

Changes in regional unemployment over the last decade

Between the mid-1970's and 1984, the geographic distribution of unemployment shifted; in 1975, the highest jobless rate was in New England but by 1984, that division had the lowest rate due to the influx of high technology industries

SUSAN ELIZABETH SHANK

During the mid-1970's, the Northeast and the West experienced the highest unemployment rates in the Nation, but after a strong expansion in the late 1970's and severe recessions in the early 1980's, high unemployment was concentrated in a band of States stretching from the Great Lakes south to the Gulf of Mexico. Business cycle swings, as well as differences in industrial structure and demography, account for the geographic shift in unemployment. While all regions benefited from the robust 1983-84 recovery, the East South Central division (Kentucky, Tennessee, Mississippi, and Alabama) improved less rapidly than other areas, and its jobless rate in 1984 was the highest of the nine census divisions. In contrast, New England continued its dramatic improvement into the current recovery, and its unemployment rate in 1983 and 1984 was much lower than that in any other census division.

This article analyzes employment and unemployment changes during three distinct cyclical swings.¹ It contrasts the 1976-79 period, when employment rose strongly and unemployment declined, with the 1979-82 period, when employment growth slowed and unemployment increased sharply. Emphasis is placed on how these two periods, as well as the recovery in 1983-84, affected different sections

of the country. Employment developments in the four census regions and nine divisions within these regions (and occasionally individual States) are used to demonstrate major subnational variations.² (Footnote 2 lists the States included in census regions and divisions.)

The article is based primarily on data from the Current Population Survey, a monthly sample of approximately 60,000 households nationwide, which provides information on the employment and unemployment status of the civilian population 16 years of age and over. Annual averages are used because they are subject to less sampling variability than monthly data and also give better estimates of major aggregates at the State level. The analysis begins with 1976 because it was the first year that a consistent, reasonably reliable State data series was available.³ Occasional references are made to earlier years, however, when a longer time horizon helps to explain more recent developments. Also, unemployment rates for 1984 indicate how the second year of the current recovery affected different regions and divisions. However, because final 1984 employment level data were not available at this writing, the focus in the following section is on changes over the 1976-83 period.

Employment

The strong U.S. employment increases of the late 1970's came to a virtual halt at the end of the decade, as the 1980 downturn was followed closely by the severe 1981-82 recession. Total employment, which rose 11.3 percent dur-

Susan Elizabeth Shank is an economist in the Division of Employment and Unemployment Analysis, Bureau of Labor Statistics. She was assisted by Sandy Grove, a statistician in the Division of Data Development and Users' Services.

ing 1976–79, inched up only 0.7 percent between 1979 and 1982. While the recessions in the early 1980's affected employment growth in all sections of the country, the impact was most visible in the East North Central, the East South Central, Mid-Atlantic, and West North Central divisions. Employment growth in these four divisions trailed the national pace in the 1976–79 period and then turned negative between 1979 and 1982. The sharpest drop occurred in the heavily industrial East North Central States, where employment fell by 5.5 percent from 1979 to 1982. The employment decrease, which started a year later in the East South Central division, amounted to approximately 3 percent between 1980 and 1982. In the Mid-Atlantic and West North Central States, employment essentially held steady in the 1979–81 period and then declined about 1.5 percent in 1982.

Despite the negligible growth in total U.S. employment between 1979 and 1982, employment rose about 3.5 percent in both the South Atlantic and Pacific States, while the Mountain and West South Central divisions posted gains of 7.5 to 8.5 percent. However, these increases were significantly below those of the late 1970's in all four divisions. The slowdown was particularly marked in the Pacific States, as the strong job growth that the Pacific Northwest had recorded in the late 1970's ended. Employment in construction and lumber and wood products fell in both Oregon and Washington from 1979 to 1982.

