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# Regional Population and Employment Adjustments to Rising Coal Production

Paul R. Myers



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#### ABSTRACT

Annual U.S. coal production rose by nearly 17 percent in the years following the oil crisis of 1973. This increase induced slight gains in population in the Nation's 289 coal counties but greater gains in employment--both in coal mining and in other industries. Coal counties in the West increased production and employment more than those in the Interior and East. Increased coal mining caused employment to expand in secondary industries (contract construction, transportation, finance), but had little effect on agriculture (employment down) and manufacturing (employment up slightly).

Keywords: Coal production, population and employment change, regional growth.

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## HIGHLIGHTS

Increased U.S. coal production following the 1973 oil crisis induced population and employment growth in coal counties, but only when increases in coal production were massive. Coal-producing counties in the East, with a small increase in coal production (1.3 percent) after the oil crisis, experienced less of an increase in population than the Eastern States as a whole. Coal-producing counties in the Interior, with a 7.4-percent increase in coal production, experienced population growth rates equal to the Interior States. Coal-producing counties in the West, which nearly tripled their coal production, had a population growth rate seven times greater than the national average for 1973-79.

Increased coal production boosted employment growth in such secondary industries as wholesale and retail trades, transportation, finance, insurance, and real estate. Employment growth in the service industries appeared likewise to be induced only when coal production increases were of major proportions, for example, in the major coal-producing counties of the West.

Employment growth rates in the coal counties were several times greater than population growth rates. That difference suggests increased labor force participation rates by the local population. In the Eastern coal counties, for example, coal production rose little and most new jobs were filled by people already living there. As a result, immigration of workers was limited and employment growth was four times greater than population growth. In contrast, the rapid increase in coal production in the West created job opportunities far in excess of the local labor supply. Many new jobs were filled by workers moving into the coal counties and employment growth was only twice that of population growth in the Western coal counties.

Employment in agriculture and manufacturing declined or grew minimally as coal production increased. In the case of declining manufacturing employment in the Eastern coal counties, workers may have shifted from low-paying employment in manufacturing to traditional employment in mining. While agricultural employment declined as coal production increased, employment in the contract construction industry expanded, especially in the major coal counties of the West.

# Regional Population and Employment Adjustments to Rising Coal Production

Paul R. Myers \*

## INTRODUCTION

U.S. coal production rose by nearly 50 percent between 1969 and 1981, triggered by an increased demand for energy and the 1973 oil crisis and subsequent high oil prices (fig. 1). Demand for coal exports rose even faster than domestic demand--nearly doubling between 1969 (57.9 million tons) and 1981 (112.9 million tons). Some industry forecasts predict coal exports as high as 215 million tons per year by the year 2000. 1/ To satisfy such a surge in demand, the United States has an abundant supply of coal reserves--778 billion tons--sufficient to last for centuries, even if consumption reaches 2 billion tons per year. 2/

With increased coal mining came increased employment in the coal counties. This study describes how population and employment changed in the Nation's coal-producing counties (as of 1979, excluding Alaska) as the demand for coal accelerated. Earlier research efforts were regional in scope or looked at coal mining from a natural resource perspective rather than from a demographic perspective. 3/ This study analyzes population and employment changes during 1969-79 to determine (1)

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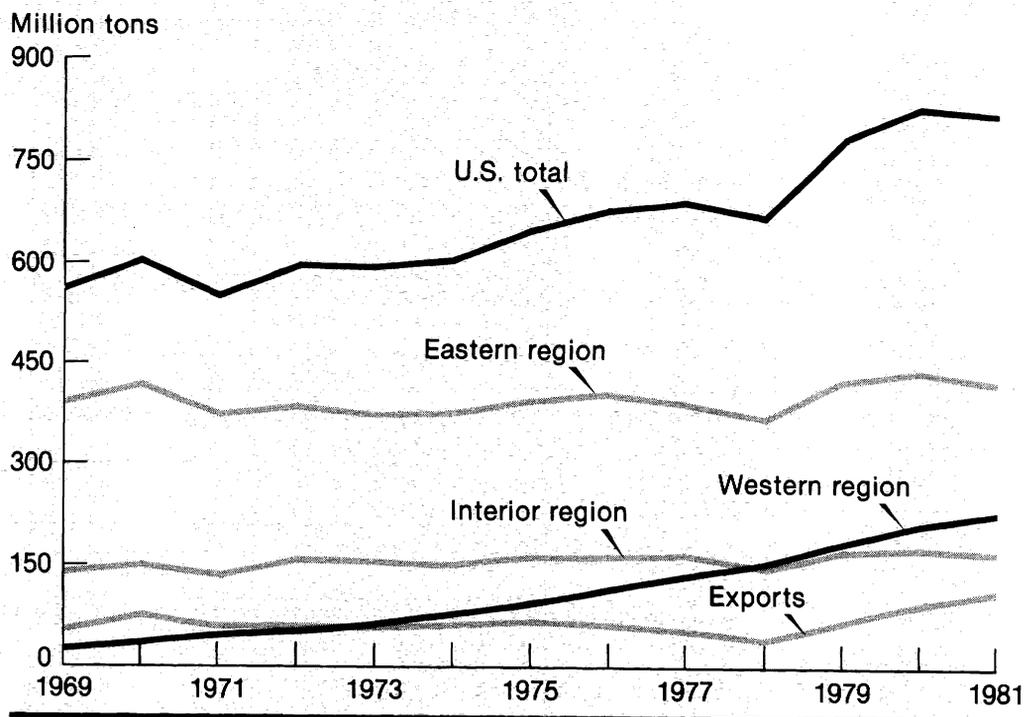
1/ U.S. Department of the Interior, Bureau of Mines, Minerals Yearbook, 1970. U.S. Department of Energy, Energy Review, Energy Fact Sheet, #25. The Washington Post, Business section, Feb. 8, 1982.

2/ Minerals Yearbook, op. cit. Projection assumes a recovery rate of 50 percent for the Nation's total reserves of 1,556,549 million tons. Office of Technology Assessment, "Direct Use of Coal," April 1979, Alan Crane.

3/ An example of regional research on the subject is A Socioeconomic Profile of the Northern Great Plains Coal Region, AER-400 (Myers, Hines, and Conopask, U.S. Dept. of Agriculture, Economics, Statistics, and Cooperatives Service, March 1978). An example of research slanted toward natural resources is Coal Development in Rural America, RDRR-29 (McMartin, Whetzel, and Myers, U.S. Dept. of Agriculture, Economic Research Service, August 1981).

Figure 1

## U.S. Coal Production, 1969-1981



where economic expansion occurred in coal-producing counties during 1973-79 and (2) which secondary industries experienced the most growth as a result of the coal boom.

While this study concentrates on the economic consequences of increased coal production during 1973-79, a decline in coal production can obviously induce economic contraction in coal counties. For example, coal mining employment declined steeply from 1979-82 producing unemployment rates well above the national unemployment rate for 1982.

For the analysis, the data were divided along the following lines.

- o The time period studied was from 1969-79, divided into two periods, 1969-73 and 1973-79, with 1973 being the dividing line because that was the year of the U.S. oil crisis.
- o The 289 U.S. coal-producing counties were grouped in several different ways:
  - By region (Eastern, Interior, and Western, see fig. 2).
  - By metro and nonmetro classification, to separate growth due to coal mining from the general growth of nonmetro areas in the seventies.
  - By major or minor coal producer, with 5 million tons per year being the dividing line (table 1).

If economic expansion was greater in 1973-79 than in 1969-73, or in major coal-producing counties than in minor counties, then that was accepted as due to increased coal mining activity.

Before the oil crisis, annual average coal production was 580.6 million tons per year (1969-73); after the oil crisis, annual average coal production was 677.5 million tons per year (1973-79), an increase of 16.7 percent, reflecting the Nation's response to threatened oil supplies. This increase was not evenly distributed among the coal regions. While production in

Figure 2

**Coal Producing Counties, 1979**

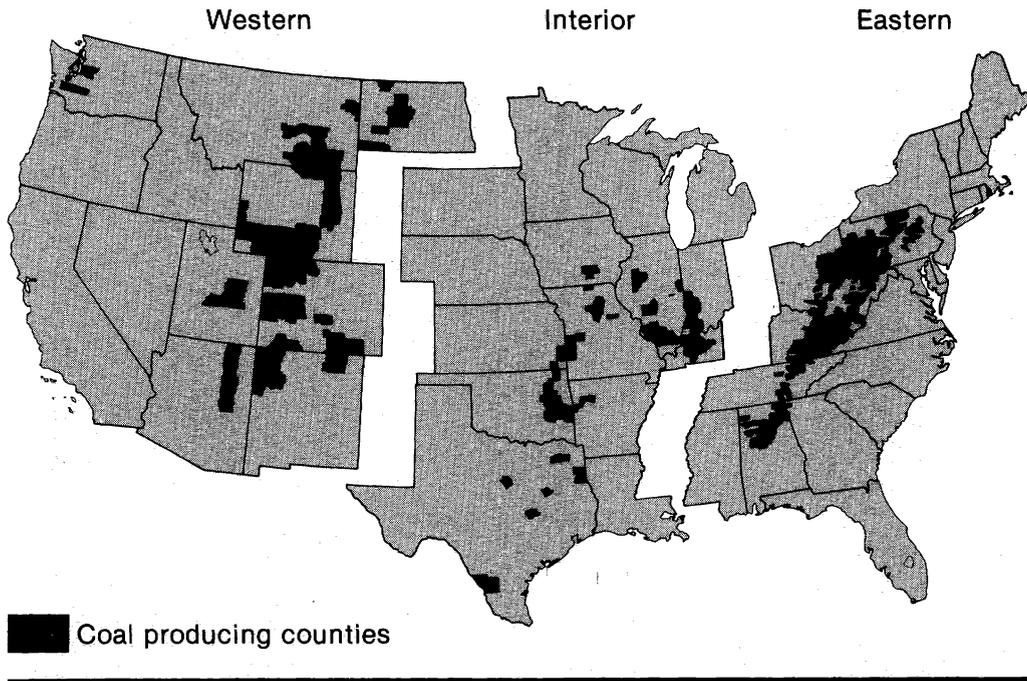


Table 1--U.S. coal-producing counties, 1979 <sup>1/</sup>

Type of coal county	Total	East	Interior	West
<u>Number of counties</u>				
Total coal counties	289	161	85	43
Minor coal counties	234	129	74	31
Major coal counties	55	32	11	12

