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AGRICULTURAL ECONOMIC REPORT NO. 97

AN ECONOMIC SURVEY Of the OZARK REGION

conomic Research Service - U. S. DEPARTMENT OF AGRICULTURE ooperating with Agricultural Experiment Station - UNIVERSITY OF ARKANSAS

READING ROGMAANCOIS

PREFACE

The delineation of the Ozark Region for purposes of this study was made July 1, 1965 and includes 115 counties. An official delineation of the region under the provisions of Title V of the Public Works and Economic Development Act of 1965 (P.L. 89-136) was made March 1, 1966 and included 125 counties. This official delineation added the following counties to those of the study delineation: in Oklahoma--Carter, Creek, Garvin, Lincoln, McClain, Murray, Pottawatomie, and Seminole; in Arkansas--Dallas, Grant, Lonoke, and Prairie. Study counties deleted from the official delineation were Hempstead and Little River Counties in Arkansas. Counties included in the study delineation and the official delineation were identical in Missouri.

This report identifies the major problems in the economy of the Ozark Region and indicates the potentials of the region and the need for additional study. Specific objectives are:

- (1) To inventory the major resources of the region and the problems and potentials associated with resource development;
- (2) To determine the direction and magnitude of changes in the region's resource use during the latest intercensal period;
- (3) To isolate the important employment trends in the major economic activities;
- (4) To evaluate the effects of the economic problems of the region on its demographic structure, employment, and incomes.

Census county data which could be aggregated for the region were used in the study. Other reports of studies within the region were consulted where appropriate. It was not the purpose of this study to generate primary data.

ACKNOWLEDGMENTS

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Cover map, courtesy of Erwin Raisz, Cambridge, Mass.

July 1966

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HIGHLIGHTS

The Ozark Region as delineated for this study comprises 115 counties in, or bordering, the Ozark and Ouachita Mountain areas of Arkansas, Missouri, and Oklahoma. (The official delineation of the region was made by John T. Connor, Secretary of Commerce, March 2, 1966, and included 125 counties.)

Employment opportunities within the region have contracted, causing a continued outmigration of youth, absolute population losses, and low incomes. Incomes are too low to support adequate public services. Low-wage labor-intensive industry moving into the area has contributed to an adverse industry balance.

A large part of the land is unsuited to further agricultural development. Much of the land adaptable to agriculture is forested. Only isolated areas specializing in poultry, dairy, and intensive crops have an intensive commercial agriculture which could serve as a development point for agriculture and related industry.

Much of the region is covered with slow-growing hardwoods; however, most of the Coastal Plains of Arkansas, the Ouachita Mountains, and the Arkansas River Valley have sufficient pine to support an expanded forest products industry for further development.

Recreation offers a potential use for physical resources. Recreation centers have emerged and are developing rapidly.

Bauxite, iron, lead, zinc, barite, coal, and natural gas are being exploited in the region. Mining employment has not contributed substantially to the economy and is not likely to expand, but the location of complementary processing and manufacturing activities near the commercial mineral operations could increase their economic significance.

Manufacturing employment has expanded rapidly in the predominantly urban areas of the region, but not enough to employ the large number of workers being released from agriculture. The manufacturing of the region is concentrated in slowly growing sectors such as apparel. A continued shift of manufacturing into the region will be required if a high growth rate is to be maintained with slow-growth manufacturing.

Public and private services adequate to support economic activities are available only in the larger urban centers of the region. Revenues from local sources alone are not adequate to support public services needed for development. The need for additional education and training is especially acute.

The age composition, insufficient education, and lack of marketable skills of the population tend to retard development of economic activities, and also tend to keep workers from moving where jobs are available. The major economic problem within the region affecting every type of adjustment is the amount and quality of education.

AN ECONOMIC SURVEY OF THE OZARK REGION

by

Max F. Jordan and Lloyd D. Bender 1/

PROBLEMS AND POTENTIALS

The shortage of employment opportunities for the human resources of the 115 counties of the Ozark Region is a major problem. In the 1950-60 decade, the labor force declined, unemployment increased, and underemployment remained high by national standards. The results were migration rates of about 40 percent in the most productive age groups, a median education level of 8.9 years for those in the region, and family incomes only 60 percent of the national median.

The magnitude of the deficiency in education is indicated by the differences between Ozark levels and those of the United States. The region would have 132,000 more high school graduates if education levels were equivalent to those of the Nation. Per pupil expenditures equivalent to the United States level of \$375 per student in average daily attendance in 1959-60 would have required an additional expenditure that year of \$55 million. A capital outlay for schools equivalent to the U. S. average would have required about \$20 million more in the region in 1962. Retraining an estimated 40,000 underemployed persons at \$1,700 a trainee for a 52-week training period would reach \$68 million.

The seriousness of the problem is also indicated by the fact that 24 counties within the region had an average daily attendance less than 1,650 in 1959-60--the minimum size district necessary to support an adequate high school. The small school districts (whether incapable of consolidation because of isolation or not) need much larger expenditures per student to support even a minimum program. The local economies of the region cannot support the expenditures necessary to provide superior educational services.

Improving the quality of the human resources offers the greatest single potential for more complete utilization of those resources. A better trained labor force will contribute to more rapid economic development within the region. A good educational program for the youth will permit them to take

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advantage of a broader range of opportunities within or outside the region. Adult education programs tailored to the needs of the underemployed and unemployed of the region will allow adults to make needed adjustments.

The potential of individuals can be greatly enhanced by an accelerated program of basic education to qualify them for labor force participation. Since labor force requirements are changing so rapidly, existing rates of improvement in education are narrowing the gap between education levels and labor force requirements only slightly. Programs superior to those of most other regions are needed if the gap is to be closed.

The recreation industry offers the best single opportunity for providing additional employment by developing the physical resources of the region. Recreation in the region is already a basic industry, and recreation demand is increasing.

Recreation centers are emerging around the major reservoirs, especially those with access to the main concentrations of population, and around other attractions of the region. On the basis of past recreation-related trade and service employment, six recreation centers can be identified. The first is Garland County, Ark., with 38 percent of the county labor force in recreationrelated employment. Hot Springs, the center of the development, has ready highway and air access, and diversified recreation. The second center surrounds the Lake of the Ozarks in Missouri, near Kansas City and St. Louis, and specializes in water-based sports, sightseeing, entertainment, and related activities. The third center is the Lake Texoma area in Oklahoma north of Dallas and Fort Worth. The White River center includes Lakes Norfork, Bull Shoals, Taneycomo, Table Rock, and Beaver; the Blanchard Springs Cavern; and the Ozark Cultural Center. The reservoirs in east central and northeast Oklahoma near Tulsa comprise the two other centers.

The principal needs for further recreation development in the region include:

- (1) Highway and air access to recreation centers.
- (2) Concentrations of diversified facilities.
- (3) Coordination of development through planning and zoning.
- (4) Development of complementary public services such as health facilities and regulations, sanitary facilities, communications, and public protection.
- (5) Credit systems for predominantly rural areas.
- (6) Insurance programs for recreation-related developments.

The growth of population in nearby metropolitan centers and the continued growth of demand for family vacation services favor increased employment in recreation. Family recreation is the most important source of recreation employment in the region, and has a greater employment multiplier than other types of recreation that require less complex facilities. An expanded recreation industry will contribute to additional employment of local residents. As a basic industry, recreation contributes to local demand for other services. In addition, there are other industries closely linked to recreation which have a potential in the region. Retirement communities and part-time homes, for instance, should contribute to the local economies of the recreation centers.

The problems of the recreation industry relate primarily to development of the full potential of the region. A number of additional measures can be taken to stimulate further development. Concentration of diversified facilities requires local private cooperation and initiative. Many measures, such as planning and zoning, require local private and public initiative. However, provision of highways and air access, public health facilities, and home financing may require cooperation of Federal, State, and local governmental units.

A major problem associated with the lack of employment opportunities in manufacturing is the lack of centers with adequate public and private services. In 1960, only 14 towns and cities within the region had populations over 10,000. Forty percent of the manufacturing employment was located within the 11 predominantly urban counties. 2/ Only eight counties had over 30 percent of the labor force employed in the trades and services most closely related to manufacturing.

A relatively small but increasing proportion of the Ozark labor force is employed in manufacturing. In the 1950-60 decade, however, manufacturing employment increased 39,945 while agricultural employment decreased 142,110. A high proportion of the new manufacturing employment was composed of women, indicating that those released from agriculture were not those employed in manufacturing. The industries moving into the region are primarily laborintensive and slow-growth types utilizing female labor. Continued increases in female employment will mask, and maintain, male underemployment. Since the manufacturing growth is of the slowly growing type, an adverse industry balance is also maintained and growth of existing industries will not likely absorb large numbers from agriculture and forestry.

Policies and programs designed to increase the public services in and around potential centers of manufacturing are necessary for development of new industry. These include development of public services and facilities needed by industry. Education to improve labor force capabilities and the community as a place to live must be furnished. Complementary relationships among industries can encourage further industrial development. Measures to expand employment in existing firms are especially appropriate.

A large part of the land in the Ozark Region is unsuited to agriculture for crop and forage production. Incomes on the many small farms have been low, resulting in movement of a large number of people from agricultural employment in recent years. The age of the farm operators, the nature of the land resources, and the levels of income make it virtually impossible to develop a highly commercial agriculture for the area with farms of sufficient size to provide an adequate income for the farm family.

2/ See Appendix B for list of urban and rural counties in region.

A few younger farmers with considerable resources and managerial ability should be aided to develop adequate commercial farm units. Those young farmers without resources and managerial ability should be aided to develop opportunities outside of agriculture. Older farmers, too young to retire and without other opportunities, should be assisted to use their existing resources to improve incomes as much as possible, but it is unlikely that many will have the managerial capacity to utilize enough resources for adequate levels of income. They can be assisted in getting local part-time employment to the extent this employment is available. Older farmers of retirement age can be helped to retire to release resources for incorporation in farms of younger operators. "Boxed-in" farmers and those of retirement age may need welfare supplements to relieve undue privation.

The Ozark Region has a high proportion of its land in timber. The Coastal Plains of Arkansas, the Ouachita Mountains, and the Arkansas River Valley have highly productive well-stocked stands of pine forests. However, over half of the timber in the Ozark Uplands is on poor sites with poor quality of timber, and much of the timber throughout the region is in small tracts with poor management.

One step to improve the potential of timber production of the region is to consolidate the small tracts into larger holdings that justify better management. The best use of the poor sites is for flood protection, recreation, and site protection. In some parts of the region with good supplies of timber and growth capabilities there is considerable potential for expansion of forestproducts industries. Additional utilization of forest products will provide incentives to consolidate holdings and improve management.

The varied mineral resources located within the region have had limited exploitation and have not contributed significantly to employment. Mining employment in the region is not likely to expand due to the modest size of the higher grade deposits, the low quality of the larger mineral deposits, and depressed market prices. But with complementary processing and manufacturing activities near the commercially feasible mining operations, their economic significance can increase.

Public services of the developing centers within the region are inadequate for the full development potential to be realized. Manufacturing, recreational, agricultural, and forestry centers each require a unique set of public services, although in most cases there will be combinations of these sets required.

Local and State Governments will be unable to supply all the programs necessary for full development of the region. Maintenance and operation of adequate programs cannot now be provided, especially education and training. Only with the full cooperation of all governmental agencies and private groups can an appropriate combination of public and private services be developed and maintained.

Government employment is about 10 percent of total employment of the region. Local governmental employees are the largest single group. There are many Federal and State services now located in congested urban areas that can be decentralized and located in areas such as the Ozark Region. While these services must be located near population centers for needed transportation, communication, and other services, these may be smaller centers than they currently occupy. Costs of governmental services and economic development should be considered as a part of overall economic development policy.

The problems of the Ozark Region vary among areas. Each area with differing resources and potentials must be treated separately, but as a part of the region and the U. S. economy as a whole. Since there are many problems, each with many facets, a single program will not solve them. It will take coordinated efforts among all levels of government and private groups to develop the economy of the region.

THE REGION

Delineation of the Region

The Ozark Region includes 42 counties in Arkansas, 44 in Missouri, and 29 in Oklahoma (fig. 1).



FIGURE 1. URBAN AND RURAL COUNTIES, OZARK REGION The region was delineated by the following sequential procedure: 3/

- (1) Initially included were all counties one-half or more within welldefined Ozark or Ouachita soil associations.
- (2) Border counties adjacent to the area above were included if (a) the 1960 median family income in the county was \$3,000 or less,
 (b) the soil productivity was low, or (c) the county had been designated 5a or 5b by the Department of Commerce. 4/
- (3) Additional counties or groups of counties adjacent to the basic region were included if they had abundant mineral or recreational resources with undeveloped income potentials.
- (4) Counties bounded on three or four sides by the above area were included.

Urban and nonurban counties within the region were defined for further analysis as follows: Counties were classified as predominantly urban if onehalf or more of the 1950 county population was urban, regardless of the size of the major population centers. Counties with 1960 population less than one-half urban were classed as predominantly rural. Five counties in Oklahoma, four in Arkansas, and two in Missouri are predominantly urban according to these criteria.

Physiographic Features of the Ozark Region

The Ozark Region may be divided into four broad physiographic areas (fig. 2): (a) the Ozark Uplands of about 40,000 square miles, almost half the region, including the Salem and Springfield Plateaus and the Boston Mountains; (b) the Arkansas River Valley; (c) the Ouachita Mountains; and (d) border counties consisting partly of coastal plain, prairie, bottomland, or bottomland terrace.

Ozark Uplands

The Salem Plateau occupies about two-thirds of the Ozark Uplands. Rising from the plateau in Southeast Missouri are the St. Francois Mountains, of igneous rocks, covering an area of about 70 square miles. Their peaks rise to about 1,800 feet above sea level.

The Springfield Plateau lies generally west of the Salem Plateau, but a narrow strip circles to the south and lies between the Salem Plateau and the Boston Mountains.

<u>3</u>/ The counties delineated for purposes of this study do not constitute an official delineation of the Ozark Region under the provisions of Title V of the Public Works and Economic Development Act of 1965. See Preface.

^{4/} Areas eligible for the development assistance provided in the Area Redevelopment Act of 1961 were specified in Sections 5(a) and 5(b) of the Act. Criteria for designation included high unemployment rates and low income.



Figure 2. Physiographic Areas of the Ozark Region

The Boston Mountains comprise some of the most rugged lands of the Ozark uplift. They are about 200 miles long east and west and average about 35 miles wide. They rise several hundred feet above the Springfield and Salem Plateaus to the north and drop off steeply to the Arkansas River Valley to the south. They form the southern boundary of the Ozark Uplands north of the Arkansas River.

The Arkansas River Valley

The Arkansas River Valley is a deep depression lying principally between the Boston Mountains to the north and the Ouachita Mountains to the south. The bottomlands along the river are 2 to 6 miles wide. Much of the land in the valley away from the bottoms is rolling to hilly, with isolated mountains 500 to 600 feet high, chiefly south of the Arkansas River. Magazine Mountain, 2,823 feet, is one of the highest elevations in Arkansas, and one of the highest points between the Alleghenies and the Rockies.

The Ouachita Mountains

Averaging 60 miles wide, the Ouachita Mountains extend from Little Rock, Ark., to Atoka, Okla. They are roughly delimited on the north and northwest from Little Rock to Danville by the Rock Island Railroad. In the valley of the Poteau River, which flows westward into Oklahoma, the Choctaw Fault serves as the northwest limit. The boundary follows this fault westward and southwestward to the coastal plain. The southern boundary of the Ouachita Mountains terminates at the coastal plain in Oklahoma and Arkansas.

At the eastern end of the Ouachita Mountains the elevation is about 500 feet, rising to a maximum height of more than 2,600 feet near the Oklahoma-Arkansas border. From there the elevations diminish to about 750 feet at the west end. At each end of the Ouachita uplift the elevations are about 250 feet above the coastal plain.

The Border Areas

The border areas of the Ozark Region are comprised of prairies and coastal plains almost entirely surrounding the Ozark-Ouachita uplift areas. The prairies are on the western boundary from Missouri south across Oklahoma where they merge with the coastal plain and extend around to the south into Arkansas. Broadly speaking, the eastern boundary of the study area can be called coastal plain, even though it merges into the Mississippi and Missouri bottomlands on the northeast and north.

THE HUMAN RESOURCES OF THE REGION

People who originally settled in the Ozark mountains were descendants of the early English colonists from the mountain regions of Kentucky, Tennessee, Virginia, North Carolina, and other eastern States. 5/ The settlers engaged in trapping, fishing, and subsistence farming for a livelihood. Exploitation of the timber resources of the region eventually became the major economic activity.

Because of the isolated nature of the early settlements, the people in the heart of the Ozark Region have retained much of their folk culture. Value systems tend to be particularistic, and self-sufficiency of the local community has bred a distrust for values from outside the community. Personal ingenuity in meeting social, economic, and family problems is a cultural trait derived from this orientation. With this social background, people of the region have been slow to assimilate urban values and ways of living, and economic changes have lagged behind those in most of the Nation.

Population Trends

The population of the Ozark Region reached a maximum about 1910 when the logging and lumbering industry was important $(\underline{14}, \underline{27})$. During the 1950's the region's population declined 4.4 percent (table 1). U. S. population increased 18.5 percent and Appalachian population increased 1.5 percent during the same period. Migration from the Ozark Region has long been large due to the excess of births over deaths and the paucity of economic opportunity.

The Ozark Region is still predominantly rural despite the growth of urban population centers within the region. However, between 1950 and 1960 the urban

5/ This section draws upon Gregory (27). Underscored numbers in parentheses refer to Selected References, p. 71.

Table	1Population	change,	Ozark	Region,	Appalachia,	and	United	States,	1950
				to 1960	1/				

Item	Population 1960	Population change 1950-60		
:	<u>Number</u>	<u>Number</u>	Percent	
United States:	179,323,175	27,997,377	18.5	
Appalachia	15,033,000	223,800	1.5	
Ozark Region	2,250,805	-104,489	-4.4	
Rural counties:	1,443,946	-155,193	-9.7	
Urban counties:	806,859	50,704	6.7	
Arkansas	931,776	-31,404	-3.3	
Rural counties:	519,617	-85,595	-14.1	
Urban counties:	412,159	54,191	15.1	
Missouri	786,330	19,445	2.5	
Rural counties:	581,191	-1,765	-0.3	
Urban counties:	205,139	21,210	11.5	
Cklahoma	532,699	-92,530	-14.8	
Rural counties:	343,138	-67,833	-16.5	
Urban counties:	189,561	-24,697	-11.5	

1/ See Appendix B for urban and rural counties in region.

Source: (69).

population increased in the Missouri and Arkansas portions of the region. Rural population (rural nonfarm and rural farm) declined in all three State portions and the region had a net population loss (15, 55, 68). In 1960, only 39 percent of the population in the region was in urban areas as defined by the Census of Population.

Until recently, the population of the Ozark Region was weighted heavily with those of dependent ages--under 18 or over 64. But in 1960, the proportion in these age groups was about the same as in the rest of the country--34 percent compared with 36 percent (<u>15</u>, <u>68</u>). The proportion of the population in these dependent age groups was higher in the rural counties of the region than in the urban counties.

Migration from the region has been mainly of two types. A study of Arkansas migration indicated the movement of individuals separated from the parental family before becoming established independently constituted the principal stream of outmigration from farms in the State before 1950 (<u>14</u>). The rate of this type of migration was highest in the groups completing high school and in the 18 to 35 age range. Family migration, especially migration of families with lower skills and little training for nonfarm employment, became more prevalent in the State during the 1950's, although migration of individuals continued. It is presumed these patterns held true for the Ozark Region as well as for Arkansas.

Every county in the region except the two urban counties in Missouri had net outmigration between 1950 and 1960 (table 2). The migration rate was greatest in the 20-29 age group--around 40 percent. The net migration rate among young people of every age group was much higher in the rural than in the urban counties. The continued movement of the younger members of the labor force from the region in the 1950's is directly reflected in the skill composition of the labor force remaining in the region, as well as in the absolute size of the labor force. Both these factors affect the ability of the region to maintain and build a viable industry base.