Employment in New England grew at about the national rate in the late 1970's and slightly above it in the early 1980's. These employment gains contrast markedly with the sluggish growth experienced earlier in the post-World War II period, when New England underwent a dramatic shift in its employment mix by industry. Accounting for almost half of New England's employment, Massachusetts illustrates the movement away from labor-intensive non-durable manufacturing and into the service-producing industries and high technology manufacturing. Between 1947 and 1975, Massachusetts' employment in three industries—textiles, apparel, and leather—plunged from 250,000 to 90,000, or from 14 to 4 percent of its nonfarm payroll jobs.⁴ During this period, total manufacturing employment in the State dropped by 21 percent, in sharp contrast to a 19-percent increase nationally. Starting in the mid-1970's, manufacturing employment in Massachusetts began to pick up, with a major part of the increase occurring in three newer "high tech" industries⁵—machinery, electrical equipment, and instruments. This recovery in manufacturing jobs, combined with continued expansion in the service-producing sector, resulted in statewide job growth in the late 1970's that was close to the national pace.

A central challenge to any area's economy is that employment must expand simply to keep pace with population growth. An economy that stands still in job creation actually deteriorates over time if the population expands. Two distinctly different subperiods are evident when regional em-

ployment and population growth rates are compared from 1976 to 1983. In the late 1970's, employment growth rates exceeded population increases in all nine census divisions. This relationship is measured by the employment-population ratio (the percent of the population 16 years old and over that is employed), which peaked in 1979. Between 1979 and 1982, no division recorded an employment gain equal to its population increase, so employment-population ratios fell until the onset of the 1983–84 recovery.

In the late 1970's, New England and the Pacific States recorded the largest employment-population ratio gains (4 to 4.5 percentage points), while the East South Central and the South Atlantic divisions had the smallest (1.5 to 2 percentage points). When the employment picture weakened in the early 1980's, employment-population ratios fell most in the East North Central States (down 4.3 percentage points) and the adjacent East South Central States (down 3.4 points). These decreases outweighed the gains of the late 1970's in both divisions, the only divisions to do so. (See table 1.)