<sup>1/</sup> See appendix table 11 for list of coal-producing counties.

the Eastern coal region changed minimally between the two periods (1.3 percent), production in the Interior coal region increased by 7.4 percent, and the Western coal region experienced a dramatic increase of 188.3 percent.

Why did coal production increase so much in the Western coal counties? There are several reasons. Western coal is sub-bituminous and possesses a low sulphur content, making it less polluting than eastern coal when it is burned and consequently more compliant with the standards of the Clean Air Act. Western coal deposits are found in much thicker seams, with less overburden, than eastern coal. These features make western coal more amenable to surface mining than coal in the other two regions. Western coal mining is more capital intensive with higher levels of worker productivity than mining in the Interior and Eastern regions. This has given the Western region an advantage in responding to increased energy demand, especially since 1973. In 1979, the Western region produced 89.5 percent of its coal through surface mining techniques compared with only 42.7 percent of coal in the East.

Only 55 of the 289 coal-producing counties accounted for 67.3 percent of total U.S. coal production in 1979. These 55 counties, which produced over 5 million tons per year each in 1979, exemplify the effects of intensive coal production and for this reason are called major coal-producing counties (table 2).

#### IMPORTANCE OF COAL MINING

The U.S. coal mining industry employed 254,059 people in 1979 (table 3), representing 0.3 percent of the total wage and salary employment in the United States and 0.9 percent in the U.S. nonmetro areas. Although coal mining is not a large employer in the United States, it is an inducer of secondary

Table 2--Coal production, 1979

County, State	Production	
	Million tons	Percent of total
234 minor coal counties	254.6	32.7
55 major coal counties	523.3	67.3
Top 20 major counties	283.6	36.5
Top 10 major counties	174.7	22.4
Top 5 major counties	112.4	14.4
Campbell, Wyo.	41.0	5.3
Pike, Ky.	23.2	3.0
Big Horn, Mont.	18.1	2.3
Buchanan, Va.	15.8	2.0
Rosebud, Mont.	14.2	1.8

Source: U.S. Department of Energy, Bureau of Mines, Minerals Yearbook, "Coal--Bituminous and Lignite," 1979.

Table 3--Coal mining employment and earnings in 289 U.S. coal counties

Area	Total coal mining employment			Compound annual employment change			Coal mining employment as a percent of TWSE 1/			Coal mining earnings as a percent of total income 2/		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979	1969	1973	1979
	Number			Percent								
Total coal counties	132,686	156,850	254,059	6.7	4.3	8.4	2.4	2.7	3.8	3.4	4.2	6.6
Metro	32,815	38,737	55,239	5.3	4.2	6.1	.9	1.1	1.3	1.3	1.6	2.3
Nonmetro	99,871	118,113	198,820	7.1	4.3	9.1	5.1	5.5	7.9	7.6	8.9	14.2
Eastern region	111,205	127,868	195,828	5.8	3.6	7.4	3.0	3.3	4.6	4.1	5.1	7.8
Minor	35,636	35,857	62,136	5.7	.2	9.6	1.2	1.2	1.9	1.6	1.8	3.4
Major	75,569	92,011	133,692	5.9	5.0	6.4	9.0	10.1	12.7	12.9	15.6	20.6
Interior region	18,170	23,417	39,405	8.0	6.5	9.1	1.7	2.1	3.0	3.0	3.7	5.7
Minor	9,910	12,732	21,336	8.0	6.5	9.0	1.0	1.2	1.7	1.7	2.1	3.3
Major	8,260	10,685	18,069	8.1	6.6	9.2	11.2	12.8	17.4	19.3	23.4	29.6
Western region	3,311	5,565	18,826	19.0	13.9	22.5	.4	.7	1.8	.6	1.1	1.5
Minor	2,216	2,912	8,129	13.9	7.1	18.7	.3	.4	.9	.4	.6	3.1
Major	1,095	2,653	10,697	25.6	24.8	26.2	1.6	3.1	7.2	2.3	4.9	13.3
Type of county:												
Minor	47,762	51,501	91,601	6.7	1.9	10.1	1.1	1.1	1.7	1.4	1.7	2.9
Major	84,924	105,349	162,458	6.7	5.6	7.5	8.7	9.7	12.4	12.6	15.3	21.0

1/ TWSE = Total wage and salary employment in 289 U.S. coal counties; coal mining employment as a percent of total wage and salary employment for the United States in 1979 was 0.3 percent; for U.S. metro areas, 0.07 percent; and for U.S. non-metro, 0.9 percent.

2/ Total income equals earnings from total wage and salary employment, plus proprietor's income plus all other income from labor.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973 and 1979.

employment (the railroad industry, for example) and is economically important at the national level as a basic industry with a growing export market.

Coal mining in 1979 accounted for just 3.8 percent of total wage and salary employment in the Nation's 289 coal counties, but it was important in other ways. 4/ The coal mining share of employment was 7.9 percent in nonmetro coal counties, and in dollar terms coal mining earnings represented 14.2 percent of total income in the nonmetro coal counties in 1979, almost twice the 7.6 percent of 1969.

Coal mining employment increased by 6.7 percent per year between 1969 and 1979 (7.1 percent in nonmetro coal counties), with a surge in coal mining employment after the oil crisis. As a direct source of employment and income, the coal industry is far more important to the 234 nonmetro coal counties than to the 55 metro coal counties.

Coal mining has become an increasingly important employer in the major coal-producing counties. Minor coal counties, on the other hand, were less dependent on coal mining for employment and earnings in 1979. However, since 1973, the minor coal counties have experienced a 10.1-percent annual increase in coal mining employment. If national energy trends persist, this may lead to further increases in coal production and more dependence on coal mining for these minor coal counties. In 1979, 12.4 percent of employment in major coal counties was in the coal industry, while 21 percent of total income came from the coal mines. The divergence between coal mining's share of total employment and share of total income was probably due to two factors, (1) coal mining employment pays higher wages than most other jobs, and (2) coal mining jobs added in 1973-79 may have been filled by workers who had been only marginally employed previously. 5/

The Eastern coal counties have historically been closely associated with coal mining. Many areas in the East depend on coal production to such a degree that tradition and lifestyles have developed around coal mining. Most of the Nation's coal mining employment, 77.1 percent, was in the Eastern coal region in 1979. Coal mining in the Eastern coal region increased by 5.8 percent annually since 1969, with annual employment surging 7.4 percent following the oil crisis. By 1979, 4.6 percent of the region's employment was in coal mining, which generated 7.8 percent of the Eastern coal region's total income. In major Eastern coal counties, 12.7 percent of employment was in coal mining, which produced more than 20 percent of total income compared with 6.6 percent for all U.S. coal counties. Although the major Eastern coal counties had the smallest relative change in coal production between 1973 and 1979, they

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4/ Total wage and salary employment henceforth will be referred to as employment.

5/ Differences between shares of income and employment may be due also to differences in quality of BEA data for the two variables.

constituted the largest absolute gain in coal mining employment--41,681 new jobs in the 32 counties.

While coal mining is a well established and important industry in the East, its importance to the Interior and, especially, the West arose only after the oil crisis. The Interior region employed 39,405 people in coal mining in 1979, compared with 18,826 in the West and 195,828 in the East. Coal mining represented only a small percentage of employment in the Interior and West. The two most significant features of coal mining in these regions are: (1) the rapid increase of employment in coal mining since 1973, and (2) the relative importance of this industry in the major coal counties, especially in the Interior's 11 major counties where the industry accounted for 17.4 percent of total employment and generated 29.6 percent of total income by 1979. Coal mining was second only to manufacturing in the Interior coal region, where manufacturing has declined as an employer since 1969 (app. table 3). The coal industry contributed heavily to the Interior's 11 major coal counties in 1979 in dollar terms and employment, but less so in the West's major coal counties.

