile. Only 41 percent of adults have completed high school, only 33 percent of the total population is employed, and almost 15 percent of the labor force age population has a work-limiting disability. Over 25 percent of the population in persistently low-income counties is black. This distinctly different population profile in low-income counties contributes to their high rate of poverty.

Explaining Intercounty Variations

We have looked at the relationship of single factors to population change and income level. We now investigate the effect of all the factors considered together, using ordinary least squares regression to provide a more coherent explanation of demographic and socioeconomic change in nonmetro areas.

Population Change

Traditional explanations for variations in population change among areas have concluded that growth is more likely in areas that: (1) had been previously growing, (2) had a relatively high level of urbanization, (3) had relatively easy access to nearby larger places, (4) had a relatively large proportion of their economy involved in manufacturing activities, (5) had relatively high levels of income and other indicators of socioeconomic status, and (6) were located outside of the South. The direction of the relationships between population change and demographic, locational, and economic base factors has generally remained the same during the last three decades, but the explanatory power of these factors has diminished over time. For example, Lichter and Fuguitt demonstrated positive effects of population density, urbanization, adjacency to larger places, and interstate highways on rural growth, but they also showed that these effects were increasingly weak (*14*). They showed that the positive effects of growth in manufacturing and recreation employment and the negative effects of agricultural employment have declined. These traditional demographic and economic base variables explained much less of the intercounty variation in rural population change during 1970-75 than in 1960-70 or in 1950-60, suggesting that other explanations have become relatively more important in recent years.

Other research has demonstrated that the relationship between rural population change and certain explanatory variables reversed direction. Beale showed that employment in manufacturing and level of urbanization, which had been a positive influence on growth during 1960-70, were negative factors during 1970-75 (*1*). And Heaton, Clifford, and Fuguitt showed that median family income was positively related to rural migration of persons under 65 years of age during 1950-60 and negatively associated in 1960-70 and 1970-75 (*11*). Location in the Southern region also reversed from negative to positive in its effect on population growth (*14*).

The ordinary least squares regression of the effects of county characteristics on population growth during 1970-80 presented in table 4 includes three types of explanatory variables: demographic and locational, economic base, and population composition and socioeconomic status. The analysis is performed for all 2,424 nonmetro counties, for the three categories of natural resource based counties, and for persistently low-income counties.

The mean rate of population growth among nonmetro counties was 14.6 percent during the 1970's, with a standard deviation of over 20 percentage points.[4] We explain almost half of the intercounty variation in population change in all nonmetro counties and in farming and persistently low-income counties, and about 20 to 30 percent of the variance in the mining and Federal land counties. This is comparable to previous research. However, it indicates that the variables we have included in our equations, and/or the way in which we have measured them, leave much of the explanation to further research. For example, our analysis includes no measures of amenities or quality of life, factors that have been shown to be important in some previous analyses of rural migration (*11*). Still, our analysis does a fairly good job of identifying factors related to rural population growth during the 1970's.

Demographic and Locational Factors. All six of the demographic and locational variables help to explain post-1970 rural population change. However, the magnitude of some effects, and sometimes their sign, varies among the county types. The positive effects of population change during 1960-70 on change during the 1970's is by far the strongest in our analysis. This is true for the total nonmetro sector and in two of the four county types. The analysis shows that population growth tended to be greater in less urbanized counties during the 1970's. While four of five county classes share this negative relationship between urbanization and growth, it is statistically significant in only the total nonmetro and mining categories. Retirement coun-

[4]This rate differs from that contained in table 1 since this is the unweighted mean of the rates for all counties, while that in table 1 is the aggregate rate for the entire nonmetro category.

ty status (having a 10-percent or higher rate of net migration of persons 65 or older during 1960-70) is also positively related to the 1970-80 rate of population growth. Retirement county status is an important determinant of post-1970 population growth in all of the county classes.

Locational factors also have relatively consistent effects on rural population growth. In most cases the rate of growth was greater in counties adjacent to SMSA's, in counties that had an interstate highway within their borders, and in counties located in the South or West. Exceptions to this pattern include mining counties, which tend to grow less rapidly when they are located near an SMSA, and access to an interstate highway, which has a statistically significant effect on growth in only total nonmetro and mining counties. Also, southern or western location does not explain differential growth among low-income counties because 90 percent of these counties are located in the South.