Several additional implications of these population changes are noted by Charlton $(\underline{14})$. Reduction in the number of people in rural areas hampers diffusion of knowledge and values, and makes social interaction more difficult. The tax base declines, yet services become more expensive on a per capita basis, and the need for special services, such as those for the aged, increases.

Educational Levels

The low level of educational attainment holds back development of the region and also hinders individuals from obtaining employment outside the region. In 1960, more than one-tenth of the Ozark population 25 years old or over were functional illiterates with less than 5 years of formal education $(\underline{68})$. The average was 13 percent in the rural counties and 8 percent--close to the U.S. average--in the urban counties.

Although a high school education is considered a minimum qualification for most skilled jobs in the United States, only 31 percent of Ozark Region residents 25 years of age or over had completed high school in 1960. The median number of school years completed by this group was 8.9, compared with the U. S. median of 10.6 (table 3). School enrollment in the region in 1960 was 86.5 percent of the population aged 5 to 17 years, not far below the 89 percent enrollment in the United States ($\underline{68}$); however, the median educational level of the region's population will remain low if the high outmigration of young people continues.

Levels of Living

Regions with a surplus of unskilled labor usually have low incomes and may even be victims of a circular effect in which the income gap is widened $(\underline{30})$. In 1959, both median family income and income per capita in the Ozark Region were far below those in the United States (table 4). The U.S. median family income was \$5,660. The Ozark median was \$3,373. The median was much lower for rural counties than for urban counties.

One indication of the level of living in an area is the proportion of its families having certain housing facilities. The rural counties are much below

્ર 1 Table 2.--Migration rate $\underline{1}$ / by age group, Ozark Region, 1950 to 1960 : : : Ozarks Arkansas Missouri : Oklahoma

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Age in .	•				•			·				
1960 :	Total	: Rural	: Urban : <u>2</u> /	· Total	Rural	Urban : <u>2</u> /	: Total	Rural	Urban 2/	: Total	Rural	Urban <u>2</u> /
: All ages.: 10-14:	-15.3 -15.2	-19.1 -18.3	- 7.1 - 8.6	-16.4 -17.2	-24.5 -24.1	- 2.8 - 5.5	- 6.4 - 7.0	- 8.8 - 8.9	1.2 - 0.7	-24.3 -21.3	-25.7 -21.9	-21.6 -20.2
 15–19: 20–24:	-17.7 -36.2	-22.1 -46.2	- 7.0 - 9.1	-19.5 -33.2	-28.6 -52.7	- 1.5 10.3	- 5.6 -22.0	- 8.5 -28.1	5.6 4.6	-28.7 -55.9	-30.7 -60.6	-24.4 -45.3
25-29:	-41.4	-52.0	-15.2	-37.3	-55.4	1.0	-34.0	-41.6	- 5.8	-55.5	-60.5	-44.9
30-34:	-23.1	-28.4	-13.8	-25.2	-36.5	- 9.4	-12.1	-14.5	- 5.9	-32.8	-34.6	-29.8
35-39:	-15.3	-18.3	-10.3	-17.1	-25.1	- 6.5	- 6.5	- 7.4	- 4.5	-23.1	-23.2	-22.9
40-44	-11.3	-13.2	- 7.9	-12.8	-18.6	- 4.8	- 3.4	- 3.8	- 2.4	-18.5	-18.2	-19.2
45_49	- 8.2	- 9.8	- 5.0	- 9.5	-14.2	- 2.3	- 2.0	- 2.2	- 1.2	-13.8	-14.0	-13.4
50_54	- 5.6	- 6.9	- 3.0	- 6.3	-10.0	- 0.4	- 0.9	- 1.0	- 0.5	-10.5	-10.8	- 9.9
55–59:	- 2.6	- 3.1	- 1.7	- 3.4	- 5.9	0.4	1.9	1.9	1.8	- 7.1	- 6.3	- 8.6
60–64:	1.0	1.0	1.1	- 0.2	- 2.0	2.0	2.5	4.2	4.5	- 1.3	0	- 3.6
65 -6 9:	3.9	3.4	4.8	3.3	1.6	6.2	6.2	6.2	6.3	1.6	1.9	1.2
70 - 74:	4.6	- 3.5	6.9	4.9	2.6	9.1	6.7	6.0	8.8	1.3	1.0	1.8

1/ Net migration estimates expressed as a percentage of the 1950 population that survived to 1960. Minus sign denotes net outmigration.

2/ See Appendix B for urban and rural counties in region.

Source: Compiled from data in (10).

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Table 3.--Median school years completed by persons 25 years of age and over, Ozark Region and United States, 1960 1/

Item	Median school years completed
United States	10.6
Ozark Region	8.9
Rural counties	8.7
Urban counties	10.4
Arkansas	9.3
Rural counties	8.7
Urban counties	10.9
: Missouri Rural counties Urban counties	8.9 8.7 10.5
Oklahoma	8.7
Rural counties	8.5
Urban counties	9.2

 $\underline{1}$ / See Appendix B for urban and rural counties in region.

Source: Calculated from data in (68).

Table 4.--Median family income and per capita income, Ozark Region, Appalachia, and United States, 1959 1/

Item	Median family income 1959	Per capita income	
:	Dollars	Dollars	
United States	5,660	1,850	
Appalachia:	5,287	1,451	
: Ozark Region	3,373	1,233	
Rural counties	2,867	1,070	
Urban counties	4,384	1,524	
Arkansas	3,423	1,238	
Rural counties	2,740	986	
Urban counties	4,459	1,554	
:		1 000	
Missouri	3,516	1,290	
Rural counties	3,107	1,117	
Urban counties	4,664	1,011	
Oklahoma	3,046	1,138	
Rural counties	2,707	1,018	
Urban counties:	3,843	1,356	

1/ See Appendix B for urban and rural counties in region.

Source: (15, 68).

the urban counties of the region in this respect. In the rural counties of the region, 56 percent of the housing units had hot and cold running water in 1960 (table 5). About the same proportion had a flush toilet and a tub or

	:	Housin	g units witho	ut	
Item	Hot & cold water <u>2/</u>	Flush toilet	Tub or shower	Water system <u>3</u> /	Sewage system <u>4</u> /
	:		Democrat		
Ozark Region Rural counties Urban counties	: 34.1 : 43.5 : 16.3	32.1 42.2 13.6	<u>Percent</u> - 33.4 43.3 15.2	7.8 10.5 2.7	32.0 43.0 12.0
Arkansas Rural counties Urban counties	: 31.7 : 44.7 : 15.0	29.6 43.3 11.9	31.0 44.5 13.7	7.7 11.5 2.8	28.8 43.3 10.0
Missouri Rural counties Urban counties	: : 36.4 : 44.9 : 12.1	34.0 42.5 9.6	35.2 43.6 11.0	9.1 11.8 1.4	34.7 44.0 7.7
Oklahoma Rural counties Urban counties	: 34.7 39.3 23.6	33.5 40.1 21.6	34.6 41.0 23.1	6.0 7.0 4.1	33.6 40.8 20.6

Table 5.--Percentage of housing units without specified facilities, Ozark Region, 1960 1/

1/ See Appendix B for urban and rural counties in region.

 $\overline{2}$ / Piped inside the structure.

 $\overline{3}$ / Includes water coming directly from springs, creeks, ponds, rivers, lakes and other sources besides public and private systems and individual wells.

 $\frac{4}{4}$ Units not having access to public sewers, and lacking septic tanks or cess pools.

Source: (70).

shower. About 8 percent of all housing units in the region obtained water from springs, creeks, ponds, rivers, lakes, and other sources besides public and private water systems and individual wells.

The Changing Labor Force

The civilian labor force of the Ozark Region 6/, paralleling the population changes, declined 5.4 percent between 1950 and 1960 (table 6). The

Table 6.--Civilian labor force: Participation of population 14 years of age and over, Ozark Region and United States, 1950 and 1960 1/

	:Parti	cipation	n in civ	vilian	labor	force	: Chang	ge in c	ivilian
Item	:	1950		:	1960		labor	force,	1950-60
	:Male	:Female	:Total	:Male:	Female	:Total	.:Male :	Femal	e: Total
	:			т т	Parcent				
United States	:78.0	28.9	52.9	74.6	34.5	54.0	7.0	35.4	14.9
Ozark Region Rural counties Urban counties	:72.9 :73.0 :72.8	21.1 17.5 28.1	46.8 45.4 49.6	64.4 61.9 69.2	27.8 24.5 33.4	45.8 43.3 50.5	-15.2 -21.3 -2.2	27.8 30.7 24.3	-5.4 -11.3 5.6
Arkansas Rural counties. Urban counties.	:74.4 :74.7 :73.9	22.6 16.8 31.4	48.0 45.8 51.7	67.7 66.5 69.3	30.0 24.8 36.5	48.3 45.2 52.2	-12.8 -22.5 3.9	30.9 33.8 28.5	-2.3 -12.2 11.7
Missouri Rural counties. Urban counties.	:74.9 :74.9 :75.1	21.7 19.6 27.4	48.2 47.5 50.0	62.8 59.4 73.6	28.0 26.1 32.9	45.6 43.4 51.9	-12.3 -17.2 3.3	31.3 31.9 30.1	-2.4 -7.2 11.1
Oklahoma Rural counties. Urban counties.	:68.1 :67.6 :69.0	18.1 15.4 23.0	43.1 41.7 45.7	61.2 59.4 64.5	23.6 21.5 27.2	42.0 40.1 45.2	-23.2 -25.9 -18.2	16.2 23.4 7.5	-14.9 -16.8 -11.7

1/ See Appendix B for urban and rural counties in region.

Source: (55, 68).

decline occurred despite a large movement of women into the labor force. The female labor force increased in each State portion of the region, totaling 28 percent for the region. The United States increase was 35 percent. The male labor force declined in all except the urban Arkansas and Missouri counties. These were the only counties that did not show an overall decrease in labor force.

 $[\]frac{6}{1}$ The civilian labor force is defined as all civilians 14 years old and over who were employed (at work, or with a job but not at work) or unemployed (looking for work). Hereafter, the term labor force will refer to the civilian labor force.

Participation in the labor force is lower in the Ozarks than in the United States as a whole owing to the lack of employment opportunities. The U.S. participation rate was 54.0 percent in 1960. Participation in the region was below that figure in all three States, averaging 45.8 percent. However, the urban counties approached the U.S. average.

The unemployment figures of the census do not take into account "hidden unemployment" and "underemployment" (table 7). The low participation in the

: Item	Une	mployment	:	Share of labor	civilian force
	1950	1960	:	1950	1960
: United States Appalachia	<u>Number</u> 2,832,200 263,900	<u>Number</u> 3,504,800 368,000		Percent 4.8 5.1	Percent 5.1 7.0
: Ozark Region: Rural counties: Urban counties:	30,227 17,471 12,756	40,803 26,332 14,471		3.8 3.4 4.6	5.4 5.7 4.9
: Arkansas Rural counties: Urban counties:	12,882 6,843 6,039	18,301 11,047 7,254		3.9 3.5 4.4	5.6 6.4 4.7
: Missouri Rural counties: Urban counties:	8,265 5,476 2,789	12,045 8,741 3,304		3.1 2.7 4.0	4.6 4.7 4.2
: Oklahoma Rural counties: Urban counties:	9,080 5,152 3,928	10,457 6,544 3,913		4.8 4.3 5.5	6.4 6.6 6.2

Table 7.--Unemployment in the Ozark Region, Appalachia, and United States, 1950 and 1960

1/ See Appendix B for urban and rural counties in region.

Source: (15, 55, 68).

labor force may be a result of unemployment forced upon the individual because of lack of opportunity rather than lack of initiative or drive. Peterson ⁵ stated that "fewer rural workers appear to be actively seeking work when they know that job opportunities are limited locally". <u>7</u>/

<u>7</u>/ John M. Peterson. Economic Development Planning Needs of the Ozarks. Testimony before the Senate Committee on Public Works concerning the Public Works and Economic Development Act of 1965. Underemployment is difficult to define and measure. In a 1956 survey of 12 counties in the Arkansas Ozarks, Metzler and Charlton determined that a large proportion of the farmers were underemployed in terms of days worked in comparison with days worked by persons in other occupations ($\underline{38}$, pp. 29, 57). Farm operators averaged an equivalent of 166 days of work on and off the farm, while the average for persons engaged in nonfarm pursuits was 231 days. The average for farm operators 2^4 to 6^4 years of age averaged only slightly above that for all farmers.

Census data on weeks worked in 1959 provide some indication of underemployment (table 8). Fifty-seven percent of the persons working in the United

Item	: 50 to 52	:48 to 4	9:40 to 4	7:27 to 39	:14 to 26	:13 weeks
	: weeks	: weeks	: weeks	: weeks	: weeks	:or less
	:		D	orgent		
United States	56.8	5.6	8.9	9.3	8.4	11.0
Ozark Region	51.2	5.5	9.0	11.1	10.0	13.2
Rural counties	48.9	5.8	9.4	11.6	10.5	13.8
Arkansas	: 55.7 : 51.8	4.9 5.3	8.7	10.2	9.0	13.2
Rural counties. Urban counties.	: 45.9 : 58.7 :	5.6 5.0	9.6 7.6	12.4 9.8	11.1 8.5	15.5 10.6
Missouri	: 52.4	5.7	9.1	10.9	9.8	12.8
Rural counties.	: 52.4	5.9	9.3	10.8	9.7	11.8
Urban counties.	: 52.7	4.7	8.0	11.4	10.0	13.4
Oklahoma	47.8	5.6	9.4	11.5	10.5	15.2
Rural counties.	46.1	5.9	9.3	12.1	11.0	15.6
Urban counties.	50.6	5.0	9.6	10.6	9.8	14.4

Table 8.--Proportion of workers who worked specified numbers of weeks, Ozark Region and United States. 1959 1/

1/ See Appendix B for urban and rural counties in region.

Source: (68).

States in 1959 worked 50 or more weeks, compared with 51 percent in the Ozark Region as a whole and 49 percent in the rural Ozark counties. If the data accurately reflect weeks worked by those in the labor force, considerable underemployment exists in the Ozarks.

Agriculture, including forestry and fisheries, continues to dominate the economy of the Ozarks, despite major readjustments in the past quarter century. In contrast to the Appalachian Region and the United States as a whole where the labor force employed in agriculture was about 6 percent in 1960, 13.5 percent of the Ozark Region's labor force was in agriculture in 1960 (table 9). However, the 58-percent decline in agricultural employment in the Ozark Region between 1950 and 1960 was much greater than the decreases in the United States and Appalachia.

Table 9.--Share of the civilian labor force employed in major industries, Ozark Region, Appalachia, and United States, 1950 and 1960

Major industry and area	Share of: labor	civilian: force	Chang employ	e in nent
	1950	1960	1950 to	1960
Agriculture, forestry, and fisheries:	: : <u>Percent</u> :	Percent	Number	Percent
United States Appalachia Ozarks	: 11.9 : 12.3 : 30.6	6.4 5.8 13.5	-2,683,707 -334,900 -142,110	-38.2 -52.0 -58.3
Mining: United States Appalachia Ozarks	1.6 8.6 2.0	1.0 3.5 1.4	-276,962 -265,400 -5,108	-29.8 -58.8 -32.0
Manufacturing: United States Appalachia Ozarks	24.8 26.4 12.1	25.7 30.1 18.1	2,827,604 212,700 39,945	19.3 15.4 41.5
Construction: United States Appalachia Ozarks	5.8 5.2 6.1	5.6 5.3 7.0	357,957 14,000 4,088	10.4 5.2 8.4
Trades and services: United States Appalachia Ozarks	51.1 42.4 45.4	56.2 48.2 54.6	7,979,082 341,400 49,745	26.3 15.4 13.8

Source: (15, 55, 68).

Increases between 1950 and 1960 in employment in manufacturing and trades and services in the Ozark Region were not enough to offset the losses in agriculture and mining. Number of persons employed in agriculture and mining decreased 147,218, compared with a gain in other sectors of only 93,778. However, losses in agricultural employment in the 1960's could be offset by gains in other sectors if these continue to expand at present or accelerated rates.

Human Resource Problems and Potentials

Underemployed and unemployed human resources represent a waste to the Nation and the area in which they are found. The loss of aggregate demand, skilled labor, capital, and other factors associated with selective migration are problems which set up a self-perpetuating income gap between the area and the rest of the country (30). Until this downward spiral in the economic activity is broken, outmigration will continue. Outmigration and its effects are simply the symptoms of deep-seated problems within an area.

Development of programs to upgrade education to qualify the population for labor force participation regardless of place of residence will affect the economy of the Ozark Region and the welfare of individuals in the region. Investment in human resources is a mechanism for development. Experience has shown that aspirations change as the unskilled are trained. High-quality education is one important means of enabling individuals to become involved in the development process and to make significant contributions to society.

AGRICULTURAL RESOURCES

The shortage of suitable resources has been a major obstacle in the development of agriculture in the Ozarks. The land, capital, and human resources are the limiting factors in the growth of the agricultural economy of an area.

Land Utilization

The suitability of the region's soils (productivity and adaptability) to agriculture, and the feasibility of shifting the region's farm units into economic-size operations are important to its agricultural potential.

The soils of the region are generally characterized by low fertility, rough topography, stoniness, and poor moisture-holding capacity. There are areas of fine agricultural production in the fertile river valleys and on some of the plateaus and prairies, but the total acreage is small.

The Ozark Uplands, with nearly 6.8 million acres in the Springfield Plateau, 14.2 million acres in the Salem Plateau, and nearly 3.7 million acres in the Boston Mountains, make up 47 percent of the land area in the 115-county region. The predominant soils in the Springfield Plateau are cherty brown limestone soils, originally forested but now in a variety of uses from forest and pasture to fruit, truck, and field crops.

The most abundant soils in the Salem Plateau are generally rough, stony, and of low fertility. Most of these soils have little agricultural value and are in pasture and slow-growing hardwoods.

The major soils in the Boston Mountains are generally shallow sandy loams, often stony, over sandstone. The area is largely in woodland.

In the Arkansas River Valley, which comprises about 6.1 million acres, the principal soils are deep sandy loams. Land use in the valley is about equally divided between cropland and pasture at one intensity extreme, and forest and rangeland at the other. The largest single soil association, covering 2 million acres, is in forest and rangeland.

The Ouachita Mountain area covers about 6.8 million acres. Predominant soils are silt to sandy loams that are chiefly in woodland of shortleaf pine and mixed upland hardwoods. There are some scattered general farms.

Around the periphery of the Ozark Region are various types of soil associations differing significantly from those in the Ozark and Ouachita uplifts and the Arkansas River Valley. The approximately 14.7 million acres included in these border areas comprise prairies, coastal plains, bottomlands, and terraces. In the border areas of Arkansas, the forested coastal plain soils predominate, covering about 1.5 million acres. These soils are largely in pine timber and general farming units. The eastern (Cherokee) prairie soils predominate in the Oklahoma border areas, covering about 3.7 million acres-one-fourth of the total land area in the 29 Oklahoma counties. These prairie soils are largely in pasture and rangeland. The majority of the border soils in Missouri are prairie soils. These soils of low to medium fertility cover about 1.9 million acres in cropland and pasture.

The Soil Conservation Service uses a soil capability classification system to indicate suitability of land for mechanized cultivation. This classification scheme groups soils into eight capability classes, in which Classes I-III are considered reasonably well adapted to agriculture, Class IV is marginal, and Classes V through VIII have severe limitations for such use.

According to the 1958 SCS soil capability inventory, 41 percent of the inventory acreage in the Ozark Region is in Classes I-III, compared with the national figure of 44 percent (table 10). 8/

The Missouri Ozarks, with 32 percent of its inventory land in Classes I-III, has the smallest proportion of adaptable land in the region. In the Oklahoma and Arkansas portions of the region, which include considerable areas in the Arkansas River Valley, 44 and 48 percent, respectively, of the inventory land is in Classes I-III.

Federally owned land in the Ozarks, most of which was excluded from the SCS soil capability inventory, totals approximately 4.9 million acres. Nearly 4 million acres of the federally owned land, largely of Class V-VIII quality, is in National Forests.

