

Socioeconomic and Housing Trends in □ Central Appalachia

Recent Changes in the Appalachian Counties of Kentucky, □
Tennessee, Virginia, and West Virginia

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Executive Summary

Appalachia has long held the reputation of an “under developed, lagging region” (Isserman 1996b, 2). Limited economic opportunities and spatial isolation have always been major contributors to the region’s under-development. However, recent reports (Isserman 1996a and Isserman 1996b) reveal that socioeconomic conditions in Appalachia are changing. More importantly, while many counties in the region are still economically distressed, many counties are growing faster than the nation (Isserman 1996b, 23). Even with the economic success of some counties in the region, other counties lack employment and development opportunities and continue to be among the poorest in the nation.

This report evaluates demographic, economic, and housing conditions in the Appalachian region of four states (Kentucky, Tennessee, Virginia, and West Virginia) to determine the impact of socioeconomic development on housing needs in the region. The findings testify to the diversity of the region. There is a clear distinction between the core and periphery of the region. Findings reveal an economically depressed core area with only modest population growth—net out-migration is evident in most core counties with only slight growth in total households. The periphery, particularly in the south and east, is defined by significant economic and employment growth and subsequent population growth. The economies of the periphery are heavily reliant on services and trade, as well as on occasion manufacturing. The economies of the core are heavily dependent on government and transfer payments. The stereotypical image of a depressed and backward Appalachia is largely an image of the past.

Housing occupancy and homeownership are affected by the socioeconomic condition of the region. The core has declining occupancy but the highest homeownership rates in the region. The periphery has declining occupancy and homeownership, which may be the result of increased housing production in the area and a shift toward urban/suburban rental housing.

Recommendations for housing development in the region are based on the distinctive conditions of the core and periphery. In the core, economic development should include cost efficient building solutions for future development on rugged terrain. Housing production in the core should be tailored to the needs of a labor force that increasingly serves the tourism and recreation industries. Housing programs need to consider the potentially negative impact of homeownership on labor mobility. Lastly, there are social obligations to low-income residents of the core that, for a variety of reasons, cannot relocate. Housing for many residents in the core

needs to be subsidized. Such housing should be developed with an emphasis on long-term use as well as the physical durability of the unit.

In the periphery, the success of economic development poses challenges for "smart growth" and "fair growth"—land planning is needed to control sprawl as well as to protect and promote affordable housing.

Study Area and Project Details

This study analyzes demographic, economic, and housing trends in the Central Appalachian region from 1990 to 2000 to determine the rate of change occurring in Central Appalachia relative to national trends. For this study, the Central Appalachian region is defined as the counties in four states, Kentucky, Tennessee, Virginia, and West Virginia, designated by the Appalachian Regional Commission (ARC) (see Maps 1-5 in Appendix-A for the complete list of counties). All orientation references for these states pertain solely to the counties identified as part of the Central Appalachian region.

Past studies found that “much of the Appalachian condition relative to the nation can be understood in terms of its urbanization relative to the nation” (Isserman 1996a, p. 4). Consequently, the eleven MSAs containing 33 counties (Map-6) are identified whenever we map data for the region.

The analysis covers demographic trends, economic trends and housing trends. For demographic trends, we examine total households (2000 and percent change 1990-2000), the percent of population change due to net migration (1990-1999), the dependency ratio (2000 and change 1990-2000), and persons over 80 (2000 and change 1990-2000). Total households indicate the size and direction of overall demand for housing since by definition each household occupies a separate housing unit. The contribution of net migration to population change indicates the relative growth or loss due to migration, which generally reflects the draw of jobs or of retirement amenities. The dependency ratio indicates the degree to which there are more (or fewer) people in the “dependent years” (children and the elderly) relative to those more likely to be in the labor force.

For economic trends, we examine county income (1999 and change 1989-1999), transfer payments as a percent of personal income (1999 and change 1989-1999), private earnings as a percent of non-farm earnings (1999 and change 1989-1999), the unemployment rate (2000), non-farm employment (percent change 1989-1999), and employment by industry (1999). Transfer payments as a percent of personal income indicates a county’s reliance on public assistance. The employment variables indicate the diversity of the economy and the availability of jobs in the region.

For housing trends, we examine the percent of occupied units (1990 and change 1990-2000) and the percent of homeownership (1990 and change 1990-2000). Both variables are indicators of housing demand.

Demographic Trends

Households and thus housing demand are well disbursed throughout the region (Map-7), but with the largest concentrations in the metropolitan areas. The counties with the highest concentrations of households are located in the southern metropolitan areas of Chattanooga and Knoxville, Tennessee. Knox County has the highest concentration of households with 157,872 and Hamilton County has 124,444 households. No other county in the region exceeds 100,000 households. Kanawha County in the Charleston, WV MSA ranks third with 86,226 households.

The counties with fewer than 3000 households are clustered in central Kentucky, western Virginia, and central West Virginia. Tennessee has only three counties located within Central Appalachia with fewer than 3000 households.

The whole region grew in the number of total households—except for counties located in southern West Virginia, adjacent Buchanan County, VA, and the Wheeling, WV MSA (Map-8). Overall, the region had growth comparable to the nation and 49 percent of counties exceeded the national growth rate of 14.7 percent (see Table-1). Tennessee, counties in the western region of Kentucky and counties in the Washington, D.C. metropolitan area had the highest rates of increase in total households, which also means they had the highest increases in housing demand.

| Percent Change | KY Counties | TN Counties | VA Counties | WV Counties | Total Counties |
|-----------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| <0 | 0 | 0 | 3 | 7 | 10 |
| 0 - 14.69% | 22 | 5 | 21 | 36 | 84 |
| 14.7 - 30% | 24 | 35 | 8 | 11 | 78 |
| >30% | 3 | 9 | 0 | 1 | 13 |

Although the largest source of growth in many areas is natural increase (births exceed deaths), net-migration provides a better perspective on the attractiveness of an area. The Appalachian region has long been an area where more people moved away from than moved into. That is no longer the case. A large percentage of the region increased in total population due to in-migration between 1990 and 1999 (Map-9) and 53 percent of counties had more growth

due to in-migration than did the nation (in relative terms). The counties with the highest net in-migration rates were located on the periphery with the highest rates in Tennessee, the western counties in Kentucky, and the panhandle of West Virginia, which were also the areas with the highest increases in total households. The counties with net out-migration were concentrated in the core of the region and the Wheeling, WV MSA and three counties adjacent to that MSA.

Although the number of households equates to the number of housing units needed (plus enough vacancies for turnover), family households are often considered the backbone of housing demand, particularly for owner-occupied housing. A high proportion of family households (and of owner-occupied housing) characterizes Central Appalachia. Indeed, 86 percent of counties have a higher percentage of family households than the nation (Map-11). The counties with the lowest percentage of family households are located in metropolitan areas or are the location of state universities (Knox County, TN, Montgomery County and Radford, VA, and Monongalia County, WV).

Consistent with the national trend, the region experienced a decrease in family households. However, the decline was more severe in Central Appalachia with over 96 percent of counties losing a higher proportion of family households than the nation. As a result of increased urbanization in the region, Central Appalachia is becoming more like the nation, although it continues to have a very high percentage of family households. Counties with the greatest loss were concentrated in the core of the region (Map-12).

Age dependency is a demographic measure that indicates how much of the population is in the “working years.” The age dependency ratio is defined as the ratio of the combined child population and aged population (dependents) to the intermediate population (non-dependents)¹. This ratio represents the typical non-working population to the working population. Given past trends of out-migration (usually among younger workers) and of economic stagnation, one might expect that Central Appalachia has become a fairly age-dependent population, with more children and elderly relative to workers. However, there is no clear geographic pattern in the level of age dependency in Central Appalachia (Map-13). More than half of the region (52% of counties) has higher age dependency than the national rate of 51.2 percent. The state with the highest age dependency rate is West Virginia with 60 percent of counties exceeding the national

¹ (U.S. Department of Commerce, The Methods and Materials of Demography p. 235)

age dependency rate. Other counties with high age dependency rates are distributed throughout the region in no particular pattern.

The location of the elderly population has implications on the availability of specialized care and the demand for services in the region. Persons over age 80 are distributed throughout the region with the highest concentrations in metropolitan counties (Map-15), where services are more likely. While Knox and Hamilton counties, TN are the only counties with over 10,000 persons over age 80, even the most rural and remote areas of the region have a sizable elderly population that might require specialized care (see Table-two). The highly dispersed pattern of elderly housing needs represents a serious challenge to find efficient and effective approaches to meeting those needs.

Table-two, Persons over age 80

| Number of Persons | KY Counties | TN Counties | VA counties | WV Counties | Total Counties |
|--------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| <1,000 | 38 | 24 | 23 | 32 | 117 |
| 1,000 - 1,999 | 11 | 15 | 9 | 13 | 48 |
| 2,000 - 10,000 | 0 | 8 | 0 | 10 | 18 |
| >10,000 | 0 | 2 | 0 | 0 | 2 |

In the majority of Appalachian counties, age dependency declined (82% of counties) and persons over age 80 increased (94% of counties). The counties with the highest decline in age dependency were located in central West Virginia (even though West Virginia had the highest age dependency in 2000 than any other state in the region) and throughout central Kentucky (Map-14). Counties with the highest positive change in the age dependency ratio were located along the Virginia/Tennessee border, in north central counties in Virginia, and the Wheeling, WV MSA.

Overall, persons over age 80 increased throughout the region (Map-16). Nonetheless, the rates of increase were slower than the nation for most counties; only 22 percent of counties surpassed the national growth rate of 30.9 percent (see Table-three). Counties with the highest growth in persons over age 80 were concentrated in Tennessee and central Virginia counties.

Table-three, Percent Change in Persons over Age 80 Relative to the Nation

| Percent Change | KY Counties | TN Counties | VA Counties | WV Counties | Total Counties |
|-----------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| <0 | 3 | 1 | 2 | 5 | 11 |
| 0 - 14.9% | 20 | 6 | 4 | 26 | 56 |
| 15 - 30.95% | 21 | 22 | 17 | 17 | 77 |
| > 30.9% | 5 | 20 | 9 | 7 | 41 |

The change in the age dependency ratio and persons over age 80 were partially related with $R^2 = 0.277$. In all counties that had an increase in the age dependency ratio the percent of persons over age 80 also increased. Of the counties with the highest growth in age dependency, 70 percent likewise had the highest growth in persons over age 80.

Economic Trends

Income

Central Appalachia continues to fall below the national average in per capita personal income. All counties but one, Hamilton County, TN, have incomes below the national average (Map-17). Thirteen counties (7%) have less than half of the per capita national income and are the most seriously distressed counties in the region. Counties earning less than 65 percent of the national income comprise 55 percent of the region and are concentrated in Kentucky, northern Tennessee, southwestern Virginia, and central, western, and southern West Virginia.

Only five counties earn more than 90 percent of the national income. These counties are located in metropolitan areas in Tennessee and West Virginia. All metropolitan counties earn more than 65 percent of the national income.

The prevalence of low incomes obviously represents greater need for public assistance. The percent of transfer payments are generally higher for the region than the nation (Map-19). The highest concentration of transfer payments is in the core of the region: eastern Kentucky, adjacent Virginia counties, and southern West Virginia. Reliance on transfer payments decreases with distance from this area. Metropolitan counties have lower percentages of transfer payments as well as most Virginia counties except those along the Kentucky border. Only two percent of counties were less reliant on transfer payments than the national average. Of these counties, two are located in metropolitan areas (Jefferson County, WV and Botetourt County, VA) and two are the location of state universities (Montgomery County and Radford, VA).

The positive change in the ratio of county income to the nation (i.e. the change in the income index) identifies areas where income growth exceeded the national average. Relative to the nation, 59 percent of counties experienced an increase in per capita income (Map-18). Counties with the highest growth in income were located in Kentucky and Tennessee. While counties in northeastern and southern West Virginia also gained in income, the state as a whole

lost ground relative to the nation. In many counties in the region the increase in income appears to be due to increases in transfer payments rather than increases in private earnings.

Overall, the region gained in transfer payments and 83 percent of all counties exceeded the national growth rate (Map-20). Only five counties became less reliant on transfer payments. In four of these counties, the per capita personal income increased faster than the nation. In eastern Kentucky and some adjacent counties in Virginia and West Virginia, and northern Tennessee, the impressive gains in per capita personal income appears to be associated with gains in transfer payments. In the rest of Tennessee, the gains in income appear to be associated more with private earnings. Counties with already high incomes in south and eastern Tennessee saw positive changes in incomes and private earnings with only a moderate increase in transfer payments. Tennessee has the highest concentration of counties where private earnings exceed 85 percent of total earnings (Map-21) and has emerged as the most economically independent section of Central Appalachia.

There is a clear distinction between the economic changes in core and periphery counties of the region. The core of Appalachia falls behind the nation in every economic indicator (with the exception of Pike County, KY). Eastern Kentucky and southern West Virginia appear to be the poorest areas in Appalachia with the highest concentration of incomes below the national average, the highest growth in transfer payments, and the largest declines in private earnings. Conversely, the southeastern periphery of the region is showing strong signs of economic growth with the metropolitan areas of Roanoke, VA and Chattanooga, TN having the greatest economic growth in the region.

Employment

Although unemployment in Central Appalachia in 2000 was higher than the national average throughout three-fourths of the counties, the unemployment rate varies throughout the region (Map-23). Counties with unemployment rates lower than the nation are the northern counties of Virginia and those located in the metropolitan areas on the periphery of the region. Only eight percent of the region has unemployment rates higher than 10 percent. These counties are disbursed throughout eastern Kentucky and West Virginia, and two northern counties in Tennessee.

Overall, non-farm employment increased throughout Central Appalachia with 97 percent of counties having an increase in the number of non-farm jobs (Map-24). However, the majority of areas had slower growth than the national rate of 19.8 percent and only 41 percent of counties exceeded the national growth rate. Counties that lost non-farm jobs were clustered along the intersection of Kentucky, Virginia and West Virginia, but otherwise disbursed throughout the region. All metropolitan areas had an increase in non-farm employment except Greenup County in the Huntington-Ashland MSA and Hancock County in the Wheeling MSA.

Change in non-farm employment partially corresponds to changes in total households, net migration, income, and private earnings (see Table-four). Counties that lost non-farm jobs along the intersection of Kentucky, Virginia and West Virginia also experienced net out-migration (Map-10), as well as declines in income and private earnings. Income in this area was already much lower than the nation and transfer payments comprised over 30 percent of personal income.

Table-four, Correlation between Non-farm Employment and Selected Variables

| Change in Non-Farm Employment and Change in | R² |
|--|----------------------|
| Total Households | 0.343 |
| Population (Migration) | 0.302 |
| Private Earnings | 0.149 |
| Income | 0.111 |

Counties where non-farm employment increased by over 50 percent experienced net in-migration, except for Leslie County, KY, and an increase in income, with the exception of six counties disbursed throughout Kentucky, Tennessee, and West Virginia (Map-18).

The industry types selected for analysis reflect six major employment industries in Appalachia. They are mining, manufacturing, construction and transportation combined, trade (wholesale and retail), services and finance combined, and government (Maps 25-28 and Charts 1-4 in Appendix B).

Data on employment by industry were compiled from the Bureau of Economic Analysis data on total full-time and part-time employment by industry tables. Some industry types were suppressed but the number of jobs in these categories was included in the county totals for non-farm employment. County Business Patterns data from the U.S. Census Bureau were used to

estimate the number of jobs and the percent of total employment comprised in the suppressed categories.

Contrary to its stereotype, Central Appalachia has become much more economically diverse with few areas heavily reliant on mining. Mining was the predominant employment industry in only three counties (Leslie and Martin counties, KY and Boone County, WV). In addition, mining was a dominant industry with over 25 percent of total employment in several counties in eastern Kentucky and throughout West Virginia, and less so in Virginia along the Kentucky border. Incomes in counties with high concentrations of mining ranged between 48 and 70 percent of the national average. Mining was not a major industry in Tennessee and had less than five percent of total employment in all counties.

In contrast, services and finance, combined, made up the predominant employment industry in 69 percent of the region. Counties with services and finance employment exceeding 40 percent were scattered throughout the region primarily in or adjacent to metropolitan areas and in the Allegheny Highland counties of Virginia and West Virginia. Two counties, Bath County, VA and Ohio County, WV, had services and finance industries that comprised over 50 percent of total employment. Only two counties had services and finance industries constituting less than 20 percent of total employment, Monroe County, KY and Hardy County, WV. Incomes in counties with a dominant services and finance industry span from 43 percent to 103 percent of the national average in Elliott County, KY and in Hamilton County, TN, respectively.

Manufacturing was a strong industry in several areas. Manufacturing was the predominant industry in three counties: Hamblen County, TN (39%), Pulaski County, VA (37%), and Hardy County, WV (48%). Areas with high concentrations of manufacturing² were located in counties in southwestern Kentucky, the Lexington MSA and adjacent northern counties, throughout Tennessee, the central counties in Virginia, and northwest West Virginia. Incomes in counties with high concentrations of manufacturing ranged between 45 and 87 percent of the national average. However, only two counties had incomes over 80 percent of the national average, Clark County, KY and Bradley County, TN. Areas with the lowest concentrations of manufacturing employment were located in eastern Kentucky, in Virginia along the Kentucky border and southern West Virginia south of the Charleston MSA.

² High concentration is considered greater than 25 percent of total employment.

Construction and transportation, combined, constituted less than 20 percent of total employment in all counties except for Putnam and Mason counties in West Virginia. In Putnam County, part of the Charleston MSA, 21 percent of total employment was in construction and transportation. Adjacent Mason County had the second highest rate of construction and transportation employment (20%). Other areas in the region with concentrated construction and transportation employment included the counties around south Lexington, KY, Grundy and Meigs counties adjacent to the Chattanooga, TN MSA, and the Roanoke, VA MSA and the two adjacent counties to the west. Incomes in these counties were between 50-88 percent of the national average with the highest incomes in metropolitan areas (Botetourt County, VA, 88% and Putnam County, WV, 83%). Areas with the lowest percentage of construction and transportation employment (constituting less than 10 percent of the total employment) were located in southern Kentucky and the metropolitan areas of Washington, D.C. and Wheeling, WV.