Economic Base Factors. Dependence on natural resource related activities (agriculture and mining) has a negative effect on population growth for all nonmetro counties. In fact, the strongest negative effect is among mining and agricultural counties themselves; the higher the dependence in those counties, the lower the rate of post-1970 population growth. Dependence on mining is not a statistically significant factor in the farming and persistently low-income categories. Population growth is generally lower in counties with a higher level of dependence on manufacturing. However, there is one notable exception: manufacturing activity contributes strongly to growth in farming areas. Dependence on wage and salary government employment tends to be positively related to rural population growth, but it is statistically significant only in farming areas.

Population Composition and Socioeconomic Status. Wealthier areas and areas with lower percentages of nonwhites have been traditional growth areas in rural America. Other research indicates that retirement areas, (areas with higher than average inmigration of elderly people) grew during the 1970's. Our results (table 4) show that older age and median family income are positively related to rural population growth, but the relationships are very weak and contribute little to our understanding population growth. Income is only statistically significant in the Federal lands category, and

Table 4—Effects of county characteristics on population growth rate of nonmetropolitan counties, 1970-80[1]

County characteristics	Effects on population growth rate by county classes				
	Nonmetro total	Farming	Mining	Federal land	Persistent poverty
Demographic and locational:					
Percent population change, 1960-70	0.393*	0.390*	0.119*	0.247*	0.246*
Percent with city of 10,000 or more	−.139	−.039	−.100**	.090	.051
Retirement county[2]	.160*	.191*	.196*	.115**	.183*
Adjacent to SMSA	.042*	.161*	−.107**	.100**	.139*
Percent with interstate highway in 1970	.036**	.029*	−.155*	−.032	.012
South/West regions	.292*	.319*	.139*	.150*	−.005
Economic base, 1970:					
Percent of income from agriculture	−.271*	−.077**	−.356*	−.218*	−.160*
Percent of income from mining	−.039	.034	−.309*	−.248*	−.070
Percent of income from manufacture	−.174*	.096**	−.209*	−.326*	−.132*
Percent of income from government	.025	.163*	.033	−.119**	.038
Population composition-socioeconomic status:					
Median family income, 1969	.043	.042	.088	.121**	.022
Percent nonwhite, 1970	−.113*	−.099*	.046	−.065	−.442*
Percent 65 years and older, 1970	.025	.001	.037	.023	−.020
$\bar{R}^2$	.468	.506	.217	.288	.487
Number of counties	2,424	656	199	245	242

* = significant at .01.
** = significant at .05.

[1]Standardized regression coefficients.
[2]0-1 variable with low rate (less than 10 percent inmigration at age 65 in 1960-70) of elderly migration as a reference.

the percentage of residents 65 years and older only reaches statistical significance in the total nonmetro equation (where over 2,000 counties are included). In contrast, the percentage of nonwhites has a consistently negative effect on growth. This is somewhat surprising since region is controlled in the analysis, and most rural blacks live in the South. The "race effect" is particularly strong in farming and persistently low-income counties.

In summary, we found that nonmetro population growth is higher in areas that were growing previously, are classified as retirement counties, have access to an SMSA and to the interstate highway system, and are located in the South or West. Conversely, growth tends to be less in counties that are highly urbanized; depend on agriculture, mining, or manufacturing for a large proportion of personal income; and in which blacks constitute a relatively large proportion of the population. The positive associations with previous growth experience, access to an SMSA and access to transportation, and the negative associations of race and dependence on natural resource based industries are consistent with previous research on rural population change. However, the positive associations between population growth and regional location in the South, the negative relationships between population growth and level of urbanization and dependence on manufacturing, and the lack of a positive association between growth and community income break with past explanations of nonmetro growth.