Only 1.6 percent of employment in the major Western coal counties was in the coal mining industry in 1969. By 1979, after a decade of annual increases of about 25 percent, coal mining employment in major Western coal counties constituted 7.2 percent of total employment there and coal earnings accounted for 13.3 percent of total income in these counties. Using coal mining employment data to gauge the importance of coal mining to the West probably understates the total impact of the coal mining industry on the region. Since most coal is surface mined in the West (89.5 percent in 1979), every additional miner in the West not only produces more coal than an eastern miner but also produces more secondary employment because greater levels of income are generated by the western coal miner.

#### CHANGING LEVELS OF POPULATION

The growth or decline of population in an area often depends on local employment opportunities. If the demand for labor increases, the existing population base is pressured to supply labor. The response is increased labor force participation rates, immigration of new labor, or both. Immigration, of course, increases population as well as employment.

U.S. coal counties experienced an overall population growth at a smaller annual rate than did the Nation as a whole, 0.6 percent versus 0.9 percent for the decade (table 4), despite the coal counties' smaller than average population base in 1969. However, it does appear that the population did grow through new job opportunities in coal mining, in areas where coal production increased rapidly. The 55 major coal-producing counties of 1979 grew twice as rapidly during the decade as the 234 minor coal counties, 1.0 percent per year compared with 0.5 percent. Since the average population bases were nearly the same for the major and minor coal counties in 1969, the

Table 4--Population and population change for the United States

Area	Counties	Population			Compound annual change			Average population per county (1969)
		1969	1973	1979	1969-79	1969-73	1973-79	
	Number	Thousands			Percent			Number
U.S. total	3,141	201,298	<sup>1/</sup> 209,846	220,062	0.9	1.0	0.8	64,087
Metro	631	146,389	152,211	158,356	.8	1.0	.7	231,995
Nonmetro	2,510	54,909	57,635	61,706	1.2	1.2	1.1	21,876
U.S. coal	289	15,854	16,201	16,841	.6	.5	.6	54,858
Metro	55	9,128	9,202	9,327	.2	.2	.2	165,964
Nonmetro	234	6,726	6,999	7,514	1.1	1.0	1.2	28,744
Eastern U.S.	1,172	91,754	95,437	98,098	.7	1.0	.5	78,288
Eastern coal	161	10,852	11,064	11,262	.4	.5	.3	67,404
Minor	129	8,304	8,446	8,561	.3	.4	.2	64,372
Major <sup>2/</sup>	32	2,548	2,618	2,701	.6	.7	.5	79,625
Interior U.S.	1,525	75,218	77,734	80,832	.7	.8	.6	49,323
Interior coal	85	3,148	3,235	3,379	.7	.7	.7	37,035
Minor	74	2,887	2,959	3,074	.6	.6	.6	39,014
Major	11	261	276	306	1.6	1.4	1.7	23,727
Western U.S.	444	34,326	36,675	41,132	1.8	1.7	1.9	77,311
Western coal	43	1,854	1,902	2,200	1.7	.6	2.4	43,116
Minor	31	1,625	1,645	1,846	1.3	.3	1.9	52,419
Major	12	229	257	354	4.4	2.9	5.5	19,083
Type of county:								
Minor	234	12,816	13,050	13,481	.5	.5	.5	54,769
Major	55	3,038	3,151	3,360	1.0	.9	1.1	55,236

<sup>1/</sup> Numbers may not add to total due to rounding.

<sup>2/</sup> Major coal producing counties produced 5 million tons or more of coal in 1979.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

difference in population growth rates is most likely due to differences in coal production activity. 6/

Population in the major Eastern coal counties increased at the same rate as in the East as a whole--0.5 percent from 1973-79. Slow population growth in Eastern coal counties corresponded to the small increase (1.3 percent) in total coal production in the time period (app. table 1). However, demand for coal miners increased and new labor was supplied by the region's indigenous population through increased labor force participation rates. For more data about labor force participation rates in nonmetro areas, as it generally might apply to this study, see The Nonmetro Labor Force in the Seventies, RDRR-33 (Schaub, James D., U.S. Department of Agriculture, Economic Research Service, November 1981).

Employment as a percentage of total population in the Eastern coal counties increased from 34.1 percent in 1969 to 38.1 percent in 1979. (These percentages are not labor force participation rates, but they do reflect a measure of the potential supply of labor in a given region.) The East's 38.1 percent is low compared with the Western coal counties' 48.9 percent and suggests that surplus labor is still available to accommodate future expansion in the Eastern coal counties.

While it seems that the Eastern coal counties drew upon their established population for new labor during 1973-79, major coal-producing counties of the Interior and West, with sparsely populated counties in 1973, were not able to draw upon their indigenous populations. Since increased labor force participation could not supply the labor, new labor migrated into these major coal counties, causing an annual population growth of 1.7 percent in the Interior's 11 major coal counties following the oil crisis. The rate of population growth in major coal counties of the West following the oil crisis was an astonishing 5.5 percent per year. In 1969 the 12 major Western coal counties had an average population of 19,083 people; by 1979, the average population had increased to 29,500.

#### CHANGING PATTERNS OF EMPLOYMENT

The Nation's 289 coal counties employed 6.7 million people in 1979, an increase of 2.2 million workers since 1969 (table 5). Annual employment growth rates were the same for total U.S. areas and total coal counties, as well as for the metro and nonmetro sectors. Strong nonmetro growth occurred both in the coal regions and in the Nation at large. However, the effect of increased demand for labor in coal counties is quite discernible between the two periods. While U.S. nonmetro employment increased by 2.4 percent per year both before and after the oil crisis, employment in U.S. coal counties increased by 2.4 percent in 1969-73 and by 2.7 percent in 1973-79. Also, for all coal counties, the level of coal production (major coal versus minor coal counties) clearly demonstrates

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6/ Little, if any, of the population growth rates' difference should be attributed to metro/nonmetro status; 80 percent of minor counties were nonmetro while 83.6 percent of majors were nonmetro in 1979.

Table 5--Total wage and salary employment and change

Area	Total wage and salary employment <sup>1/</sup>			Compound annual employment change		
	1969	1973	1979	1969-79	1969-73	1973-79
	-----Thousands-----			-----Percent-----		
U.S. total	78,266	83,797	95,832	2.0	1.7	2.3
Metro	60,704	64,452	73,502	1.9	1.5	2.2
Nonmetro	17,562	19,345	22,330	2.4	2.4	2.4
U.S. coal	5,502	5,810	6,702	2.0	1.4	2.4
Metro	3,544	3,658	4,183	1.7	.8	2.3
Nonmetro	1,958	2,152	2,518	2.5	2.4	2.7
Eastern U.S.	36,360	38,776	42,385	1.5	1.6	1.5
Eastern coal	3,698	3,905	4,292	1.5	1.4	1.6
Minor	2,860	2,994	3,237	1.2	1.1	1.3
Major	838	911	1,055	2.3	2.1	2.5
Interior U.S.	28,484	30,244	34,718	2.0	1.5	2.3
Interior coal	1,060	1,138	1,334	2.3	1.8	2.7
Minor	986	1,054	1,230	2.2	1.7	2.6
Major	74	84	104	3.5	3.1	3.7
Western U.S.	13,421	14,777	18,729	3.4	2.4	1.6
Western coal	744	767	1,076	3.8	.7	5.8
Minor	676	680	928	3.2	.1	5.3
Major	68	87	148	8.1	6.2	9.3
Type of county:						
Minor coal	4,522	4,735	5,395	1.8	1.1	2.2
Major coal	980	1,081	1,307	2.9	2.5	3.2

<sup>1/</sup> Includes hired farmworkers.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

the strong labor demand exerted as a result of increased coal production. Total employment in major coal counties rose by 2.9 percent per year (2.5 percent in 1969-73 and 3.2 percent in 1973-79) while employment in minor coal counties rose by 1.8 percent. Minor coal counties experienced slower employment growth than the Nation as a whole during both time periods, which suggests that coal production may be an effective employment stimulus only when increases in coal production are great.