Trade was the predominant industry in three counties, Laurel County, KY (32%), Marion County, TN (30%), and Wetzel County, WV (33.5%). In 92 percent of all counties in the region, trade comprised more than 15 percent of total employment. Counties with high concentrations of trade employment were located in and around the metropolitan areas of Ashland, KY, Chattanooga, TN, Knoxville, TN, Bristol, VA, Charleston, WV, Huntington, WV, and Parkersburg, WV. Incomes in these counties ranged between 52-96 percent of the national average. Metropolitan counties with high percentages of trade employment had the highest incomes. Areas with the lowest percentages of trade employment were located in eastern West Virginia and other counties scattered throughout the region.

Government employment was the predominant industry in only eight percent of the region. West Virginia had the majority of counties with the highest percentages of government employment. Areas with high concentrations of government employment were located in central and eastern Kentucky and three Virginia counties on or near the West Virginia border (Bland, Craig, and Montgomery), and scattered in Tennessee and West Virginia. Incomes in counties with dominant government industries ranged between 43-85 percent; counties with the lowest incomes were located in Kentucky and in Hancock County, TN. Counties with the smallest government industries were concentrated in the metropolitan areas of Lexington, Knoxville, Johnson City-Kingsport-Bristol, Charleston, Huntington-Ashland, Parkersburg, and Wheeling.

Overall, services and finance was the strongest industry in the region with the majority of Appalachian counties having a predominant services and finance industry. The trade industry was also a strong industry in the region. In western counties in Kentucky, northwestern West Virginia and throughout Tennessee manufacturing was a dominant industry.

Counties with the highest concentration of government jobs had the lowest incomes. Counties with dominant trade and services and finance industries had the highest incomes. The service and finance industries, combined, were strong sources of employment in counties with high rates of tourism such as Menifee and Russell counties in Kentucky, Bath and Highland counties in Virginia, and Hampshire, Morgan, Pocahontas, Tucker, Tyler, and Wirt counties in West Virginia.

Housing Trends

The Appalachian region had lower housing occupancy³ than the nation. Over 95 percent of counties fell behind the national occupancy rate of 93.9 percent (Map-29). Still, occupancy rates for the majority of counties were close to the national rate with the majority of counties (66%) having occupancy rates over 90 percent.

Most counties (71%) experienced a decline in occupancy (Map-30) but only nine percent of counties exceeded the national growth trend in housing occupancy. Counties with an increase in occupancy were disbursed throughout the region but primarily in western Tennessee and northern West Virginia.

Overall, Tennessee had an increase in total households and net in-migration however only 30 percent of counties had an increase in housing occupancy. Western counties in Kentucky and eastern counties in Virginia showed similar trends.

Counties in eastern Kentucky and adjacent counties in Virginia and West Virginia that had a decline in occupancy also experienced net out-migration (Map-9). These counties also had slower growth in total households and five counties actually had a decline in total households. Conversely, these counties (except for in West Virginia) had an increase in the total number of housing units between 1990 and 2000.

³ Housing occupancy is calculated based on total housing units excluding vacant units for seasonal use.

Central Appalachia has a high percentage of homeownership (Map-31). Over 93 percent of the region exceeded the nation in the percent of owner occupied units. Only four counties in the region had homeownership rates less than 65 percent.

Homeownership increased in the majority of Central Appalachian counties but only 24 percent of counties surpassed the national growth rate (Map-32). These counties were concentrated in the core of the region (i.e. eastern Kentucky, southwestern Virginia, and southern West Virginia). Most of the counties that experienced a decline in homeownership were located on the periphery, particularly in Tennessee and Virginia.

Summary

The clearest trend found in this study is the distinction between core and periphery sub-regions. The core, centered on eastern Kentucky and southern West Virginia, has a higher concentration of rural counties and is characterized by slower economic and population growth and fewer employment opportunities. The periphery, particularly in the south and east, is defined by significant economic and employment growth and subsequent population growth. The periphery has more metropolitan and suburban counties—of the 33 metropolitan counties in Central Appalachia, only the Charleston, WV MSA is not located in the periphery.

Reinforcing the distinctions between the core and periphery found in this study, Glasmeier and Fuellhart, in a report prepared for the ARC, likewise found that “counties in central West Virginia, eastern Kentucky, and northeastern Tennessee comprise the focal areas of "hard core" distress” (Glasmeier and Fuellhart 1999). The authors related the improvements on the edge of the region to several factors including public investment in infrastructure and road development, industrialization of the Southeast U.S. and a prevalence of metropolitan areas on the western and eastern edges. While Glasmeier and Fuellhart examined the entire thirteen state Appalachian region defined by the ARC, their findings of distress levels in Kentucky, Tennessee, Virginia, and West Virginia are consistent with this study’s findings.

The southern periphery consistently experienced positive growth in demographic and economic variables. The south and eastern peripheral counties had the highest combination of high incomes, private earnings and lower transfer payments. The periphery had the highest increase in non-farm employment, except in northern West Virginia. Population growth also

characterized the peripheral sub-region (again, except in northern West Virginia) with the highest increase in total households and in-migration.

Surprisingly, growth in the southern periphery did not translate into higher occupancy and homeownership rates. The periphery had occupancy and homeownership rates commensurate to the nation but experienced a decline in occupancy and homeownership while rates for the nation (and the core) grew. One possible reason for lower occupancy rates in the periphery is that strong economic growth and in-migration led to an increase in the production of new housing units, thereby causing vacancy rates to rise as households move from older to new houses leaving the older units unoccupied for longer periods of time. In fact, several counties in or adjacent to the metropolitan areas of Knoxville, Chattanooga and Johnson City-Kingsport-Bristol in Tennessee and Lexington, Kentucky had increased rates of vacant units for sale or rent⁴. The decline in homeownership in areas with economic and population growth may be due to the housing demand shifting towards rental units especially in metropolitan areas.

The core experienced not only slower growth than the periphery but in some instances stagnation. The core had the highest concentration of counties with incomes less than 65 percent of the national average and the highest concentration of counties with transfer payments comprising more than 40 percent of total earnings. While counties in the core had overall growth in income they also experienced the highest growth in transfer payments in Appalachia.

Additionally, several core counties declined in the percentage of non-farm employment while the remaining core counties had mixed rates of growth in non-farm jobs. The mining industry was concentrated in the core and the core had a higher concentration of government employment. Manufacturing, an employment industry that is generally associated with higher incomes and economic health (Glasmeier and Fuellhart 1999), was not a dominant industry in the core except in northern Tennessee and two counties in Kentucky.

Total households increased in most counties in the core but at a slower rate than the nation. In southern West Virginia and adjacent Buchanan County, VA, total households declined. Similarly, out-migration was prevalent; the only counties with moderate in-migration were located on the edge of the sub-region.

Age dependency in the core is generally lower than the nation meaning that the core has fewer dependents. The percent of persons over age 80 has increased throughout the core with

⁴ This statement is partially supported by the 2000 Census “vacancy status” tables, factfinder.census.gov.

several counties conforming to the national trend. A growing elderly population heightens the need for specialized medical care in these counties. While the southern periphery likewise shows significant gains in the elderly population these counties are largely metropolitan or suburban counties that are generally more capable of serving the needs of a growing elderly population.

The core had lower occupancy rates than the nation and experienced a decline in occupancy. Conversely, the core exceeded the nation in homeownership rates and had the highest growth in homeownership in the region. Clearly high rates of homeownership and economic vitality are not related. The economist Andrew Oswald has argued that high rates of homeownership contribute to high unemployment (in Western Europe and the U.S.) (Oswald 1997). Basically, Oswald argues that homeownership can reduce people's willingness to relocate out of distressed regions into areas where jobs are more plentiful. Although Oswald's work is definitely exploratory and by no means conclusive, a relationship between homeownership and unemployment might be a factor in the core area of Appalachia, where very high homeownership rates are accompanied by low incomes and high unemployment. Since the area's economic distress does not reflect exceptionally high rates of age dependency, it would appear that people in their working years remain in the area despite its poverty and lack of economic opportunity. It's impossible to say if this reflects a personal attachment to place, or whether owning a home impedes out-migration for jobs. But the evidence poses a challenging public-policy conundrum; promoting homeownership in the core region might contribute to the long-term impoverishment of working-age adults.

The absence of metropolitan areas in the core (excepting counties adjacent to Charleston, WV) may contribute to slower growth and greater distress in the core. In a study of distressed counties in Appalachia, Glasmeier and Fuellhart found that metropolitan and adjacent counties have better "economic health" than rural, non-metropolitan counties (Glasmeier and Fuellhart 1999). The major benefit of living in or near metropolitan areas is an increase in net income derived from commuting to other counties for work. Also, metropolitan areas have more jobs and diverse labor markets available to residents of metropolitan and adjacent counties (Glasmeier and Fuellhart 1999).

To conclude, the major finding of this report is the divergence between the core and the periphery of Central Appalachia. Counties in the south, eastern and western edges of the Central

Appalachian region showed the strongest economic growth while the core stagnated. Topography may partly explain the differences between the core and periphery. Rough terrain in the core makes the area more difficult to serve and may account for the absence of major highways or interstates running through the core. Areas that are difficult to serve consequently have less developable land.

Also, the ARC's "original economic development principle of 'concentrated public investments made in the region in areas where there is the greatest potential for future growth, and where the expected return on public dollars would be the greatest'" (Glasmeier and Fuellhart 1999) may have worked to the disadvantage of distressed core counties. ARC's strategy, which was practiced until 1981 when it was replaced by the Appalachian Regional Development Act, may have helped to amplify the distinction between the distressed core and the periphery by directing funds toward larger metropolitan areas and skirting the more rural and remote counties.

Lastly, extractive industries have become more efficient requiring less manpower, which translates into fewer jobs. Where extractive industries were once dominant employers, such as in the core of Appalachia, employment opportunities have declined. Expanding the presence of other employment industries in these areas is desirable but this requires infrastructure development and developable land, which may be impeded by the terrain in the core area of Appalachia.

Recommendations

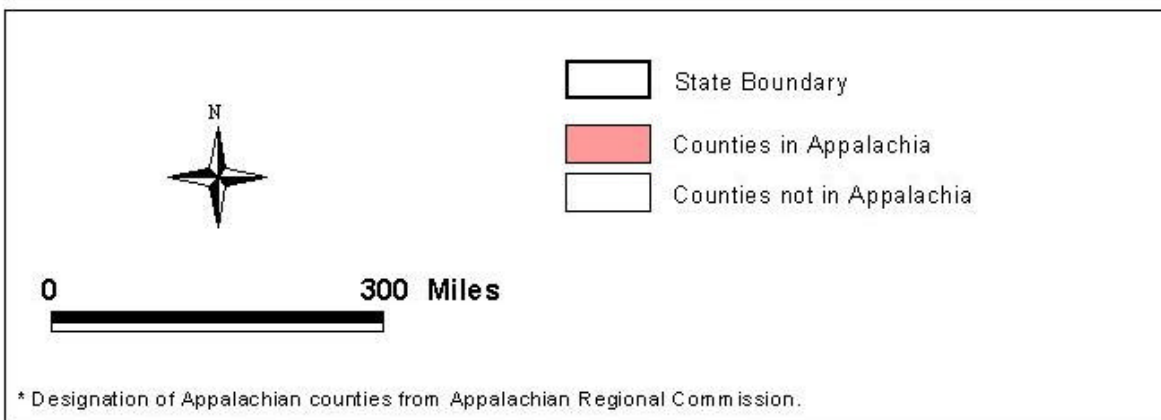
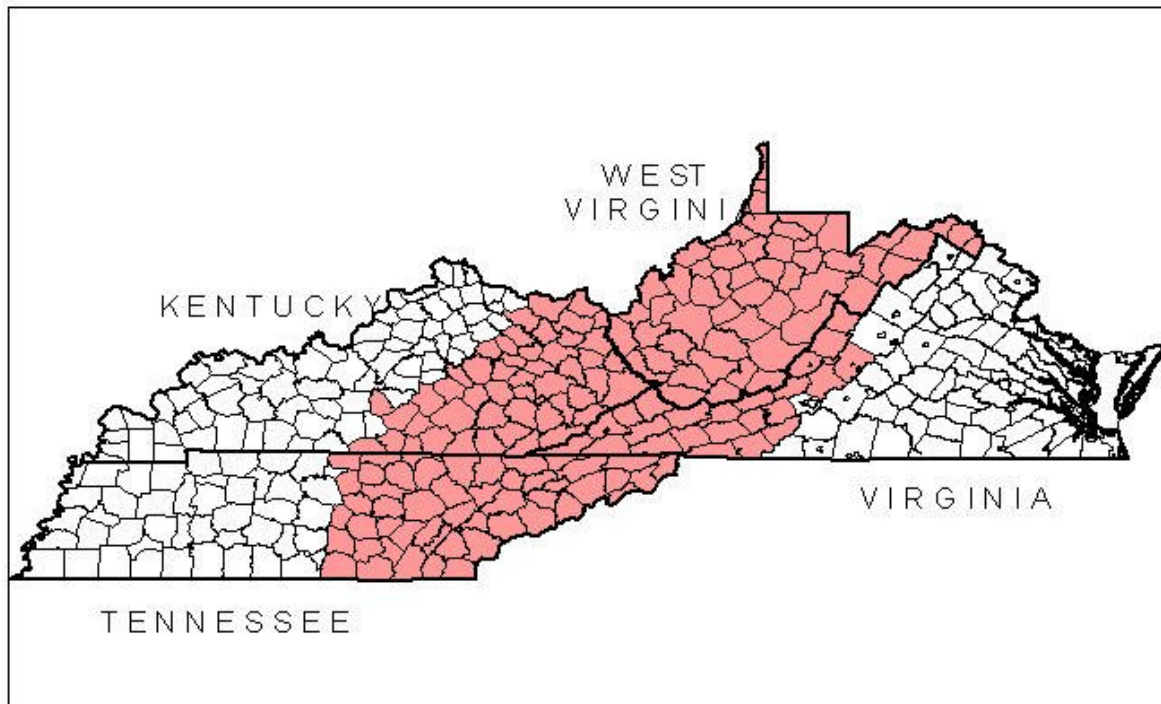
- Housing production will not be a driving force of development in the core but should compliment economic development that builds on the qualities of the area such as tourism and recreation. Housing production should be tailored to serve the needs of the labor force that these economic activities will attract.
- Economic development should include cost efficient building solutions for future development on rugged terrain in the core.
- A potentially negative impact of homeownership on labor mobility should be taken into consideration when designing housing programs in the core.
- There are social obligations to low-income residents of the core that, for a variety of reasons, will not relocate. Subsidized housing for low-income residents in the core needs to be

developed with emphasis on the physical durability of the unit as well as the long-term appeal of the site.

- The success of economic development in the periphery now poses challenges for "smart growth" and "fair growth". In some metropolitan and suburban counties, land planning is needed to control sprawl as well as to protect and promote affordable housing. Low-income residents are negatively affected by the growing demand for housing in these counties and sufficient, affordable housing must be developed for all groups.