The 1970-80 population growth of specific county types is generally explained by factors similar to all nonmetro counties. Among the notable exceptions, however, are that government and manufacturing are sources of growth in agricultural areas; that mining areas grow more rapidly if they are not adjacent to an SMSA; and that Federal land counties have a lower rate of growth where dependence on government is relatively low. The positive effect of manufacturing on population growth in agricultural areas is an anachronism today. In earlier times, most of rural America was dominated by agriculture, and manufacturing differentiated growing areas from declining areas. We suspect that the growth effect of manufacturing in agricultural areas works through off-farm job opportunities for farm family members, but household level analysis will be necessary to determine this. While the explanation of growth among persistently low-income counties is generally consistent with that for all nonmetro counties, several factors are not statistically significant in the low-income analysis: level of urbanization, access to interstate highway, region, and dependence on mining.

Income Level

The economic development literature consistently argues that some measure of income, preferably one that has a distributional component, is a more appropriate way to assess levels of development than measures of aggregate economic activity or growth alone (3). In fact, given the difficulty of measuring other dimensions of social and economic well-being, income is often used as the sole indicator of development.

Central place theory provides a strong basis for believing that urbanization and position in the urban hierarchy affect development. Similarly, economic base theory suggests that the sectoral composition of economic activity affects income levels. We measured location and role in the urban hierarchy by percent urban, adjacency to an SMSA, and location in the southern region (table 5). Our measures of economic base are percentages of labor and proprietors' income from agriculture, manufacturing, mining, and government. In the analysis of intercounty income variation for all nonmetro counties, all of these variables are statistically significant except for the region; and all of the variables have the expected sign.[5]

The remainder of our model of area income determination draws principally on human capital theory: explaining income differences by educational attainment, employment status and disability, age, and race. All these variables are statistically significant for nonmetro counties taken as a group, and all have the expected sign (table 5). Our model of interarea income explains over 70 percent of the observed variation in median family income levels among this group of counties. In fact, only for the persistently low-income counties does the model's explanatory power fall significantly below this level.

Comparison of County Groupings. Results of the income model are consistent across the county groupings and there are few notable exceptions. However, it is somewhat surprising to find the strong negative association for the farming counties between their family income levels and their dependence on farm income. While the farm counties as a group do not lag seriously behind all nonmetro counties in income level, agricultural dependence continues to be a developmental liability.

[5]We had no *a priori* basis for expecting the sign of the government variable to be positive or negative, except that we do know that government jobs tend to pay relatively low wages.

We were unable to explain the large negative association between dependence on government and income levels in farming and mining counties. But this finding, combined with the strong positive effects of government dependence on population growth in the farming group and positive (although not significant) association for mining counties suggests that we need a much better understanding of the composition of income and the activities that make up the governmental sector. The way in which the government counties are spread across the rural landscape defies easy generalization.[7] However, it seems clear that most counties' dependence on government results from some Federal or State activity. Because such activities are largely administrative, their location is determined by a political process, not by marketplace factors.

Perhaps the most surprising finding in our income modeling effort is the fact that increased urbanization is negatively associated with income levels for the persistently low-income group. This finding is contrary to our expectation, and to the findings for all nonmetro counties and the natural resource groupings. Equally puzzling is why the age structure variable is not significant in explaining differences in income among the persistently low-income counties. The lack of association between percent nonwhite and per capita income is also unexpected, but is probably because the persistently low-income category includes counties with both very high and very low proportions of black population. This cancels out the race effect in the regression.

That the persistently low-income counties have been largely outside the mainstream of development for 30 years certainly suggests that they are somehow different. But many of the summary statistics for them are puzzling, as are a number of the regression results we obtained. If future rural policy focuses on areawide rural poverty, we will need a much better understanding of why these areas are so resistent to change.

Summary of Findings

Over 1,000 nonmetro counties have a continuing dependence on natural resources, as measured by agriculture, mining, and Federal landholdings. These resource dependent counties account for about 42 percent of all rural counties, but contain less than 25 percent of the total rural population. Thus, these counties are sparsely settled in comparison to all rural counties. They are also less likely to be adjacent to an SMSA and relatively less likely to have access to the interstate highway system. Of the natural resource counties, only those with a dependence on farming trailed all nonmetro counties in median family income as of 1980. And farming counties lagged less than $1,000

Table 5—Effects of county characteristics on intercounty variation in median family income, 1979[1]