8/ Inventory acreage includes all land except (a) urban and built-up areas, (b) land owned by the Federal Government other than cropland operated under lease or permit, (c) water areas of less than 40 acres in size and less than one-eighth mile in width. Larger water areas are not included in total land area. Eighty-eight percent of the land in the Ozark Region was included in the SCS inventory. Sixty-four percent of the inventory acreage was in farms, compared with 56 percent of the total land area in the region.

:	: Inventory	Classes	I-III :	Class	IV.	Classes V-VIII		
Item :	acreage <u>2</u> / :	Area	Share	Area	Share	Area	Share	
:	<u>1,000 acres</u>	<u>1,000 acres</u>	Percent	1,000 acres	Percent	1,000 acres	Percent	
United States:	1,452,873.0	638,009.0	43.9	169,181.0	11.6	645,683.0	44.4	
Appalachia	87,888.0	27,035.0	30.8	11,880.0	15.4	48,973.0	55.7	
Ozark Region:	45,586.0	18,687.8	41.0	6,008.6	13.2	20,889.6	45.8	
Rural counties:	40,905.4	16,307.6	39.9	5,488.7	13.4	19,109.1	46.7	
Urban counties:	4,680.6	2,380.2	50.9	519.9	11.1	1,780.5	38.0	
Arkansas	15,321.9	7,344.7	47.9	1,594.2	10.4	6,383.0	41.7	
Rural counties:	13,797.1	6,546.7	47.5	1,455.2	10.6	5,795.2	42.0	
Urban counties:	1,524.8	798.0	52.3	139.0	9.1	587.8	38.6	
Missouri	16,643.2	5,303.2	31.9	3,279.5	19.7	8,060.5	48.4	
Rural counties:	15,860.0	4,869.1	30.7	3,117.5	19.7	7,893.4	49.6	
Urban counties:	783.2	434.1	55.4	162.0	20.7	187.1	23.9	
Oklahoma	13,620.9	6,039.9	44.3	1,134.9	8.3	6,446.1	47.3	
Rural counties:	11,248.3	4,891.8	43.5	916.0	8.1	5,440.5	48.4	
Urban counties:	2,372.6	1,148.1	48.4	218.9	9.2	1,005.6	42.4	

Table 10.--Inventory acreage, by SCS land-capability class, Ozark Region, Appalachia, and United States, 1958 and 1959 1/

See Appendix B for urban and rural counties in region. 1/ 2/

Because of rounding, some totals may not equal the sum of the items listed.

Source: (2, 16, 40, 45).

A recent study of 2 million acres in northwest Arkansas, outside the Ozark National Forest, showed only 19 percent of the land in Classes I-III, and 11 percent in Class IV (5, p. 11).

The land capability classification does not indicate how the land has been used or the relative productivity of the land. Nearly 28 percent of the Class I-III land in the Ozark Region was in forest and woodland in 1958--the proportion was 39 percent in Arkansas. Not all of the land which is free of physical hazards to cultivation is productive enough and in tracts of sufficient size to make its cultivation economically feasible.

The acreage in farms in the Ozark Region stood at approximately 29,347,000 acres in 1959 and accounted for about 56 percent of the total area (table 11).

:	Land in f	arms , 1959	: : Change,	Average size		
: It om	:	Proportion	land in farms			
:	Acreage : :	of total land <mark>a</mark> rea	: 1950-59 <u>2</u> /	: 1950 :	1959	
:	1 000					
•	1,000 acres	Percent	Percent	Acres	Acres	
United States	1,123,508	49.5	<u>-3.3</u>	215.3	302.4	
Appalachia	42,958	43.6	-21.8	82.5	105.6	
:	,	•				
Ozark Region:	29,347	56.4	-9.7	140.1	198.1	
Rural counties:	26,005	55.7	-10.2	142.9	200.5	
Urban counties:	3,342	62.8	-5.7	121.1	181.3	
:						
Arkansas	8,485	45.5	-16.6	116.2	167.1	
Rural counties:	7,696	45.9	-16.3	120.7	173.4	
Urban counties:	789	42.0	-18.9	86.0	123.4	
:						
Missouri:	11,391	61.2	-10.9	144.8	182.4	
Rural counties:	10,735	60.4	-11.2	148.5	186.9	
Urban counties:	656	77.7	-6.6	101.1	130.2	
	0 1 73		•			
	9,471	64.1	-0.9	170.2	271.3	
Rural countles:	1,514	62.2	-1.5	10.2	271.5	
orban counties:	1,097	13.0	1.5	107.0	270.8	

Table 11.--Land in farms, proportion of total land area in farms, and average size of farm, Ozark Region, Appalachia, and United States, 1950 and 1959 1/

 $\frac{1}{2}$ See Appendix B for urban and rural counties in region. $\frac{2}{2}$ Difference in definition of farm in 1950 and 1959 Censuses affects comparisons.

Source: (15, 53, 54, 61, 62).

This was a 10 percent decline in farm acreage from 1950, which contrasts with declines of 3 percent in the United States and 22 percent in Appalachia.

Very little of the decrease of 3.2 million acres in "land in farms" in the Ozarks can be explained by urbanization. Reversion of lands to public ownership in the national forest areas, acquisition of land by the Corps of Engineers for reservoirs and similar developments, and the reduction due to the census definition of a farm account for a sizable portion of the change. 9/

The number of farms in the Ozarks declined 36 percent between 1950 and 1959 (table 12). Within the region, the greatest decrease was in Arkansas and the least in Missouri. Approximately one-half the total decline was due to changes in definition of a farm.

Number of commercial farms in the Ozark Region declined 43 percent in 1950-59 (table 12). During the same period, number of commercial farms declined 39 percent in Appalachia and 35 percent in the United States as a whole.

The average size of farms in the Ozark Region in 1959 was 198 acres-two-thirds the U.S. average and nearly twice the Appalachian average (table 11).

The change in farm size in 1950-59 was slightly greater in the Ozark Region than in the country as a whole. Increases averaged about 26 percent in Missouri, 44 percent in Arkansas, and 59 percent in Oklahoma.

The average size of commercial farms in the region increased about 54 percent in 1950-59, from 196 acres to 301 acres. Within the region the increases were 37 percent in Missouri, 52 percent in Arkansas, and 79 percent in Oklahoma. These farms in 1959 averaged 245 acres in Arkansas, 257 acres in Missouri, and 464 acres in Oklahoma. Commercial farms in the predominantly urban counties are smaller than those in the rural counties, but the 1950-59 increase in farm size was greater in urban than in rural counties. Despite these changes, farm size has increased too slowly to maintain adequate incomes and make efficient use of new technology.

Harvested cropland in the region in 1959 comprised about 4,752,000 acres, or 16 percent of the total land in farms (table 13). Harvested cropland was 22 percent of total farmland in Appalachia and nearly 28 percent of total farmland in the United States. The 58 acre increase in size of the average Ozark farm in 1950-59 included a 3-acre increase in harvested cropland.

The sharp decline in number and the equally significant increase in size of commercial farms in the Ozarks indicate consolidation of units. This may explain the shift from crop enterprises to beef cattle, or it may be that operators can increase their farm acreages only by shifting to beef cattle.

^{9/} The reversion of a considerable volume of cropland in the Ozarks to less intensive uses (about 2 million acres) may have taken a considerable acreage of land out of the "land in farms" class. There is an understatement of land in farms because on large farms with only small acreages in agricultural uses, forest and wasteland are not completely enumerated.

:		All farms		:	Con	mercial far	ms	
: Item		:	:	:	1950	:	1959	^{Change} in
	1950	1959	1950-59	Farms	Percentage of all farms	: Farms :	: Percentage of : all farms	: 1950-59 :
:	Number	Number	Democrat	Number		Number	Democrt	Percent
imited States	$\frac{\text{Number}}{282,162}$		Percent		Percent	Aumber 0 146 000	Fercent 65.2	Percent 3h 8
	<i>J</i> , <i>SUZ</i> , <i>LUZ</i>	5,105,094	- 31.2	3,100,400		2,410,000), 5),	-34.0
Apparaceira	n.a.	400,900	-20.0	303,000	42.1	104,000	47.4	- 39 • 2
Ozark Region	231,980	148.138	-36.1	121.805	52.5	69.090	46.6	-43.3
Rural counties:	202,701	129,699	-36.0	106.834	52.7	60,548	46.7	-43.3
Urban counties:	29,279	18,439	-37.0	14,971	51.1	8,542	46.3	-42.9
:		•		•				
Arkansas:	87,492	50,770	-42.0	40,822	46.7	21,811	43.0	-46.6
Rural counties:	76,164	44,373	-41.7	35,712	46.9	19,000	42.8	-46.8
Urban counties:	11,328	6,397	-43.5	5,110	45.1	2,811	43.9	-45.0
:								
Missouri	88,331	62,463	-29.3	52,798	59.8	31,242	50.0	-40.8
Rural counties:	81,386	57,426	-29.4	48,658	59.8	28,837	50.2	-40.7
Urban counties:	6,945	5,037	-27.5	4,140	59.6	2,405	47.8	-41.9
:	,		-				1	1
Oklahoma:	56,157	34,905	-37.8	28,185	50.2	16,037	45.9	-43.1
Rural counties:	45,151	27,900	-38.2	22,464	49.8	12,711	45.6	-43.4
Urban counties:	11,006	7,005	-36.4	5,721	52.0	3,326	47.5	-41.9

Table 12.--Number of farms by type of farm, Ozark Region, Appalachia, and United States, 1950 and 1959 1/2/

-- Continued

1

:				Noncomme	erc	ial farms					
		Part-tin	ne farms		:	Other farms <u>3</u> /					
Item		1950		1959	:		195	0		1959	
:	Farms	Percentage of : all farms :	Farms	Percentage of all farms	: :	Farms	:	Percentage of all farms	Farms	Percentage of : all farms	
:	Number	Percent	Number	Percent		Number		Percent	Number	Percent	
United States	639,200	11.9	884,800	23.9		1.033.600		19.2	407.200	11.0	
Appalachia	110,300	16.6	154,600	38.0		251,100		37.7	67,100	16.5	
Ozark Region	43,973	19.0	57,294	38.7		66,202		28.5	22,388	15.1	
Rural counties:	38,830	19.2	49,947	38.5		57,037		28.1	19,765	15.2	
Urban counties:	5,143	17.6	7,347	39.8		9,165		31.3	2,623	14.2	
: Arkansas	18,102	20.7	20,758	40.9		28,568		32.7	8,174	16.1	
Rural counties:	16,103	21.1	18,305	41.3		24,349		32.0	7,112	16.0	
Urban counties:	1,999	17.7	2,453	38.4		4,219		37.2	1,062	16.6	
Missouri	15,094	17.1	21,727	34.8		20,439		23.1	9,760	15.6	
Rural counties:	13,930	17.1	19,817	34.5		18,798		23.1	9,035	15.7	
Urban counties:	1,164	16.8	1,910	37.9		1,641		23.6	725	14.4	
Oklahoma	10,777	19.2	14,809	42.4		17,195		30.6	4,454	12.8	
Rural counties:	8,797	19.5	11,825	42.4		13,890		30.8	3,618	13.0	
Urban counties:	1,980	18.0	2,984	42.6		3,305		30.0	836	11.9	

Table 12.--Number of farms by type of farm, Ozark Region, Appalachia, and United States, 1950 and 1959 1/ 2/--Continued

 $\frac{1}{2}$ See Appendix B for urban and rural counties in region. $\frac{2}{2}$ Difference in definition of farms in 1950 and 1959 Censuses affects comparisons. $\frac{3}{2}$ Residential, part-retirement, and abnormal farms.

Source: $(\underline{15}, \underline{53}, \underline{54}, \underline{61}, \underline{62})$.

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Table 13.--Harvested cropland as a percentage of total farmland, Ozark Region, Appalachia, and United States, 1950 and 1959 1/

	l	950 <u>2</u> /	:	19	59	<u>2</u> /
Item :	Harvested Cropland	: Share of total : farmland	: :	Harvested Cropland	:	Share of total farmland
: : United States: Appalachia:	1,000 <u>acres</u> 344,564 13,691	Percent 29.7 24.9		1,000 <u>acres</u> 311,476 9,640		Percent 27.7 22.4
Ozark Region: Rural counties: Urban counties:	6,761 5,836 925	20.8 20.2 26.9		4,752 4,094 658		16.2 15.7 19.7
Arkansas Rural counties: Urban counties:	1,952 1,752 200	19.2 19.1 20.6		1,183 1,045 138		13.9 13.6 17.5
Missouri Rural counties: Urban counties:	2,804 2,523 281	21.9 20.9 40.0		2,289 2,051 238		20.1 19.1 36.3
Oklahoma Rural counties: Urban counties:	2,004 1,561 443	21.0 20.3 23.7		1,280 998 282		13.5 13.2 14.9

 $\frac{1}{2}$ See Appendix B for urban and rural counties in region. $\frac{2}{2}$ Difference in definition of farm in 1950 and 1959 Censuses affects comparisons.

Source: $(\underline{15}, \underline{53}, \underline{54}, \underline{61}, \underline{62})$.

Types of Farming

The acreage of harvested cropland in corn, cotton, and hay declined considerably in the 1950-59 decade in the Ozarks, although 361,000 more acres of soybeans were harvested. The proportion of commercial farms classed in the agricultural census as crop farms--field-crop and vegetable, fruit, and nut farms--declined from 21 percent to 15 percent during the 10-year period, while the proportion classed as livestock, poultry, and dairy farms increased from 64 percent to 78 percent. 10/

^{10/} Except for dairy farms, farms are classed according to the product or group of products accounting for 50 percent or more of the total value of farm products sold.

In the Arkansas area in 1959, one out of every five commercial farms was a poultry farm, 18 percent were dairy farms, and 36 percent were "other livestock" farms, mostly beef. Only 4 percent of the commercial farms in the Missouri area were poultry farms. Thirty-six percent were dairy farms and 44 percent were "other livestock" farms. Sixty-one percent of the commercial farms in the Oklahoma area in 1959 were "other livestock" units, mainly beef cattle, 2.5 percent were poultry farms, and 11 percent were dairy farms.

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The share of all farm product sales derived from livestock in the Ozark Region increased from 75 percent in 1950 to 80 percent in 1959 (table 14).

		_				
:	Value of 1	li√e	stock and]	livestock p	roducts s	sold <u>2</u> /
: Item : :	1950	: : 1959 :		: :Increase : 1950-59	: As sha :farm pro : 1950	are of all oducts sold : 1959
		- -		••••••••••••••••••••••••••••••••••••••	·	
:	1,000		1,000			
:	dollars		dollars	Percent	Percent	Percent
United States	12,197,274		17.045.431	39.7	54.9	55.9
Appalachia	559,606		934,706	67.0	62.0	69.0
:						
Ozark Region 3/	266,923		436,810	63.7	74.7	80.2
Rural counties:	224,083		370,300	65.3	77.7	80.9
Urban counties:	42,840		66,510	55.3	74.6	76.8
:			•			
Arkansas 3/:	73,906		153,276	107.4	64.5	77.8
Rural counties:	57,388		121,863	112.4	61.6	76.8
Urban counties:	16,517		31,413	90.2	77.1	82.3
:	• • •					
Missouri 3/	133,915		183,160	36.8	86.1	83.9
Rural counties:	119,889		167,723	40.0	86.9	85.1
Urban counties:	14,026		15,438	10.1	80.1	73.2
:						
Oklahoma 3/:	59,102		100,373	69.8	67.8	77.7
Rural counties:	46,805		80,714	72.5	68.2	79.3
Urban counties:	12,297		19,659	59.9	66.4	71.7
:	-					

Table 14.--Value of livestock and livestock products sold, Ozark Region, Appalachia, and United States, 1950 and 1959 1/

1/ See Appendix B for urban and rural counties in region.

2/ Values have not been adjusted for price changes.

 $\overline{3}$ / Because of rounding, some totals may not equal the sum of the items listed.

Source: (15, 53, 54, 61, 62).

Farms with gross sales of \$10,000 or more would normally provide more than the proverty-level family income from product sales alone. <u>11</u>/ In 1959, 16 percent of the commercial farms in the Ozark Region were in this category, about the same as in Appalachia (table 15). The proportion ranged from 13 percent in the 42 predominantly rural Missouri counties to 31 percent in the 4 Arkansas urban counties. Urban counties in the region generally had a greater share of the commercial farms in the higher sales category.

Fifty-eight percent of the commercial farms in the Ozarks had gross sales of \$2,500 to \$9,999 in 1959 compared with 48 percent in Appalachia. The Ozark Region was below Appalachia in the proportion of commercial farms with less than \$2,500 in sales of farm products--26 percent compared with 35 percent.

The Ozarks made greater gains in the proportion of commercial farms in the \$10,000-and-over sales category in 1950-59 than did Appalachia or the country as a whole--nearly a five-fold increase during the decade. The proportion in Appalachia was four times as high in 1959 as in 1950, and in the United States it was two and one-half times as high.

The proportion of part-time farms more than doubled in the Ozarks, in Appalachia, and the United States in 1950-59. <u>12</u>/ In the Ozarks in 1959, 39 percent of all farms were part-time farms. Much of the off-farm work performed by the part-time farmers is public work on the roads or driving school buses, or timber work. There is some employment in fishing- and hunting-guide services, float-fishing businesses, and other recreation enterprises. A part-time farmer who depends on beef cattle for farm income works relatively few hours at farmwork and can easily manage his livestock and hold an off-farm job.

The total number of cattle in the Ozark Region increased 20 percent in 1950-59. However, the composition of cattle inventories changed significantly during this period. Number of beef cows more than doubled while number of milk cows declined about one-third. The greatest change occurred in Oklahoma and the least in Missouri. The relatively greater shift from milk cows to beef cows in the urban counties indicates a shift to labor-extensive enterprises as off-farm employment opportunities were presented.

Hog production is declining in the Ozarks. In contrast to the 22-percent and ll-percent increases in number of hogs in the United States and Appalachia, the number in the Ozark Region declined about 10 percent in 1950-59. The 42-percent decline in number of hogs in Oklahoma and the 23-percent decline in Arkansas were partly offset by a 16-percent increase in the Missouri Ozarks. Proximity to the Corn Belt gives southern Missouri a competitive advantage over other Ozark areas in producing feeder pigs.

 $\frac{11}{Poverty-level}$ family income is defined as less than \$3,000 net cash income.

12/ A part-time farm, according to the 1959 Census of Agriculture (62), was a farm with a value of sales of farm products of \$50 to \$2,499 whose operator was under 65 years of age and either worked off the farm 100 or more days or had income, together with that of members of his household, from non-farm sources greater than the total value of farm products sold.