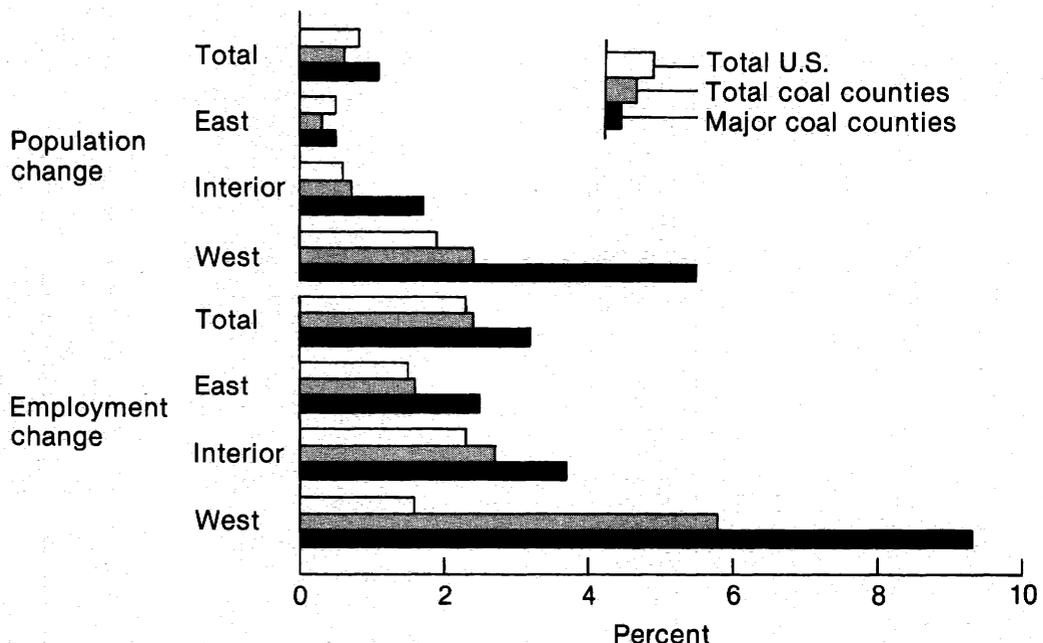
Regional Variations  
in Employment

Employment growth during 1969-79 for the Eastern coal counties was the same as for the eastern region, 1.5 percent per year. However, in the Interior and West, employment growth in coal counties exceeded that for the U.S. regions--2.3 percent compared with 2.0 percent in the Interior, and 3.8 percent compared with 3.4 percent in the West. While major coal counties in the East increased their employment by 2.3 percent annually, major coal counties in the Interior and West increased their employment by 3.5 percent and 8.1 percent, respectively (fig. 3).

Similar factors (level of coal production, labor force participation rates, employment/population ratio, degree of industrial development at start of period, and size of the county) appear to have contributed both to the different population growth rates and also to the different employment growth rates for the regions. The Eastern coal counties had a more developed industrial infrastructure in 1969 than did the Interior and Western coal counties. Additional coal mining employment in the

Figure 3

**Population and Employment: Compound Annual Change  
by Region, 1973-79**



Eastern coal counties appears to have had less of a multiplier effect in inducing secondary employment than in the Western coal counties (table 6). 7/

Another important factor relating to the greater employment growth in the Western coal counties may be their larger size compared with the Eastern coal counties. The great distances fostered the development of service centers around Western coal mining areas because neighboring counties with service centers were simply too distant. Thus, secondary employment growth was generally more localized in coal counties of the West. Eastern coal counties, no doubt, lost some of their new secondary employment to neighboring noncoal counties (spillover). Also, since employment growth generally was two to three times greater than population growth in the time period, it is likely that labor force participation rates increased sharply, perhaps more in the Western coal counties than in the Eastern or Interior coal counties.

Employment Changes  
for Primary  
Industries

Basic employment industries such as agriculture, mining, and manufacturing export goods from their regions, thereby generating income and stimulating growth in nonbasic industries. Mining employment represented 4.8 percent of total employment in 1979 in the Nation's 289 coal counties, but represented 14.3 percent of total employment in the 55 major coal counties (app. table 4). 8/ Increased coal mining activity appears to have stimulated the expansion of secondary industries in major coal counties during 1973-79. This is especially true for the Western coal counties where coal production increased most following the oil crisis (fig. 4).

On the other hand, agriculture as an employer declined in importance in coal counties, although rising by 2.1 percent overall in the United States. Agricultural employment in U.S. coal counties increased by only 0.3 percent in 1969-79 and represented just 1.1 percent of total employment in 1979 (app. table 2). Agricultural employment in major coal counties in the Interior and West actually declined, while increasing by 0.9 percent in major coal counties in the East. It is unlikely that agriculture induced additional secondary employment in the Nation's coal counties, especially in the 55 major coal counties following the oil crisis.

7/ Appendix table 3 indicates a more developed industrial infrastructure in the Eastern coal counties as evidenced by the larger shares of total employment in manufacturing for the East than in the other regions in 1969. The multiplier effect refers to how increases in basic employment (agriculture, mining, and manufacturing) generate additional employment in nonbasic industries. For example, every basic sector job (mining, manufacturing, and agriculture) created 3.8 nonbasic jobs in major Western coal counties in 1973, and increased total employment by 4.8 jobs. The employment multiplier equals total wage and salary employment divided by basic employment.

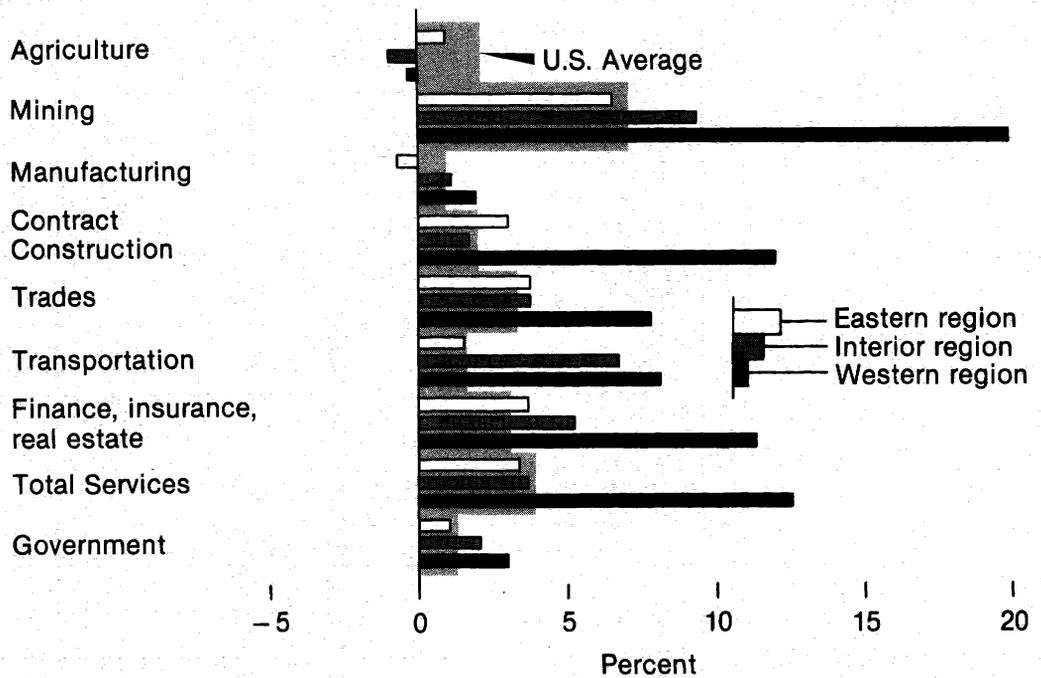
8/ Coal mining employment in 1979 amounted to 79.4 percent of total mining employment.

Table 6--Employment multipliers for major coal counties

Region	1973	1979
Total	3.2	3.3
East	3.2	3.3
Interior	2.6	2.5
West	4.8	4.0

Figure 4

**Annual Employment Change for Major Coal Counties, 1973-79**



Manufacturing employment in the Nation's coal counties declined by 0.7 percent during 1969-79 compared with a U.S. growth rate of 0.4 percent (app. table 3). Yet, manufacturing employment by region declined only in the Eastern coal counties; in the Interior and Western coal counties, manufacturing employment rose. Manufacturing declined by 0.8 percent in the major coal counties of the East from 1973-79, compared with growth rates of 1.1 percent in the Interior and 1.9 percent in the West. Since most of the manufacturing decline occurred in the major Eastern coal counties during 1973-79 when coal production levels increased, it appears that manufacturing change may be inversely related to mining employment change. One possible

explanation might be that the two industries in the East compete for the same labor. Eastern workers may have left low-paying jobs in manufacturing for more traditional jobs, paying higher wages, in mining.

### Employment Changes for Secondary Industries

The contract construction industry is typically responsive to changes in basic economic activity. It often reflects the "boom and bust" developmental activity associated with quick infusions of new manufacturing or mining and is often the harbinger of such activity, as in the case of the building of new mining sites. Contract construction employment for all U.S. counties, U.S. coal counties, and the Eastern and Interior regions ranged from 4.4 percent to 5.1 percent of total employment in 1979. However, contract construction employment constituted 12 percent of total employment in the major coal counties of the West (app. table 5). This high share resulted from an annual growth rate of 12 percent during 1973-79 (fig. 4). The massive increase in contract construction was due to two factors: (1) the large demand for new mining sites, especially in the West but also in the East and, (2) the need to build a service-producing industrial infrastructure in the previously underdeveloped Western coal counties.

Wholesale and retail trade was the second largest employer in U.S. coal counties in 1979 at 20.6 percent, compared with manufacturing at 22.9 percent (app. table 6). Employment growth rates in the trades industry during 1973-79 were higher in the major coal counties in all three regions than the employment growth rate for the United States. In the major coal counties of the West, trade employment expanded by 7.7 percent annually following the oil crisis compared with the U.S. growth rate of just 3.3 percent.