Appendix A- Maps 1-32

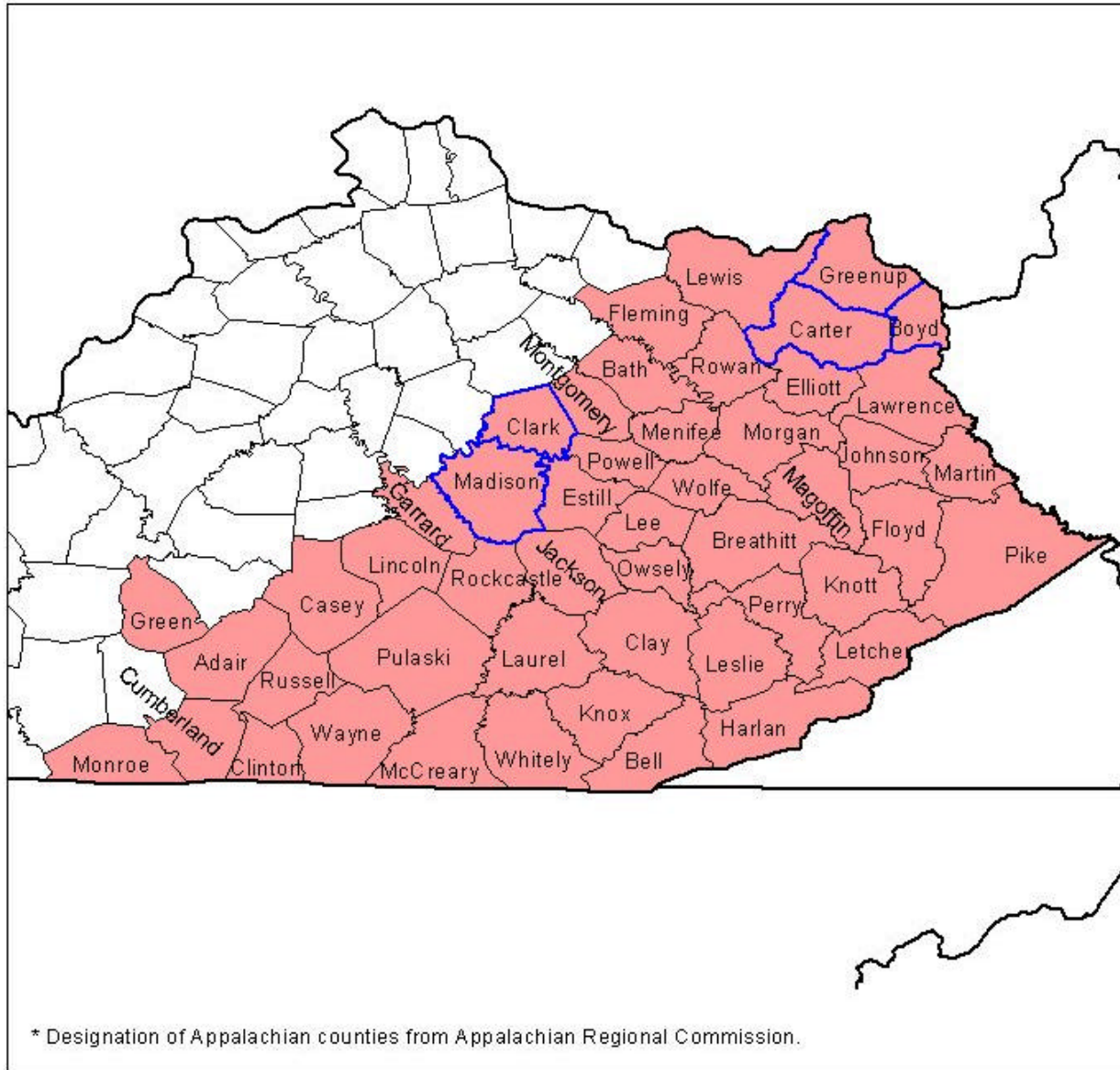
Appalachian Counties in Kentucky, Tennessee, Virginia and West Virginia



| <u>Kentucky</u> | <u>Tennessee</u> | <u>Virginia</u> |
|-----------------|------------------|------------------------|
| Adair | Anderson | Alleghany |
| Bath | Bledsoe | Bath |
| Bell | Blount | Bland |
| Boyd | Bradley | Botetourt |
| Breathitt | Campbell | Buchanan |
| Carter | Cannon | Carroll |
| Casey | Carter | Craig |
| Clark | Claiborne | Dickenson |
| Clay | Clay | Floyd |
| Clinton | Cooke | Giles |
| Cumberland | Coffee | Grayson |
| Elliott | Cumberland | Highland |
| Estill | De Kalb | Lee |
| Fleming | Fentress | Montgomery |
| Floyd | Franklin | Pulaski |
| Garrard | Grainger | Rockbridge |
| Green | Greene | Russell |
| Greenup | Grundy | Scott |
| Harlan | Hamblen | Smyth |
| Jackson | Hamilton | Tazewell |
| Johnson | Hancock | Washington |
| Knott | Hawkins | Wise |
| Knox | Jackson | Wythe |
| Laurel | Jefferson | |
| Lawrence | Johnson | <u>Virginia Cities</u> |
| Lee | Knox | Bristol |
| Leslie | Loudon | Buena Vista |
| Letcher | McMinn | Clifton Forge |
| Lewis | Macon | Covington |
| Lincoln | Marion | Galax |
| McCreary | Meigs | Lexington |
| Madison | Monroe | Norton |
| Magoffin | Morgan | Radford |
| Martin | O'Verton | |
| Menifee | Pickett | |
| Monroe | Polk | |
| Montgomery | Putnam | <u>West Virginia</u> |
| Morgan | Rhea | All counties |
| Owsley | Roane | |
| Perry | Scott | |
| Pike | Sequatchie | |
| Powell | Sevier | |
| Pulaski | Smith | |
| Rockcastle | Sullivan | |
| Rowan | Unicoi | |
| Russell | Union | |
| Wayne | Van Buren | |
| Whitely | Warren | |
| Wolfe | Washington | |
| | White | |

M-1

Kentucky Counties in Appalachia



-  State Boundary
-  Kentucky Counties in Appalachia
-  Kentucky Counties not in Appalachia
-  Metropolitan Counties

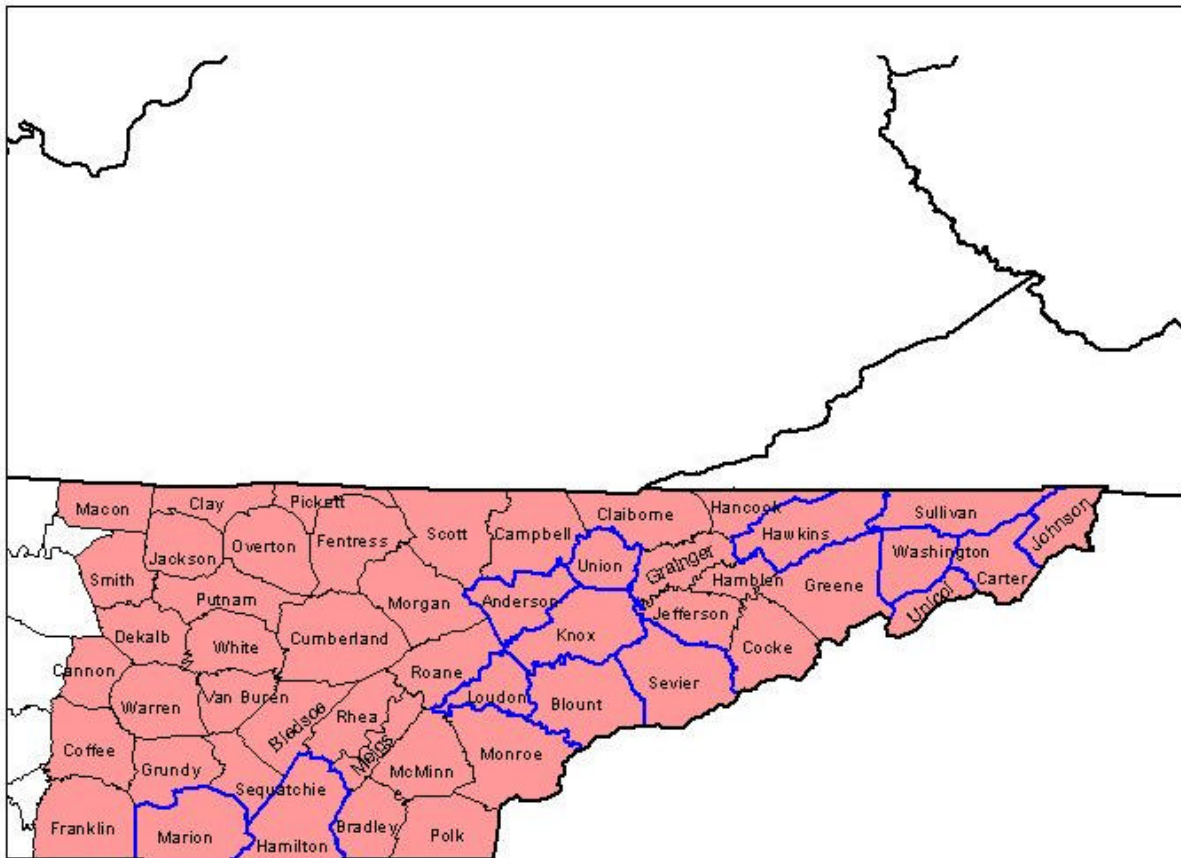






0  70 Miles

M-2

* Designation of Appalachian counties from Appalachian Regional Commission.

Tennessee Counties in Appalachia



-  State Boundary
-  Tennessee Counties in Appalachia
-  Tennessee Counties not in Appalachia
-  Metropolitan Counties

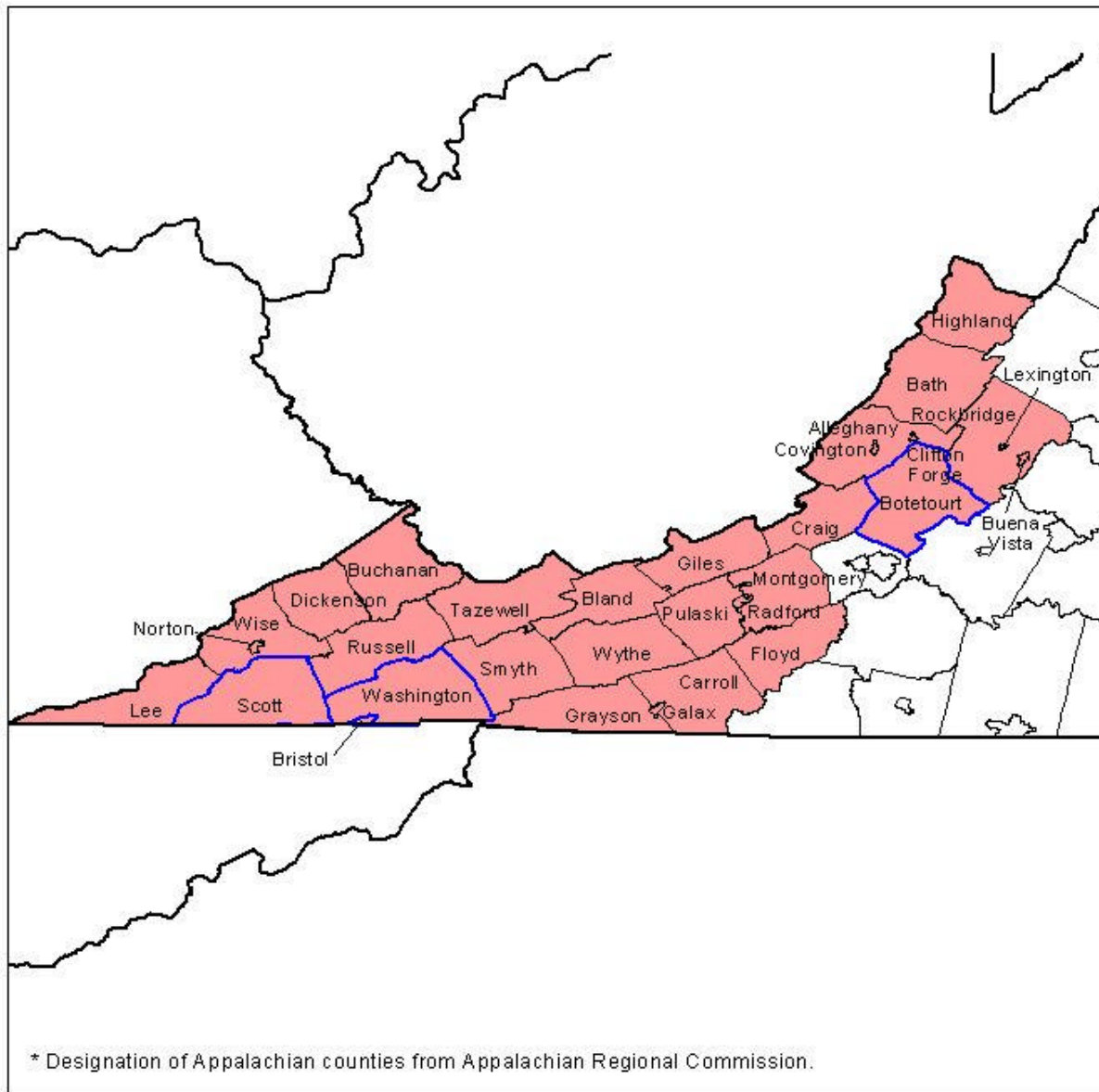


0  90 Miles

* Designation of Appalachian counties from Appalachian Regional Commission.

M-3

Virginia Counties and Cities in Appalachia



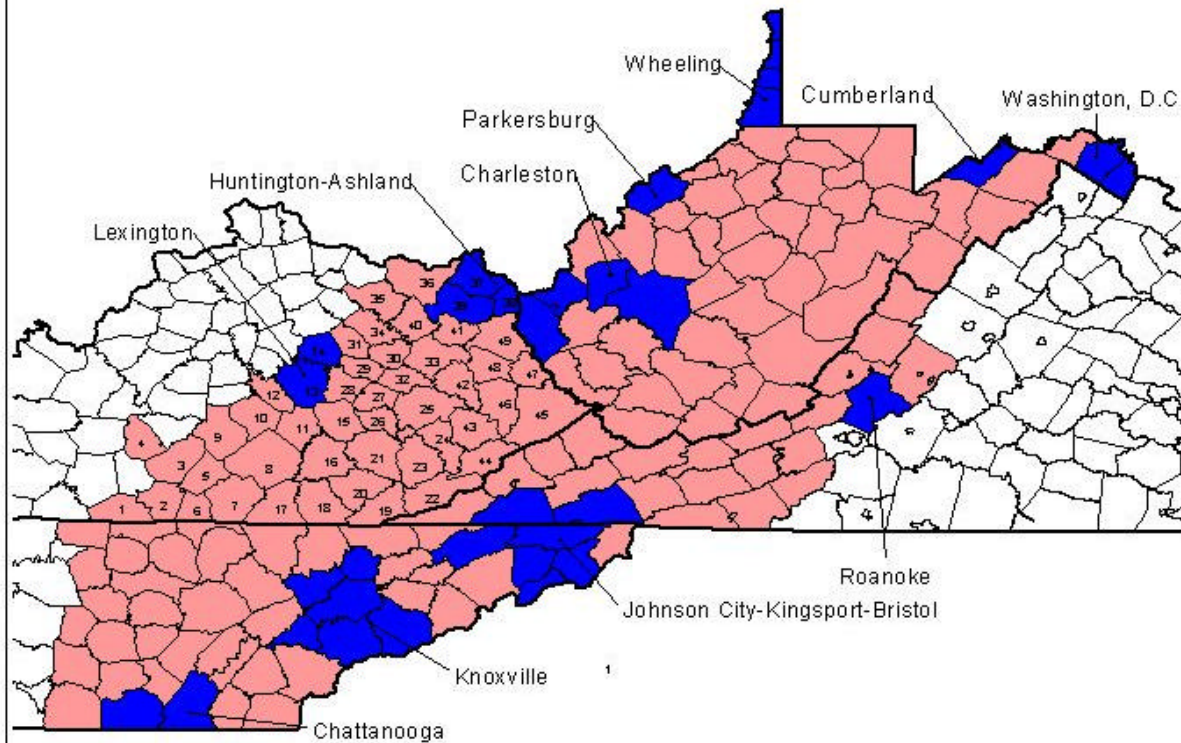
- State Boundary
- Virginia Counties and Cities in Appalachia
- Virginia Counties and Cities not in Appalachia
- Metropolitan Counties



0 80 Miles

M-4


Metropolitan Counties in Appalachia



-  State Boundary
-  Metropolitan Counties in Appalachia
-  Non-metropolitan Counties in Appalachia
-  Counties not in Appalachia



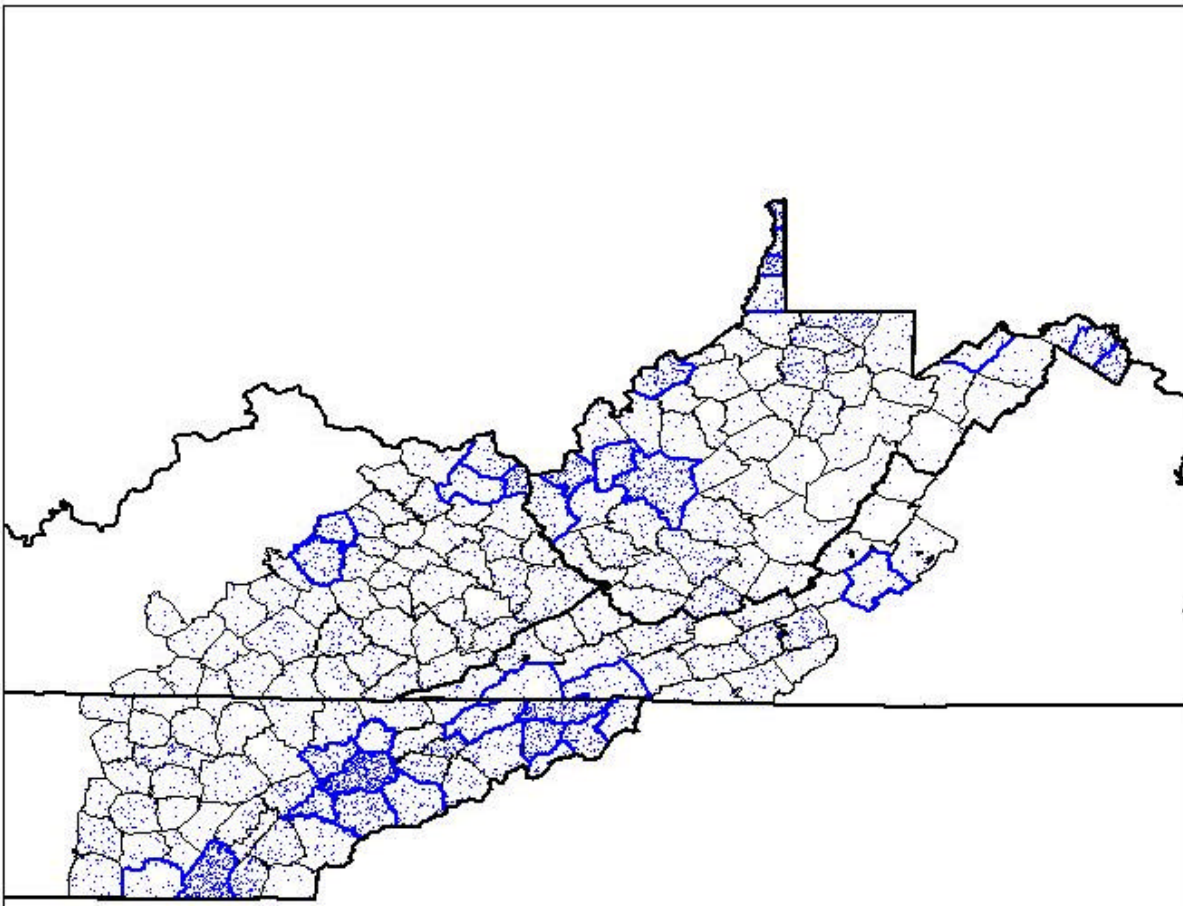
0 100 Miles



* Metropolitan designations from U.S. Census Bureau 1999 population estimates.