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Table 15.--Number and percentage of commercial farms with gross sales of specified value, Ozark Region, Appalachia, and United States, 1950 and 1959 1/ 2/

	Sal	les greater	than \$10,0	00	:	Sa	les from \$	5,000 to	\$9,999
· Item :	195	50	195	59	:	195	0	• •	1959
:	Farms : H	Percentage <u>3</u> /	Farms : F	Percentage <u>3</u> /	: Far :	ms :P :	Percentage <u>3</u> /	: Farms :	:Percentage : <u>3</u> /
: United States: Appalachia	Number 484,400 12,100	Percent 13.1 4.0	<u>Number</u> 795,500 31,500	Percent 32.9 17.1	<u>Numb</u> 721, 27,	er 200 200	Percent 19.5 9.0	<u>Number</u> 653,90 35,80	Percent 0 27.1 0 19.3
Ozark Region <u>4</u> / Rural counties Urban counties	4,104 3,174 930	3.4 3.0 6.2	11,322 9,393 1,929	16.4 15.5 22.6	9, 7, 1,	276 629 647	7.6 7.1 11.0	15,29 13,21 2,07	0 22.1 1 21.8 9 24.3
Arkansas <u>4</u> / Rural counties: Urban counties:	1,635 1,169 466	4.0 3.3 9.1	4,615 3,735 880	21.2 19.7 31.3	2, 2,	665 011 654	6.5 5.6 12.8	4,13 3,49 64	7 19.0 1 18.4 6 23.0
Missouri <u>4</u> / Rural counties: Urban counties:	1,510 1,285 225	2.9 2.6 5.4	4,210 3,712 498	13.5 12.9 20.7	4, 3,	491 921 570	8.5 8.1 13.8	7,52 6,75 76	0 24.1 9 23.4 1 31.6
Oklahoma <u>4</u> / Rural counties: Urban counties:	959 720 239	3.4 3.2 4.2	2,497 1,946 551	15.6 15.3 16.6	2, 1,	120 697 423	7.5 7.6 7.4	3,63 2,96 67	22.7 1 23.3 2 20.2
	Sal	es from \$2,	500 to \$4,9	999	:		Sales less	than \$2	,500
: Ttem	195	0	195	59	:	19	950	:	1959
:	Farms :	Percentage <u>3</u> /	: Farms : I : :	Percentage <u>3</u> /	: Far :	ms :H	Percentage <u>3</u> /	: Farms :	:Percentage : <u>3</u> /
United States	<u>Number</u> 882,300 50,500	Percent 23.8 16.7	Number 617,700 53,300	Percent 25.6 28.8	Numt 1,618, 212,	500 800	Percent 43.7 70.3	<u>Number</u> 349,00 64,30	<u>Percent</u> 00 <u>14.4</u> 00 <u>3</u> 4.8
Ozark Region <u>4</u> / Rural counties Urban counties	23,303 20,167 3,136	19.1 18.9 21.0	24,533 21,644 2,889	35.5 35.8 33.8	85 75 9	122 864 258	69.9 71.0 61.8	17,91 16,30 1,61	45 26.0 00 26.9 45 19.3
Arkansas <u>4</u> / Rural counties Urban counties	6,242 5,425 817	15.3 15.2 16.0	6,387 5,663 724	29.3 29.8 25.8	30 27 3	280 107 173	74.2 75.9 62.8	6,6 6,1 50	72 30.6 L1 32.2 51 20.0
Missouri <u>4</u> / Rural counties Urban counties	11,787 10,565 1,222	22.3 21.7 29.5	12,454 11,548 906	39.9 40.1 37.7	35 32 2	,010 ,887 ,123	66.3 67.6 51.3	7,0) 6,8 2 ¹	58 22.6 18 23.6 +0 10.0
Oklahoma <u>4</u> / Rural counties Urban counties	5,274 4,177 1,097	18.7 18.6 19.2	5,692 4,433 1,259	35.5 34.9 37.9	19 15 3	,832 ,870 ,962	70.4 70.7 69.3	4,2 3,3 8	15 26.3 71 26.5 44 25.4

1/ See Appendix B for urban and rural counties in region. 2/ Difference in definition of farms in the 1950 and 1960 Censuses affects comparisons. Also, value has not been adjusted for price changes.

 $\frac{3}{4}$ Percentage of all commercial farms. $\frac{1}{4}$ Because of rounding, some totals may not equal the sum of the items listed.

Source: (<u>15</u>, <u>53</u>, <u>54</u>, <u>61</u>, <u>62</u>).

Ewe flocks expanded 8 percent in the Ozarks from 1950 to 1959, but the total number of ewes was less than 150,000 in 1959. United States inventories were up nearly 6 percent in the same period. Number of ewes in Appalachia declined slightly from 1950 to 1959, but there were still nearly 600,000 in 1959. The prevalence of predators, the type of land cover, the lack of adequate buildings, and the greater grain requirements for sheep than for other livestock partly explain the small number of sheep in the Ozarks.

The broiler industry in the Ozarks accounted for about 12 percent of the commercial broiler production in the United States in 1959 and for nearly 90 percent of the broilers produced in Arkansas, Missouri, and Oklahoma. In contrast, the Appalachian region produced nearly 29 percent of the national total.

Increases in broiler production in the Ozarks nearly paralleled those in Appalachia in 1954-59, more than doubling, but this was more than the increase in the United States. Most of the 1954-59 gain in production of Ozark broilers was in the rural counties of Arkansas. Commercial egg production is small in the Ozarks, but is expanding. In the Arkansas Ozarks, egg production in 1959 was more than three times that in 1954.

Capital Accumulation

The portion of the "total investment in land and buildings" attributable to buildings is relatively small in the Ozark Region. In fact in some cases of unit consolidation in the region, acquired buildings may actually have negative value. The average value of land and buildings in the region in 1959 was \$12,721 per farm or about \$64 per acre. This compares with \$12,032 per farm or about \$114 per acre in Appalachia, and \$33,173 per farm or about \$110 per acre in the United States as a whole (table 16). The 1950-59 increase in the investment in land and buildings per farm in the Ozarks was considerably greater than the increase in farm size for the same period--farm size increased 41 percent, and investment in land and buildings, 135 percent. However, the investment per acre in the Ozark Region in 1950 was about \$39 per acre compared with \$72 in Appalachia and \$65 for the United States. The percentage increase in value of this investment <u>per acre</u> in 1950-59 was about 66 percent in the Ozarks, 70 percent in the United States as a whole, and 57 percent in Appalachia.

The livestock enterprises that dominate the agriculture of the Ozark Region are less capital-intensive than most crop enterprises. However, to the extent that capital rationing has hindered farm enlargement and enterprise reorganization, shortages have penalized Ozark farm operators. On the other hand, farmers with pasture have had little difficulty in obtaining adequate credit to purchase stock cattle. The Farmers Home Administration has actively provided capital for increasing the size of farm enterprises. In an 8-county area in North Central Arkansas, the outstanding balance on operating loans Table 16.--Value of investment in land and buildings per farm, Ozark Region, Appalachia, and United States, 1950 and 1959 1/ 2/

: : Item :	All fa	arms :	Commercial farms			
:	1950	1959	1950	1959		
United States Appalachia	Dollars 13,911 5,978	Dollars 33,173 12,032	<u>Dollars</u> 17,696 7,736	Dollars 44,439 16,416		
Ozark Region	5,412	12,721	7,313	19,198		
Rural counties:	5,190	12,124	7,017	18,233		
Urban counties:	6,946	16,921	9,429	26,043		
Arkansas	4,981	11,118	6,730	16,796		
Rural counties:	4,758	10,633	6,400	15,997		
Urban counties:	6,476	14,479	9,040	22,199		
Missouri	5,730	12,065	7,354	17,044		
Rural counties:	5,434	11,375	7,005	16,032		
Urban counties:	9,199	19,935	11,456	29,175		
Oklahoma	5,583	16,226	8,081	26,663		
Rural counties:	5,479	16,036	8,022	26,567		
Urban counties:	6,008	16,984	8,311	27,028		

1/ See Appendix B for urban and rural counties in region.

 $\overline{2}$ / Difference in definition of farm in 1950 and 1960 Censuses affects comparisons. Value has not been adjusted for price changes.

Source: $(\underline{15}, \underline{53}, \underline{54}, \underline{61}, \underline{62})$.

increased about 165 percent in 1960-63. $\underline{13}$ / In view of the qualifications for FHA loan eligibility, the increase implies that this agency is providing credit for needs not otherwise met by conventional credit sources.

Capital accumulation in Ozark agriculture from farm-product sales is extremely slow. In 1959, the average value of all farm products sold in the region was only \$3,675 per farm or about 45 percent as high as the U. S. average of \$8,218. In general, about one-third of the returns from sale of products is available for capital accumulation and consumption. Income from off-farm employment is subsidizing agriculture in the region. Forty percent of the Ozark farm operators worked off-farm 100 days or more in 1959 (table 17).

^{13/} The unpaid principal balance on loans increased from \$592,133 on June 30, 1960, to \$1,568,156 on June 30, 1963, in the area composed of Baxter, Boone, Izard, Marion, Newton, Searcy, and Stone Counties. Source: Arkansas State Director's Office of Farmers Home Administration, Little Rock, Ark.

Table 17.--Percentage of farm operators with off-farm employment and of farm families with other income greater than value of farm products sold, Ozark Region, Appalachia, and United States, 1950 and 1960 <u>1</u>/ <u>2</u>/

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:		All farms						:	Commercial farms						
: Item :	Farm operators : working off-farm : 100 days or more :		:	Families with other income greater than value of farm products sold		:	Farm operators : working off-farm : 100 days or more :		•	Families with other income greater than value of farm products sold					
	1950	:	1959	:	1950	:	1959	:	1950	:	1959	:	1950	:	1959
:							Pe	rce	nt						
United States	23.9		29.9		29.1		35.8		9.3		14.5		9.1		12.5
Appalachia	32.1		37.5		44.1		51.2		9.0		14.9		12.2		15.3
: Ozark Region:	25.7		39.9		42.3		53.8		8.4		18.5		11.6		18.8
Rural counties:	24.6		39.0		42.0		53.4		8.2		18.1		11.5		18.0
Urban counties:	32.9		46.1		44.1		57.0		10.1		21.2		12.7		24.1
: Arkansas	27.4		39.9		46.3		56.4		8.0		16.5		12.5		18.0
Rural counties:	26.3		39.4		46.4		55.9		7.4		16.1		12.0		16.7
Urban counties:	34.5		43.2		45.4		60.5		12.1		19.3		15.5		26.5
Missouri	24.6		37.6		36.8		50.6		8.5		18.6		10.4		18.9
Rural counties:	23.6		36.9		36.4		50.4		8.7		18.2		10.7		18.6
Urban counties:	35.4		46.3		41.7		53.7		6.3		22.8		7.5		22.7
Oklahoma	24.7		44.0		44.7		55.8		8.9		20.9		12.7		19.5
Rural counties:	23.5		42.8		44.8		55.7		8.3		20.7		12.4		18.6
Urban counties:	29.8		48.7		44.4		56.3		11.1		21.6		14.1		23.1
•															

 $\underline{1}$ / See Appendix B for urban and rural counties in region.

2/ Difference in definition of farm in 1950 and 1960 Censuses affects comparisons.

Source: $(\underline{15}, \underline{53}, \underline{54}, \underline{61}, \underline{62})$.

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In the 11 urban counties, 46 percent of the operators worked off-farm 100 days or more. About 30 percent of the operators in the United States reported this much time in off-farm work.

Over half the farm-operator families had other income exceeding the value of farm products sold in 1959, more than in Appalachia or the United States as a whole. The proportion was higher in urban Ozark counties than in rural counties--57 percent compared with 53 percent. In urban counties in the Arkansas Ozarks, the proportion was about 61 percent.

In an effort to have adequate family incomes, members of farm-operator families have actively sought off-farm employment. In many cases female members of the operator's family also sought employment in recreation jobs or in the low-skill manufacturing jobs available to women in some rural areas. Nonfarm employment of family members has reduced consumption out of agricultural inventories and has improved opportunities to accumulate capital.

Human Resources in Agriculture

The rural farm population in the Ozark Region numbered nearly 414,000 in 1960, or 18 percent of the population--a much higher proportion than in Appalachia or the United States as a whole (table 18). In the rural Ozark counties, 25 percent of the population were farm residents in 1960. The proportion was highest in the 42 rural counties of Missouri, where nearly 29 percent of the population lived on farms. The rural farm population of the Ozarks, like that of the rest of the country, declined sharply in the 1950's.

While adjustments out of agriculture in the Ozarks have lagged about 10 years behind those in Appalachia and the United States as a whole, the transition continues. 14/ Nearly one-third (31 percent) of the civilian labor force in the region were employed in agriculture in 1950 (55). By 1960, only 14 percent were employed in agriculture (68).

One of the barriers to rapid migration out of agriculture in the Ozarks is the farm-operator age structure. The average age in 1960 was 52. Persons at this age are not readily employable in nonfarm jobs, especially with the limited education and lack of marketable skills typical of Ozark agricultural workers and farm operators.

Approximately 10 percent of the 1960 rural farm population 25 years of age and over in the Ozark Region had less than 5 years of formal education (68). Only about 22 percent had completed high school and 2 percent were college graduates.

The low agricultural incomes and limited nonagricultural employment opportunities in the region prevent many farm operators from enjoying levels of living comparable to those of rural farm families in the rest of the Nation or Appalachia. Based on a 1959 U.S. index of 100, the average farm operator

<u>14</u>/ The 18 percent of the Ozark Region's population on farms in 1960 compares with 21 percent and 15 percent on farms in 1950 in Appalachia and the United States, respectively (15, 55, 68).

Table 18.--Distribution of urban, rural nonfarm, and rural farm population, Ozark Region, Appalachia, and United States, 1950 and 1960 1/ 2/

Item	U	Urban		ral farm	Ru	ral rm
	1950	1960	1950	1960	1950	1960
:			Perce	ont		
United States	610	60 0	20 7	$\frac{10}{22}$	15 3	7 5
Appalachia	15 6) o 1	20.1	22.0	17.5	1.7
npparaenta	47.0	49.1	2.00	41.9	21.2	9.0
Ozark Region	33.3	39.4	27.6	42.2	39.0	18.4
Rural counties:	17.9	21.8	31.8	53.0	50.3	25.2
Urban counties:	65.9	70.8	18.8	23.0	15 3	6.2
:	• / • /	1010	10.0	23.0	17.5	0.2
Arkansas	38.4	47.5	25.4	37.7	36.1	14.8
Rural counties:	19.2	25.3	30.8	51.4	50.0	23.3
Urban counties:	70.9	75.5	16.4	20.4	12.7	4.1
:						
Missouri	28.6	32.2	28.1	44.9	43.3	22.9
Rural counties:	15.2	17.3	32.0	54.1	52.8	28.6
Urban counties:	71.2	74.4	15.7	18.8	13.1	6.8
:	. – . –	• • • •		1010		0.0
Oklahoma:	31.2	35.6	30.5	46.3	38.3	18.0
Rural counties:	19.9	23.9	33.1	53.5	47.0	22.5
Urban counties:	52.8	56.8	25.5	33.3	21.6	9.9
	-		-,,,	22.0		

1/ See Appendix B for urban and rural counties in region.

 $\frac{2}{2}$ Difference in definition of farm in 1950 and 1960 Censuses affects comparisons.

Source: (15, 55, 68).

level-of-living index for the Ozark Region was 68 in 1959, compared with 72 in Appalachia (table 19). The improvement between 1950 and 1959 was less in the Ozarks than in Appalachia. Arkansas had the lowest average indexes of the Ozark areas in both 1950 and 1959.

Shifts out of agriculture have been more rapid in the rural counties than the urban counties. Off-farm employment opportunities were better in the urban counties, and off-farm income frequently subsidizes the agricultural operation and thus retains the agricultural dependence of rural families.

Agricultural Problems and Potentials

With the extensive type of agriculture in the Ozarks, returns per acre are relatively low, and large acreages are required to yield enough income to support a family. On the other hand, labor requirements per unit of livestock, Table 19.--Farm operator level-of-living indexes, 1/ Ozark Region, Appalachia, and United States, 1950 and 1959 2/

Item	1950	195	59
:			
United States	59	10	0
Appalachia	34	Ĩ	72
Ozork Region	32	e	58
Burgl counting	31	e	57
Rurai counties	<u>г</u> о	E	33
Orban councies	40		
Amkongag	26	e	50
	2h		58
Rural counties	28		78
	50		
Missouri	40	•	74
Purel counties	20		73
Urban counties	60	10	00
orban countres			
Oklahoma	31	•	72
Dural counties	30		70
Impan counties	35	8	Bl
OLDER COMPLES			

(U.S. index 1959=100)

1/ Indexes are averages of county indexes, unweighted for differences in the number of farms.

2/ Difference in definition of farm in 1950 and 1960 Censuses affects comparisons. See Appendix B for urban and rural counties in region.

Source: (18).

especially beef cows, are small. Hence, a large investment in land and livestock is required to keep the farm family fully employed. Farm families with limited capital and surplus labor often seek off-farm employment to supplement farm incomes or to accumulate capital to enlarge the farm business.

The intensity of agricultural activity in the Ozarks is indicated by figure 3. The counties with \$18,000 or more in farm product sales per 1,000 acres of total land area are predominantly dairy and poultry areas. Butler County, Mo., and Lawence County, Ark., are exceptions in which cotton and soybeans account for a large volume of sales.



Most of the Class I-III land in timber is in small isolated tracts not economically cultivable. The potential for cultivated crops in the region is restricted largely to the Arkansas River Valley and the prairie counties on the boundaries of the Ozark Region. These are areas with relatively large percentages of open Class I-III land (figure 4). In six of the counties, largely border counties, 60 percent or more of the 1958-59 inventory acreage was in Class I-III land. In 40 counties, less than 20 percent was in open Class I-III land. These 40 counties make up the Salem Plateau and the Boston and Ouachita Mountains.

The shift in crop production to hay and forage crops should continue with the trend toward larger farms, increasing recognition of erosion and soil structure problems, and more livestock production.



Figure 4. Percent of Inventoried Class I-III Land not in Forest

If substantial investments are made in farming in the region, capital must come from sources other than farming in the area. Operators with above-average managerial ability will accumulate capital slowly if the only sources are borrowing and savings from current farm income.

Among the alternative livestock enterprises suited to the region, the production of feeder calves is best adapted to part-time farming. This enterprise utilizes large quantities of forages economically produced in the region. Dairying also utilizes these forages, but economical dairy units are full-time enterprises requiring above-average managerial ability and considerable capital.

Expansion of poultry production offers limited opportunities in the region. High capital requirements and the competitive market structure of the vertically integrated poultry industry limit expansion. Producer margins are relatively narrow and a large capacity is necessary to obtain production contracts.

THE RECREATION-RELATED INDUSTRY

Recreation-Related Resources

The Ozark Region has many resources for a variety of activities in outdoor recreation. The scenic mountains and forests of the region contrast with its large manmade reservoirs and rivers.

Approximately 5.5 million acres of the region were in 197 <u>public</u> outdoor recreation areas in 1960 (table 20), and more areas have been added. Private recreation areas have also been developed.

The region's road network provides fair access to the major reservoirs, but most scenic areas are relatively inaccessible. The greatest concentration of urban recreation seekers is outside the region, and roads giving access to the full range of the region's facilities are essential for development of these recreation resources. Some of the roads through scenic areas might themselves be developed into recreation attractions.

Figure 5 shows the location of some public recreation areas in the region and population centers. This map does not show facilities of the National Park Service, U. S. Fish and Wildlife Service, State Park agencies, State Fish and Game agencies, or other State and local agencies.

Recreation facilities in particular sections of the region are likely to be frequented by persons from particular geographic areas. In 1960, one-third of the visitors to the Lake of the Ozarks and the Big Springs-Clearwater-Wappapello areas were from Illinois and St. Louis--the major origin (9, p. 11). In 1960, 28 percent of the visitors to lakes in the White River area (Table Rock, Taneycomo, Bull Shoals, and Norfork) were from Kansas City and the State of Kansas.

Over one-third of the out-of-State visitors to the northeastern Oklahoma lakes (Grand, Fort Gibson, and Tenkiller) were from Kansas and Missouri in 1959-60 (<u>19</u>, p. 14). The Lake Texoma area is frequented by residents of Dallas and Fort Worth and other parts of Texas (20).

The Impact of Recreational Developments

Recreation contributes to the economic growth of the Ozarks. A study i... 31 of the Ozark counties in Missouri found that recreation and tourism added nearly \$70 million in gross volume of business and about 5,300 employees to the economy in 1959 ($\underline{8}$). Approximately 22 percent of the \$27 million total payroll of retail and service firms in the 31-county area resulted from tourism. Tourist-related businesses employed an estimated 2,200 part-time or full-time workers with payrolls totaling \$2.5 million. Ninety-three percent of all the operators of trade and service firms reported that some of their business came from the tourist trade.