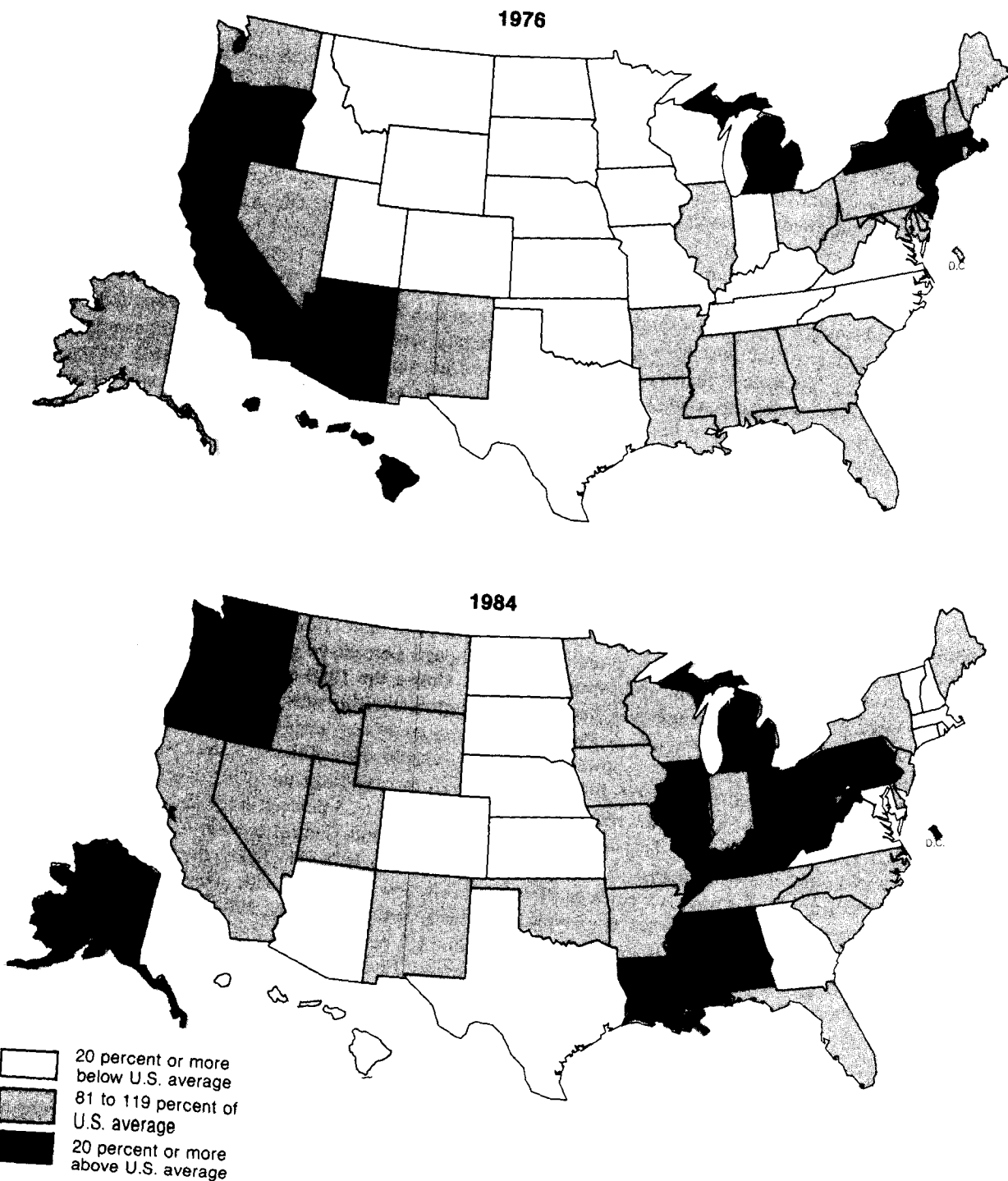
From 1976 to 1983, New England experienced the largest employment-population ratio gain (3.2 percentage points), and substantial increases (2 to 2.5 points) were also posted in the Mountain, Pacific, and West South Central divisions. At the other extreme, the ratios fell about 1.5 percentage points in the East North and East South Central divisions. In the latter division, the ratio was the lowest of the nine divisions in both 1982 and 1983.

Unemployment

The locus of unemployment has shifted markedly in a very short time, attesting to the influence of both cyclical changes and industrial mix on the fortunes of an area. In 1976, the highest jobless rates were recorded in the New England, Mid-Atlantic, and Pacific divisions, while the lowest rate occurred in the West North Central division. In 1984, the U.S. unemployment rate, at 7.5 percent, was close to the 7.7 percent rate of 1976, but the geographic distribution differed dramatically. In both 1983 and 1984, the highest rates in the Nation occurred in the heavily industrialized East South and East North Central divisions and in adjacent States, while New England had the lowest rate. (See chart 1.) Three changes in unemployment rate rankings were especially notable between the mid-1970's and 1983–84. New England shifted from the highest jobless rate division to the lowest; the East South Central division moved from the low unemployment rate category to the highest rate of the nine divisions; and the East North Central States shifted from an average unemployment ranking to next to the highest in both 1983 and 1984.

The pronounced shift in unemployment among regions between the mid-1970's and 1983 and 1984 reflected developments during three distinct cyclical subperiods: 1975–79, when national unemployment fell, 1979–82, when it rose sharply, and 1983–84, when joblessness declined. March 1975 was the trough of the 1973–75 recession and, there-

Chart 1. State unemployment rates, 1976 and 1984



fore, 1975 is an important year in cyclical analysis. Regional and divisional data for 1975 appear in table 2. However, individual State unemployment rates for 1975 are omitted because sampling errors for many were inordinately high.