M-6

Total Households - 2000



- State Boundary
- Metropolitan Counties in Appalachia
- = 400 Households

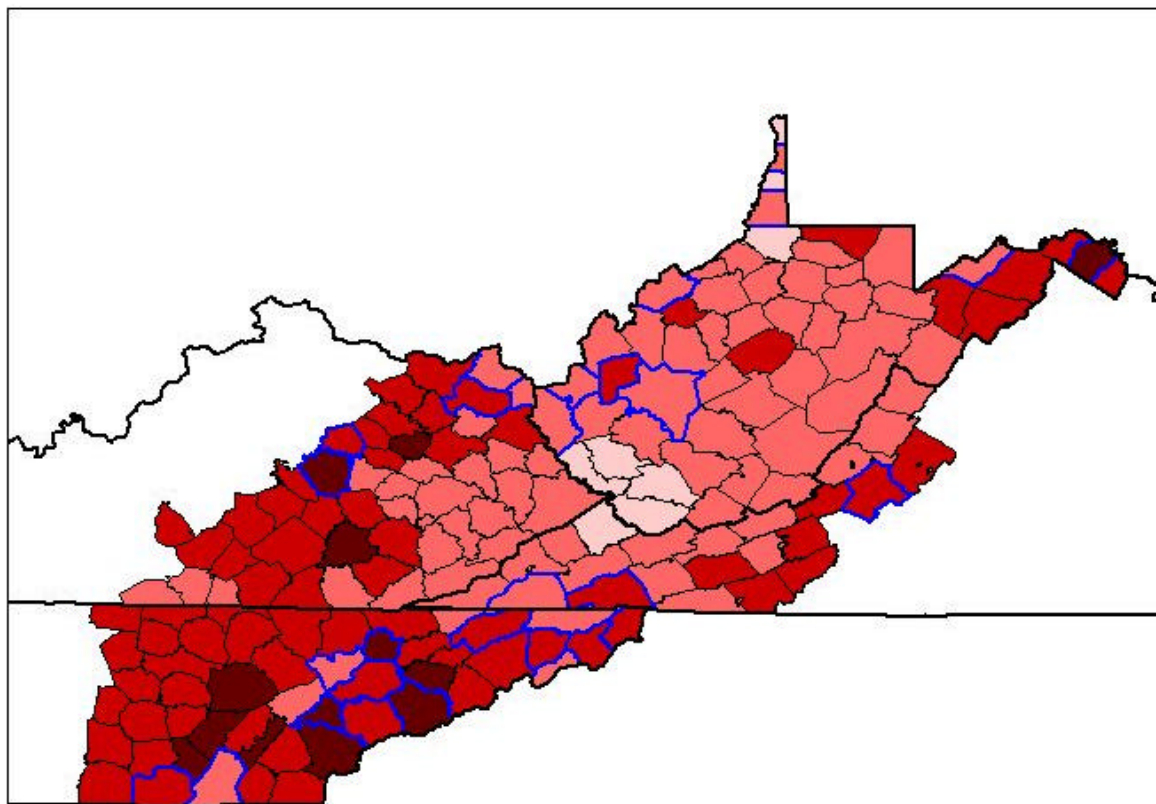
Total Households in U.S.: 105,480,101



M-7

* Designation of Appalachian counties from Appalachian Regional Commission.
* Metropolitan designation from U.S. Census 1999 population estimates.
* Data compiled from 2000 U.S. Census.

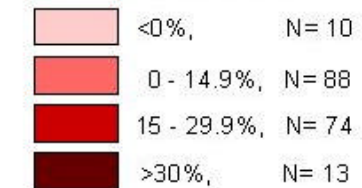
Percent Change in Total Households 1990 - 2000



State Boundary

Metropolitan Counties in Appalachia

Percent Change in Total Households



Percent Change in Total Households
for U.S., 1990 to 2000 = 14.7%

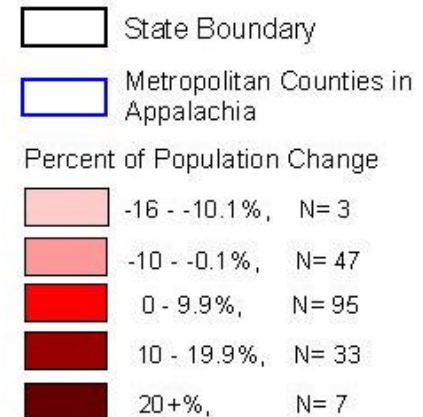
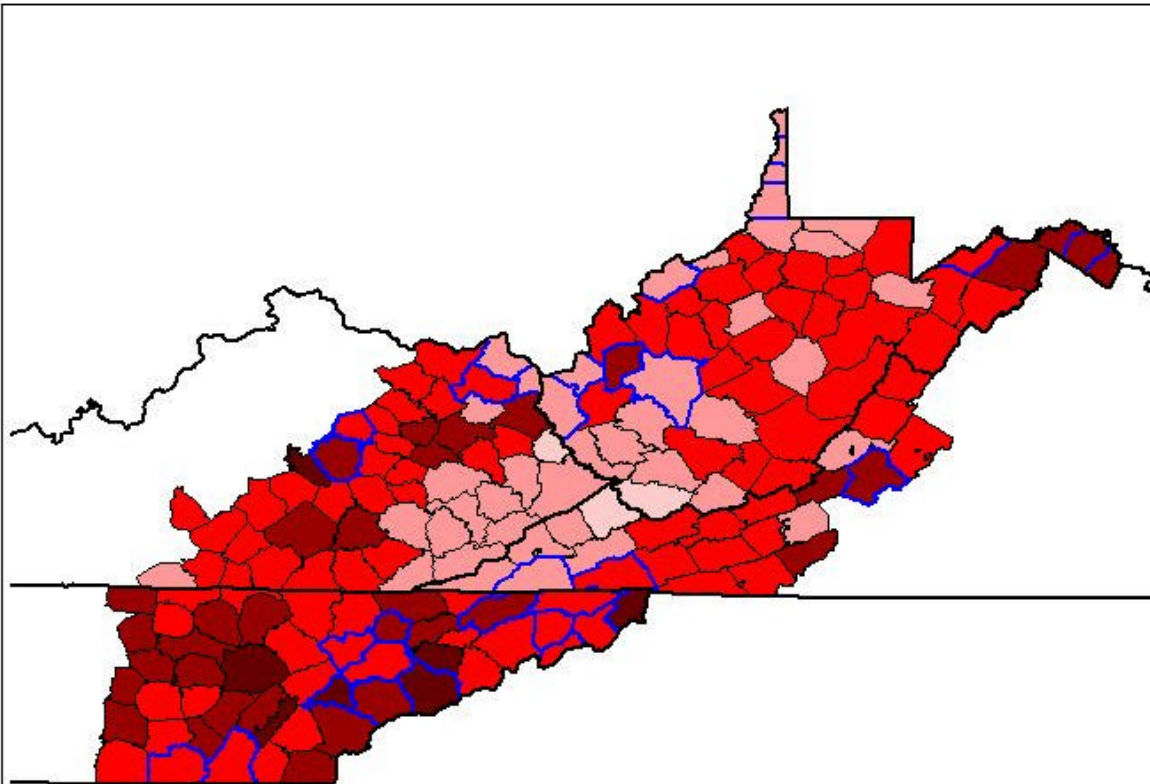


0 200 Miles

M-8

* Designation of Appalachian counties from Appalachian Regional Commission.
* Metropolitan designation from U.S. Census 1999 population estimates.
* Data compiled from 1990 and 2000 U.S. Census.

Population Change from Migration 1990 to 1999



Population Change from Migration
for U.S. = 3.0%



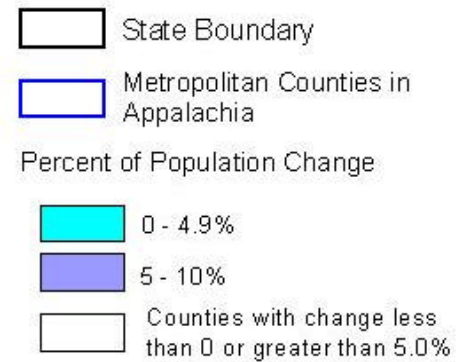
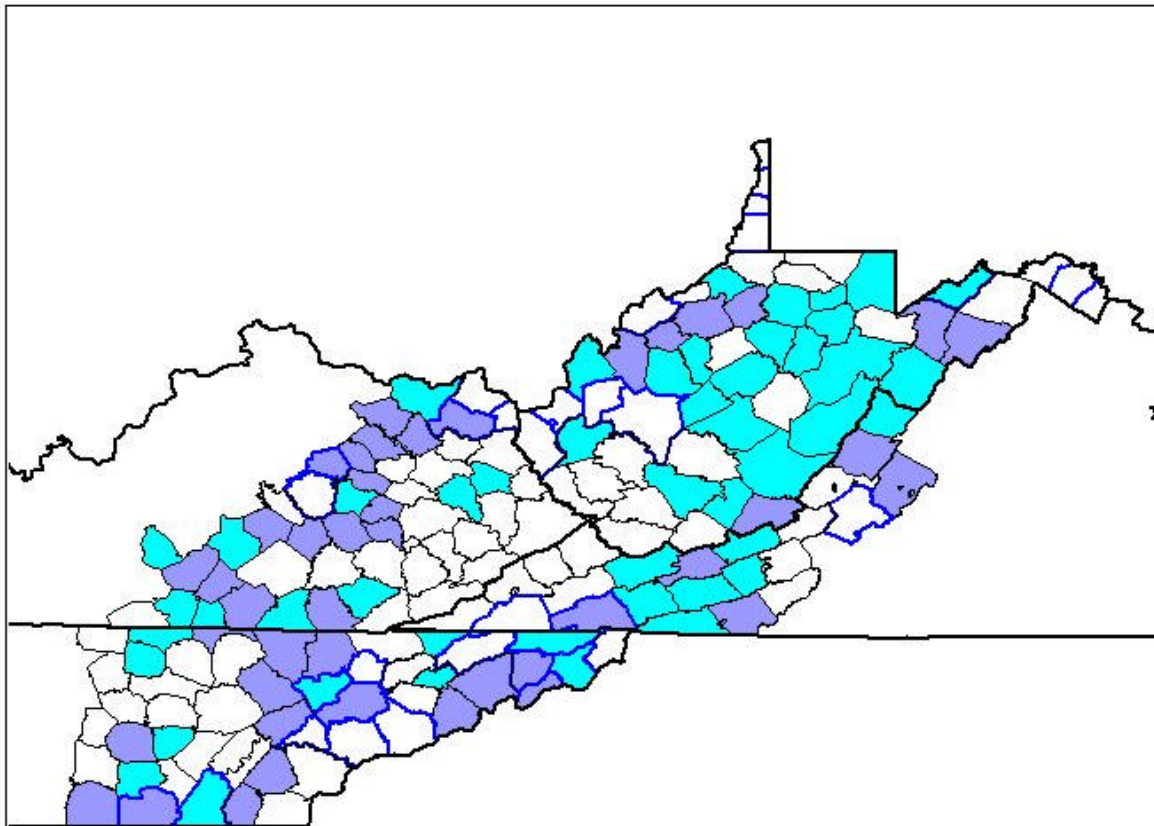
0 200 Miles

M-9

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from U.S. Census 1999 population estimates.

Population Change from Migration, Map 2

1990 to 1999



Population Change from Migration
for U.S. = 3.0%

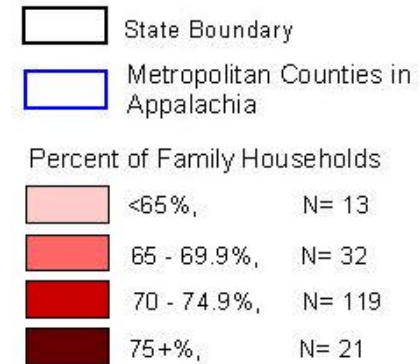
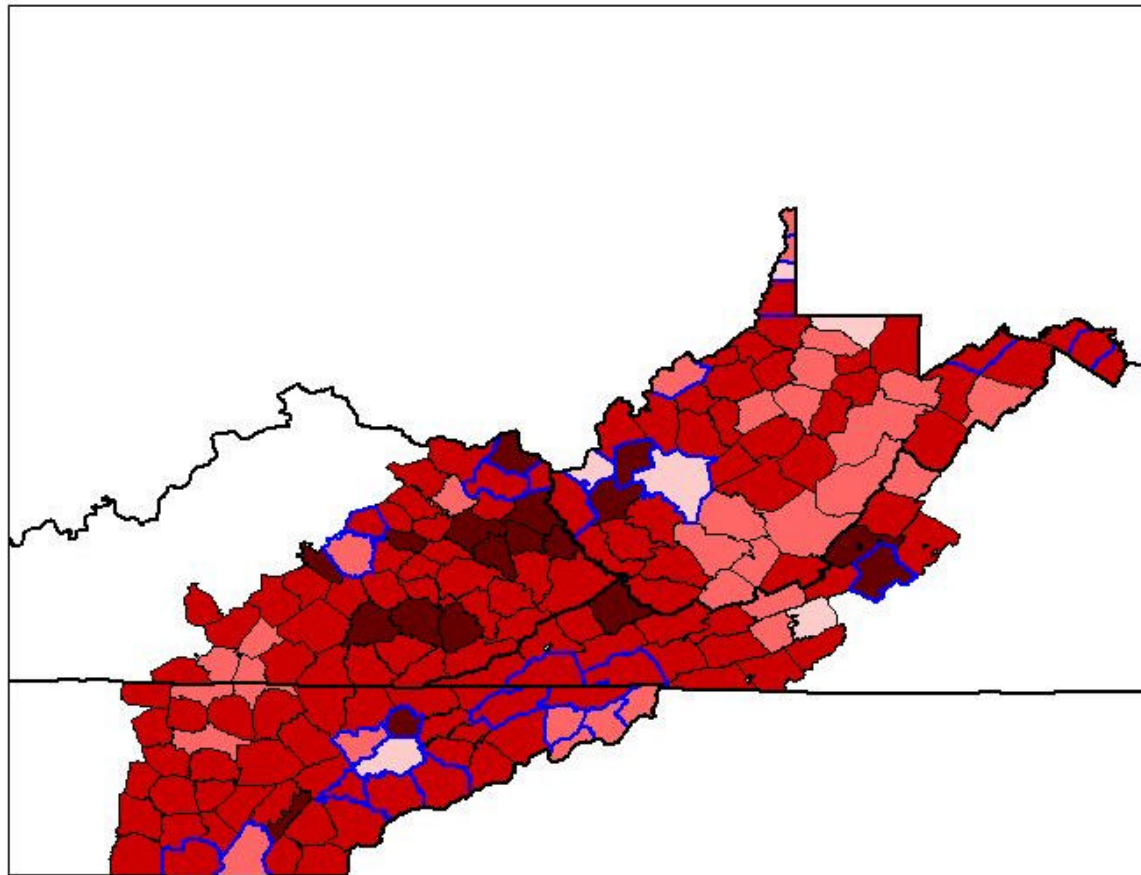


0 200 Miles

M-10

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from U.S. Census 1999 population estimates.

Percent of Family Households, 2000



Percent Family Households
for U.S. = 68.1%

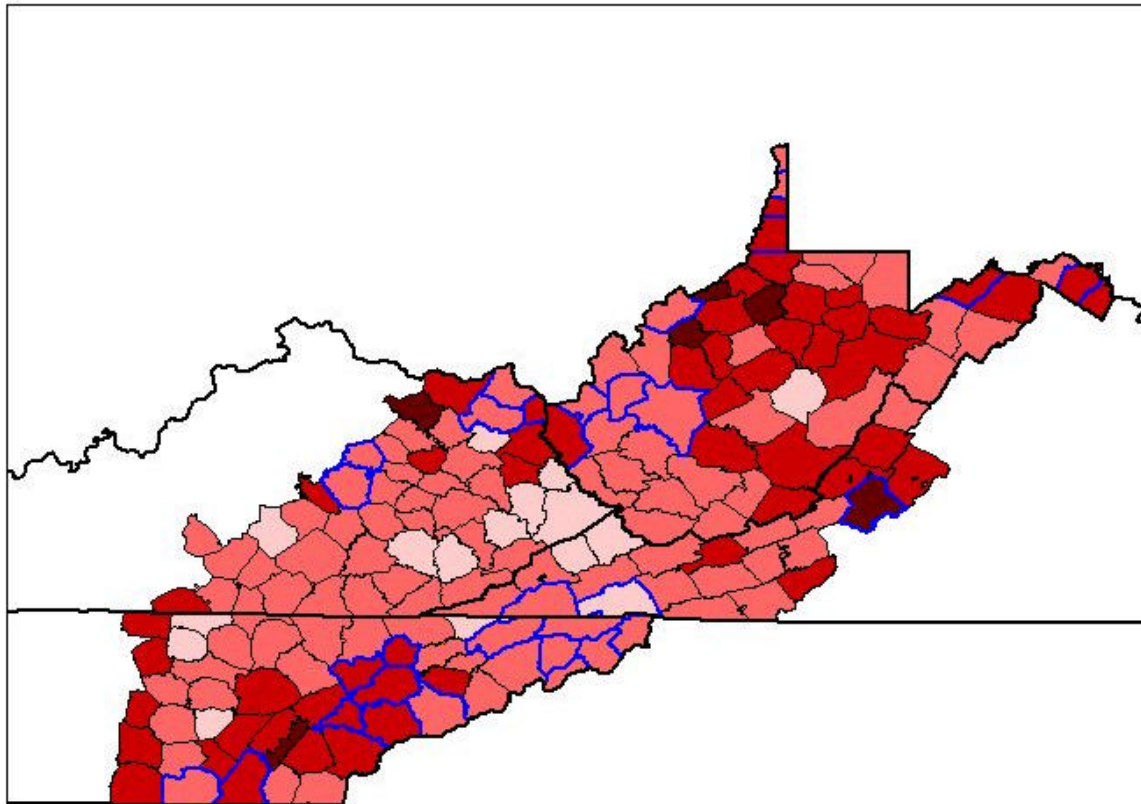


0 200 Miles

M-11

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from 2000 U.S. Census.