It is estimated that travelers spent \$167 million in Arkansas in 1960 and \$259 million in 1964 ($\underline{4}$). In 1960, travel-serving businesses made about one-sixth of all retail trade and service sales, about one-half of which were

Item	:National Park Service	: U.S. Forest Service	U.S. Fish and Wildlife Service	: U.S. Corps of Engineers	: : State : Park : Agency	: State : Fish and : Game : Agency	: :Other State :agencies and :authorities	: : Other : local : agencies	: : : Total : acreage
	:				Acres				
Ozark Region Rural counties Urban counties Arkansas Rural counties Urban counties	: 5,407 : 4,421 : 986 : : 5,197 : 4,211 : 986	3,929,404 3,929,404 - 2,382,219 2,382,219 -	45,355 45,355 - 6,870 6,870	636,466 554,066 82,400 251,090 168,690 82,400	88,262 81,286 6,976 18,789 13,526 5,263	511,112 468,478 42,634 52,923 52,389 534	237,403 210,403 27,000 27,000	32,714 13,217 19,497 16,527 1,527	5,486,123 5,306,630 179,493 2,760,615 2,629,432
Missouri Rural counties Urban counties	210 210 -	1,361,346 1,361,346 -	21,663 21,663 -	123,115 123,115 -	38,928 38,928 -	61,686 61,686 -	151,154 151,154 -	4,465 4,465	1,762,567 1,758,102 4,465
Oklahoma Rural counties Urban counties	 	185,839 185,839 -	16,822 16,822 -	262,261 262,261 -	30,545 28,832 1,713	396,503 354,403 42,100	59,249 59,249 -	11,722 11,690 32	962,941 919,096 43,845

Table 20.--Inventory of public outdoor recreation areas by management agency, 0zark Region, 1960 $\underline{1}/$

-38-

 $\underline{1}$ / See Appendix B for urban and rural counties in region.

Source: $(\underline{47})$.



-39-

to travelers. These businesses accounted for nearly one-third of the 1960 retail and service employment in the State. 15/

The total expenditures by out-of-State motorists in Oklahoma in 1959 were estimated at \$141 million (20, p. 4). Approximately 31,000 persons in the State were engaged in activities supported wholly or in part by these expenditures.

The major share of the recreation activity in all three States is located in the Ozarks.

Employment

To estimate the impact of recreation activity on employment in the region, the trade and service groups influenced by recreation expenditures were identified from previous research $(\underline{8})$ as retail trade, repair services, other personal services, and entertainment and recreation enterprises. Repair services include service stations and garages. Hotels and motels are included in other personal services.

Any county adjacent to a reservoir with one-half million or more visitors in 1961 was classed as an "operating-reservoir" county. Those counties adjacent to reservoirs under construction and to small reservoirs were classed as "counties with reservoirs under construction."

An index of employment change was calculated for the counties of the region, expressing 1950-60 change in recreation-related trade and service employment as a percentage of the U.S. change. <u>16</u>/ The index of employment change shows the effect of reservoirs within the region on recreation-related trades and services (table 21). Of the 27 reservoir counties, 70 percent had indexes above the median index of the region. <u>17</u>/ This was the general pattern in all three States. 18/

Notable growth in employment in the trades and services related to recreation occurred in several rural counties which were not adjacent to a reservoir. The most striking changes were in Douglas and Pulaski Counties, Mo., and Atoka County, Okla. The increase in Douglas County was contributed by workers commuting to the Bull Shoals area. Fort Leonard Wood is in Pulaski County, and Atoka is on Highways 69 and 75 midway between Tulsa and Dallas. Texas, Shannon, Oregon, and Ripley Counties in the roughest portion of the Missouri

15/ This employment is that trade and service employment which is "export," i.e., services bought by tourists from outside the region. Autonomous recreation within the region is not to be considered a tertiary industry, but primary.

16/ For method of calculating, see Appendix A.

 $\overline{17}$ / The weighted indexes of rural nonreservoir and reservoir counties are similar because there is a wide range among counties and a few populous counties have relatively heavy weights. The median index for the region was 132 but the weighted index was only 114.2. Only one-fifth of the counties ranked below the weighted index.

18/ Moore reached a similar conclusion using different procedures $(\underline{41})$.

Table 21.--Median county indexes of change in employment and sales and receipts in recreation-related trades and services, Ozark Region, 1950 to 1960 and 1954 to 1963

Area, and county classification $\frac{1}{2}$ counties: Employment Sales			Median indexes of	change (U.S.=100)
iNumberOzark counties.11513299.8Operating reservoir $2/$	Area, and county classification 1/	Countles	Employment	Sales
Number Ozark counties 115 132 99.8 Operating reservoir $2/ 27 147 109.1 Reservoir under construction 3/.: 18 121 100.7 Nonreservoir$				
Ozark counties 115 132 99.8 Operating reservoir $2/ 27 147 109.1 Reservoir under construction 3/.: 18 121 100.7 Nonreservoir$:	Number		_
Operating reservoir $2/$: 27 147 109.1 Reservoir under construction $3/.$: 18 121 100.7 Nonreservoir: 70 127 97.6 Rural: 63 132 97.7 Urban: 7 96 86.9 : 42 124 108.5 Operating reservoir $2/ 42 124 105.1 Nonreservoir under construction 3/.: 12 121 105.1 Nonreservoir under construction 3/.: 12 124 111.9 Rural 23 124 111.9 Rural$	Ozark counties	: 115	132	99.8
Reservoir under construction $\underline{3}/.:$ 18 121 100.7 Nonreservoir	Operating reservoir <u>2</u> /	: 27	147	109.1
Nonreservoir. 70 127 97.6 Rural. 63 132 97.7 Urban. 7 96 86.9 Arkansas counties. 42 124 108.5 Operating reservoir $2/$. 7 146 130.0 Reservoir under construction $3/$. 12 121 105.1 Nonreservoir. 23 124 111.9 Rural. 21 128 115.1 Urban. 2 94 102.3 * * * * Missouri counties. 144 136 97.6 Operating reservoirs $2/$. 11 147 107.2 Reservoir under construction $3/$. 1 141 104.6 Nonreservoir. 32 132 95.7 Wral. 30 133 95.7 Urban. 29 128 89.4 Operating reservoirs $2/$. 9 19 98.3 Oklahoma counties. 29 128 89.4 Operating reservoirs $2/$. 9 19 94.5	Reservoir under construction <u>3</u> /.:	: 18	121	100.7
Rural6313297.7Urban79686.9Arkansas counties79686.9Arkansas counties42124108.5Operating reservoir $2/$ 7146130.0Reservoir under construction $3/.$ 12121105.1Nonreservoir23124111.9Rural21128115.1Urban294102.311147107.2Reservoir under construction $3/.1$ 1141104.6Nonreservoir3213295.7Rural29498.32Oklahoma counties29498.3	Nonreservoir	: 70	127	97.6
Urban79686.9Arkansas counties42124108.5Operating reservoir $2/$ 7146130.0Reservoir under construction $3/$.12121105.1Nonreservoir.23124111.9Rural.21128115.1Urban294102.3294107.2Reservoir under construction $3/$.1141Nonreservoir.321329498.32	Rural	: 63	132	97.7
Arkansas counties.:42 124 108.5 Operating reservoir $2/$ 7 146 130.0 Reservoir under construction $3/.:$ 12 121 105.1 Nonreservoir.23 124 111.9 Rural.21 128 115.1 Urban.2 94 102.3 .Missouri counties. 44 136 Operating reservoirs $2/$ 11 147 Nonreservoir under construction $3/.:$ 1 141 Nonreservoir. 32 132 P5.7Rural. 29 94 Nonreservoir. 2 94 Operating reservoirs $2/$ 29 128 Reservoir under construction $3/.:$ 129 128 Nonreservoir. 29 128 89.4 Operating reservoirs $2/$ 9 152 Name counties. 29 128 89.4 Operating reservoirs $2/$ 9 152 Name counties. 15 126 89.0 Rural. 12 130 90.5 Urban. 12 130 90.5 Urban. 12 130 90.5	Urban	: 7	96	86.9
Arkansas counties 42 124 108.5 Operating reservoir $2/$ 7 146 130.0 Reservoir under construction $3/.$: 12 121 105.1 Nonreservoir 23 124 111.9 Rural 21 128 115.1 Urban 2 94 102.3 2 94 102.3 2 94 Operating reservoirs $2/$ 11 147 Nonreservoir under construction $3/.$: 1 141 Nonreservoir 32 132 95.7 89.3 94 94 98.3 94 94 98.3 129 128 94 99.8 Nonreservoir under construction $3/$:		
Operating reservoir $2/:$ 7 146 130.0 Reservoir under construction $3/.:$ 12 121 105.1 Nonreservoir: 23 124 111.9 Rural: 21 128 115.1 Urban: 2 94 102.3 : 2 94 102.3 : 2 94 102.3 2 94 102.3 2 94 102.3	Arkansas counties	: 42	124	108.5
Reservoir under construction 3/.: 12 121 105.1 Nonreservoir: 23 124 111.9 Rural: 21 128 115.1 Urban: 2 94 102.3 Missouri counties: 11 136 97.6 Operating reservoirs 2/: 11 147 107.2 Reservoir under construction 3/.: 1 141 104.6 Nonreservoir: 32 132 95.7 Rural: 30 133 95.7 Urban: 2 94 98.3 Oklahoma counties: 29 128 89.4 Operating reservoirs 2/: 9 152 94.5 Reservoir under construction 3/.: 5 119 99.8 Nonreservoir 12 130 90.5 Urban	Operating reservoir 2/	: 7	146	130.0
Nonreservoir. $ 23$ 124 111.9 Rural. 21 128 115.1 Urban. 2 94 102.3 Missouri counties. 44 136 97.6 Operating reservoirs $2/$ 11 147 107.2 Reservoir under construction $3/$.: 1 141 104.6 Nonreservoir. 32 132 95.7 Rural. 30 133 95.7 Urban. 2 94 98.3 Oklahoma counties. 29 128 89.4 Operating reservoirs $2/$ 9 152 94.5 Reservoir under construction $3/$.: 5 119 99.8 Nonreservoir 15 126 89.0 Rural 12 130 90.5 Urban 3 102 85.6	Reservoir under construction 3/.	: 12	121	105.1
Rural21128115.1Urban294102.3Missouri counties4413697.6Operating reservoirs $2/$ 11147107.2Reservoir under construction $3/.$ 1141104.6Nonreservoir3213295.7Rural3013395.7Urban29498.3Oklahoma counties2912889.4Operating reservoirs $2/$ 915294.5Reservoir under construction $3/.$ 511999.8Nonreservoir1512689.0Rural1213090.5Urban310285.6	Nonreservoir	23	124	111.9
Urban2 94 102.3 Missouri counties 44 136 97.6 Operating reservoirs $2/$ 11 147 107.2 Reservoir under construction $3/.$ 1 141 104.6 Nonreservoir 32 132 95.7 Rural 30 133 95.7 Urban 2 94 98.3 2 94 Operating reservoirs $2/$ 9 152 9 152 94.5 Reservoir under construction $3/$ 5 119 15 126 89.0 Rural 12 130 90.5 12 130 90.5 3 102 85.6	Rural	: 21	128	115.1
::Missouri counties: $\frac{1}{2}$ 11 $\frac{1}{47}$ 11 $\frac{1}{47}$ 11 $\frac{1}{41}$ 107.2<	Urban	: 2	94	102.3
Missouri counties: \u00ed \u	:	:	-	
Operating reservoirs 2/: 11 147 107.2 Reservoir under construction 3/.: 1 141 104.6 Nonreservoir: 32 132 95.7 Rural: 30 133 95.7 Urban: 2 94 98.3 :	Missouri counties	։ 44	136	97.6
Reservoir under construction 3/.: 1 141 104.6 Nonreservoir	Operating reservoirs 2/	: 11	147	107.2
Nonreservoir. 32 132 95.7 Rural. 30 133 95.7 Urban. 2 94 98.3 : 2 94 98.3 :	Reservoir under construction 3/.	: 1	141	104.6
Rural 30 133 95.7 Urban 2 94 98.3 Oklahoma counties 29 128 89.4 Operating reservoirs 2/ 9 152 94.5 Reservoir under construction 3/.: 5 119 99.8 Nonreservoir 15 126 89.0 Rural 12 130 90.5 Urban 3 102 85.6	Nonreservoir	32	132	95.7
Urban 2 94 98.3 2 94 98.3 29 128 89.4 Operating reservoirs 2/	Rural	: 30	133	95.7
i: i: <td< th=""><th>Urban</th><th>2</th><th>94</th><th>98.3</th></td<>	Urban	2	94	98.3
Oklahoma counties: 29 128 89.4 Operating reservoirs 2/: 9 152 94.5 Reservoir under construction 3/.: 5 119 99.8 Nonreservoir: 15 126 89.0 Rural: 12 130 90.5 Urban: 3 102 85.6				2000
Operating reservoirs 2/ 9 152 94.5 Reservoir under construction 3/.: 5 119 99.8 Nonreservoir 15 126 89.0 Rural 12 130 90.5 Urban 3 102 85.6	Oklahoma counties	29	128	89.4
Reservoir under construction 3/.: 5 119 99.8 Nonreservoir 15 126 89.0 Rural 12 130 90.5 Urban 3 102 85.6	Operating reservoirs 2/	· 9	152	94.5
Nonreservoir 15 126 89.0 Rural 12 130 90.5 Urban 3 102 85.6	Reservoir under construction 3/.	s 5	119	99.8
Rural 12 130 90.5 Urban 3 102 85.6	Nonreservoir	15	126	89.0
Urban	Rural	12	130	90.5
	Urban	3	102	85.6
			±02	0,.0

1/ See Appendix B for urban and rural counties in region.

2/ Arkansas--Baxter, Boone, Pike, Fulton, Garland, Marion, Montgomery; Missouri-Barry, Benton, Camden, Hickory, Miller, Morgan, Ozark, Reynolds, Stone, Taney, Wayne; Oklahoma--Bryan, Cherokee, Delaware, LeFlore, Love, Marshall, Ottawa, Sequoyah, Wagoner.

<u>3</u>/ Arkansas--Benton, Cleburne, Hempstead, Howard, Johnson, Little River, Logan, Pope, Sevier, Van Buren, Washington, Yell; Missouri--St. Clair; Oklahoma--Haskell, McIntosh, Pittsburg, Nowata, Rogers.

Ozarks also had high indexes, as a result of National Forest and State recreation areas.

Sales and Receipts

Sales and receipts from recreation-related trades and services also indicate the importance of recreation to the economy of the region. An index of sales was computed, using 1954 and 1963 Census of Business data for approximately the same set of trades and services used in the employment-change index. <u>19</u>/ Since data are for establishments, they show sales at the point of sale.

Reservoir counties as a group have a higher index of changes in sales from 1954 to 1963 than nonreservoir counties (table 21). The reservoir counties have a greater growth rate than the United States as a whole, despite the low incomes and the general decline in the labor force of these rural counties.

The sales indexes also were sensitive to construction projects in progress. The sales indexes were higher in counties in which reservoirs were under construction than in nonreservoir counties, except in Arkansas. The stage of construction of a reservoir at the time the census data were taken affects the index. When construction was at its peak, sales and receipts would be much greater than when only land acquisition and surveying were underway.

As the recreation facilities have grown, in some cases from modest fishing camps to elaborate recreation complexes, the income and employment multiplier effects of recreation and tourist expenditures have changed. More trade and service employees are needed to serve the patrons of family vacation facilities than those of the more primitive fishing camps, and expenditures in the local area are likewise larger (52, p. 4).

Part-Time Home Developments

An economic activity stimulated by the development of recreation facilities in the Ozarks is the establishment of part-time or summer homes in the recreation areas, part of a national trend toward second homes. 20/ Part-time home residents in the Missouri Ozarks spent approximately \$1,200 per family in the area in 1960 for consumable items in addition to the investment in building or improving their homes, according to a recent study ($\underline{7}$). Average sale value of the homes was about \$7,500.

There were approximately 34,000 part-time homes in the Ozark Region in 1960--about 4 percent of all housing units (table 22). In 1960, about 8 percent of the housing units in the reservoir counties and about 3 percent of the units in nonreservoir counties were second homes. In the reservoir counties of Missouri, 17 percent were second homes.

19/ For method of calculating, see Appendix A.

20/ According to a recent estimate there are 65 million housing units in the Nation, including about 3.5 million second homes (5 percent of all units). Source: Mary Jane Ellis. Housing: Supplies, Prices and Outlook for 1966. Paper presented 43d Annual Agricultural Outlook Conference, November 17, 1965, Washington, D. C.

Item	All housing units	Part-time units <u>2</u> /	Part-time units as percentage of total
Ozark Region Reservoir counties Nonreservoir counties	Number 796,756 156,794 639,962	Number 34,106 13,116 20,990	Percent 4.3 8.4 3.3
Arkansas	318,212	10,460	3.3
Reservoir counties	56,742	2,915	5.1
Nonreservoir counties	261,470	7,545	2.9
Missouri	288,281	15,992	5.5
Reservoir counties	37,623	6,488	17.2
Nonreservoir counties	250,658	9,504	3.8
Oklahoma	190,263	7,654	4.0
Reservoir counties	62,429	3,713	5.9
Nonreservoir counties	127,834	3,941	3.1

Table 22.--Part-time homes, Ozark Region, 1960 1/

1/ See table 21, footnote 3, for reservoir counties (including those with reservoirs under construction).

2/ Part-time units were computed from the Census by adding units held for occasional use and seasonal units.

Source: (70).

Many heads of families who have second homes in the Ozarks are nearing retirement--63 percent of the owners in the Missouri study were 50 years of age or over and about 19 percent were 65 or over. Many have made their parttime homes in the Ozarks permanent residences when they retired, thus adding to the income of the local area.

Problems and Potentials of Recreation-Related Industry

The recreation industry offers a major opportunity for economic development of the region. With rising demand, existing recreation businesses can be expanded. There will also be an opportunity to fill this demand with new reservoirs, parks, and other developments in the future.

Anticipated Problems

The increase in income from recreation and retirement sources has a cost, however. The recreationists and retirees have specific needs for communication and medical facilities, roads, and other community services. These require capital expenditures that the local communities must finance alone or with outside help.

Additional study is needed of special problems that come as recreation centers develop. The need for public health and welfare facilities, for instance, is obvious. In addition, to insure the integrity of the rural recreation area, measures relating to public health and sanitation need to be enacted and enforced within the areas.

Problems of zoning and home finance in rural recreation areas are especially important. Zoning is needed to insure orderly development and continued investment in rural recreation areas. There is need for financing methods tailored to the unique needs of owners of part-time and retirement homes in the recreation areas. Present insurance programs for homes and cabins not occupied during the whole year are inadequate, and insurance on equipment and against vandalism is hard to obtain. Law enforcement to protect person and property becomes a problem as the number of tourists and part-time residents increases.

Expected Growth

The trend in recreation is toward more family vacation facilities, in the region as in the rest of the country. The related trades and services sector of the economy will likely continue to grow more rapidly in the Ozark Region than in the United States as a whole. First, increased income in the region will result in greater per capita demands for services. Second, the population centers served by the region's recreation industry are growing. Also, retirement villages, which complement family recreation facilities, can be located in the same area, and will further increase need for services.

Emerging Recreation Centers

The recreation industry will likely be centered in locations having a concentration of activities. These centers of recreation activity will be interconnected, and connected with the outside. As they become recreationist drawing points, opportunities will expand for numerous small private businesses in adjacent areas and in-transit locations ($\underline{6}$, $\underline{33}$).

Recreation centers have formed and are forming around the region's reservoirs, which are located principally in the predominantly rural counties. Centers will probably form around the new folk center in Stone County, Ark., the Ozark Rivers Monument area in Shannon, Ripley, and Oregon Counties, Mo., and the new Eufaula Reservoir area in McIntosh and Pittsburg Counties, Okla.

Existing recreation areas may be partly identified by the share of the labor force in recreation-related trades and services. This measure does not predict growth, since patterns of demand and access to various recreation areas change.

Percentages of the labor force employed in recreation-related trades and services were nearest the median in the counties with operating reservoirs and the urban nonreservoir counties-22.4 percent and 23.8 percent (table 23).

Area, and county classification $\frac{1}{2}$	Counties	Median share of labor force
:	Number	Percent
Ozark	115	19.7
Operating reservoir	27	22.4
Reservoir under construction	18	19.6
Nonreservoir	70	18.7
Rural	63	19.0
Urban	7	23.8
:	'	
Arkansas counties	42	18.2
Operating reservoir:	7	22.2
Reservoir under construction:	12	18.0
Nonreservoir:	23	18.1
Rural:	21	17.8
Urban	2	23.1
:	_	
Missouri counties:	44	19.4
Operating reservoir:	11	19.8
Reservoir under construction:	1	19.5
Nonreservoir:	32	19.3
Rural:	30	19.1
Urban:	2	24.1
:		
Oklahoma counties:	29	22.0
Operating reservoir:	9	23.5
Reservoir under construction:	5	22.0
Nonreservoir:	15	21.3
Rural:	12	21.3
Urban:		23.1
:	-	

Table 23.--Share of civilian labor force in recreation-related trades and services, Ozark Region, 1960

1/ See Appendix B for urban and rural counties in region, and footnotes to table 21 for reservoir counties.