County characteristics	Effects on median family income by county classes				
	Nonmetro total	Farming	Mining	Federal land	Persistent poverty
Location:					
Percent urban, 1980	0.109*	0.101*	0.176*	0.226*	−0.110*
Adjacent to SMSA	.167*	.213*	.063*	.058*	.112*
South	.025	.064*	.041	−.152*	.182*
Economic base, 1978:					
Percent of income from agriculture	−.124*	−.185*	−.138*	−.166*	−.190*
Percent of income from manufacture	.103*	.057*	−.069**	.163*	.070
Percent of income from mining	.154*	.060*	−.038	.219*	.144*
Percent of income from government	−.084*	−.219*	−.291	.036	.011
Demographic and human capital, 1980:					
Percent of high school graduates	.356*	.442*	.430*	.187*	.364*
Employment-to-population ratio	.270*	.142*	.244*	.359*	.399*
Percent reporting disability	−.197*	−.150*	−.080	−.049	−.256*
Percent 65 years and older	−.115*	−.121*	−.128*	−.158	−.055
Percent nonwhite	−.102*	−.132*	−.078*	−.126*	−.049
R^2	.727	.665	.790	.761	.569
Number of counties	2,424	656	199	245	242

* = significant at .01.
** = significant at .05.

[1]Standardized regression coefficients.

behind. The three groupings of natural resource counties had poverty rates comparable to all rural counties. Clearly, natural resource dependence is not an important correlate of area income level or incidence of poverty in rural America in the 1980's. It is equally unsatisfactory in explaining recent population change of rural counties, with the notable exception of farming dependence, which continues to be associated with net outmigration from rural areas.

In contrast, persistently poor rural counties do not have a unique economic base profile; they are very similar to the nonmetro county average. Forty-three of the poor rural counties are agriculturally dependent by our measure, 14 others are mining dependent, and 5 are Federal lands dependent. Even more (a total of 45) are dependent on manufacturing and government, and 18 are areas with a significant inmigration of retired people. What differentiates persistently low-income counties is their population profile and location, not their economic base. Most important in that profile is low levels of schooling, a high percentage of the working age population who identify themselves as having a work-limiting disability, a southern location, and the relatively large percentage of dependents (old and young combined). The percentage of blacks in these counties is more than double the average for all nonmetro counties.

Rural Policy Directions

The initial results of our efforts to classify rural counties and to provide a different perspective on the social, economic, and political meaning of rural in the 1980's improves the knowledge base for policy and program development. For example, it seems clear that many rural areas tend to have a specialized economic base. Thus, no single sectoral policy will be appropriate in assisting the development of rural areas. The nonagricultural character of much of rural America is increasingly shaping the future (certainly it was at the heart of the population turnaround of the 1970's). This presents a very different setting for development and employment policies than was the case 20 to 30 years ago. A development policy intended to address the needs of the entire rural and smalltown population will not succeed if focused primarily on farming and agribusiness (*20*).

Federal policy designed to assist rural people and areas has been a response to perceived and actual rural disadvantage. The picture of rural America, with many of its citizens poor, undernourished, undereducated, ill-housed, denied access to essential public facilities and services, was painted vividly by the President's Poverty Commission in its 1968 report, *Rural Poverty in the United States* (*16*). While poverty remains a serious problem for many rural Americans, there has been enormous social and economic progress. Thus, generalized assistance to rural areas based on an assumed universal disadvantage seems inappropriate.

Rural counties with areawide low personal and family income are relatively few and geographically concentrated. The persistently low-income counties represent one delineation of such areas. In these areas, the rural poor are confronted by a lack of adequate human and community facilities and are relatively isolated from other areas that have such facilities. In many cases, rural institutions (particularly governmental) are unable or unwilling to provide needed assistance or support for change. Given the distinct population profile of these low-income areas (low level of formal education, high percentage nonwhite, high degree of work-limiting disability), we wonder how much of the problem can reasonably be solved through public and/or private development efforts alone. Even if such efforts are carefully targeted, the design of most development programs assumes that their principal benefits will occur through the creation of more and better job opportunities.

All of the welfare reform proposals considered in recent years would have established national minimum payment standards. They would also have made numerous changes in asset qualification requirements and in assumptions about family status and labor market status that would have benefited rural residents. For many of the rural poor, especially those in States with low welfare payment levels and in chronically disadvantaged areas of the South, welfare reform is a key issue for Federal rural policy. No other single policy action would have as immediate and obvious consequences for their well-being in terms of their ability to obtain the goods and services essential to a decent level of living.