Change in the Family Households Index 1990 - 2000



- State Boundary
- Metropolitan Counties in Appalachia

Change in the Family Households Index



Change in the Family Households Index
for U.S., 1990 to 2000 = -2.1

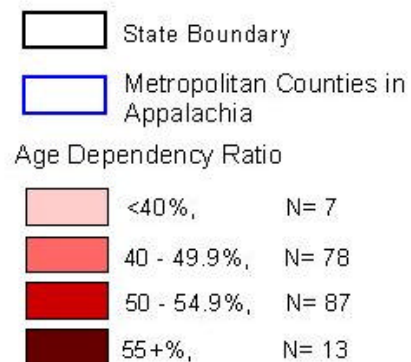
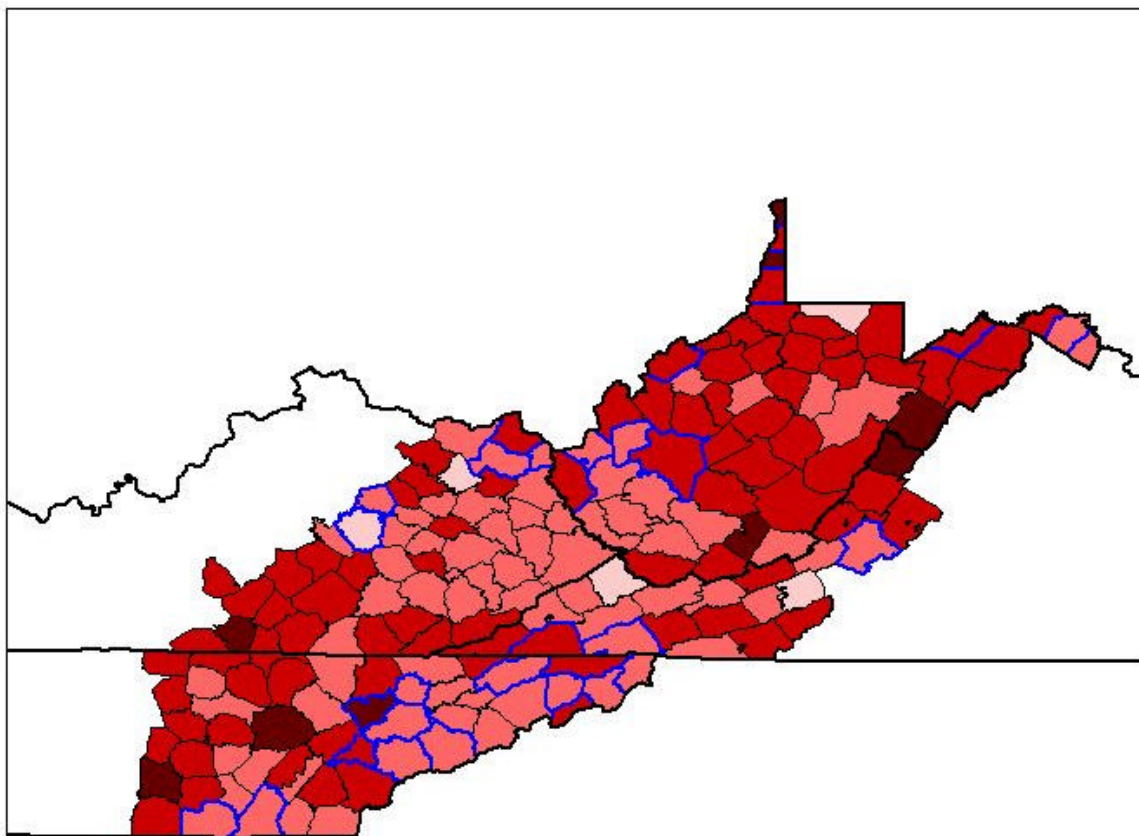


0 200 Miles

M-12

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from 1990 and 2000 U.S. Census.

Age Dependency Ratio, 2000

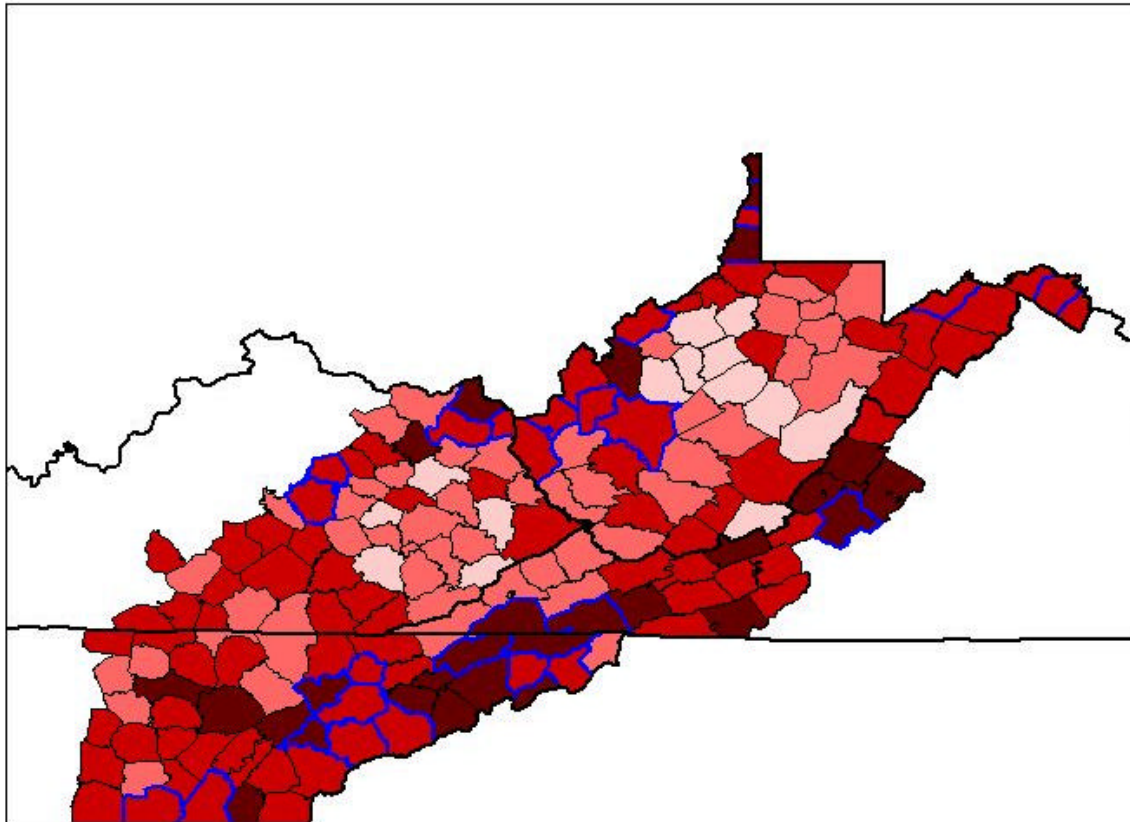


Age Dependency Ratio for U.S. = 51.2%




* Designation of Appalachian counties from Appalachian Regional Commission.
* Metropolitan designation from U.S. Census 1999 population estimates.
* Data compiled from 2000 U.S. Census.

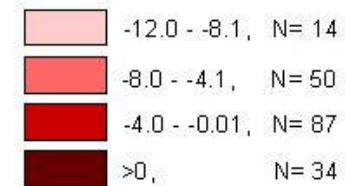
Change in the Age Dependency Ratio Index 1990 - 2000



 State Boundary

 Metropolitan Counties in Appalachia

Change in Age Dependency Ratio Index



Change in the Age Dependency Ratio Index for U.S., 1990 to 2000 = -0.5

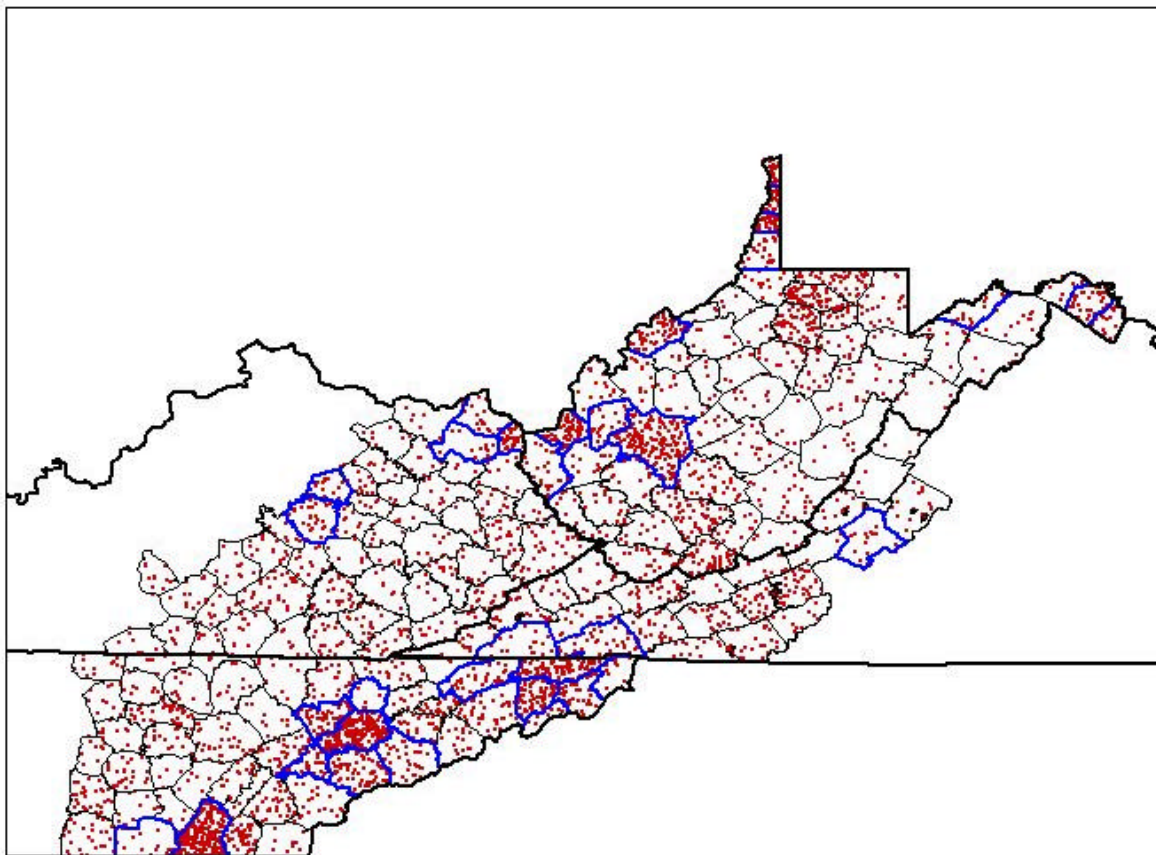


0  200 Miles

M-14

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from 1990 and 2000 U.S. Census.

Persons over Age 80 - 2000



- State Boundary
- Metropolitan Counties in Appalachia

Persons over Age 80

• = 50 Persons



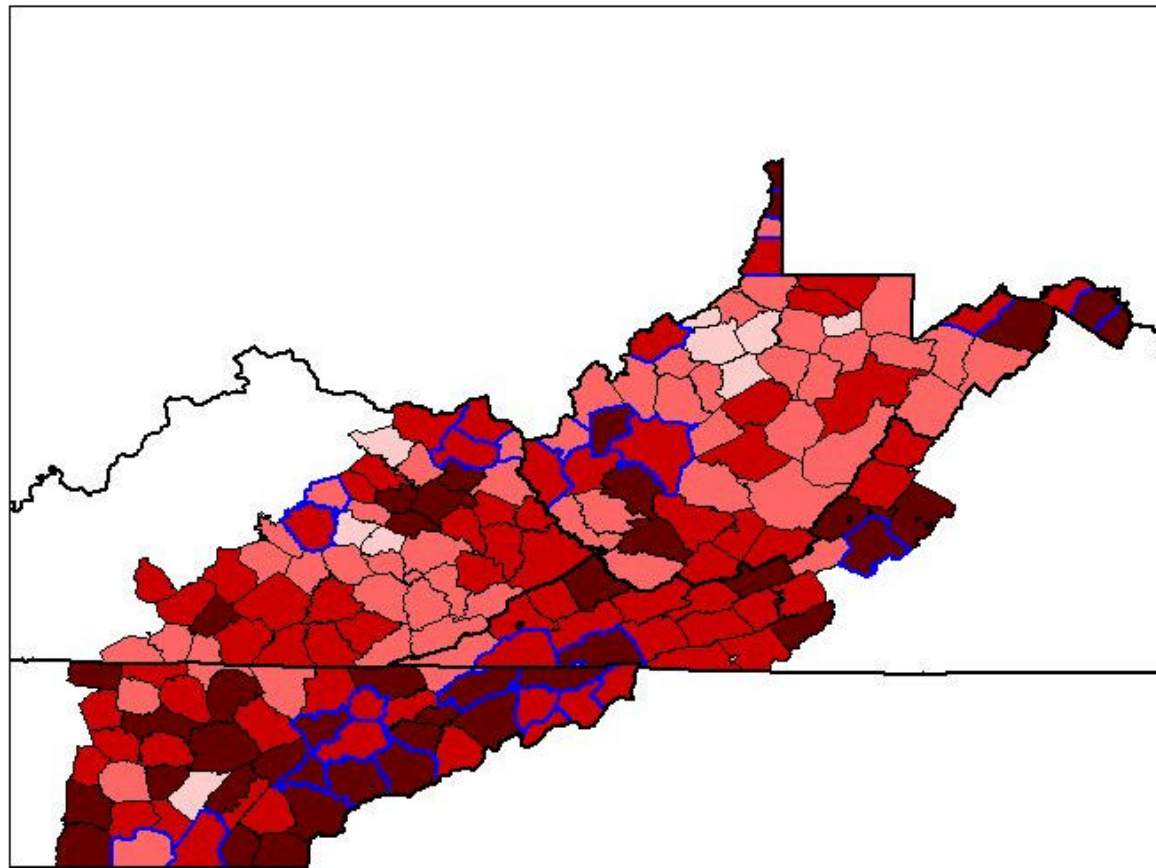
0 200 Miles





M-15





* Designation of Appalachian counties from Appalachian Regional Commission.
* Metropolitan designation from U.S. Census 1999 population.
* Data compiled from 2000 U.S. Census.

Change in Persons over Age 80 Index 1990 - 2000



-  State Boundary
-  Metropolitan Counties in Appalachia

Percent Change in Persons over Age 80 Index

-  <0%, N= 11
-  0 - 14.9%, N= 56
-  15 - 29.9%, N= 74
-  30+%, N= 44

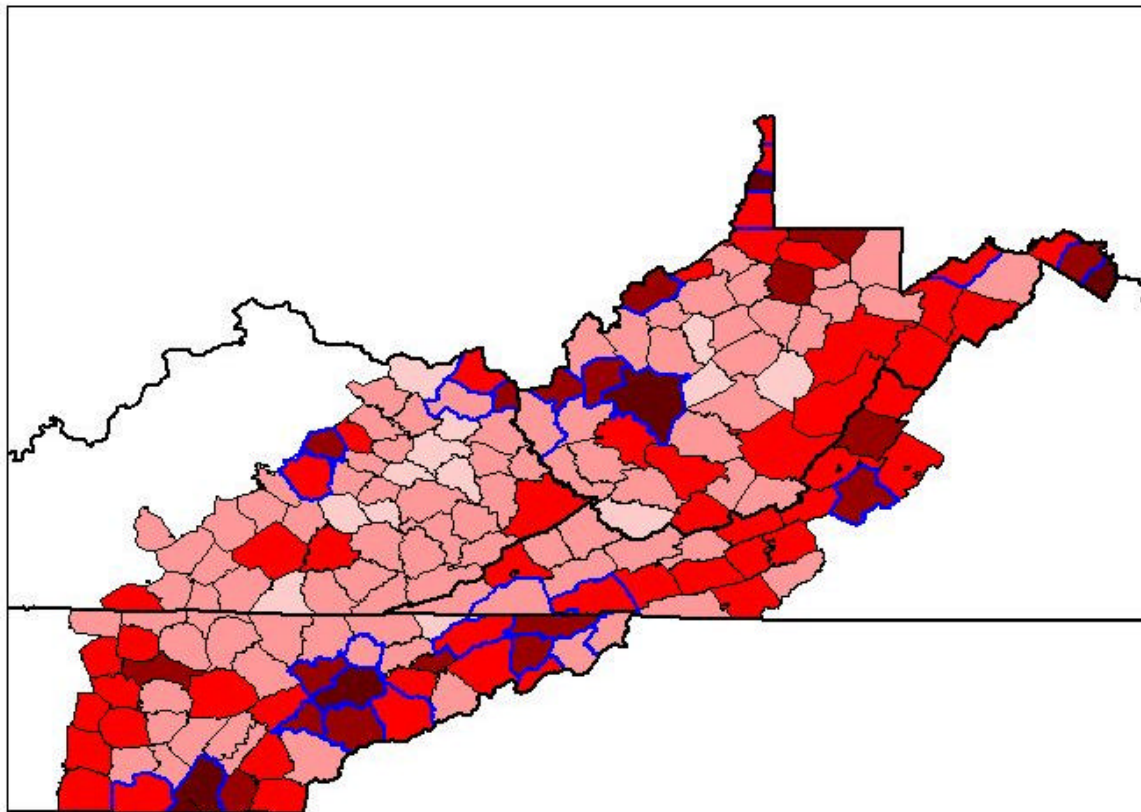
Percent Change in Persons over Age 80 Index for U.S., 1990 to 2000 = 31%



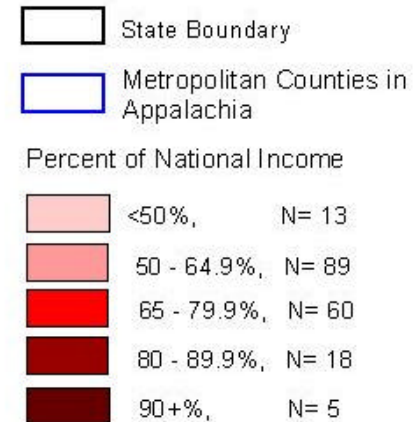
M-16

* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan designation from U.S. Census population estimates for 1999.
 * Data compiled from 1990 and 2000 U.S. Census.