The transportation industry (including transportation, public utilities, and communications) is closely related to the mining industry because the coal must be transported from the mining site to consumers. Unlike the other secondary industries, new transportation employment was not confined to one coal mining area as other secondary industries were. Employment gains for the Burlington Northern or the Chessie System railroads, as a result of increased coal mining, were not localized. Therefore, growth of the transportation industry, when related to increased coal production, may be slightly understated when U.S. coal counties are examined separately. Nevertheless, the impact of increased coal mining on transportation employment was evident following the oil crisis when major coal counties expanded transportation employment by 2.6 percent per year compared with the U.S. rate of 1.6 percent (app. table 7). Transportation's annual employment growth was 2.6 percent in major coal counties compared with 2.0 percent in minor coal counties during 1973-79. In fact, the transportation industry in the Western coal counties went from a period of decline and stagnation before the oil crisis to a 4.8-percent annual growth rate following the oil crisis.

The finance, insurance, and real estate industries (FIRE) experienced a 3.5-percent annual employment growth in the U.S. coal counties and a 3.1-percent annual growth rate in employment nationwide (app. table 8). The strength of the coal mining stimulus to FIRE employment was evidenced by the difference in growth rates between major and minor coal counties. The major coal counties of the West in 1973-79 expanded FIRE employment by 11.3 percent per year compared with the minor coal counties' growth rate of 5.9 percent. This reflected the need for new credit services to finance the development of service centers in the West, as well as new housing.

The service industry grew at about the same annual rate in U.S. coal counties as it did in the total United States during 1973-79, 4.0 percent compared with 3.9 percent (app. table 9). However, major coal counties in the West experienced an annual growth rate of 12.5 percent in service employment for the period, while the Eastern and Interior coal regions experienced lower rates than the Nation as a whole. This regional difference in service employment growth reflects the sparse development of industrial infrastructure in the major coal counties in the West in 1973. The Interior and Eastern coal counties benefited from service centers in nearby noncoal counties. In contrast, the coal counties in the West are large and sparsely populated with great commuting distance between established service centers, and therefore a greater demand for new local service centers in the West materialized.

Government services during 1973-79 in U.S. coal counties expanded by 1.1 percent annually, about the same as the U.S. growth rate of 1.2 percent (app. table 10). The greatest growth of employment in government services occurred in 1969-73--before the oil crisis--for U.S. coal counties and for the Nation at large. In general, the smaller annual growth for government employment later (1973-79) suggests that greater coal production did not stimulate greater government employment. However, the major coal counties of the West continued to expand government employment during 1973-79 at an annual rate of 3.0 percent. This may have been from the stimulus of massive coal production in the West.

Recent Employment  
Developments,  
1979-82

Although the Nation's 289 coal-producing counties experienced economic expansion during 1973-79, more recently (1979-82) the coal counties were caught in an economic contraction. A national recession, an oil glut, and energy conservation reduced the aggregate demand for coal. After peaking in 1980 at 825.7 million tons, coal production in 1981 declined to 815.2 million tons (app. table 1). Although these levels of coal production are historically high, a precipitous decline in coal mining employment in 1982 suggests that coal production declined again in 1982. Economic contraction in the Nation's coal counties during 1979-82 resulted in declines in employment (job loss) and subsequent high unemployment rates.

In contrast to the coal counties, employment increased in the United States as a whole by 523,000 jobs during 1979-82 (table 7). This small increase was overshadowed by a larger labor force, which induced rising unemployment rates for the Nation. U.S. unemployment rates rose from 5.8 percent in 1979 to 9.7 percent in 1982. The Nation's coal counties however, experienced an actual decline in employment of 3.7 percent, or a job loss of 266,000. A decline in coal mining employment of 20.6 percent, along with recession, made the economic contraction in coal counties more severe than in the Nation in general. Unemployment rates in the coal counties, for example, rose from 6.5 percent in 1979 to 12.4 percent in 1982.

Finally the Eastern coal counties underwent the most severe economic contraction and most of that in 1982. Of the 266,000 jobs lost in all coal counties, 234,000 (88 percent) were from the Eastern coal counties. By 1982, the unemployment rate had risen to 13.5 percent in the Eastern coal counties, compared with 10.4 percent in the Interior and 10 percent in the Western coal counties. Secondly, of 53,000 jobs lost in coal mining (from 1979-82), 51,000 of those were lost in 1982. Again, the brunt of the economic contraction was felt by the Eastern coal counties in 1982.

Table 7--Employment changes and unemployment rates

Area	Employment				Employment changes,		Unemployment rates			
	1979	1980	1981	1982	1979-82		1979	1980	1981	1982
	----- Thousands -----						----- Percent -----			
United States	:98,912	:99,288	:100,274	:99,435	:523	:0.5	:5.8	:7.1	:7.6	:9.7
Coal counties, total	:7,148	:7,106	:7,099	:6,882	:-266	:-3.7	:6.5	:8.3	:9.0	:12.4
Eastern coal counties	:4,596	:4,559	:4,524	:4,362	:-234	:-5.1	:7.0	:9.0	:9.8	:13.5
Interior coal counties	:1,478	:1,470	:1,496	:1,450	:-27	:-1.8	:5.7	:7.8	:7.9	:10.4
Western coal counties	:1,075	:1,077	:1,079	:1,070	:-5	:-.5	:5.4	:6.4	:7.5	:10.0
Coal mining employment	:256	:262	:254	:203	:-53	:-20.6	:N.A.	:N.A.	:N.A.	:N.A.

N.A. = Not available.

Source: Unpublished data, Bureau of Labor Statistics, U.S. Department of Labor.

## CONCLUSION

Regional population and employment changes in major coal-producing counties during 1973-79 corresponded closely with regional changes in coal production. Average annual coal production between 1969-73 and 1973-79 periods rose by 1.3 percent in the East, 7.4 percent in the Interior, and 188 percent in the West. Direct employment and income benefits of coal production were centered in the East in 1969, but these benefits have increasingly shifted to the West.

Increased coal production contributed to population expansion in the major coal counties of the Interior and West, but not in the East. Although the population in the Eastern coal counties grew following the oil crisis, the annual rate of growth was no greater than that of the overall eastern U.S. rate of 0.5 percent. However, major coal-producing counties of the Interior and the West experienced annual population growth rates during 1973-79 of 1.7 percent and 5.5 percent, respectively.

Employment growth followed a similar regional pattern, but annual growth rates for employment were about twice the population growth rates in the major coal counties during 1973-79. Total wage and salary employment rose by 2.5 percent annually in the major coal counties of the East, 3.7 percent in the Interior, and 9.3 percent in the West, compared with an employment growth rate of 2.3 percent for the entire United States. Labor force participation rates increased because employment growth was much greater than comparable population growth. For example, most new jobs in the East probably were filled by people already living in the coal counties, hence, employment growth rates were five times greater than population growth rates. In contrast, rapid increases in coal production in the West created job opportunities far in excess of the labor supply. New jobs in major Western coal counties were filled by new workers moving into the coal counties and, consequently, employment growth was more in line with population growth.

While mining employment increased in all three coal regions because of increased coal production during 1973-79, agricultural employment grew slowly in the major Eastern coal counties (0.9 percent annually) and declined in the Interior and West (1.1 percent and 0.4 percent, respectively). Manufacturing employment grew in the major coal counties of the Interior and the West following the oil crisis, but its growth rates were much less than for mining employment. Compared with a U.S. rate of 0.8 percent for manufacturing, the major coal counties of the Interior expanded their manufacturing employment by 1.1 percent and the West by 1.9 percent. On the other hand, in the major coal counties of the East, manufacturing employment declined by 0.6 percent. It is unlikely that agriculture or manufacturing stimulated the growth in secondary jobs as much as mining following the oil crisis.

Employment multipliers for the basic industries were highest in the major Western coal counties at 4.0 compared with 3.3 and 2.5 in the Eastern and Interior coal counties. The high

multiplier in the West resulted, no doubt, from a greater need to provide new services in the less developed major coal counties of the West. The high basic sector employment multiplier and the high annual employment growth rate of 19.8 percent in mining caused a rapid growth of secondary jobs in the West.

Major coal counties of the West underwent an annual employment increase of 12.0 percent in contract construction during 1973-79, compared with a 2.0-percent growth rate for the United States. Contract construction employment expanded rapidly in the West to meet the demand for new mining sites, service centers, and residential housing for new mineworkers. For similar reasons, the finance, insurance, and real estate industry in the major coal counties of the West expanded by 11.3 percent annually, while the overall U.S. rate was 3.1 percent. The service industry expanded by 12.5 percent in the West compared with an annual U.S. rate of 3.9 percent. This rapid growth resulted from the greater demand for new, localized service development in the large major coal counties of the West, which were less developed than the Interior and Eastern coal counties in 1973. Service industry employment in Eastern and Interior major coal counties expanded by only 3.3 percent and 3.6 percent per year. Other secondary industries such as the wholesale and retail trades industry, the transportation industry, and the government services industry in the West also experienced employment growth rates greater than the total U.S. rates.

The Nation's major coal-producing counties benefited from the accelerated energy demand following the 1973 oil crisis. Benefits were in the form of expanded job opportunities and increased income. Economic expansion corresponded to the magnitude of coal production increase and consequent growth in mining employment. The major coal counties of the West, where coal production increase was massive, experienced the greatest economic expansion.