The 1976–79 period. During 1976–79, the recovery from the deep 1973–75 recession continued, and the national jobless rate dropped from 7.7 to 5.8 percent. Jobless rates fell most in the West and Northeast, while States in the Midwest and East South Central division showed the least improvement. Twelve States recorded unemployment rate declines of 3 percentage points or more. This group comprised four New England States (Connecticut, Massachusetts, New Hampshire, and Vermont), two Mid-Atlantic States (New York and New Jersey), four States in the West (Arizona, California, Hawaii, and Nevada), and two South Atlantic States (Florida and Georgia). New England, which had the highest jobless rate of the nine divisions in 1975 (10.2 percent), recorded the largest decrease in the late 1970's—as its rate fell to 5.4 percent in 1979. The Pacific and Mid-Atlantic divisions also recorded large unemployment rate decreases between 1976 and 1979.

In contrast, jobless rates were virtually unchanged over this period in 10 States, and the rate rose in Alaska. After construction was completed on the trans-Alaskan pipeline, the State's jobless rate jumped from about 8 percent in 1976 to 11 percent in 1978 and then declined to 9 percent in 1979. Most of the States where unemployment rates did not improve significantly were in the Midwest and East South Central division. Four States in the heavily agricultural West North Central division (Iowa, Nebraska, and North and South Dakota) were in this group because they had very low unemployment rates (3 to 4 percent) in both 1976 and 1979. Idaho (in the Mountain division) also showed little change in its unemployment rate between 1976 and 1979.

The five other States where jobless rates did not decrease between 1976 and 1979 were Alabama, Tennessee, Kentucky, Indiana, and Louisiana. In Alabama and Indiana, unemployment rates had edged downward between 1976 and 1978 but then increased in 1979, when employment growth in each State slowed markedly. Both States have heavy concentrations of goods-producing industries, which experienced little or no job growth from 1978 to 1979.

Despite the improved employment situation nationally, jobless rates in Kentucky, Louisiana, and Tennessee showed no discernible trend between 1976 and 1979. The fact that three of four East South Central States (Alabama, Kentucky, and Tennessee) had virtually the same unemployment rates in 1976 and 1979 meant that this division was the only one where the unemployment rate did not drop substantially in the late 1970's. As a result, the East South Central jobless rate shifted from well below the U.S. rate in 1976 to slightly above it in 1979.

The 1979–82 period. Between 1979 and 1982, the national unemployment rate jumped from 5.8 and 9.7 percent, as the economy suffered two successive recessions. This increase affected all U.S. regions although with different timing and severity. The brief and relatively mild 1980 recession had the most adverse effect on industries that are highly sensitive to interest rates, particularly automobiles and housing. In the East North Central States, where automobile manufacturing and supplier industries are concentrated, the unemployment rate jumped from 6.1 percent in 1979 to 9.2 percent in 1980. Very sharp unemployment increases occurred in Michigan, Ohio, and Indiana—States where jobless rates had begun to rise as early as 1979. Although starting from a lower level, the jobless rate in the neighboring West North Central States also increased markedly in 1980. In contrast, the unemployment rate in the Northeast only rose from 6.6 to 7.0 percent between 1979 and 1980, and rates in the South and West both increased about 1 percentage point.

Unlike the 1980 experience, the severe 1981–82 recession resulted in substantial unemployment increases in all sections of the country. The most adverse impact occurred in heavily industrialized States, which were still suffering from the 1980 downturn in basic industries. Jobless rates jumped to 12.5 percent in the East North and 12 percent in the East South Central divisions—double the 6 percent rates recorded in 1979. The rate in the West North Central States, while low compared with other divisions, also nearly doubled. Seven States had 1982 unemployment rates in excess of 11.7 percent—one-fifth or more above the national average. Five of the seven were the East Central States of Michigan, Ohio, Indiana, Alabama, and Tennessee. West Virginia and Washington were the two other States with very high 1982 jobless rates.