County Income as a Percent of National Income, 1999



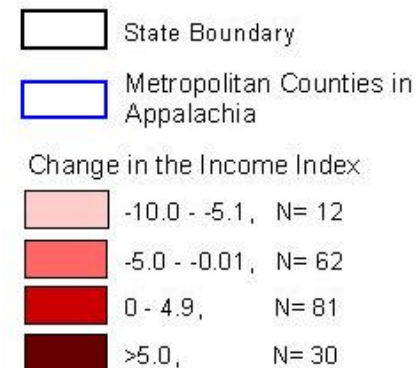
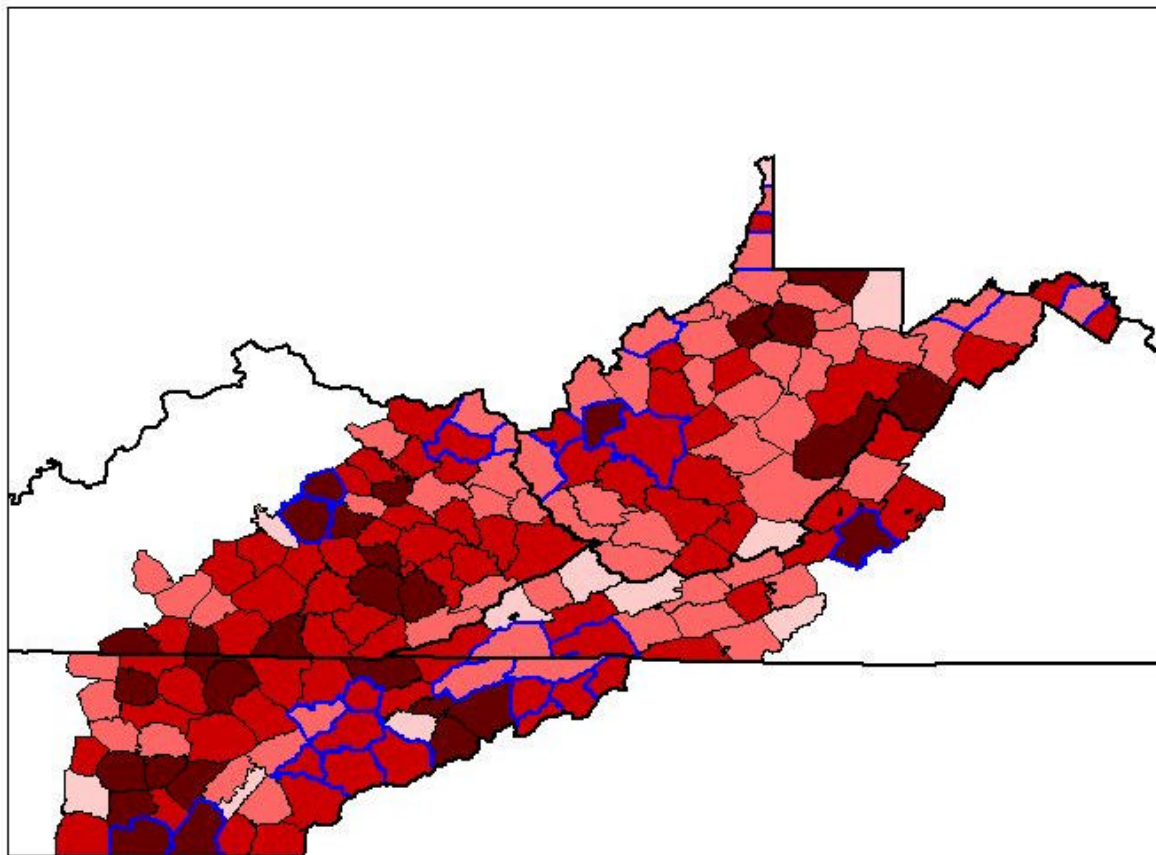
Hamilton County, 103.9%



M-17

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Economic Analysis.

Change in the Income Index 1989 - 1999

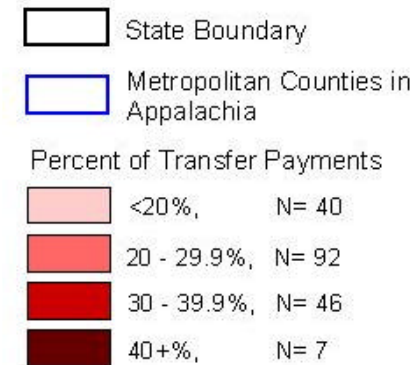
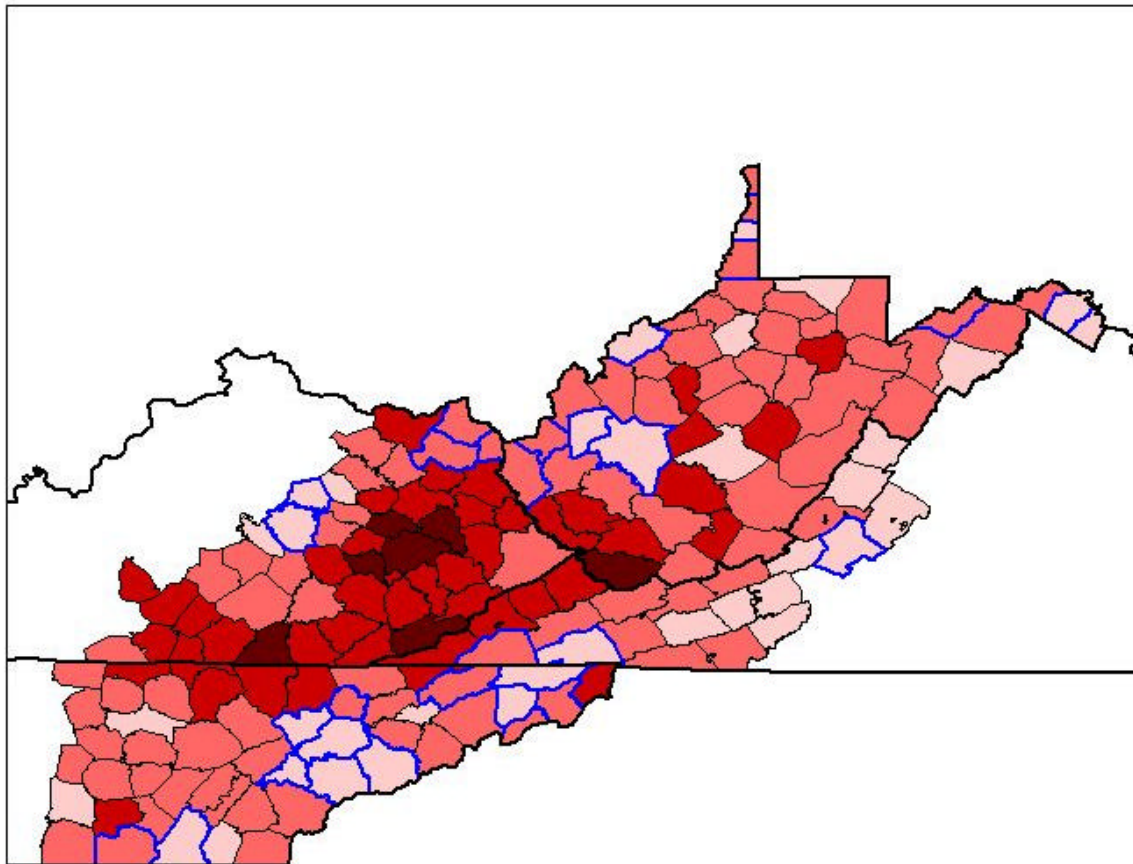


0 200 Miles

M-18

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Economic Analysis.

Percent of Transfer Payments, 1999



Percent of Transfer Payments
for U.S. = 13.1%

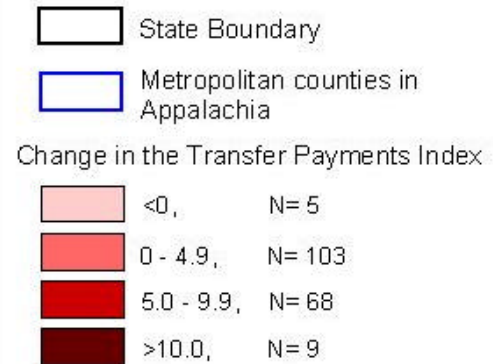
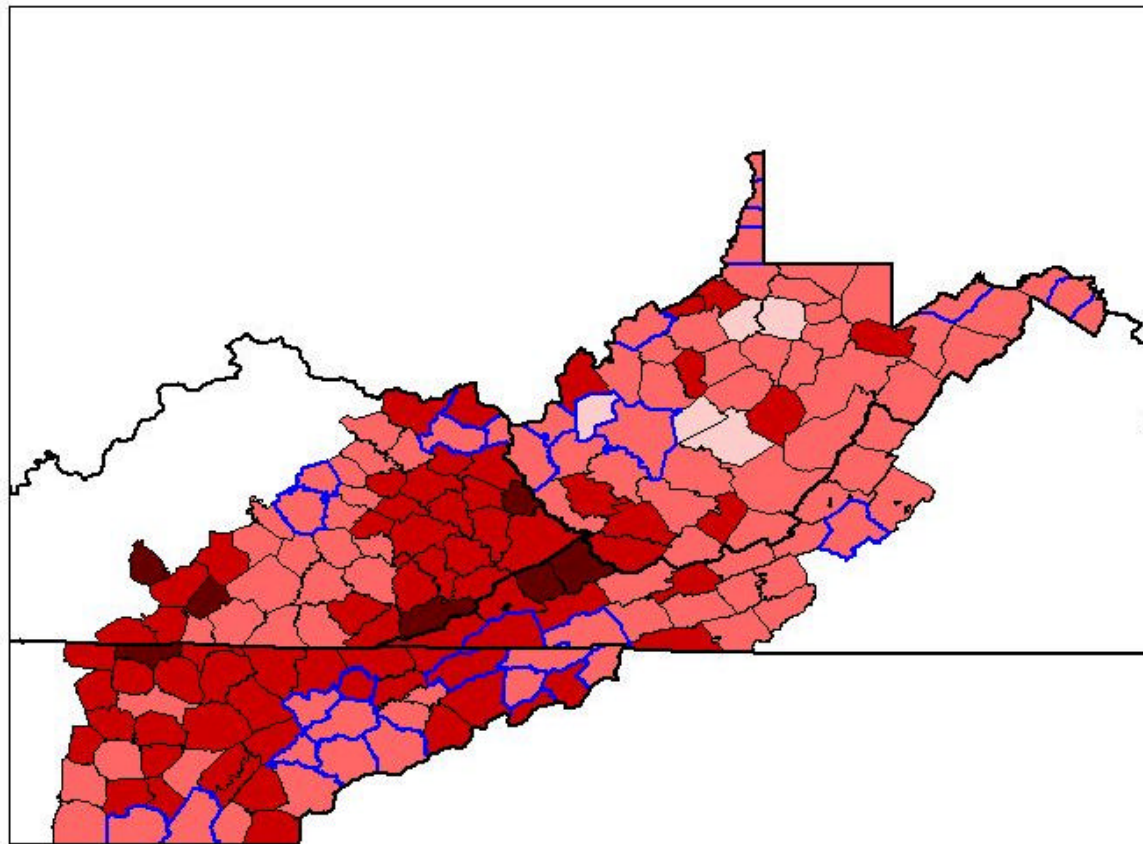


0 200 Miles

M-19

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Economic Analysis (Transfer payments as a percent of personal income).

Change in the Transfer Payments Index 1989 - 1999



Change in the Transfer Payments Index for U.S., 1989 to 1999 = 1.3

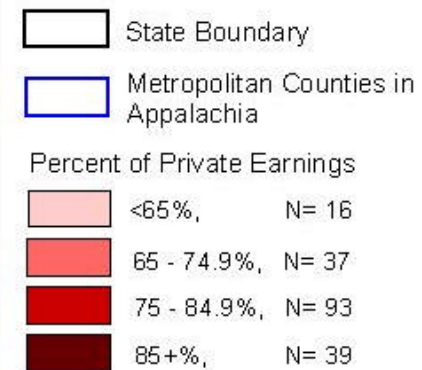
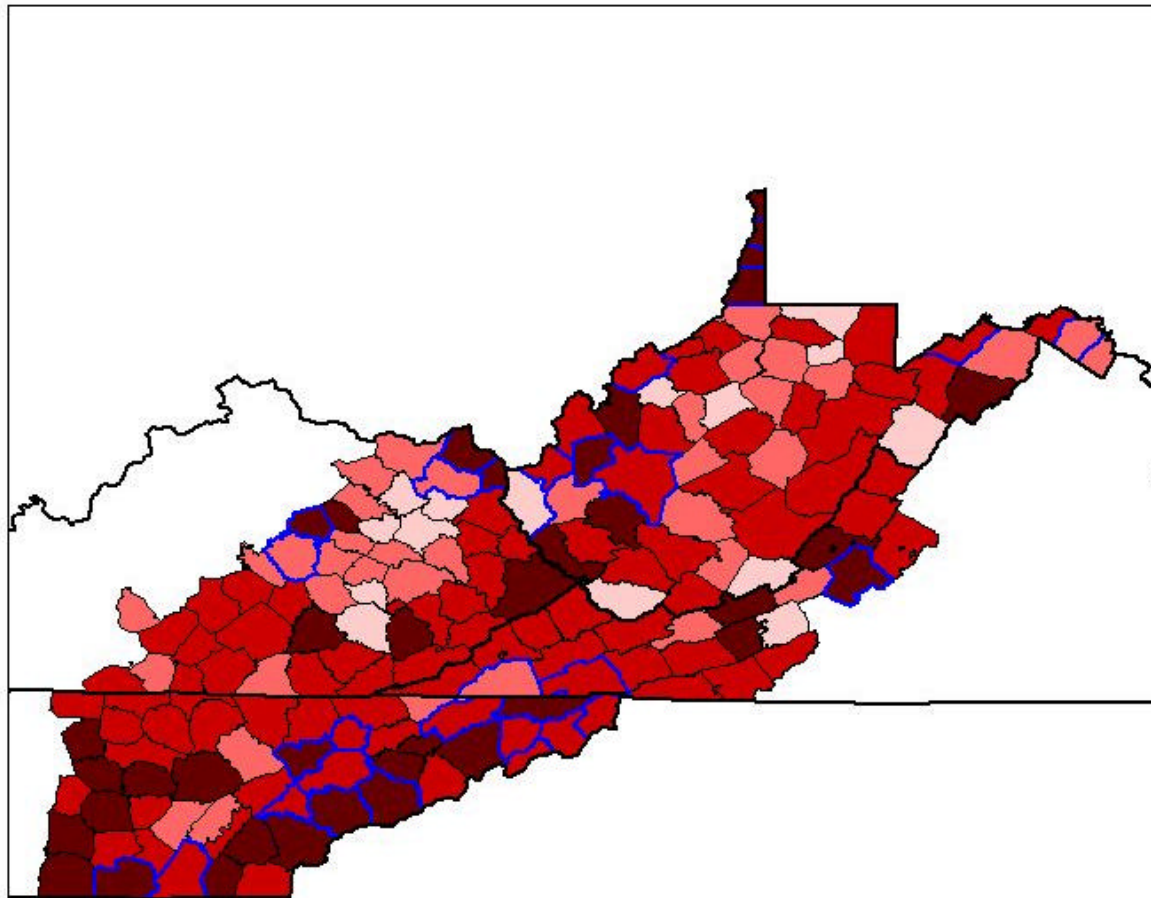


0 200 Miles

M-20

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Economic Analysis (Transfer payments as a percent of personal income).