Appendix table 1--U.S. coal production, by region, 1969-81

Year	U.S. total		East		Interior			West			
	Production	Surface mined	Production	Share of U.S. total	Surface mined	Production	Share of U.S. total	Surface mined	Production	Share of U.S. total	Surface mined
	Million tons	Percent	Million tons	Percent	Million tons	Percent	Million tons	Percent	Million tons	Percent	Million tons
1969	560.5	38.1	394.9	70.5	27.8	139.9	25.0	62.4	25.7	4.6	63.8
1970	602.9	43.8	417.8	69.3	34.2	149.9	24.9	63.6	35.1	5.8	72.6
1971	552.2	50.0	373.5	67.6	41.4	136.4	24.7	64.8	42.3	7.7	78.5
1972	595.4	48.9	387.2	65.0	37.4	157.5	26.4	66.9	50.6	8.5	81.6
1973	591.7	49.4	374.8	63.3	37.8	156.4	26.4	64.1	60.5	10.2	83.5
1974	603.4	54.0	377.7	62.6	43.8	150.2	24.9	63.4	75.5	12.5	86.4
1975	648.4	54.7	396.5	61.1	43.5	162.1	25.0	64.5	89.8	13.8	86.7
1976	678.7	56.5	406.2	59.8	44.2	162.0	23.9	65.6	110.6	16.3	88.5
1977	691.3	61.5	393.8	60.0	49.6	163.8	23.7	67.3	133.8	19.3	89.3
1978	665.1	63.6	370.0	55.6	50.2	146.2	22.0	70.3	149.0	22.4	89.9
1979	777.9	59.3	425.3	54.7	42.7	170.0	21.8	68.8	182.3	23.5	89.5
1980	825.7	60.1	438.6	53.1	42.3	176.6	21.4	68.8	209.9	25.4	90.1
1981	815.2	61.8	425.2	52.2	43.2	166.1	20.4	71.5	223.9	27.5	90.0
Annual average:											
1969-73	580.6		389.7			148.0			42.9		
1974-79	677.5		394.9			159.0			123.6		
	-----Percent-----										
Change, 1969-79	16.7		1.3			7.4			188.3		

Source: U.S. Department of Energy and the Interior, Bureau of Mines, Minerals Yearbooks, "Coal--Bituminous and Lignite," 1969-1981.

Appendix table 2--Agriculture, forestry, and fisheries industry: Employment change, and share of total wage and salary employment

Area and county type	Employment <sup>1/</sup>			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	1,570	1,602	1,815	1.5	0.5	2.1	2.0	1.9	1.9
Metro	625	665	794	2.4	1.6	3.0	1.0	1.0	1.1
Nonmetro	945	937	1,021	.8	-.2	1.4	5.4	4.8	4.6
U.S. coal, total	71	71	74	.3	N.C.	.5	1.3	1.2	1.1
Metro	22	22	24	1.1	.3	1.6	.6	.6	.6
Nonmetro	50	49	49	N.C.	-.2	N.C.	2.5	2.3	2.0
Eastern U.S.	584	579	632	.8	.2	1.5	1.6	1.5	1.5
Eastern coal	35	36	35	.1	.7	.1	.9	.9	.8
Minor	30	30	29	-.3	N.C.	.3	1.0	1.0	.9
Major	5	6	6	2.3	4.5	.9	.6	.7	.6
Interior U.S.	550	556	625	1.3	.3	2.0	1.9	1.8	1.8
Interior coal	22	23	25	.9	.4	1.2	2.1	2.0	1.8
Minor	20	21	22	1.0	.3	1.4	2.1	2.0	1.8
Major	2	2	2	-.4	.6	-1.1	2.9	2.6	2.0
Western U.S.	436	467	558	2.5	1.7	3.0	3.2	3.2	3.0
Western coal	14	13	14	N.C.	-2.4	1.6	1.9	1.7	1.3
Minor	11	10	12	N.C.	-2.2	2.1	1.6	1.5	1.2
Major	3	3	3	-1.6	-3.4	-.4	4.6	3.1	1.8
Type of county:									
Minor	61	60	63	.2	-.3	.6	1.4	1.3	1.2
Major	10	11	11	.7	1.5	.2	1.0	1.0	.8

<sup>1/</sup> Includes hired farmworkers, but excludes farmowners.

N.C. = No change or change is less than 0.05 percent.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 3--Manufacturing industry: Employment change, and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	20,270	20,090	21,076	0.4	-0.2	.8	25.9	24.0	22.0
Metro	15,610	15,020	15,668	N.C.	-1.0	.7	25.7	23.3	21.3
Nonmetro	4,660	5,070	5,408	1.5	2.1	1.1	26.5	26.2	24.2
U.S. coal, total	1,567	1,524	1,535	-.2	-.7	.1	28.5	26.2	22.9
Metro	1,066	1,000	1,013	-.5	-1.6	.2	30.1	27.3	24.2
Nonmetro	500	524	522	.4	1.2	N.C.	25.6	24.4	20.8
Eastern U.S.	9,878	9,655	9,710	-.2	-.6	N.C.	27.2	24.9	22.9
Eastern coal	1,172	1,142	1,094	-.7	-.6	-.7	31.7	29.3	25.5
Minor	981	958	918	-.7	-.6	-.7	34.3	32.0	28.4
Major	191	184	175	-.8	-.9	-.8	22.8	20.2	16.6
Interior U.S.	7,868	7,881	8,214	.4	N.C.	.7	27.6	26.1	23.7
Interior coal	249	260	278	1.1	1.1	1.1	23.5	22.9	20.8
Minor	234	242	259	1.0	.9	1.1	23.7	23.0	21.1
Major	15	18	19	2.6	5.0	1.1	19.8	21.3	18.2
Western U.S.	2,525	2,554	3,152	2.2	.3	3.6	18.8	17.3	16.8
Western coal	146	122	163	1.1	-4.4	5.0	19.6	15.9	15.2
Minor	141	117	158	1.1	-4.6	5.1	20.8	17.2	17.0
Major	5	5	6	1.4	.6	1.9	7.3	5.9	3.9
Type of county:									
Minor	1,356	1,318	1,335	-.2	-.7	.2	30.0	27.8	24.7
Major	210	207	200	-.5	-.4	-.6	21.5	19.1	15.3

N.C. = No change or change is less than 0.05 percent.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 4--Total mining industry: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	623	636	956	4.4	0.5	7.0	0.8	0.8	1.0
Metro	276	280	415	4.2	.4	6.8	.4	.4	.6
Nonmetro	347	356	541	4.5	.6	7.2	2.0	1.8	2.4
U.S. coal, total	173	195	320	6.4	3.0	8.6	3.1	3.4	4.8
Metro	52	56	80	4.3	1.7	6.0	1.5	1.5	1.9
Nonmetro	121	139	241	7.2	3.6	9.6	6.2	6.5	9.6
Eastern U.S.	183	201	276	4.2	2.4	5.4	.5	.5	.7
Eastern coal	123	140	213	5.7	3.3	7.3	3.3	3.6	5.0
Minor	44	44	74	5.4	.4	8.9	1.5	1.5	2.3
Major	79	96	139	5.8	4.8	6.5	9.5	10.5	13.2
Interior U.S.	312	305	483	4.5	-.6	8.0	1.2	1.0	1.4
Interior coal	37	40	63	5.5	2.0	8.0	3.5	3.5	4.8
Minor	28	29	44	4.7	.8	7.4	2.8	2.7	3.6
Major	9	12	20	7.8	5.6	9.3	12.5	13.8	18.9
Western U.S.	128	130	197	4.4	.4	7.5	1.0	.9	1.1
Western coal	13	15	44	12.7	3.4	19.4	1.8	2.0	4.1
Minor	6	6	16	11.0	.1	18.9	.8	.8	1.7
Major	8	10	28	13.9	5.6	19.8	11.4	11.1	19.2
Type of county:									
Minor	77	78	133	5.7	.5	9.3	1.7	1.7	2.5
Major	96	117	187	6.9	4.9	8.2	9.8	10.8	14.3