States with jobless rates lower than the national average rates were more numerous and more geographically dispersed than those with high rates. Sixteen States recorded 1982 rates of 7.8 percent or less—at least one-fifth below the national average. Rates were below 7 percent in the following farm belt and oil and gas drilling States: Kansas, Nebraska, North and South Dakota, Wyoming, Oklahoma, and Texas, as well as in Connecticut, Vermont, and Hawaii. An additional six States had 1982 jobless rates between 7 and 7.8 percent—Colorado, Minnesota, Utah, New Hamp-

Table 1. Employment-population ratios by census division, selected years, 1976–83

Division	1976	1979	1982	1983
United States	56.8	59.9	57.8	57.9
New England	58.5	62.3	61.3	61.7
Mid-Atlantic	53.2	56.6	54.8	54.7
East North Central	58.2	60.9	56.6	56.8
West North Central	60.6	63.8	61.1	61.1
South Atlantic	57.3	59.4	57.5	57.7
East South Central	55.2	56.7	53.3	53.6
West South Central	57.4	60.4	60.0	59.5
Mountain	59.0	62.1	61.0	61.5
Pacific	56.9	61.3	59.2	59.2

Table 2. Unemployment rates by census region and division, 1975–84

Region and division	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
United States	8.5	7.7	7.1	6.1	5.8	7.1	7.6	9.7	9.6	7.5
Northeast	9.5	9.4	8.4	6.9	6.6	7.0	7.4	9.0	8.7	6.8
New England	10.2	9.1	7.7	5.7	5.4	5.9	6.3	7.8	6.8	4.9
Mid-Atlantic	9.3	9.5	8.7	7.3	7.0	7.5	7.8	9.4	9.4	7.6
Midwest	7.8	6.6	6.0	5.3	5.5	8.2	8.6	11.1	10.8	8.4
East North Central	8.9	7.3	6.5	5.9	6.1	9.2	9.7	12.5	12.0	9.4
West North Central	5.2	5.0	4.8	4.0	4.0	5.8	6.0	7.8	7.9	6.2
South	7.7	6.7	6.4	5.6	5.4	6.4	7.0	8.9	9.3	7.2
South Atlantic	8.5	7.4	6.8	5.7	5.5	6.3	7.0	8.7	8.5	6.5
East South Central	7.9	6.2	6.4	6.0	6.1	7.9	9.2	12.1	12.3	9.8
West South Central	6.4	6.0	5.7	5.2	4.7	5.6	5.9	7.5	8.9	7.0
West	9.2	8.7	7.8	6.6	6.0	6.9	7.4	9.9	9.5	7.6
Mountain	7.5	7.2	6.6	5.4	5.0	6.4	6.3	8.7	8.6	6.2
Pacific	9.8	9.1	8.2	7.0	6.4	7.1	7.8	10.2	9.9	8.1

shire, Georgia, and Virginia.

The Northeast, which had the highest unemployment rate of the four regions throughout the 1976–79 period, was less affected than other parts of the country by the recessions of the early 1980's. Within that region, the Mid-Atlantic States moved from being the division with the highest unemployment rate during 1976–79 to registering slightly below the national average in 1982. During the 1970's, employment growth had been sluggish in these States, as a shift occurred away from older manufacturing industries to the more rapidly growing service-producing sector. Jobless rates in New York and New Jersey, which had been substantially above the national average during the mid- and late 1970's, were relatively resistant to the unemployment increases in the early 1980's, and in 1982, both States had rates that were lower than the national average. However, Pennsylvania, which had fared better than New York and New Jersey during most of the 1970's, was hard hit in the 1980's by problems in industries such as steel and coal mining, and its unemployment rate jumped from 6.9 to 10.9 percent between 1979 and 1982. The New England jobless rate increased less in the 1979–82 period than in any division except the Mid-Atlantic and, at 7.8 percent in 1982, was the second lowest of the nine divisions.