Percent of Private Earnings, 1999



Percent Private Earnings for U.S. = 84.0%

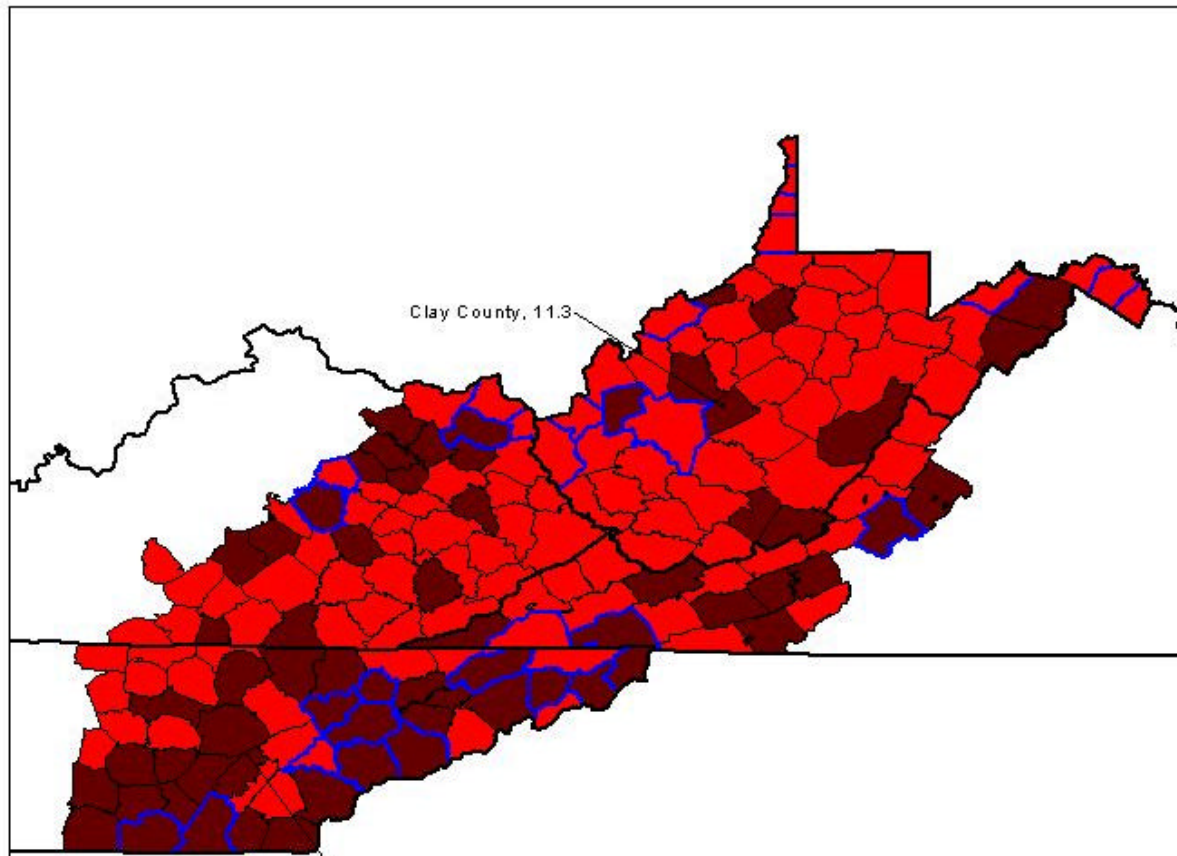


0 200 Miles

M-21

- * Appalachian designation from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Economic Analysis (Private earnings as a percent of non-farm earnings).

Change in the Private Earnings Index 1989 - 1999



State Boundary

Metropolitan Counties in
Appalachia

Change in the Private Earnings Index

<0, N= 115
>0, N= 70

Change in the Private Earnings Index
for U.S., 1989 to 1999 = 2.0

Clay County, 11.3

Rhea County, 17.7

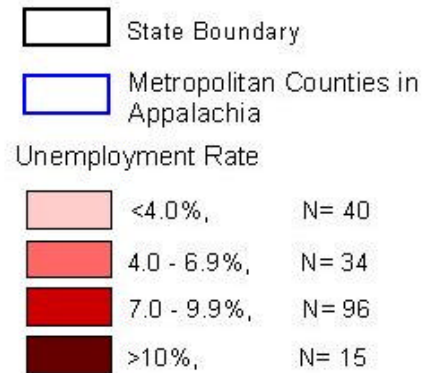
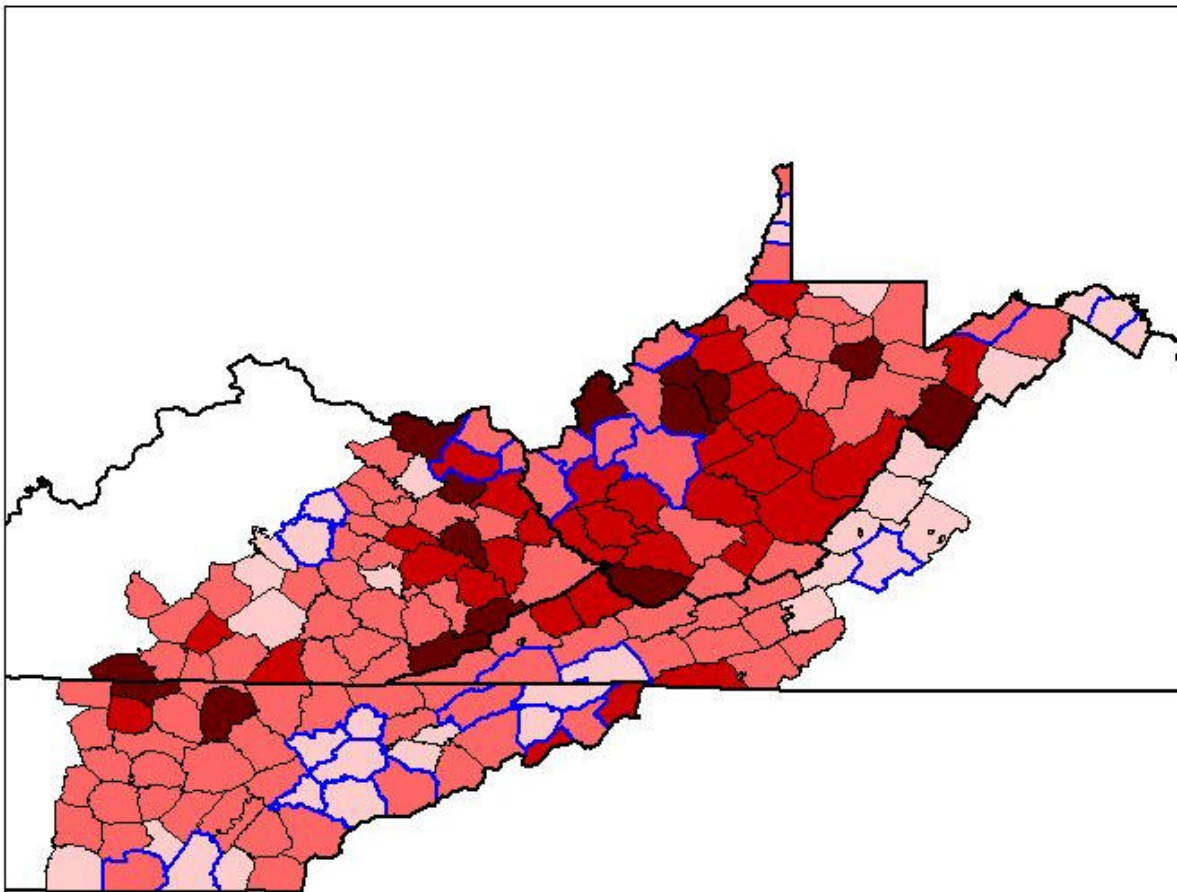
* Designation of Appalachian counties from Appalachian Regional Commission.
* Metropolitan designation from U.S. Census 1999 population estimates.
* Data compiled from Bureau of Economic Analysis (Private earnings as a percent of non-farm earnings).



0 200 Miles

M-22

Unemployment Rate, 2000



Unemployment Rate for U.S. = 4.0%

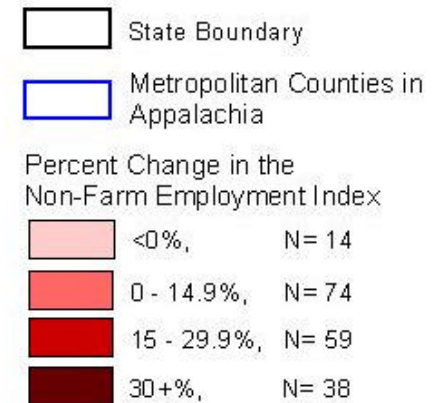
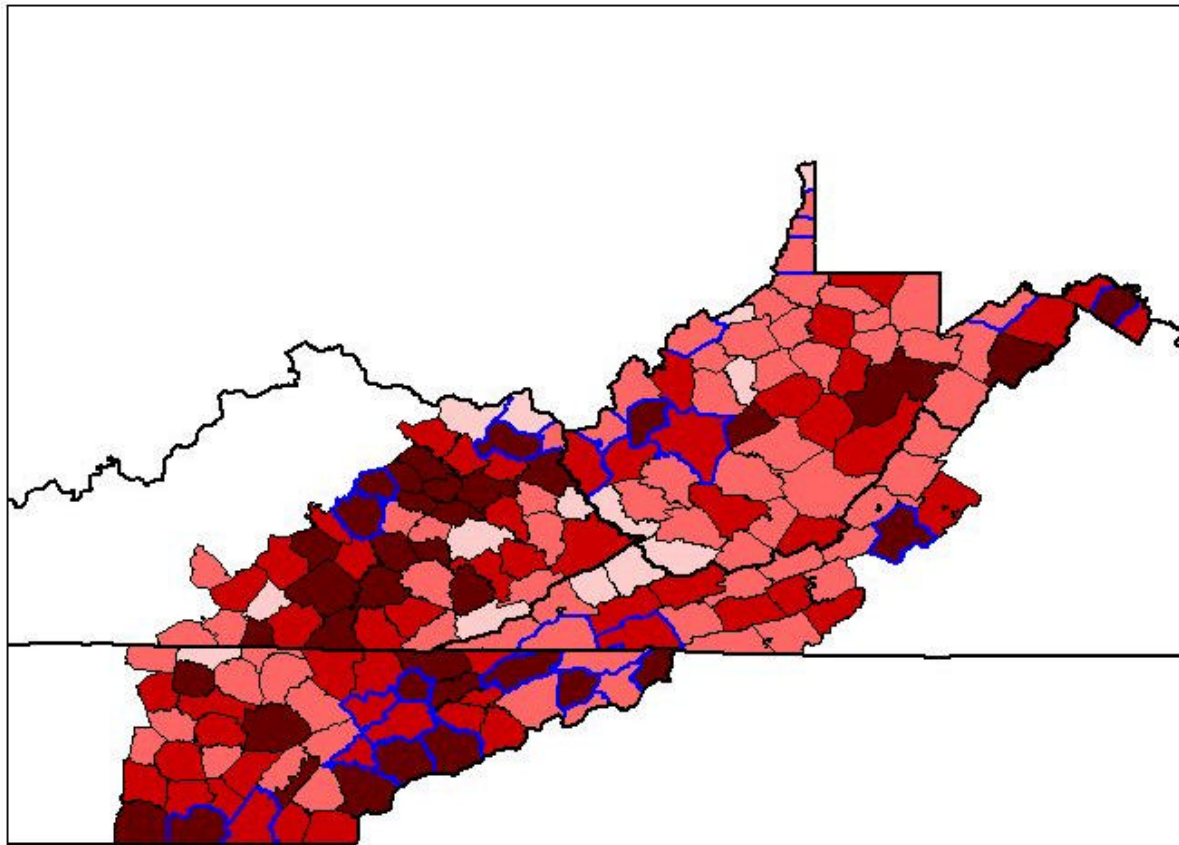


0 200 Miles

M-23

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Labor Statistics 2000 Local Area Unemployment Statistics.

Percent Change in Non-Farm Employment 1989 - 1999



Percent Change in the Non-Farm Employment Index for U.S., 1989 to 1999 = 19.8%



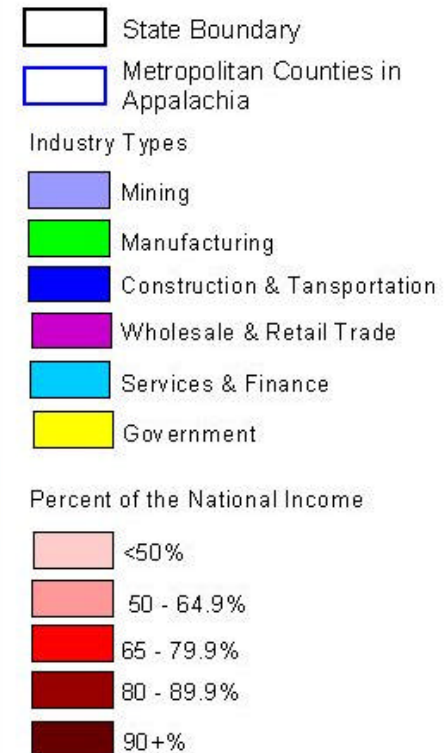
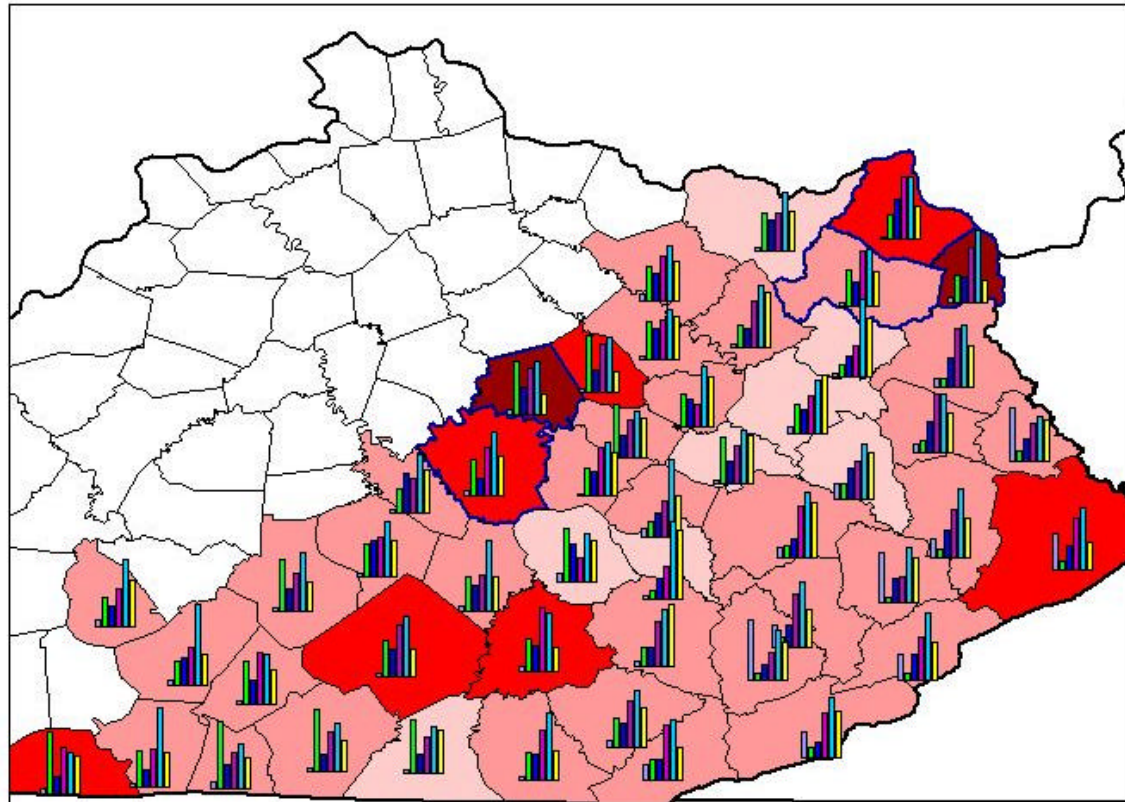
0 200 Miles

M-24

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from Bureau of Economic Analysis.

Major Employment Industries

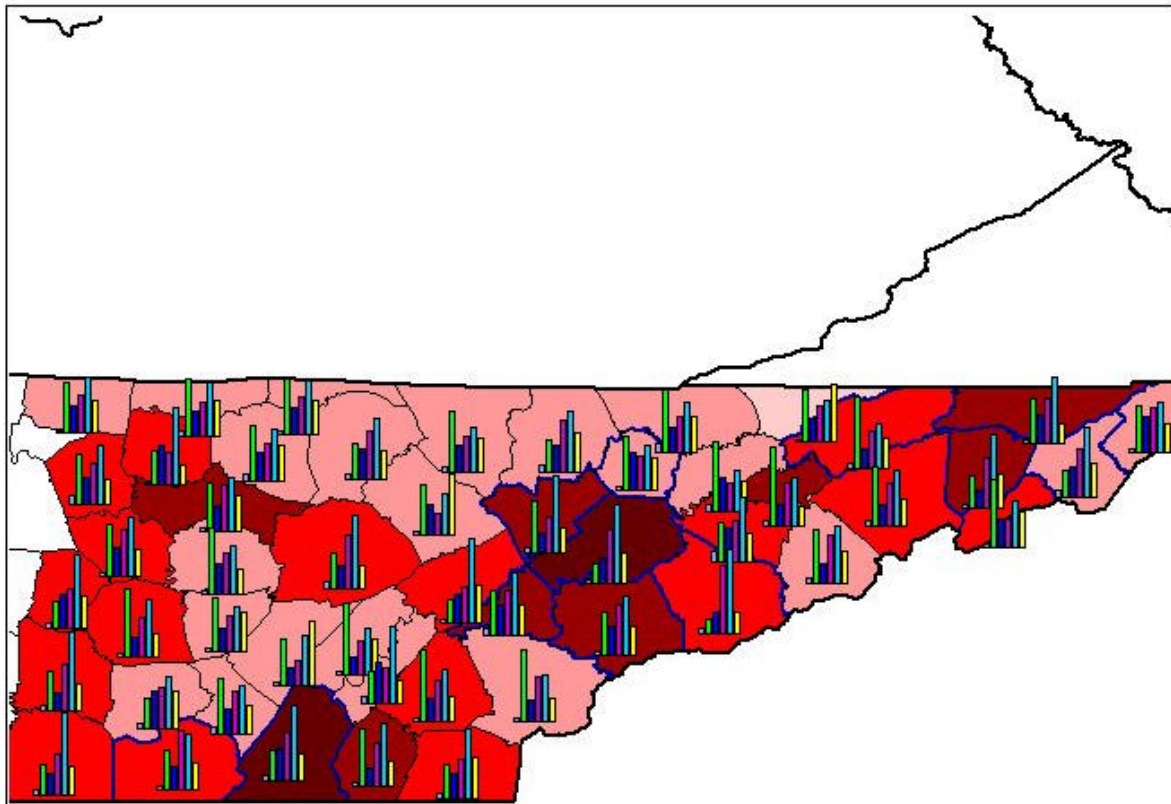
Kentucky, 1999



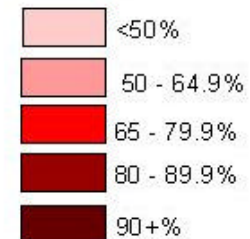
* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan Designation from U.S. Census 1999 population estimates.
 * Industry Types compiled from Bureau of Economic Analysis.