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 5--Contract construction industry: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	3,618	4,041	4,545	2.3	2.8	2.0	4.6	4.8	4.6
Metro	2,873	3,173	3,466	1.9	2.5	1.5	4.7	4.9	4.7
Nonmetro	745	868	1,079	3.8	3.9	3.7	4.2	4.5	4.8
U.S. coal, total	259	270	335	2.6	1.0	3.7	4.7	4.6	5.0
Metro	176	173	213	1.9	-.4	3.5	5.0	4.7	5.1
Nonmetro	83	97	122	3.9	3.8	4.0	4.3	4.5	4.8
Eastern U.S.	1,679	1,982	1,864	1.1	4.2	-1.0	4.6	5.1	4.4
Eastern coal	169	181	198	1.6	1.6	1.6	4.6	4.6	4.6
Minor	129	138	146	1.3	1.7	1.0	4.5	4.6	4.5
Major	41	43	52	2.4	1.5	3.0	4.9	4.7	4.9
Interior U.S.	1,357	1,354	1,702	2.3	-.1	3.9	4.8	4.5	4.9
Interior coal	52	52	644	2.2	.1	3.6	4.9	4.6	4.8
Minor	47	47	59	2.3	.1	3.8	4.8	4.5	4.8
Major	5	5	5	.9	-.2	1.7	6.5	5.7	5.0
Western U.S.	582	706	980	5.3	4.9	5.6	4.3	4.8	5.2
Western coal	38	37	72	6.8	-.7	12.0	5.1	4.8	6.7
Minor	33	28	55	5.0	-4.7	12.0	4.9	4.1	5.9
Major	4	9	18	15.7	21.5	12.0	6.1	10.4	12.0
Type of county:									
Minor	209	213	260	2.2	.4	3.4	4.6	4.5	4.8
Major	50	57	75	4.2	3.5	4.6	5.1	5.3	5.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 6--Wholesale and retail trades industry: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	14,938	16,743	20,313	3.1	2.9	3.3	19.1	20.0	21.2
Metro	12,027	13,383	16,052	2.9	2.7	3.1	19.8	20.8	21.8
Nonmetro	2,911	3,360	4,261	3.9	3.7	4.0	16.6	17.4	19.1
U.S. coal, total	1,023	1,121	1,382	3.1	2.3	3.6	18.6	19.3	20.6
Metro	696	750	914	2.7	1.9	3.3	19.6	20.5	21.8
Nonmetro	327	370	469	3.7	3.2	4.0	16.7	17.2	18.6
Eastern U.S.	6,610	7,434	8,594	2.7	3.0	2.4	18.2	19.2	20.3
Eastern coal	660	732	856	2.6	2.6	2.6	17.9	18.7	19.9
Minor	509	561	642	2.4	2.5	2.3	17.8	19.6	19.8
Major	152	171	214	3.5	3.0	3.8	18.2	18.7	20.3
Interior U.S.	5,720	6,282	7,660	3.0	2.4	3.4	20.1	20.8	22.1
Interior coal	207	224	282	3.1	2.0	3.9	19.5	19.7	21.1
Minor	195	211	266	3.1	2.0	3.9	19.8	20.0	21.6
Major	12	13	16	3.1	2.2	3.8	15.9	15.3	15.3
Western U.S.	2,605	3,027	4,059	4.5	3.8	5.0	19.4	20.5	21.7
Western coal	156	165	245	4.7	1.5	6.8	20.9	21.5	22.8
Minor	143	149	220	4.4	.9	6.7	21.2	21.9	23.7
Major	12	16	25	7.5	7.2	7.7	18.0	18.7	17.1
Type of county:									
Minor	847	921	1,128	2.9	2.1	3.4	18.7	19.5	20.9
Major	176	200	255	3.8	3.3	4.1	17.9	18.5	19.5

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 7--Transportation industry: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	4,455	4,660	5,134	1.4	1.1	1.6	5.7	5.6	5.4
Metro	3,661	3,812	4,132	1.2	1.0	1.4	6.0	5.9	5.6
Nonmetro	794	848	1,002	2.3	1.6	2.8	4.5	4.4	4.5
U.S. coal, total	348	356	403	1.5	.6	2.1	6.3	6.1	6.0
Metro	232	237	262	1.2	.5	1.7	6.6	6.5	6.3
Nonmetro	115	119	141	2.0	.7	2.9	5.9	5.5	5.6
Eastern U.S.	2,014	2,111	2,218	.9	1.2	.8	5.5	5.4	5.2
Eastern coal	225	232	249	1.0	.8	1.2	6.1	6.0	5.8
Minor	168	170	181	.7	.2	1.1	5.9	5.7	5.6
Major	56	62	68	1.9	2.6	1.5	6.7	6.8	6.4
Interior U.S.	1,648	1,712	1,914	1.5	1.0	1.9	5.8	5.7	5.5
Interior coal	70	71	84	1.9	.5	2.9	6.6	6.3	6.3
Minor	66	67	77	1.6	.2	2.5	6.7	6.3	6.3
Major	4	5	7	5.7	3.6	6.7	5.6	5.7	6.7
Western U.S.	793	836	1,002	2.4	1.3	3.1	5.9	5.7	5.4
Western coal	53	52	70	2.7	-.3	4.8	7.1	6.8	6.5
Minor	46	45	58	2.3	-.6	4.3	6.8	6.6	6.2
Major	7	7	12	5.2	1.0	8.0	10.5	8.6	8.0
Type of county:									
Minor	280	282	316	1.2	.1	2.0	6.2	6.0	5.9
Major	67	74	87	2.6	2.5	2.6	6.9	6.9	6.6

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 8--Finance, insurance, and real estate industries: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	3,598	4,178	5,021	3.4	3.8	3.1	4.6	5.0	5.2
Metro	3,187	3,653	4,342	3.1	3.5	2.9	5.3	5.7	5.9
Nonmetro	411	525	679	5.1	6.3	4.4	2.3	2.7	3.0
U.S. coal, total	202	232	286	3.5	3.5	3.5	3.7	4.0	4.3
Metro	156	175	211	3.1	3.0	3.1	4.4	4.8	5.0
Nonmetro	46	57	76	5.0	5.3	4.8	2.4	2.7	3.0
Eastern U.S.	1,787	2,047	2,303	2.6	3.5	2.0	4.9	5.3	5.4
Eastern coal	127	146	172	3.1	3.6	2.7	3.4	3.8	4.0
Minor	96	111	128	2.9	3.5	2.4	3.4	3.7	4.0
Major	31	35	44	3.7	3.7	3.7	3.6	3.9	4.2
Interior U.S.	1,194	1,373	1,684	3.5	3.5	3.5	4.2	4.5	4.8
Interior coal	34	41	50	3.9	4.8	3.3	3.2	3.6	3.7
Minor	33	39	47	3.8	4.7	3.2	3.3	3.7	3.8
Major	1	2	3	6.3	8.0	5.2	1.9	2.3	2.5
Western U.S.	617	758	1,034	5.3	5.3	5.3	4.6	5.1	5.5
Western coal	41	45	65	4.6	2.3	6.1	5.5	5.9	6.0
Minor	40	43	61	4.4	2.1	5.9	5.9	6.4	6.6
Major	1	2	3	9.8	7.6	11.3	2.0	2.1	2.4
Type of county:									
Minor	169	193	236	3.4	3.5	3.4	3.7	4.1	4.4
Major	33	39	50	4.1	4.1	4.2	3.4	3.6	3.8

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 9--Total services industry: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	13,311	14,974	18,828	3.5	3.0	3.9	17.0	17.9	19.6
Metro	10,693	12,040	15,304	3.6	3.0	4.1	17.6	18.7	21.0
Nonmetro	2,618	2,934	3,524	3.0	2.9	3.1	14.9	15.2	15.8
U.S. coal, total	876	958	1,210	3.3	2.3	4.0	15.9	16.5	18.1
Metro	598	647	832	3.3	2.0	4.3	16.9	17.7	19.9
Nonmetro	278	312	378	3.2	2.9	3.3	14.2	14.5	15.0
Eastern U.S.	6,412	7,095	8,591	3.0	2.6	3.2	17.6	18.3	20.3
Eastern coal	586	632	769	2.8	1.9	3.3	15.9	16.2	17.9
Minor	449	479	584	2.7	1.6	3.3	15.7	16.0	18.0
Major	137	153	185	3.1	2.8	3.3	16.4	16.8	17.6
Interior U.S.	4,523	5,112	6,377	3.5	3.1	3.8	15.9	16.9	18.4
Interior coal	169	188	233	3.2	2.6	3.7	16.0	16.5	17.5
Minor	157	175	218	3.3	2.7	3.7	16.0	16.6	17.7
Major	12	13	16	2.9	1.1	3.6	16.3	15.1	15.0
Western U.S.	2,377	2,766	3,860	5.0	3.9	5.7	17.7	18.7	20.6
Western coal	121	139	208	5.6	3.6	7.0	16.2	18.1	19.3
Minor	111	125	180	4.9	3.0	6.3	16.5	18.4	19.4
Major	9	14	28	11.6	10.2	12.5	13.6	15.7	18.7
Type of county:									
Minor	718	780	981	3.2	2.1	3.9	15.9	16.5	18.2
Major	158	179	229	3.7	3.1	4.2	16.2	16.5	17.5

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 10--Government services industry: Employment change and share of total wage and salary employment

Area and county type	Employment			Compound annual employment change			Share of total wage and salary employment		
	1969	1973	1979	1969-79	1969-73	1973-79	1969	1973	1979
	-----Thousands-----			-----Percent-----					
U.S. total	15,883	16,873	18,144	1.3	1.5	1.2	20.3	20.1	18.9
Metro	11,752	12,426	13,329	1.3	1.4	1.2	19.4	19.3	18.1
Nonmetro	4,131	4,447	4,815	1.5	1.9	1.3	23.5	23.0	21.6
U.S. coal, total	983	1,082	1,156	1.6	2.4	1.1	17.9	18.6	17.2
Metro	547	598	637	1.5	2.3	1.0	15.4	16.4	15.2
Nonmetro	436	484	519	1.8	2.6	1.2	22.3	22.5	20.6
Eastern U.S.	7,214	7,673	8,197	1.3	1.6	1.1	19.8	19.8	19.3
Eastern coal	601	665	707	1.6	2.6	1.0	16.2	17.0	16.5
Minor	454	503	535	1.7	2.6	1.0	15.9	16.8	16.5
Major	147	162	172	1.6	2.4	1.0	17.5	17.7	16.3
Interior U.S.	5,311	5,669	6,060	1.3	1.6	1.1	18.6	18.7	17.5
Interior coal	220	238	255	1.5	2.1	1.1	20.7	21.0	19.1
Minor	206	222	238	1.4	2.0	1.1	20.9	21.2	19.3
Major	14	15	17	2.0	1.7	2.1	18.6	18.2	16.4
Western U.S.	3,358	3,532	3,886	1.5	1.3	1.6	25.0	23.9	20.7
Western coal	163	179	194	1.8	2.4	1.4	21.8	23.3	18.1
Minor	145	158	169	1.6	2.2	1.2	21.4	23.2	18.2
Major	18	21	25	3.4	3.9	3.0	26.5	24.3	17.0
Type of county:									
Minor	805	884	942	1.6	2.4	1.2	17.8	18.7	17.5
Major	179	198	214	1.8	2.6	1.3	18.2	18.3	16.4

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1969, 1973, and 1979.