Throughout 1983 and 1984. The economy demonstrated a robust recovery in the 2 years following the deep 1981–82 recession. Although annual averages obscure the magnitude of the cyclical swings during 1982 and 1983, significant regional employment and unemployment changes were evident.⁶ For example, New England posted a substantial unemployment rate drop between 1982 and 1983, while the rate rose markedly in the West South Central States. As the economy completed a second full year of recovery in 1984, the national unemployment rate fell to 7.5 percent, and all sections of the country experienced lower jobless rates. (See table 2.)

Unemployment rate changes between 1982 and 1984 illustrate how the recovery affected different geographic areas. The largest relative improvement occurred in New England,

followed by the Mountain division. Four States—Arizona (from the Mountain division), and Rhode Island, Massachusetts, and New Hampshire (from New England) experienced very large drops in the jobless rates during this period. In contrast, the least improvement occurred in the West South Central division, where the jobless rate rose in 1983 and then fell in 1984. Only six States failed to show significant unemployment rate decreases between 1982 and 1984, and two of them—Louisiana and Oklahoma—were from the West South Central division. Alaska, Mississippi, Wyoming, and West Virginia were the other four States where jobless rates did not decrease between 1982 and 1984. Despite declines during the recovery, jobless rates in both the East South and East North Central divisions were very high in 1983 and 1984.

The New England jobless rate fell from 7.8 percent in 1982 to 4.9 percent in 1984. In both 1983 and 1984, New England had the lowest rate of the nine census divisions—a complete reversal from 1975, when New England had the highest rate. The strong 1983–84 rebound in the New England economy was pervasive. Three of the four States that recorded the sharpest jobless rate drops from 1982 and 1984 were Rhode Island, New Hampshire, and Massachusetts. By 1984, five of the six New England States ranked in the low unemployment group (6 percent or below) and Maine (with a 6.1-percent rate) was almost in that category.

The unemployment rate improvement in the Mountain division reflected sharply different movements among the eight States. Arizona and Colorado, the division's two most populous States, both recorded steady and substantial unemployment drops over 1982–84. At the other extreme, Wyoming was one of only six States that showed no unemployment rate decrease between 1982 and 1984. The Wyoming rate increased sharply from 1982 to 1983, as did the rate in many other States with substantial employment in oil and gas extraction; it then dropped in 1984 to about the 1982 level.

The job situation in the West South Central division worsened substantially in 1983 and rebounded in 1984. The 1983 deterioration contrasted with the national pattern, as well

as with the strong expansion that this division experienced in the previous several years. Total employment in these States rose very strongly during 1976–81, and the unemployment rate was consistently the lowest or next to lowest of the nine census divisions. Much of the economy's strength during this period was linked to oil drilling and petroleum refining, which boomed following the oil embargo by the Organization of Petroleum Exporting Countries. However, when petroleum demand began to slacken in 1982 and production was curtailed, this division was hit first. Total employment growth slowed to 1 to 1.5 percent in 1982 and 1983 from more than 4 percent annually in the 1976–81 period. Wage and salary employment in oil and gas extraction, which had more than doubled between 1976 and 1981, was nearly unchanged from 1981 to 1982 and then dropped sharply in 1983.

As employment growth slowed, the West South Central jobless rate rose from 7.5 percent in 1982 to 8.9 percent in 1983; it then fell to 7.0 percent in 1984. Oklahoma, where the rate jumped from 5.7 to 9.0 percent between 1982 and 1983 and then decreased to 7.0 percent in 1984, was the only State in the Nation where the 1984 rate was significantly above the 1982 rate. The Texas jobless rate moved from 6.9 to 8.0 to 5.9 percent over the 1982–84 period. In 1984, Texas returned to the group of States with rates one-fifth or more below the U.S. average. Louisiana, however, proved much less resilient than Texas. Over the 1982–84 period, the Louisiana jobless rate moved essentially from 10 to 12 and back to 10 percent—making it one of the six States where jobless rates did not decrease between 1982 and 1984. Also, in both 1983 and 1984, Louisiana was in the group of States with rates one-fifth or more above the U.S. average.