Source: (68).

The high proportion in the urban counties reflects nonrecreation consumption activities within the trade area. The highest share was in Garland County, Ark., an urban reservoir county, where 38 percent of the labor force was in recreation-related industry. Camden County, Mo., a predominantly rural county with an operating reservoir, had 35 percent in recreation-related industry in 1960. Twenty of the twenty-seven reservoir counties were above the median for the region. As highly specialized recreation services develop, recreation will become a basic industry in the economy of the region. With existing or new interstate and access highways, the Ozarks should become the lake and mountain playground of the mid-continent.

FORESTRY

Timber Resources of the Region

Most of the Ozark Region is within the Southern Division of the Oak-Hickory Forest Region. A large part of the region is covered by a deciduous forest dominated by oaks with an abundance of hickories (11, p. 162).

Physiographic Areas

<u>Salem and Springfield Plateaus.</u>--Oak-hickory or oak-pine forest prevails over most of the area. However, mixed with the oaks, hickories, and pines are small areas similar to the more humid forests of the eastern United States. On dry ridges and southern exposures, post oak and blackjack oak of low commercial value are widespread. Sometimes these are associated with southern yellow pine, hickory, winged elm, and persimmon trees. The oak-pine association is more common on the flatter and rolling areas of the Ozark plateaus and near the western margin than in the more rugged parts.

White oak, a relatively valuable commercial species, is more abundant on the northern slopes. It is also found in the ridge and plateau forests along with black oak, post oak, and yellow pine. Redbud, dogwood, hop hornbeam, ironwood, mulberry, and service berry are understory trees in association with white oak.

Boston Mountains.--The prevailing forest in these mountains is the oakhickory type with frequent pine and pine-oak areas. In the more moist sites, there are many types common to the Appalachian forests, as birch, sweetgum, sugar maple, chinquapin oak, basswood, umbrella magnolia, red oak, and American and winged elm. Some sites near streams have mixed mesophytic forests similar to the Cumberland and Allegheny plateaus (11, p. 172).

<u>Ouachita Mountains and Arkansas River Valley.</u>--The vegetation of this area is similar to that of the Ozark Uplands, but with yellow pine much more abundant. The pine-oak forest is the most widespread and extends over the bordering coastal plains of the south. The pine is an open forest in association with post oak, blackjack oak, black oak, white oak, and hickory.

Border Areas.--To the west of the Ouachita Mountains and Ozark Uplands is an area of forest-prairie transition of oak-hickory forest. Oaks are usually scrubby. The oaks are mainly post oak and blackjack except along the alluvial bottoms of the larger streams and on sheltered northern slopes, where the species are similar to those of the Ozark Uplands. South of the Ouachita Mountains the forest blends into the highly productive pine forests of the coastal plains.

Commercial and National Forests

In Arkansas, 69 percent of the Ozark area is woodland, and in Missouri 55 percent. The Missouri area includes five prairie counties with little woodland (table 24). Comparable data are not available for Oklahoma.

Item	All land	Commercial	forest
Ozark Region Urban counties Rural counties	1,000 acres 47,085.9 4,415.2 42,670.7	1,000 acres 28,752.3 1,905.6 26,846.7	Percent 61.1 43.2 62.9
: Arkansas (1959)	18,672.2	12,914.6	69.2
: Missouri (1959)	18,615.3	10,205.7	54.8
: Oklahoma (1955-56) <u>2</u> /: :	9,798.4	5,632.0	57.5

Table 24.--Land area and commercial forest, Ozark Region, specified years 1/

1/ See Appendix B for urban and rural counties in region.

 $\frac{2}{2}$ Includes only 17 of the 29 counties. There is little forest area in the remaining counties.

Source: (24, 50, 76).

More than 7 million acres of the rougher lands in the region are within national forest boundaries--the Ozark in Arkansas, the Ouachita in Arkansas and Oklahoma, and the Mark Twain and Clark in Missouri. Of these 7 million acres, 4 million are administered by the U. S. Forest Service (table 25). Many of the timber sites in national forests have been under protection and management for half a century or more, with some of the best and most productive stands of timber in the region.

Growing Stock and Sawtimber Volume

The Arkansas portion of the region averages 464 cubic feet of growing stock per acre, considerably higher than the 286 cubic feet in Missouri and the 234 feet in Oklahoma (table 26). <u>21</u>/ The heaviest stands of timber are in the Ouachita Mountains, with an average growing stock of 603 cubic feet, and the coastal plains, with an average of 824 cubic feet (<u>50</u>, p. 36). The stocking rate is considerably under what is considered the minimum for commercial timber management. Well-stocked stands of oak have from 1,100 to 2,400 cubic feet per acre.

^{21/} Growing stock is the net volume in cubic feet of live sawtimber trees and live pole-timber trees to a minimum 4-inch top inside bark. In softwoods only the bole is included, but in hardwoods both bole and limbs are included.

State and s forest	Gross area within forest boundaries	Administered by U. S. Forest Service	Other lands within boundaries	: Percentage : administered : by U. S. :Forest Service
Arkansas:	Acres	Acres	Acres	Percent
Ozark: Ouachita:	1,489,074 2,129,279	1,083,734 1,323,205	405,340 806,074	72.8 62.1
Missouri: Clark Mark Twain:	1,816,302 1,191,331	760,019 602,324	1,056,283 589,007	41.8 50.6
Oklahoma: : Ouachita:	411,269	230,302	180,967	56.0
: Total:	7,037,255	3,999,584	3,037,671	56.8

Table 25.--National forests in the Ozark Region, 1964

Source: $(\underline{75})$.

Per acre figures include timber sites of all types and situations, and tend to mask the wide divergence of stand quality; however, a large proportion of the region cannot support commercial-timber production under the present cost and price relationships. No studies are available to show the proportion of good forest land or the proportion which is so poor for forestry that there is no economic incentive to manage it for timber production.

A recent Arkansas study (29) covering 5 million acres in the Ozark Uplands classified 57 percent of the woodland as incapable of yielding usable wood products. 22/ Poor timber sites occupy almost two-fifths of the 5 million acres and more than half of the land now in timber. The chief contribution of the forest cover on these poor sites is site protection, flood prevention, and recreation. However, 43 percent of the present woodland, according to criteria of the Soil Conservation Service, is in good timber production sites. Although the study data refer to only 5 million acres in Arkansas, they are probably representative of the Boston Mountains, and the Ozark Uplands in Missouri and Oklahoma.

Because of the more heavily stocked stands in the Ouachita Mountains and the Coastal Plains, Arkansas averages about twice as much sawtimber per acre as Missouri and Oklahoma (table 26). The stands north of the Arkansas River are very similar to those in Oklahoma and Missouri.

^{22/} The Soil Conservation Service defined "forest range and pasture" as low-yielding forest land incapable of yielding usable wood products because of adverse site conditions but which is or may be developed for forest range or pasture.

	: : :		GROWINC	STOCK				
Item	All	Softwoods		Hardwoods				
	: species :	<u>2</u> /	Total	Soft	Hard	: per acre		
Ozark Region Rural counties Urban counties	: : <u>Mil. cu. ft.</u> : 10,225.9 : 9,660.3 : 565.6	Mil. cu. ft. 3,695.3 3,455.6 239.7	Mil. cu. ft. 6,530.6 6,204.7 325.9	Mil. cu. ft. 773.7 726.1 47.6	Mil. cu. ft. 5,756.9 5,478.6 278.3	<u>Cubic feet</u> 355.6 359.8 291.6		
Arkansas (1959)	5,991.3	2,915.9	3,075.4	539.4	2,536.0	463.9		
Missouri (1959) <u>3</u> /	: 2,918.4	284.8	2,633.6	132.7	2,500.9	286.0		
0klahoma (1955-56) <u>4</u> /	: : 1,316.2 :	494.6	821.6	101.6	720.0	233.7		
	:		SAWTI	MBER				
Item	A11	Softwoods			All species			
<u>^</u>	species	<u>2</u> /	Total	Soft	Hard	per acre		
Ozark Region Rural counties Urban counties	: : <u>Mil. bdft.</u> : 28,742.0 :- 27,257.9 : 1,484.1	Mil. bdft. 14,605.0 13,662.4 942.6	Mil. bdft. 14,137.0 13,595.5 541.5	Mil. bdft. 9,518.6 9,198.3 320.3	Mil. bdft. 4,618.4 4,397.2 221.2	Board-feet 1,012 1,023 844		
Arkansas (1959)	18,750.1	11,904.7	6,845.4	4,175.8	2,669.6	1,452		
Missouri (1959) <u>3</u> /	5,975.8	707.6	5,268.2	4,323.2	945.0	606		
• Oklahoma (1955-56) <u>4</u> /	: 4,016.1	1,992.7	2,023.4	1,019.6	1,003.8	713		

- <u>2/</u> <u>3/</u> <u>4/</u> See Appendix B for urban and rural counties in region.

Mostly shortleaf and loblolly pine, cypress, American red cedar. Excludes five prairie counties: Barton, Dade, Greene, Jasper, and Lawrence.

Includes only 17 of the 29 counties.

Source: (25, 50, 76).

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Forest Products Problems and Potentials

Much of the land in the Coastal Plain of Arkansas, the Arkansas River Valley, and the Ouachita Mountains offers a substantial long-range potential for development of forest and forest-products industries. The major problems are (1) the small size of the nonindustrial private holdings and their inadequate management, (2) the current lack of local markets for pulp, (3) the relatively high transportation costs for pulpwood, and (4) the depressed market for sawtimber. An adequate timber supply exists to supply pulp mills and other forest-products industries in this area that would complement the existing timber industries. There is also a potential for increased timber production.

Much of the woodland cover of the Ozark Uplands is on such poor sites that the potential for timber production is very low. Possible alternative uses for these sites include reforesting with desirable softwood stands or establishing natural forage covers for grazing. Either use requires removing the hardwood cover and idling the land for long periods. About 30 years are required for pine stands to reach pulp size on these sites, and about 4 years are required after initial seeding to establish a natural forage cover. Neither alternative appears to be economically feasible with present technology and the current high market price of land relative to its agricultural and timber productivity. Another barrier to timber production is the small size of holdings.

THE MINERAL RESOURCES OF THE REGION

The usefulness of a mineral deposit depends upon the demand for that mineral, the state of product and extraction technology, and the size and purity of the deposit in relation to other sources of supply. In addition, the extraction of minerals seldom produces any substantial employment unless complementary processing and manufacturing activities are located nearby.

Minerals are found in variety and abundance within the Ozark Region, although many of them have not yet been exploited. During 1953-63, minerals produced in the Missouri Ozarks decreased in value, while those in Arkansas and Oklahoma increased (table 27). The increase in the region was 13 percent, compared with 36 percent for the Nation.

Mineral Deposits

Each physiographic area in the region has characteristic mineral deposits. The location of most of these deposits is shown in figure 6.

Ozark Uplands

The principal mining operations in the Ozark Uplands have been for iron, manganese, lead, zinc, and barite. Iron is mined principally in southeastern Missouri, although there are several small operations throughout the southern and central parts of Missouri. Exploitation of large deposits of iron ores in southeastern Missouri has been extensive. About two-thirds

There	Value of min	nerals produced	:	: : Minerals produced, in order
1 tem	1963	1953	Change	of importance, 1963
: : United States	1,000 <u>Dollars</u> 19,620,000	1,000 <u>Dollars</u> 14,382,000	Percent 36.4	
Ozark Region: Rural counties: Urban counties:	202,681 148,338 54,344	179,323 129,779 49,544	13.0 14.3 9.7	
Arkansas	61,841	31,365	97.2	Stone, sand and gravel, natural gas, clay, coal, cement, gemstone, gypsum, lime barite, slate, petroleum, abrasive stone, phosphate
Missouri : :	38,619	51 , 196	-24.8	Sand and gravel, stone, iron ore, lead, copper, coal, lime, silver, clay, natural gas, barite, asphalt, lime- stone, zinc
Oklahoma :	102,222	96 , 762	5.6	Petroleum, stone, natural gas, sand and gravel, coal, cement, clay, natural gas liquids, lime, zinc, lead, tripoli

Table 27.--Value and relative importance of minerals produced, Ozark Region, 1953 and 1963 1/

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 $\underline{1}$ See Appendix B for urban and rural counties in region.

Source: $(\underline{12}, \underline{35}, \underline{37}, \underline{51})$.

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FIGURE 6. MINERAL RESOURCES OF THE OZARK REGION

Source: Midwest Research Institute, Copyright 1946

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of the Missouri production comes from underground workings--an expensive method ~ of mining iron (35, p. 12). The iron content of the concentrate, however, averaged 53 percent in 1963.

Independence County, Ark., is the site of one of the four largest manganese ore districts in the United States. The Arkansas deposit is low-grade ore, averaging about 5 percent (<u>13</u>, p. 498). Government stockpiling in the past has materially influenced operations of the marginal deposits.

The Ozark Uplands area of Missouri has been the Nation's leading lead producer for more than half a century (<u>35</u>, p. 15). Despite the problem of over-production within the industry, discovery and development of reserves, and expansion of mill capacity in the Viburnum District has continued.

Ottawa County, Okla., has major zinc operations, although the importance of zinc mining has declined in recent years. The 1958 production from this area was 53,014 short tons--about 12 percent of national production (<u>13</u>, p. 988). The zinc industry has been faced periodically with low prices, market instability, excessive stocks, and the threat of substitution (<u>13</u>, pp. 991, 993, 994).

 Barite is mined in Washington, Jefferson, and St. Francois Counties, Mo., and in parts of Arkansas. Arkansas and Missouri combined produced two-thirds of the U.S. total in 1958 (13, p. 89).

Arkansas River Valley

The folded shales and sandstones of the Arkansas River Valley have deposits of coal, natural gas, sandstone, quartzite, lightweight aggregate materials, and building stone. Coal and natural gas are the most important.

Practically all the coal deposits of the Ozark Region are in the Arkansas River Valley in Arkansas and Oklahoma. Extensive deposits exist, but workings are small, other energy sources are cheap, and potential markets have closer supplies. Peak coal production in the region was reached about 1907 when Arkansas produced 2.7 million tons. Total production in the region through 1958 has been only about 300 million tons (<u>1</u>3, p. 113).

The dry gas industry in the Arkansas portion of the Arkansas River Valley has aided considerably in the development of sections of the Ozark Region. Natural gas lines from the area serve the broiler industry in northwest Arkansas, as well as industries and homes in the valley. Production in 1958 was about 24 billion cubic feet, with reserves estimated at 804 billion cubic feet (77, p. 22). Exploration is continuing in the area.

Ouachita Mountains

The intensely folded and faulted shales and cherts of the Ouachita Mountains have a wide range of minerals. However, mining activities in the area are minor.

Border Areas

The border areas of the region contain scattered deposits of minerals. The petroleum operations on the western edge of the region and bauxite mining on the southern border are the major sources of mineral industry employment in those areas. Of the Nation's bauxite reserves, 97 percent are in the Arkansas portion of the region (13, p. 15). New technology that utilizes bauxitic clays of 35 percent alumina would increase the State's usable bauxite reserves from 50 million tons of 52 percent ore to 140 million tons (13, p. 21). The alumina reduction capacity in Arkansas, however, is only one-fifth of the U. S. capacity of 5.2 million short tons. Only 164,000 tons of the 2.6 million short ton aluminum capacity in the United States was located in Arkansas in 1958 (13, p. 17).

Employment in Mining

Mining in the Ozark Region accounted for less than 2 percent of employment in 1960 compared with 3.5 percent in Appalachia. The 1950-60 percentage loss of employment in mining was less in the Ozarks than in Appalachia--32 percent compared with 59 percent. In 1960, 2.7 percent of the labor force in Oklahoma was employed in mining, less than 1 percent in Arkansas, and 1 1/2 percent in Missouri.

Problems and Potentials of Mineral Resource Development

The major problems limiting extensive exploitation of the region's mineral resources are the modest size of the deposits, and their distance from consuming centers. Expansion of bauxite reduction and processing is also limited by the energy costs within the region.

Depressed markets for some of the minerals in the past have limited exploitation (13, p. 443). The chief problems of the lead and zinc industries are traceable to price declines due to overproduction after the cutback in Government stockpiling in 1957-58 (13, p. 430). The coal deposits are not likely to be fully utilized under present circumstances. Barge transportation on the Arkansas River, however, may open new markets for coal.

The low quality of some mineral deposits within the region limits expansion. The manganese deposits will not be worked to any great extent without improved technology to utilize low grade ore economically, or higher prices $(\underline{13}, p. 501)$.

The future of some of the mineral industries within the region is very bright. Increases in consumption, production, and imports are the trends in the barite industry. The only major problems are dependence upon a single market (90 percent is used in oil well drilling), and lack of additional barite deposits near consuming centers (13, p. 92). Iron ore production of the region will likely continue to increase to keep pace with the growing industrialization of the West and South. Shipments to eastern markets will also increase (13, p. 420). The natural gas industry in the Arkansas River Valley will also expand as exploration continues.

THE EMERGENCE OF MANUFACTURING INDUSTRIES

Share of the Labor Force in Manufacturing

Manufacturing industries employed only 12 percent of the Ozark labor force in 1950, less than one-half the proportion in the United States or Appalachia (table 28). The share had increased to 18 percent by 1960, compared with 26 percent in the United States.

Manufacturing in the region is dominated by agriculture-related industries. Lumber, wood products and furniture, and food and kindred products accounted for 50 percent of total manufacturing employment in 1950 and 40 percent in 1960 (table 29). In Arkansas, employment in manufacturing was greater in the rural than in the urban counties, reflecting the preponderance of agriculturally based manufacturing and the existence of developing employment centers not classified as urban. The manufacturing share in employment in Oklahoma was extremely low in both 1950 and 1960.

Manufacturing Employment Growth

The 1950-60 increase in share of the labor force employed in manufacturing reflected a 41-percent increase in number of employees in manufacturing industries--much greater than the increase in Appalachia and the country as a whole (table 9). This growth in manufacturing employment resulted both from a shift of industry into the region, and an expansion of existing industries.

Relative increases were largest in those industries with a rapid national growth. Employment in transportation equipment, electrical machinery, machinery other than electrical, fabricated metals, and motor vehicles and equipment expanded rapidly, but from an extremely small employment base (table 29). The greatest absolute employment increases were in three industry groups which are expanding their share of national employment quite slowly--apparel, food and kindred products, and "other nondurable goods." The only employment decline during the decade was in the lumber, wood products, and furniture group. Manufacturing employment growth varied throughout the region. In the rural counties a large proportion of the gross increase was in manufacture of In contrast, the contribution of electrical machinery to the gross apparel. employment increase was larger in urban counties. The overall percentage increase in manufacturing employment was greatest in Missouri.

Growth Centers in Manufacturing Employment

In 1960, the ll predominantly urban counties accounted for 39 percent of the manufacturing employment in the region (table 30). Between 1950 and 1960, manufacturing employment increased nearly 38 percent in the urban and 44 percent in the rural counties.