Appendix table 11--U.S. coal-producing counties, by 1979 level of coal production and region

Major coal-producing counties (produced 5 million tons or more per year):

<u>Eastern coal region</u>	<u>National rank</u>	<u>Interior coal region</u>	<u>National rank</u>
Pike, KY	2	Muhlenberg, KY	9
Buchanan, VA	4	Warrick, IN	14
Martin, KY	6	Panola, TX	18
Indiana, PA	7	Perry, IL	19
Monongalia, WV	8	Ohio, KY	21
Boone, WV	10	Randolph, IL	27
Wise, VA	11	Hopkins, KY	28
Washington, PA	13	Titus, TX	30
Harlan, KY	16	Union, KY	42
McDowell, WV	17	Franklin, IL	47
Clearfield, PA	20	Freestone, TX	53
Belmont, OH	22		
Wyoming, WV	23		
Kanawha, WV	25	<u>Western coal region</u>	
Greene, PA	26	Campbell, WY	1
Breathitt, KY	29	Big Horn, MT	3
Logan, WV	31	Rosebud, MT	5
Cambria, PA	33	Navajo, AZ	12
Walker, AL	35	Carbon, WY	15
Jefferson, AL	36	San Juan, NM	24
Armstrong, PA	37	Sweetwater, WY	32
Somerset, PA	38	Routt, CO	34
Perry, KY	39	Emery, UT	46
Raleigh, WV	40	Mercer, ND	52
Floyd, KY	41	McKinley, NM	54
Marshall, WV	43	Lincoln, WY	55
Knott, KY	44		
Harrison, OH	45		
Muskingum, OH	48		
Marion, WV	49		
Clarion, PA	50		
Nicholas, WV	51		

Minor coal-producing counties, unranked (produced less than 5 million tons per year):

<u>Eastern coal region</u>		
Bibb, AL	St. Clair, AL	Jackson, KY
Blount, AL	Shelby, AL	Johnson, KY
Cherokee, AL	Tuscaloosa, AL	Knox, KY
Cullman, AL	Winston, AL	Laurel, KY
De Kalb, AL	Walker, GA	Lawrence, KY
Etowah, AL	Bell, KY	Lee, KY
Fayette, AL	Boyd, KY	Leslie, KY
Franklin, AL	Carter, KY	Letcher, KY
Jackson, AL	Clay, KY	McCreary, KY
Marion, AL	Elliott, KY	Magoffin, KY
Marshall, AL	Greenup, KY	Menifee, KY

-continued

Appendix table 11--U.S. coal-producing counties, by 1979 level of coal production and region--continued

Eastern coal region

Morgan, KY  
 Owsley, KY  
 Pulaski, KY  
 Rockcastle, KY  
 Wayne, KY  
 Whitley, KY  
 Wolfe, KY  
 Alleghany, MD  
 Garrett, MD  
 Butler, OH  
 Carroll, OH  
 Columbia, OH  
 Coshoctin, OH  
 Gallia, OH  
 Guernsey, OH  
 Hocking, OH  
 Holmes, OH  
 Jackson, OH  
 Jefferson, OH  
 Lawrence, OH  
 Mahoning, OH  
 Meigs, OH  
 Monroe, OH  
 Noble, OH  
 Perry, OH  
 Pike, OH  
 Stark, OH  
 Tuscarawas, OH  
 Vinton, OH  
 Washington, OH  
 Wayne, OH  
 Allegheny, PA  
 Beaver, PA  
 Bedford, PA  
 Bradford, PA  
 Carbon, PA  
 Centre, PA  
 Clinton, PA  
 Columbia, PA  
 Dauphin, PA  
 Elk, PA  
 Fayette, PA  
 Fulton, PA  
 Huntingdon, PA  
 Jefferson, PA  
 Lackawanna, PA  
 Lawrence, PA  
 Luzerne, PA

Lycoming, PA  
 Mercer, PA  
 Northumberland, PA  
 Schuylkill, PA  
 Sullivan, PA  
 Tioga, PA  
 Venango, PA  
 Westmoreland, PA  
 Anderson, TN  
 Bledsoe, TN  
 Campbell, TN  
 Claiborne, TN  
 Cumberland, TN  
 Fentress, TN  
 Grundy, TN  
 Hamilton, TN  
 Marion, TN  
 Morgan, TN  
 Putnam, TN  
 Scott, TN  
 Sequatchie, TN  
 Van Buren, TX  
 Dickenson, VA  
 Lee, VA  
 Russell, VA  
 Scott, VA  
 Tazewell, VA  
 Barbour, WV  
 Braxton, WV  
 Brooke, WV  
 Fayette, WV  
 Gilmer, WV  
 Grant, WV  
 Greenbrier, WV  
 Harrison, WV  
 Lewis, WV  
 Lincoln, WV  
 Mercer, WV  
 Mineral, WV  
 Mingo, WV  
 Ohio, WV  
 Preston, WV  
 Randolph, WV  
 Taylor, WV  
 Tucker, WV  
 Upshur, WV  
 Wayne, WV  
 Webster, WV

Interior coal region

Franklin, AR  
 Johnson, AR  
 Sebastian, AR  
 Christian, IL  
 Clinton, IL  
 Douglas, IL  
 Fulton, IL  
 Gallatin, IL  
 Hamilton, IL  
 Jackson, IL  
 Jefferson, IL  
 Knox, IL  
 Macoupin, IL  
 Montgomery, IL  
 Peoria, IL  
 St. Clair, IL  
 Saline, IL  
 Vermilion, IL  
 Wabash, IL  
 Washington, IL  
 Williamson, IL  
 Clay, IN  
 Daviess, IN  
 Dubois, IN  
 Gibson, IN  
 Greene, IN  
 Knox, IN  
 Owen, IN  
 Parke, IN  
 Pike, IN  
 Spencer, IN  
 Sullivan, IN  
 Vermillion, IN  
 Vigo, IN  
 Mahaska, IA  
 Marion, IA  
 Monroe, IA  
 Bourbon, KS  
 Crawford, KS  
 Labette, KS  
 Butler, KY  
 Caldwell, KY  
 Christian, KY  
 Daviess, KY  
 Grayson, KY  
 Henderson, KY  
 McLean, KY  
 Webster, KY

-continued

Appendix table 11--U.S. coal-producing counties, by 1979 level of coal production and region--continued

Interior coal region

Audrain, MO  
 Barton, MO  
 Bates, MO  
 Chariton, MO  
 Henry, MO  
 Howard, MO  
 Macon, MO  
 Putnam, MO  
 Randolph, MO  
 Vernon, MO  
 Craig, OK  
 Haskell, OK  
 Latimer, OK  
 Le Flore, OK  
 McIntosh, OK  
 Muskogee, OK  
 Okmulgee, OK  
 Pittsburg, OK  
 Rogers, OK  
 Tulsa, OK

Wagoner, OK  
 Erath, TX  
 Harrison, TX  
 Hopkins, TX  
 Milam, TX  
 Webb, TX

Western coal region

Archuleta, CO  
 Delta, CO  
 Fremont, CO  
 Gunnison, CO  
 Huerfano, CO  
 Jackson, CO  
 LaPlata, CO  
 Las Animas, CO  
 Mesa, CO  
 Moffat, CO  
 Montrose, CO

Pitkin, CO  
 Rio Blanco, CO  
 Musselshell, MT  
 Powder River, MT  
 Richland, MT  
 Colfax, NM  
 Adams, ND  
 Bowman, ND  
 Burke, ND  
 McLean, ND  
 Oliver, ND  
 Stark, ND  
 Ward, ND  
 Carbon, UT  
 Sevier, UT  
 King, WA  
 Lewis, WA  
 Thurston, WA  
 Converse, WY  
 Sheridan, WY

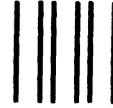
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Source: U.S. Department of Energy, Energy Information Administration, Energy Data Report, Coal Production--1979.

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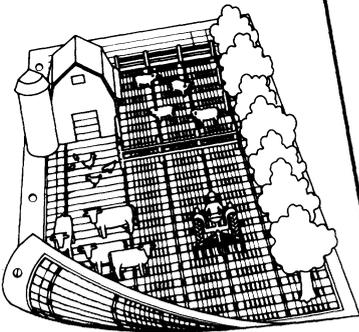
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