The jobless rate in the East North Central States, which had doubled in the early 1980's, fell substantially between 1982 and 1984. Over the latter period, the Michigan rate fell more than 4 percentage points, and drops of 3 to 3.5 points occurred in Wisconsin, Indiana, and Ohio. Despite these sharp decreases, Michigan, Ohio, and Illinois were in the high unemployment group in 1984—those States with rates of 9 percent or higher (or at least one-fifth above the U.S. average). Moreover, the East North Central rate, at approximately 9.5 percent in 1984, was the second highest of the nine census divisions.

The job picture in the East South Central States worsened more than in any other division from the mid-1970's to 1983–84. While the division jobless rate decreased between 1982 and 1984, the improvement started later and was more moderate than in many other sections of the country. In 1984, three of the four East South Central States (Alabama, Mississippi, and Kentucky) were in the high unemployment group. Tennessee, which had been in the high group in 1983, experienced a substantial unemployment rate drop in 1984 and moved into the group of States with jobless rates close to the national average. In contrast, Mississippi, which

had a jobless rate of about 11 percent in both 1982 and 1984, was one of the six States that showed no significant decrease in its rate during the recovery. Although the list of States in the high unemployment rate category changed over 1982–84, four States consistently recorded rates of 11 percent or above. Alabama and Mississippi from the East South Central division were in this very high unemployment group, as were West Virginia and Michigan.

The sharp deterioration in the East South Central division's employment situation stemmed partly from its heavy concentration in goods-producing industries, which experienced substantial job losses from 1979 to 1983. Another reason for high unemployment in this division is that a large proportion of the population resides in nonmetropolitan areas—48 percent in 1980, compared with 25 percent nationally⁷—which have experienced less economic growth than metropolitan areas in recent years. (The national jobless rate in nonmetropolitan areas was 10.1 percent in both 1982 and 1983, while the metropolitan area rates were about 9.5 percent.) A large part of the nonmetropolitan population in the South resides in or near small towns whose economies often depend heavily on a single industry or even a single plant. When these major local employers curtail or close down operations, the effect is often devastating on the surrounding communities.

West Virginia recorded the highest State unemployment rate in both 1983 and 1984 and was one of the six States that showed no jobless rate improvement between 1982 and 1984. In some respects, the problems in West Virginia resemble those of the neighboring heavily industrialized States, but West Virginia also has unique long-term structural problems. Mining (primarily coal mining) accounted for about one-fourth of nonagricultural wage and salary employment in West Virginia immediately after World War II.⁸ As the demand for coal decreased and the industry became increasingly mechanized, mining employment fell precipitously—dropping more than 60 percent from the early 1950's to 1963. The falloff in mining jobs bottomed out in the mid-1960's, and thereafter nonfarm employment increased for several years. However, employment peaked in West Virginia in 1979 and dropped in each of the succeeding 4 years. Several States with concentrations of older basic industries also experienced job declines between 1979 and 1982, but West Virginia was the only State where total employment fell significantly from 1982 to 1983. Between 1979 and 1983, the number of jobs in the goods-producing sector in West Virginia plummeted 30 percent, compared with 12 percent nationally. As a result, the State's jobless rate, which was about 1 percentage point above the U.S. rate in 1979, soared to approximately twice the national figure in 1983 and 1984.