Complementary relationships within existing manufacturing centers affect their suitability for expansion of existing firms or locating new firms. The probability of continued manufacturing growth in a county is greater if that Table 28.--Share of male and female civilian labor force employed in manufacturing, and distribution of manufacturing employees, by sex, Ozark Region, Appalachia, and United States, 1950 and 1960 <u>1</u>/

:			1950		ן ו				960		
Item	Sha	re of civ Labor for	vilian ce	Distrib manufa emplo	Distribution of manufacturing employment		Share of civilian labor force			Distribution of manufacturing employment	
•	Male	Female	Total	Male	Female	. Male	Female	Total	Male	Female	
:					Perce	ent					
United States:	25.8	22.1	24.8	75.1	24.9	28.7	19.7	25.7	74.9	25.1	
Appalachia	n.a.	n.a.	26.4	n.a.	n.a.	n.a.	n.a.	30.1	n.a.	n.a.	
Ozark Region:	12.2	11.8	12.1	77.7	22.3	18.8	16.5	18.1	71.9	28.1	
Rural counties:	10.9	11.9	11.1	79.4	20.6	18.1	17.9	18.0	72.0	28.0	
Urban counties:	14.8	11.7	13.9	75.3	24.7	19.9	14.8	18.1	71.8	28.2	
Arkansas	14.7	11.7	14.0	80.0	20.0	21.2	16.5	19.7	73.1	26.9	
Rural counties:	14.5	12.3	14.1	84.0	16.0	23.2	19.0	22.0	75.9	24.1	
Urban counties:	14.9	11.2	13.7	74.2	25.8	18.6	14.5	17.1	69.1	30.9	
Missouri	11.1	15.8	12.2	70.6	29.4	18.0	20.1	18.7	67.2	32.8	
Rural counties:	9.5	16.1	10.9	69.7	30.3	16.0	21.2	17.5	64.8	35.2	
Urban counties:	16.2	15.4	16.0	72.3	27.7	23.2	17.9	21.4	71.7	28.3	
Oklahoma	9.3	5.9	8.6	85.6	14.4	15.4	10.1	13.9	79.1	20.9	
Rural counties:	7.2	3.5	6.5	90.1	9.9	13.3	9.3	12.2	79.3	20.7	
Urban counties:	13.3	8.8	12.2	81.6	18.4	18.9	11.3	16.6	78.9	21.1	

1/ See Appendix B for urban and rural counties in region.

Source: (15, 55, 68).

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Industry group	1950 Employment			:	1960 Employment			Employment change 1950 to 1960		
	Rural	Urban :	Total	:	Rural	Urban	: Total :	Rural	Urban	Total
Furniture, lumber, wood Primary metals Fabricated metals Machinery, ex. electrical: Electrical machinery Motor vehicles & equipment: Transportation equipment: Other durable goods <u>2</u> /: Food & kindred products: Textile mill products: Apparel Printing, publishing	No. 26,668 1,056 623 940 205 390 227 2,799 7,557 797 3,878 2,197	No. 5,969 2,122 1,009 1,358 919 586 173 5,471 7,741 271 3,943 3,724	No. 32,637 3,178 1,632 2,298 1,124 976 400 8,270 15,298 1,068 7,821 5,921		No. 24,628 1,825 1,602 2,552 1,127 1,106 2,749 5,420 12,992 1,067 8,760 3,081	No. 5,702 1,557 2,023 2,554 2,707 971 1,508 7,656 10,895 364 4,779 4,591	No. 30,330 3,382 3,625 5,106 3,834 2,077 4,257 13,076 23,887 1,431 13,539 7,672	Pct. -7.6 72.8 157.1 171.5 449.8 183.6 1,111.0 93.6 71.9 33.9 125.9 40.2	Pct. -4.5 -26.6 100.5 88.1 194.6 65.7 771.7 39.9 40.7 34.3 21.2 23.3	Pct. -7.1 6.4 122.1 122.2 241.1 112.8 964.3 58.1 56.1 34.0 73.1 29.6
Chemicals Other nondurables <u>3</u> /	1,018 9,081	2,484 3,051	3,502 12,132		2,506 13,296	2,458 5,726	4,964 19,022	146.2 46.4	-1.0 87.7	41.7 56.8
: Total	57,436	38,821	96,257		82,711	53,491	136,202	44.0	37.8	41.5

Table 29.--Manufacturing employment, by industry group, Ozark Region, 1950 and 1960 1/

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See Appendix B for urban and rural counties in region. 1/

 $\frac{2}{3}$ Stone, clay, and glass; instruments; miscellaneous manufacturing. $\frac{3}{3}$ Tobacco manufacturing, paper and allied products, products of petr

Tobacco manufacturing, paper and allied products, products of petroleum and coal, rubber products, leather and leather products.

Source: (55, 68).

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- :	1950 employment			:	1960 employm	: Chang	Change 1950 to 1960		
Item	Male	Female	Total	Male	Female	Total	Male	Female	Total
:	<u>Number</u>	<u>Number</u>	Number	Number	<u>Number</u>	<u>Number</u>	Pct.	Pct.	Pct.
United States:	11,030,576	3,654,906	14,685,482	13,111,965	4,401,121	17,513,086	18.9	20.4	19.3
Appalachia	n.a.	n.a.	1,380,600	n.a.	n.a.	1,593,200	n.a.	n.a.	15.4
Ozark Region	78,819	21,438	96,257	97,994	38,208	136,202	31.0	78.2	41.5
Rural counties:	45,601	11,835	57,436	59,568	23,143	82,711	30.6	95.5	44.0
Urban counties:	29,218	9,603	38,821	38,426	15,065	53,491	31.5	56.9	37.8
Arkansas:	37,377	9,347	46,724	46,972	17,278	64,250	25.7	84.9	37.5
Rural counties:	23,343	4,456	27,799	28,771	9,153	37,924	23.3	105.4	36.4
Urban counties:	14,034	4,891	18,925	18,201	8,125	26,326	29.7	66.1	39.1
Missouri	23,347	9,728	33,075	33,190	16,219	49,409	42.2	66.7	49.4
Rural counties:	15,219	6,607	21,826	21,162	11,477	32,639	39.0	73.7	49.5
Urban counties:	8,128	3,121	11,249	12,028	4,742	16,770	48.0	51.9	49.1
: Oklahoma: Rural counties: Urban counties: :	14,095 7,039 7,056	2,363 772 1,591	16,458 7,811 8,647	17,832 9,635 8,197	4,711 2,513 2,198	22,543 12,148 10,395	26.5 36.9 16.2	99.4 225.5 38.2	37.0 55.5 20.2

Table 30.--Manufacturing employment, by sex, Ozark Region, Appalachia and United States, 1950 and 1960 $\underline{1}/$

 $\underline{1}$ / See Appendix B for urban and rural counties in region.

Source: (15, 55, 68).

county already has the labor force, facilities, and services to support in-^ dustry. Events in the Ozark Region in the 1950's seem to verify this proposition. Less than one-tenth of the counties in the region are predominantly urban, but the urban counties accounted for over a third of the 1950-60 increase in manufacturing employment.

Some of the growth in manufacturing employment in rural counties may indicate the development of growth nodes. 23/ Previous studies have shown that dispersion of industry in rural areas is not common. Ruttan states ". . . the dispersion of industrial employment to the less industrialized regions that has occurred in recent years has not been accompanied by any substantial increase in the proportion of total manufacturing employment located in the smaller cities and towns of the Nation". 24/

Female Participation in Manufacturing Growth

Manufacturing in the Ozark Region is drawing more female workers into the labor force than male workers. While the total labor force in the Ozarks declined 5 percent in 1950-60, the female labor force increased 28 percent (table 6). The share of the female labor force in manufacturing, which was much smaller in 1950 than in the United States as a whole, approached the national figure in 1960 (table 28).

Employment of women in manufacturing increased relatively more than employment of men in all State sections of the region (table 30). The increase in female employment in manufacturing was mainly in the apparel and the food and kindred products industries. These industries were responsible for a large part of the total increase in manufacturing employment in the region.

Continued expansion of employment of women in relation to men could create problems. In the Ozarks, it is new for the wife to be a breadwinner, and requires major changes in family living. But higher rates of female employment may help maintain and mask underemployment of men in the region, and thus obstruct employment adjustments needed for a viable industry balance. The short-term gains in family and community income may be offset by a long-run loss of viability of the economy. Yet, any industry contributes to an expanded tax base and to community overhead capital, and helps to develop nodal points of growth.

Manufacturing Problems and Potentials

Manufacturing employment in the Ozarks is dominated by industries having a national history of slow growth of employment, product demand, or earnings

^{23/} Census employment figures are based upon the place of residence of workers rather than county of work. Travel across county lines may, therefore, complicate interpretation of data, especially of data for counties near urban centers.

^{24/} Vernon W. Ruttan. The Potential in Rural Industrialization and Local Economic Development. Paper presented North Central Farm Management Committee Conference March 18-19, 1957, Chicago.

(table 31). <u>25</u>/ In 1960, 51 percent of the manufacturing employment in the Ozarks was in industries with slow national growth in employment, 78 percent was in industries with slow growth in national demand for the product, and 39 percent was in industries with slow national growth in employee earnings (table 31). The urban counties of the region had a much lower proportion of employment in industries with slow-growth characteristics than the rural counties (table 32).

:	Slow-growth classification 2/						
Item	Empl	Loyment	De	emand	Earnings		
:	1950	1960	1950	1960	1950	1960	
:			Per	rcent			
United States	48.9	39.9	66.3	58.1	29.6	24.7	
Ozark Region: Rural counties:	60.1 72.9	51.2 61.3	84.5 90.9	78.4 83.5	49.3 58.4	38.9 45.4	
Arkansas	41.1 62.6	51.5	84.4	81.1	57.4	45.9	
Rural counties: Urban counties:	77.1 41.4	62.9 35.2	92.7 72.2	87.5 72.0	67.4 42.6	52.8 36.0	
: Missouri Rural counties: Urban counties:	61.0 70.8 42.0	53.6 62.1 36.9	84.0 90.7 71.1	75.4 81.9 62.7	43.1 45.8 37.9	31.8 35.7 24.3	
Oklahoma Rural counties: Urban counties:	50.9 63.9 39.1	45.3 54.0 35.2	86.0 85.4 86.6	77.0 75.7 78.6	38.7 61.5 18.2	34.3 48.2 18.1	

Table 31.--Manufacturing employment in slow-growth industries, Ozark Region and United States, 1950 and 1960 1/

 $\frac{1}{2}$ See Appendix B for urban and rural counties in region. $\frac{1}{2}$ See Appendix A for industries in each group.

Source: (55, 68).

The region, however, is making substantial progress in improving its manufacturing industry balance despite the continued influx of slow-growth industries. Between 1950 and 1960, increases in some slow-growth manufacturing industries were to some extent offset by losses in others so that the proportion of manufacturing employment concentrated in slow-growing national industries

<u>25</u>/ See Appendix A for definitions and procedures used to isolate the growth characteristics of particular industries.

Table 32.--Increase in manufacturing employment, demand, and earnings among slow-growth industries, Ozark Region and United States, 1950 to 1960 1/

:	S	Slow-growth classi	fication <u>2</u> /
Item :	Employment	Demand	Earnings
:		Paraent	
United States	7.1	<u>26.6</u>	11.4
: Ozark Region:	33.8	65.5	18.5
Rural counties:	39.7	69.2	22.1
Urban counties:	25.7	60.1	11.6
:			
Arkansas	25.4	73.6	19.0
Rural counties:	30.8	75.5	20.5
Urban counties:	18.7	68.8	18.3
:			
Missouri	42.6	60.8	14.2
Rural counties:	48.1	66.5	20.6
Urban counties:	36.2	52.9	4.9
:			
Oklahoma	38.0	58.0	27.6
Rural counties:	40.8	61.2	29.7
Urban counties:	35.3	53.4	23.4
:			

 $\frac{1}{2}$ See Appendix B for urban and rural counties in region. $\frac{2}{2}$ See Appendix A for industries in each group.

Source: (55, 68).

declined. Thus, the region is gradually moving toward a manufacturing industry balance similar to that of the United States. So long as the balance remains adverse, however, the manufacturing economy of the region must look to continued shifting of slow-growth industry from other regions into the Ozarks to have a growth rate similar to that of the United States. This, in turn, adversely affects the industry balance, but it can be justified as a temporary measure. Even a slow-growth industry will increase the tax base, and will lead to development of public services attractive to more desirable industry, and of needed complementary services. The short-run policies which encourage these shifts need not overshadow the desirable goal of greater sustained growth. Attracting and maintaining rapidly growing industries should be the foremost policy of the region.

PUBLIC AND PRIVATE SERVICES

A major problem of a region with a declining population is the consolidation and support of the services of the economy, especially the services relating to communication, transportation, and education. The difficulty of supporting needed public services in the Ozarks stems from (a) a continued absolute loss of population contributing to a higher per capita service cost and a lower tax base, (b) a relatively large dependent population, and (c) low incomes.

Local Support of Public Services

One method of measuring the local support for public services is by means of an "effort index" compiled by expressing revenues from local sources as a percentage of personal income. General revenues from local sources averaged almost 5 percent of personal income in the region in 1963 (table 33). The proportion was higher in the urban than the rural counties. Interstate differences were also apparent--Arkansas counties averaged lowest, Oklahoma counties highest.

Table 33.--Selected measures of support of public services, Ozark Region $\underline{1}/$

Item	Expenditure per pupil 1959-1960 <u>2</u> /	Earnings per teacher 1962 <u>3</u> /	Local revenue as share of general revenues, 1962	Effort index <u>4</u> /
Ozark Region Rural counties Urban counties	Dollars 253.20 251.80 253.90	<u>Dollars</u> 399 394 408	Percent 58.83 52.82 68.27	Percent 4.95 4.89 5.03
Arkansas	201.20	358	62.18	4.59
Rural counties	192.70	345	52.77	4.34
Urban counties	213.80	376	71.10	4.79
Missouri	284.40	407	62.98	5.11
Rural counties	281.60	395	58.47	4.97
Urban counties	292.90	443	73.31	5.39
Oklahoma	291.80	449	48.63	5.46
Rural counties	296.70	434	44.55	5.67
Urban counties	282.20	456	56.15	5.17

1/ See Appendix B for urban and rural counties in region.

2/ Based on average daily attendance.

 $\overline{3}$ / Full-time Primary and Secondary teachers, October 1962.

 $\overline{4}$ / General revenue from local sources as percent of total personal income.

Source: (3, 46, 73). Also, Total General Expenditure by County of School Districts for 1950-60 School Year and Average General Attendance by Counties, special communication from Mo. State Dept. Ed. The proportion of general revenue from local sources indicates the extent to which the State Governments support local functions. The proportion averaged 59 percent in the Ozark counties, and was consistently higher in the urban than in the rural counties. Where the effort index was high the proportion of general revenue from local sources was also high except in Oklahoma, where the - effort index was relatively high but the local share of general revenue was quite low.

The indebtedness of local governments indicates willingness to support public services beyond current tax revenues. But in an area with a population decline and a decline in taxable assets, indebtedness may represent a willingness to support public services at the risk of increasing taxes. The long-term per capita indebtedness of local governments in the Ozarks averaged about one-third that of all local governments within the United States--\$99 compared with \$309 (table 34). The average in the urban counties of the region was almost twice as high as in the rural counties.

Item	Long-term indebtedness 1962	: Population : 1960 :	: : Indebtedness : per capita :
United States	1,000 <u>dollars</u> 55,455,000	<u>Number</u> 179,325,671	<u>Dollars</u> 309.24
Ozark Region	223,419	2,250,805	99.26
Rural counties	111,619	1,443,946	77.30
Urban counties	111,800	806,859	138.56
Arkansas	111,688	931,776	119.86
Rural counties:	44,725	519,617	86.07
Urban counties	66,963	412,159	162.46
Missouri	71,201	786,330	90.55
Rural counties:	42,389	581,181	72.93
Urban counties	28,812	205,139	140.45
Oklahoma	40,530	532,699	76.08
Rural counties:	24,505	343,138	71.41
Urban counties:	16,025	189,561	84.53

Table 34.--Per capita long-term indebtedness of local governments, Ozark Region, 1962 1/

1/ See Appendix B for urban and rural counties in region.

Source: $(\underline{73})$.
Expenditures by local governments within the region indicate a high priority for education. Close to 60 percent of local government expenditure other than capital outlay went for education in 1962 (<u>73</u>). The average was under 50 percent for all local governments in the United States.

Regardless of the priority placed upon education, the region's expenditure per pupil in daily attendance is too low to maintain an adequate educational system. The Ozark expenditure per pupil in average daily attendance in 1962 was \$253. This is low, especially in relation to the size of schools and density of population (table 33). The expenditure per pupil in smaller schools must be considerably above that in larger schools to insure the same quality of instruction. Expenditures averaged \$201 in Arkansas, \$284 in Missouri, and \$292 in Oklahoma. Small differences existed between rural and urban counties.

Teacher earnings reflect these low expenditures. Average monthly earnings were about \$400 for October 1962. Teacher salaries in Oklahoma averaged highest, those in Arkansas lowest. Salary differences between rural and urban counties were small.

The lack of adequate support for education in the region is also reflected in the amount per capita spent by local governments in the region compared with local governments in the rest of the United States. In 1962, the average (other than capital outlay) was \$65 in the Ozarks compared with \$83 in the country as a whole (table 35). Arkansas' expenditure of \$53 was low compared with averages of \$73 for Missouri and \$74 for Oklahoma.

Highways receive second priority for expenditures by local governments, and per capita expenditure is about the same as in the country as a whole. However, roads and highways in the region are very expensive to build and maintain, because of the topography and soil composition. The interstate highway program can partially substitute for State and local programs. Three major interstate routes, predominantly east-west, course through parts of the region. Interstate 44 (U.S. 66) had a 1962 average 24-hour count of 5,620 vehicles between St. Louis and Springfield, Mo. (fig. 7). Interstate 40 (U.S. 64) will, upon completion, bisect the Arkansas and Oklahoma portion of the region on a line from Little Rock to Oklahoma City. Traffic counts in 1962 on the old road which Interstate 40 will replace averaged 2,500 in Arkansas and 3,300 between Fort Smith and Muskogee. Interstate 30 (U.S. 67) from Little Rock to Texarkana skirts the southern border of the region.

The major north-south routes through the region are U.S. 69 in eastern Oklahoma, U.S. 71 through western Arkansas and Missouri, and U.S. 65 from Little Rock north through Springfield. Highway 67 from Little Rock to St. Louis roughly defines the eastern boundary of the region.

East-west traffic through the region will be well served by the interstate system under construction. Present north-south highways giving access to the major recreation areas are heavily traveled in the recreation season, but their inadequacy restricts movement of vacationists from the major population centers to the north. Since a major portion of the vacationists come from north of the recreation areas, lack of adequate direct access limits utilization of the full potential of the areas.

	U.S.	Ozarks			Arkansas			: Missouri			: Oklahoma		
Type of expenditure		: Total	: Rural	Urban	: Total	Rural	: Urban	: Total	Rural	: Urban	Total	Rural	Urban
						T	ollars -						
Direct general							01-01-0						
expenditure, other than :													
capital outlay 2/	:175.50	108.49	101.38	121.23	101.21	87.23	118.84	108.39	101.08	129.08	121.38	123.30	117.93
-								20003)	101100	10,000	1.1.1.00	1-3.30	
Education	83.22	64.73	66.10	62.29	52.56	51.47	53.93	72.90	72.28	74.65	73.99	77.80	67.09
Highways	11.97	11.08	11.63	10.09	10.51	11.13	9.74	7.50	7.22	8.31	17.34	19.86	12.78
Public welfare	14.35	0.45	0.35	0.61	0.46	0.34	0.61	0.49	0.35	0.91	0.35	0.37	0.30
Health & hospitals:	11.00	5.85	5.53	6.41	5.55	6.41	4.48	4.43	3.91	5.90	8.45	6.95	11.18
Police protection	10.33	4.32	3.19	6.36	4.61	3.00	6.64	4.07	3.09	6.87	4.19	3.64	5.18
Fire protection	6.32	2.50	1.10	5.00	3.08	1.09	5.58	2.14	1.03	5.28	2.01	1.23	3.41
Sewerage	2.15	0.90	0.51	1.60	0.90	0.46	1.46	0.93	0.43	2.34	0.85	0.72	1.09
Sanitation other :	-												,
than sewerage	3.82	0.99	0.35	2.15	1.23	0.37	2.32	0.66	0.22	1.93	1.07	0.54	2.02
Parks & recreation	3.44	1.30	0.26	3.16	1.80	0.16	3.86	1.23	0.40	3.59	0.53	0.18	1.17
Natural resources:	1.19	0.51	0.67	0.22	0.38	0.53	0.16	0.37	0.48	0.06	0.93	1.15	0.54
Housing and urban :			•							••••	- 1) 0	,	
renewal:	2.04	2.22	0.03	6.13	5.25	0.10	11.73	0.13	0	0.53	0	0	0
Correction	1.33	0.27	0.11	0.54	0.36	0.13	0.64	0.32	0.16	0.77	0.03	0.01	0.07
Libraries	1.77	0.97	0.53	1.75	1.17	0.40	2.15	1.16	0.90	1.90	0.34	0.12	0.73
Financial :													
administration	3.08	1.83	1.67	2.12	1.82	1.64	2.05	1.60	1.41	2.13	2.19	2,15	2.26
General control	5.68	3.55	3.47	3.68	3.31	3.26	3.38	3.62	3.37	4.34	3.85	3.97	3.63
General public :					•••				5.51		2/		55
buildings	1.52	0.73	0.58	1.00	0.79	0.61	1.03	0.69	0.54	1.11	0.70	0.62	0.83
Interest on general :								/					-
debt	7.67	2.77	2.20	3.80	3.33	2.40	4.49	2.73	2.35	3.83	1.87	1.66	2.26
Other and unallocable:	4.57	3.44	2.99	4.24	4.01	3.60	4.52	3.32	2.88	4.55	2.63	2.26	3.30
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Table 35 .-- Per capita local government expenditure other than allocated capital outlay, Ozark Region by State area and predominant county classification, 1962 1/

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 $\frac{1}{2}$ / See Appendix B for urban and rural counties in region. $\frac{1}{2}$ / Includes some minor capital outlays that were not allocated to functions.