Our analysis provided no convincing evidence that dependence on natural resource based activities is an important constraint to population growth. Dependence on farming or mining has a negative effect on population change in our regression analysis, but other research has demonstrated that this negative effect has diminished over time (*14*). From an aggregate perspective, dependence on natural resources appears to be a diminishing disadvantage to community growth. Similarly, our analysis does not provide clear evidence that natural resource dependence leads to a lower level

of community income. Agricultural dependence does have a negative regression effect on income level, but the median family income or poverty rate of agricultural counties is not substantially different from all nonmetro counties. And in the other two natural resource county classes, income is higher and poverty lower than in the total nonmetro category. However, individual level analysis might show that rural households with a substantial proportion of income from natural resources related pursuits have income problems meriting specific attention.

For the past 20 years, the principal justification for Federal rural development programs has been conditions of rural disadvantage. Partly as a consequence of those programs, but largely because of general economic, demographic, and other changes, conditions in rural communities have improved significantly. In addition to improved incomes, rural citizens have benefited from improvements in transportation, communication, and housing. Despite this, rural poverty persists among a disproportionate share of our rural citizens and in large concentrations in a few areas. We suggest that the connection between rural poverty and natural resource dependence is weak. It is not appropriate, however, to conclude that natural resources and poverty are unrelated, or that natural resource policies might not be an appropriate component of rural development policy for some poor areas or individuals. Rather, natural resource dependent counties are not the principal target for rural development programs which might ameliorate the problems of the rural poor.

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Other Reports of Interest on Rural Issues

Physicians in Nonmetro Areas During the Seventies shows that the gap between the number of physicians in nonmetro and metro areas widened during the seventies, with nonmetro areas lagging by almost 100 physicians per 100,000 population. This report describes availability of physicians in nonmetro areas in light of population changes and demand for medical care. RDRR-46. March 1985. 28 pp. $1.50. Order SN: 001-019-00380-4.

Housing of the Rural Elderly finds that the number of rural elderly households rose 16 percent between 1974 and 1979 compared with a 10-percent increase for all U.S. households, based on the 1979 Annual Housing Survey. Most of the U.S. elderly live in adequate housing, but 27 percent of the elderly renters and 18 percent of all elderly living in the South have inadequate housing. In 1979, 15 percent of the rural elderly lived in adequate housing compared with 8 percent of the urban elderly. RDRR-42. July 1984. 20 pp. $1.50. Order SN: 001-019-00335-9.

A Profile of Female Farmers in America discusses social and economic characteristics of female farmers, including age, race, size of household, farm and off-farm income, types of farms female farmers most frequently run, and value of agricultural products sold. Although the number of U.S. farms is dropping, the number of female farmers is rising. They tend to run smaller farms and earn less than their male counterparts. RDRR-45. January 1985. 32 pp. $1.50. Order SN: 001-019-00378-2.

Chartbook of Nonmetro-Metro Trends is a quick check on metro and nonmetro socioeconomic trends. It presents colorful charts, tables, maps, and text tracing differences in population, employment, income, poverty, housing, and government between nonmetro and metro America. RDRR-43. September 1984. 48 pp. $2.50. Order SN: 001-019-00351-1.

Patterns of Change in the Metro and Nonmetro Labor Force, 1976-82 reveals that nonmetro areas, particularly farm areas, lagged behind metro areas in employment growth during the 1976-82 period. This reversed a pattern of faster nonmetro growth occurring in the late sixties and early seventies. RDRR-44. December 1984. 28 pp. $2.00. Order SN: 001-019-00358-8.

Distribution of Employment Growth in Nine Kentucky Counties: A Case Study shows that people moving to a nonmetro area held a disproportionate share of jobs in growing business establishments and of better paying executive jobs. Manufacturing was the study area's major economic driving force, but the private service sector (which provided services to the manufacturing sector and to the area's growing population) was an important contributor to job growth between 1974 and 1979. RDRR-41. August 1984. 44 pp. $2.25. Order SN: 001-019-00337-5.

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