Summary

The employment and unemployment picture across the United States changed substantially between the mid-1970's

and the early 1980's, reflecting demographic and industrial composition shifts and, most importantly, business cycle effects. Throughout this period, employment growth was concentrated in the West and South, with especially large increases occurring in the West South Central and Mountain divisions. In contrast, the East North Central States experienced very little employment growth. Employment-population ratios clearly indicate that some parts of the country fared much better than others between 1976 and 1983. New England recorded the largest advance (more than 3 percentage points), followed by the Mountain, Pacific, and West South Central divisions. In contrast, employment-population ratios fell in both the East South Central and East North Central States.

The geographic distribution of unemployment also shifted markedly between the mid-1970's and 1983-84. In 1976, the highest jobless rates (more than 9 percent) were recorded in the New England, Mid-Atlantic, and Pacific divisions,

while low rates (5 to 6 percent) occurred in the West North Central and the West South Central divisions. Eight years later, following a strong expansion during the late 1970's, back-to-back recessions in the early 1980's, and then 2 years of recovery, unemployment rates were highest in the East South and East North Central divisions and neighboring States. Most of these States have heavy concentrations of older goods-producing industries, which were battered by the 1980 and 1981-82 recessions. In contrast, New England, which has become heavily infused with high technology industries, recorded a dramatic jobless rate decrease between the mid-1970's and 1984. Furthermore, the New England rate became the lowest of the nine divisions, a complete reversal of its ranking in 1975. Unemployment rates also fell in the Pacific and Mid-Atlantic divisions between the mid-1970's and 1984, and both improved relatively—moving from high to average jobless rate rankings. □

—FOOTNOTES—

¹ Business cycle peaks and troughs are designated by the National Bureau of Economic Research.

² The States which compose the census regions and divisions are:

Northeast region

New England division: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic division: New Jersey, New York, Pennsylvania

Midwest region (formerly North Central)

East North Central division: Illinois, Indiana, Michigan, Ohio, Wisconsin

West North Central division: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South region

South Atlantic division: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central division: Alabama, Kentucky, Mississippi, Tennessee

West South Central division: Arkansas, Louisiana, Oklahoma, Texas

West region

Mountain division: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming

Pacific division: Alaska, California, Hawaii, Oregon, Washington

³ Monthly subnational Current Population Survey (CPS) data are subject to very high sampling variability—especially those for lightly populated

States or areas. Annual averages reduce the monthly variability considerably, but even on this basis estimates for the less populated States have very large sampling errors. For example, the sampling error for the 1983 annual average unemployment rate in Wyoming of 8.4 percent was plus-or-minus 1.0 percentage point at a 90-percent confidence interval. This means that users can be confident that the estimated 1983 unemployment rate for Wyoming would not be expected to differ from the "true" rate by more than 1.0 percentage point 90 percent of the time. The sampling error on the monthly rates was about 2.2 times as large. CPS data for the 50 States and the District of Columbia from 1976 forward meet a consistent standard of reliability because they incorporate supplemental State samples, as well as an improved estimation methodology.

⁴ Industry employment data in this section are derived from the Current Employment Statistics program, a monthly sample survey of more than 200,000 nonagricultural business establishments conducted by the Bureau of Labor Statistics and designed to provide information on wage and salary employment, average weekly hours, average hourly earnings, and average weekly earnings for the Nation, States, and metropolitan areas.

⁵ For an analysis of the concepts of high technology industries and their effect on employment, see Richard W. Riche, Daniel E. Hecker, and John U. Burgan, "High technology today and tomorrow: a small slice of the employment pie," *Monthly Labor Review*, November 1983, pp. 53-58.

⁶ For an analysis of the substantial changes that occurred between the fourth quarters of 1982 and 1983, see George D. Stamas, "State and regional employment and unemployment in 1983," *Monthly Labor Review*, September 1984, pp. 9-15. Also see Richard J. Rosen, "Regional variations in employment and unemployment during 1970-82," *Monthly Labor Review*, February 1984, pp. 38-45.

⁷ 1980 Census of Population, Vol. I, PC80-1-A1.

⁸ See footnote 4.