Source: (<u>73</u>).

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The greatest benefit to be derived from improved highways within certain parts of the Ozark Region is from access provided to the major family recreation developments. The highway systems are presently constituted with respect to the major population centers, where recreation enterprises have developed and flourished. But improved routes into many of the more remote recreation areas would create a greater potential for economic development through family vacation type recreation.

Employment Complementary to Industry

The probability of future growth in industries that ship products to other regions is greatest at points which already have some industrial concentration. Recreation-related growth has a greater probability of occurring at points exhibiting past growth because of convenience and savings to consumers when these services are offered close to each other. Manufacturing requires a set of available community facilities and business services. Where these are well developed, the services are cheaper when used by several firms rather than a single firm. This section identifies specific points where economic growth has a higher probability of occurring.

The industry location process is quite complicated, and is different for each industry. Availability of complementary business services is only one of many factors in the location matrix of industry, but availability of these services in a place increases the probability for industrial growth there.

The urban counties have a high concentration of employment in these services, as do certain of the rural counties (table 36). In 1960, Phelps County, Mo., which is a rural county, ranked second only to the urban county of Pulaski, Ark., in this respect. Phelps County is the site of the Missouri School of Mines, and has a large number of professional personnel. The other rural counties with 30 percent or more of their labor force employed in complementary services in 1960 were Cherokee and Latimer Counties, Okla., each the site of a junior college; Craig County, Okla., in which the city of Vinita is a service point between Tulsa and Springfield on Interstate 44; Logan County, Ark., which is within commuting distance of Fort Smith, a thriving industrial city; and Pulaski County, Mo., the location of Fort Leonard Wood.

Government employment in the region is lower than in the United States as a whole. Local government employees averaged 208 per 10,000 population in 1962 within the region, compared with 250 in the United States as a whole (table 37). The number of Federal employees per 10,000 population was also lower than in the United States, but varied considerably within the region. The number in the urban counties of Arkansas and Oklahoma exceeded the U.S. average, but the number was much lower in most of the rural counties, including all of the Missouri counties.

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Problems and Potentials in Public and Private Services

Adequate public services, especially those relating to education, cannot be supported with the revenues generated by local governments within the region. Yet, expenditures for education and highways both have to be above the

Table 36.--Counties ranked by share of civilian labor force in manufacturing-related trades and services, Ozark Region, 1960 $\underline{1}/$

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Rank	County and State	Share	::	Rank	County and State Share
	:	Democrit	::		: Parcent
-	Dulter has (when)	Percent		1.6	Orregen Me
T	Pulaski, Ark. (urban)	41	•••	40	
2	Phelps, Mo	40	•••	4 (), Q	Pope, Ark 22
3	Muskogee, Okla. (urban):	30	•••	40	Labrace Ark
4	Greene, Mo. (urban)	30 21	•••	49	Deuter Ark 22
2	Latimer, Okla	34	::	50	Baxter, Ark
6	Craig, Okla	33	•••	51	Fulton, Ark 22
.(Pittsburg, Okla. (urban):	33	::	52	Adalr, $\bigcup_{k=1}^{N}$
8	Washington, Ark. (urban):	32	::	うろ	Polk, Mo 22
9	Pulaski, Mo	30	::	54	Benton, Ark 22
10	Sebastian, Ark. (urban):	30	::	55	Ripley, Mo 22
11	Jasper, Mo. (urban):	30	::	50	Little River, Ark: 22
12	Cherokee, Okla	30	::	57	Howell, Mo 21
13	Logan, Ark	30	::	58	Perry, Ark 21
14	Butler, Mo	29	::	59	Camden, Mo 21
15	St. Francois, Mo	29	::	60	Dent, Mo 21
16	Pontotoc, Okla. (urban):	29	::	61	Coal, Okla 21
17	Bryan, Mo:	28	::	62	Sequoyah, Okla: 21
18	Faulkner, Ark	28	::	63	Wagoner, Okla: 21
19	Taney, Mo:	27	::	64	Haskell, Okla: 21
20	Johnston, Okla	27	::	65	Howard, Ark 21
21	Clark, Ark:	27	::	66	Christian, Mo: 21
22	Garland, Ark. (urban):	27	::	67	McCurtain, Okla: 20
23	Hughes, Okla	27	::	68	Barton, Mo 20
24	Okfuskee, Okla	26	::	69	Independence, Ark: 20
25	Le Flore, Okla:	26	::	70	Marion, Ark 20
26	Okmulgee, Okla. (urban):	26	::	71	Wayne, Mo 20
27	Ottawa, Okla. (urban):	26	::	72	Nowata, Okla 20
28	Saline, Ark	26	::	73	Marshall, Okla: 20 '
29	Maves, Okla	25	::	74	McDonald, Mo 20
30	Boone, Ark	25	::	75	Cedar, Mo 20
31	Iron. Mo	25	::	76	Webster, Mo 20
32	Rogers. Okla	25	::	77	Washington, Mo: 20
33	Lawrence. Mo	25	::	78	Delaware, Okla: 20
34	Choctaw. Okla	25	::	79	Lawrence, Ark: 20
35	Sevier. Ark	24	::	80	Hot Spring, Ark: 20
36	McIntosh, Okla	24	::	81	Conway, Ark 20
37	Miller Mo	24	::	82	Sharp, Ark 20
38	Reynolds Mo	24	::	83	Carter. Mo 19
30	White Ark	23	::	84	Stone, Ark 19
<u>ло</u>	Laclede Mo	23	::	85	Randolph, Ark 19
ц Т	Love Mo	23	::	86	Dallas, Mo 19
μ2 	Atoka Okla	23		87	Morgan, Mo 19
<u>л</u> г	Pushmataha Okla	23		88	Wright, Mo 19
յր Մր	Newton Mo	27	•••	89	Hempstead. Ark: 19
 115	Barry Mo	22		90	Franklin, Ark 18
77					continued

Table 36.--Counties ranked by share of civilian labor force in manufacturingrelated trades and services, Ozark Region, 1960 1/--Continued

Rank	County and State	Share	::	Rank	:	County and State	Share
	:		::			:	
`91	Polk, Ark:	18	::	103		Madison, Mo	17
92	St. Clair, Mo	18	::	104		Montgomery, Ark	17
93	Yell, Ark	18	::	105		Dade, Mo	16
94	Benton, Mo	18	::	106		Crawford, Mo	16
95	Newton, Ark	17	::	107		Scott. Ark:	15
96	Texas, Mo	17	::	108		Stone. Mo	15
97	Cleburne, Ark	17	::	109		Carroll, Ark	15
98	Pike, Ark	17	::	110		Shannon. Mo	14
99	Maries, Mo	17	::	111		Searcy. Ark	14
100	Bollinger, Mo	17	::	112		Ozark. Mo	13
101	Van Buren, Ark	17	::	113		Hickory, Mo	13
102	Izard, Ark	17	::	114		Douglas, Mo	13
	;		::	115		Madison, Ark	12
			::	/			<u> </u>

<u>1</u>/ Manufacturing-related trades and services are those classified by the census as public utilities and transportation; wholesale trade; finance, in-surance, and real estate; professional and related services; and government.

Source: (68).

average for the United States if services are to be made comparable to those _ of the rest of the Nation.

Present public and private services are inadequate to attract additional industry to the region, with the exception of the urban counties and a few of the rural counties. The urban counties constitute the greatest potential for further development.

More and improved highways, airports, and communications are necessary to develop most other parts of the region. The full potential of the region's recreational assets and the development of additional industry will depend upon ready access to its resources.

RESEARCH NEEDS

At present there are many developmental relationships which are not thoroughly understood. Such understanding is essential to organization of a comprehensive program to foster maximum utilization of the region's resources. Research in four general areas is essential to assure sound regional action programs:

1. Technical, scientific, and engineering research to improve the efficiency of resource utilization in the region.

Table 37.--Local government and Federal civilian employees per 10,000 population, Ozark Region, 1962 1/

Item	Local govern	ment employees	Federal civilian employees			
	(full-time	equivalent)	(full-time equivalent)			
	Total	Per 10,000 population <u>2</u> /	Total	: Per 10,000 : population <u>2</u> /		
:	Number	Number	<u>Number</u>	Number		
United States:	4,480,158	250	2,212,848	123.4		
Ozark Region	46,920	208	19,687	87.4		
Rural counties:	28,864	200	9,455	65.4		
Urban counties	18,056	224	10,232	126.8		
: Arkansas Rural counties: Urban counties:	18,536 9,820 8,716	199 189 211	9,126 2,785 6,341	97.9 53.6 153.8		
: Missouri Rural counties: Urban counties:	15,896 10,920 4,976	202 188 243	6,013 4,804 1,209	76.5 82.7 58.9		
Oklahoma	12,488	234	4,548	85.4		
Rural counties:	8,124	237	1,866	54.4		
Urban counties:	4,364	230	2,682	141.5		

1/ See Appendix B for urban and rural counties in region. 2/ Per 10,000 population in 1960.

Source: (32, 73).

- 2. Sociological, psychological, and economic research to learn more about the nature of people in the region and their needs, to facilitate adjustments.
- 3. Research to determine the needs for community facilities and services and to promote the provision of such facilities and services.
- 4. Research on the structural relationships within the region and its subareas required to utilize available resources for development of the region.

Financial support for research in the region needs to be increased and placed on a continuing basis, and, in some cases, current research programs need to be reoriented to meet the needs of economic development in the region.

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APPENDIX A

Industry Performance

Industry balance refers to the proportion of industry employment of the region in slow-growth or fast-growth industries classified by major industry group (1957 two-digit SIC code). Slow-growth or fast-growth is defined three ways with respect to (1) demand for product, (2) employment, or (3) earnings.

The following general formula for each major industry group was used in the basic calculations: $\underline{1}/$

Index =
$$\left[\frac{(X_{mi}/X_m)}{(X_{ni}/X_n)} = 100\right] - 100$$

where X = National income, employment, or average full-time earnings i = Industry classification m = 1960 n = 1950

The indexes classify each major industry group relative to growth of all industry in the United States (table 38). A positive demand or employment index means the industry group has increased its share of national income or national employment. A positive earnings index implies earnings in that industry group have increased more rapidly than the average. Those industry groups with positive indexes are fast-growth, and those with negative indexes are slow-growth. Regions specializing in fast-growth industries will have greater growth than the United States as a whole.

Industry classifications of the census and national income series are not comparable. National income and earnings data are from establishment records, while those of the census are from individuals. The Census of Population classes government employees by industry (including public administration) while the national income and earnings series classify government employees together regardless of industry association.

^{1/} Lee R. Martin, Long-run Developments in the United States in the Demand for Goods and Services and for Labor, unpublished manuscript on file Dept. Agr. Econ., Univ. Ark. Fayetteville.

Table 38.--Change in demand for product, labor, and earnings by economic activity, 1950 to 1960, and annual earnings 1960, United States

Industry group 1/	(Annual earnings		
industry group <u>1</u> /	Demand	Labor	Earnings	index 1960
· · · · · · · · · · · · · · · · · · ·		Per	cent	•
Agriculture, forestry and fisheries	-41.9	-46.2	-17.7	36.9
Mining	-36.2	-38.9	5.4	120.8
Contract construction	10.0	-4.0	5.0	116.6
Manufacturing total	-5.6	3.8	3.4	113.5 🕈
Furniture. lumber. wood	-29.9	-22.4	-3.4	85.0
Primary metals	-14.9	-10.0	8.7	134.7
Fabricated metals	0.6	32.7	5.4	123.7
Machinery, ex. electrical	0.8	8.8	2.5	128.0
Electrical machinery	30.2	50.3	8.1	121.1
Motor vehicles and equip:	-26.6	-14.5	4.5	139.3
Transportation equipment:	88.0	74.8	13.3	140.7
Other durable goods	-0.5	10.6	3.8	110.5
Stone, clay and glass	-5.0	-	5.3	113.4
Instruments	33.8	-	7.3	126.0
Miscellaneous manufacturing	-16.2	-	-2.7	96.6 .
Food and kindred products	-11.4	7.0	2.1	104.1
Textile mill products	-41.6	-32.4	-13.7	79.2
Apparel	-17.2	-5.4	-15.2	70.4
Printing, publishing	4.6	15.1	-5.7	119.2 🖻
Chemicals	5.3	18.0	7.2	134.3
Other non-durables	-5.7	-7.8	0.8	110.3
' macco manufacturing	13.6	-	9.2	81.9
Paper and allied products	-1.8	-	1.9	117.8
Products of petroleum and coal	-16.1	-	2.9	147.7
Rubber products	18.9	-	0.4	118.2
Leather and leather products	-19.9	-	-9.9	76.2
Transportation communication and public utilities:	-1.7	-12.8	4.1	123.7
Transportation	-21.8	-19.3	2.5	125.9
Communication and public utilities	35.7	0.0	8.7	119.9
Wholesale trade	0.9	-2.0	0.3	127.9
Retail trade	-14.7	-2.4	-9.9	81.8
Finance insurance and real estate	19.3	22.2	-3.9	102.8
Professional and related services	35.9	36.6	-1.4	79.3
Commercial and trade schools and empl. agencies:	-11.4	_	-17.7	93.3
Medical and other health services	37.3	48.1	-5.9	64.7
Legel services	17.1	-	13.6	89.7
Engineering and other prof. services. NEC	85.8	22.4	7.2	146.3
Educational services NEC 2/	35.7	42.1	0.4	82.6
Non-profit membership organizations. NEC	29.5	26.5	-2.9	83.2
Government and government enterprises 2/	29.7	10.8	-0.7	99.5
Other services	17.0	-1.3	5.4	74.0
Hotels and other lodging places 3/	-13.2	-	-11.6	63.2
Personal services	-7.2	-9.4	-2.0	71.6
Private households	30.2	4.2	-0.6	49.6
Business services. NEC.	71.9	84.9	-1.8	112.9
Miscellaneous renair services and hand trades	-3.0	-22.2	-5.8	107.8
Motion pictures 4/	39.8	-	0.6	97.5
Amusements and recreation. ex. motion pictures	22.4	-11.3	14.0	98.4
Other industry (rest of the world)	4.5	169.1	-6.8	111.5

<u>l</u>/ Major differences in groupings are footnoted separately. Lack of data or noncomparability of data necessitate blanks within some subgroups in the labor index derived from census data on employment.

2/ National income series from which demand and earnings indexes were calculated report any type of government employment as "government and government enterprises" while census data on employment are reported by industry whether public or private. The education data in the labor index includes public and private education together.

3/ Reported as a part of personal services in the labor index.

 $\overline{4}$ / Reported as a part of amusement in the labor index.

Source: (42, p. 177; 43, pp. 13 and 30; 44, p. 213; 68).

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_ Table 39.--Slow-growth manufacturing industries, Ozark Region, 1950 to 1960 1/

Industry group	Demand	Employment	Earnings
:			
Apparel:	Х	х	Х
Food and kindred products	Х		
Furniture, lumber and wood products:	х	Х	Х
Motor vehicles and equipment	х	х	
Other durable goods	х		
Other non-durable goods:	х	х	
Primary metals:	х	x	
Printing and publishing			x
Textile mill products:	х	x	x

l/ Delineated using the classification indexes developed in this section above.

The annual earnings index, 1960 (table 38) is the 1960 average industry earnings per full-time employee as a percentage of the average earnings per full-time employee for all industry in the United States. The index compares the earnings status for 1960 of the various industries.

Recreation-Related Employment Index (RRE Index)

The trades and services employment most closely associated with recreation were retail trade, repair services, other personal services, and entertainment and recreation as defined in the Census of Population, 1960 (67).

The general formula for the recreation-related employment index for each - county is as follows:

RRE Index =
$$\frac{(E_{mi}/L_m)/(E_{ni}/L_n)}{(E'_{mi}/L'_m)/(E'_{ni}/L'_n)} =$$

1950-60 percentage change in ratio of recreation employees to total labor force, Ozark counties

1950-60 percentage change in ratio of recreation employees to total labor force, U.S.

where E' = U. S. employment

- E = County employment
 - L' = U. S. civilian labor force
 - L = County civilian labor force
- m = 1960
- n = 1950
 - i = Recreation-related trades and services

An RRE index above 100 indicates that share of the labor force in recreation-related trades and services has increased more rapidly in the area than in the United States. An index below 100 indicates it has not increased as rapidly as in the United States.

Recreation-Related Sales Index (RRS Index)

The trade and service sales and receipts most closely associated with recreation are from the Census of Business 195^4 and 1963 ($\underline{58}$, $\underline{72}$). These include retail trade, other personal services, repair services, and enter-tainment and recreation services.

The recreation-related sales index was calculated using the following general formula:

RRS Index = $\frac{S_{mi}}{[(S'_{mi}/S'_{ni})(S_{ni})]}$ = Actual 1963 sales, industry i Expected 1963 sales, industry i

where S' = U. S. sales and receipts
 S = County sales and receipts
 m = 1963
 n = 1954
 i = Recreation-related sales and receipts

An RRS index above 100 means sales in the area have increased more rapidly than the United States. An index below 100 means sales have not increased as rapidly as U.S. sales, or have decreased more rapidly. Population data were not available by county in 1954 and 1963, so the sales could not be expressed in relation to population.

APPENDIX B

Arkansas	Arkansas	Missouri	Oklahoma	
Baxter	(continued)	(continued)	Adair	
Benton	Randolph	Hickory	Atoka	
Boone	Saline	Howell	Bryan	
Carroll	Scott	Iron	Cherokee	
Clark	Searcy	Jasper*	Choctaw	
Cleburne	Sebastian*	Laclede	Coal	
Conway	Sevier	Lawrence	Craig	
Crawford	Sharp	Madison	Delaware	
Faulkner	Stone	Maries	Haskell	
Franklin	Van Buren	McDonald	Hughes	
Fulton	Washington*	Miller	Johnston	
Garland*	White	Morgan	Latimer	
Hempstead	Yell	Newton	Le Flore	
Hot Spring		Oregon	Love	
Howard	Missouri	Ozark	McCurtain	
Independence	Barry	Phelps	McIntosh	
Izard	Barton	Polk	Marshall	
Johnson	Benton	Pulaski	Mayes	
Lawrence	Bollinger	Reynolds	Muskogee*	
Little River	Butler	Ripley	Nowata	
Logan	Camden	Shannon	Okfuskee	
Madison	Carter	St. Clair	Okmulgee*	
Marion	Cedar	St. Francois	Ottawa*	
Montgomery	Christian	Stone	Pittsburg*	
Newton	Crawford	Taney	Pontotoc*	
Perry	Dade	Texas	Pushmataha	
Pike	Dallas	Washington	Rogers	
Polk	Dent	Wayne	Sequoyah	
Роре	Douglas	Webster	Wagoner	
Pulaski*	Greene*	Wright		

Table 40.--Counties included in the delineation of the Ozark Region in this report, by State area

* Predominantly urban counties.

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