Major Employment Industries

Tennessee, 1999



Percent of the National Income

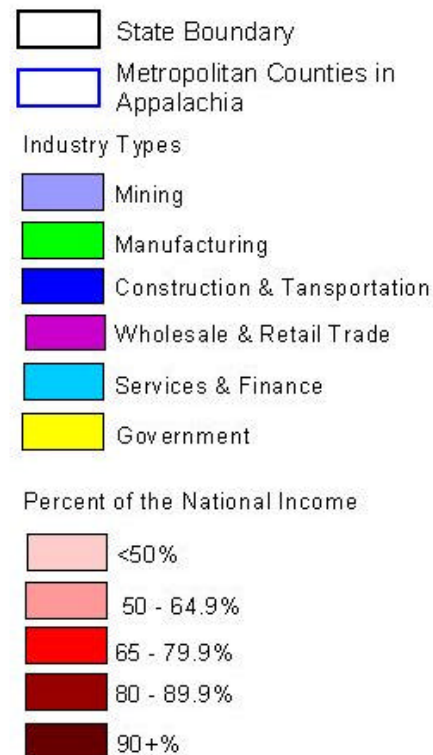
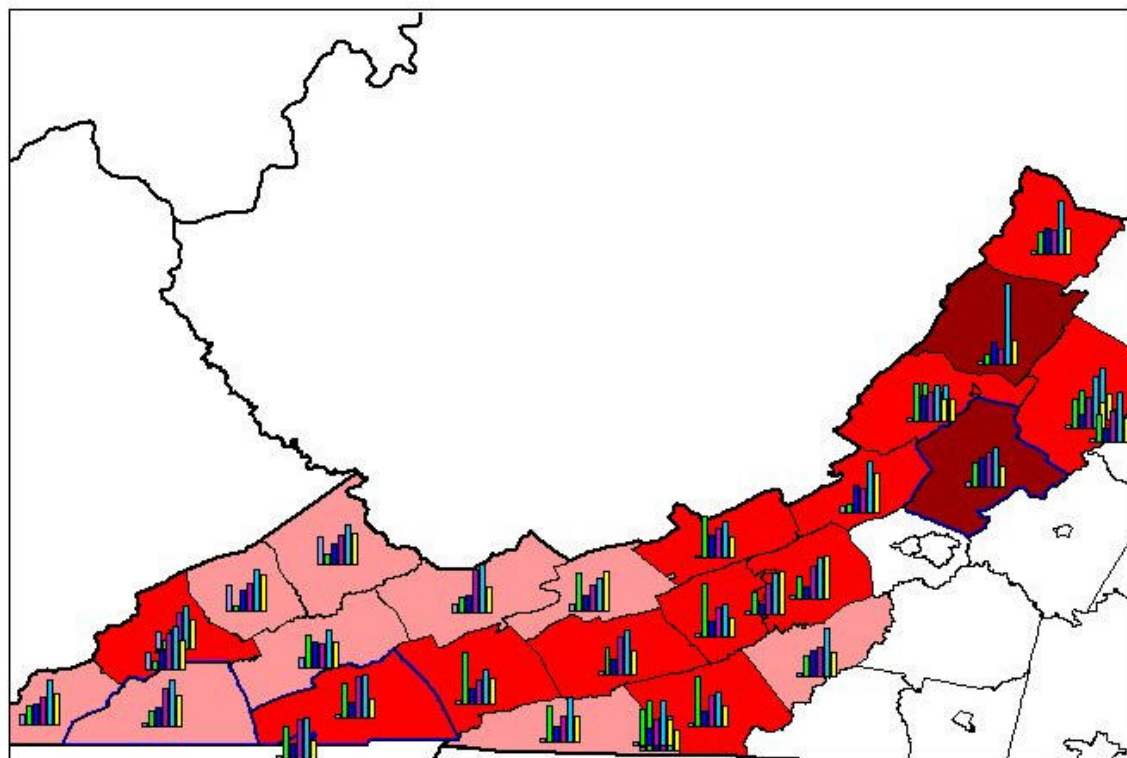


M-26

* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan designation from U.S. Census 1999 population estimates.
 * Industry Types compiled from Bureau of Economic Analysis.

Major Employment Industries

Virginia, 1999

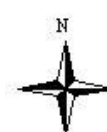
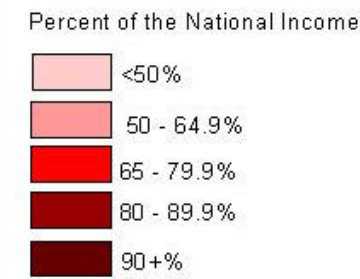
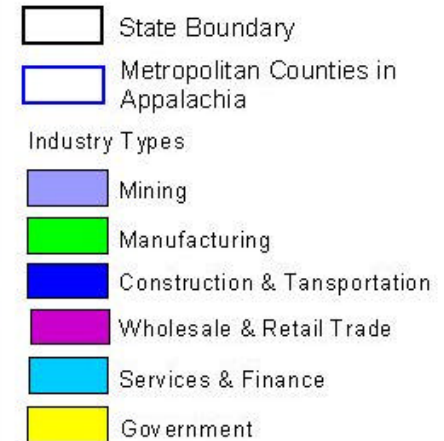
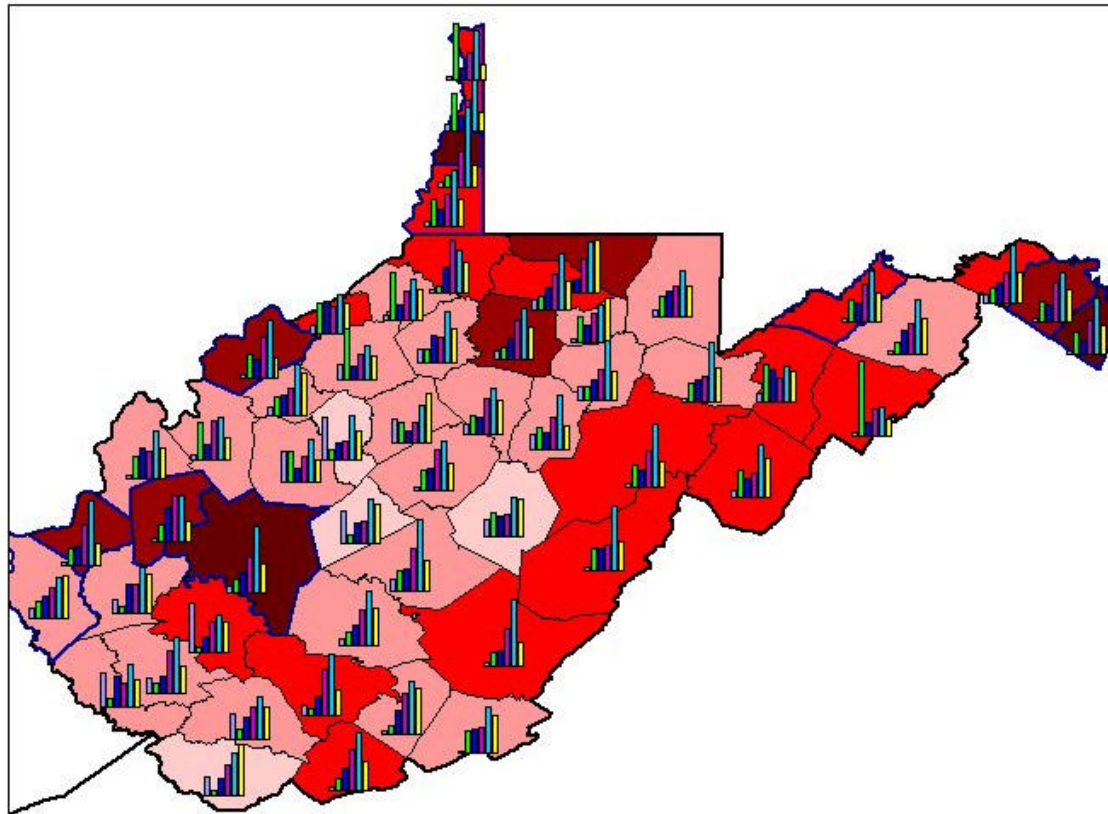


M-27

* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan Designation from U.S. Census 1999 population estimates.
 * Industry Types compiled from Bureau of Economic Analysis.

Major Employment Industries

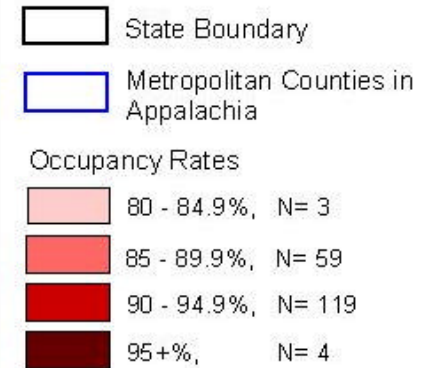
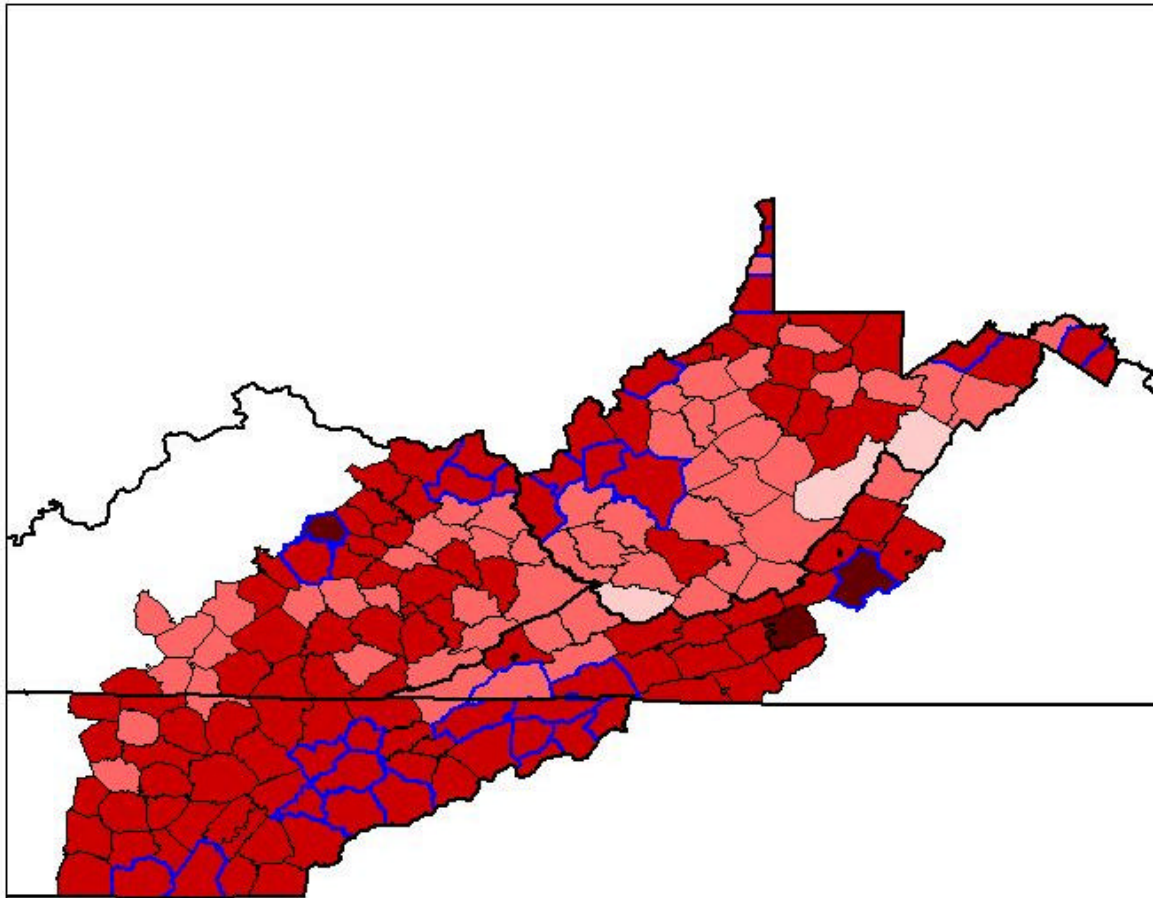
West Virginia, 1999



M-28

* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan Designation from U.S. Census 1999 population estimates.
 * Industry Types compiled from Bureau of Economic Analysis.

Percent of Occupied Units, 2000



Percent of Occupied Units
for U.S. = 93.9%

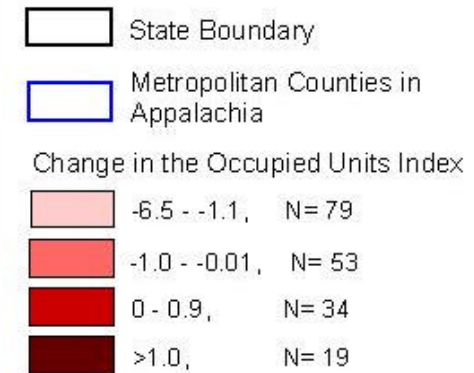
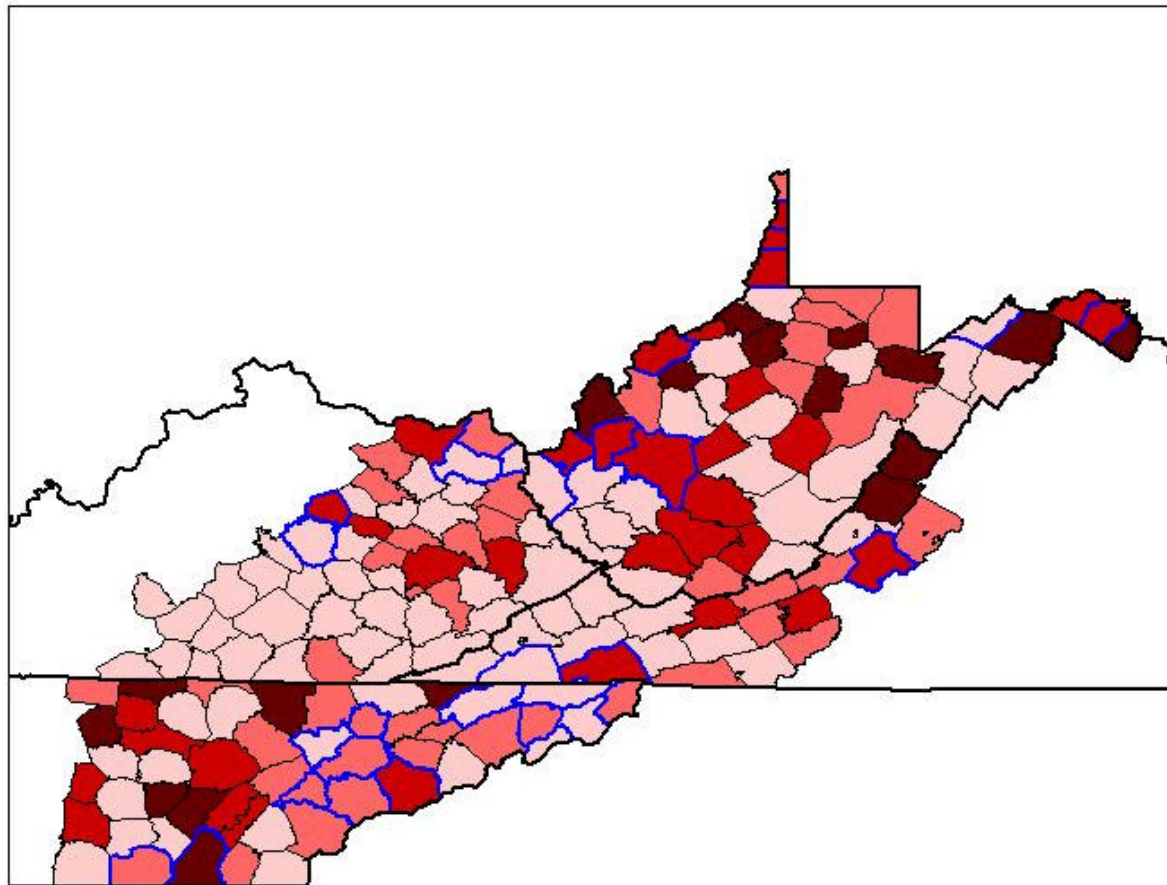


0 200 Miles

M-29

- * Designation of Appalachian counties from Appalachian Regional Commission.
- * Metropolitan designation from U.S. Census 1999 population estimates.
- * Data compiled from 2000 U.S. Census.
- * Total housing units excludes vacant units for seasonal use.

Change in the Occupied Units Index 1990 - 2000



Change in the Occupied Units Index
for U.S., 1990 to 2000 = 1.2



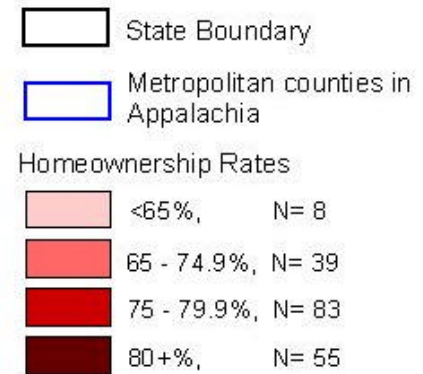
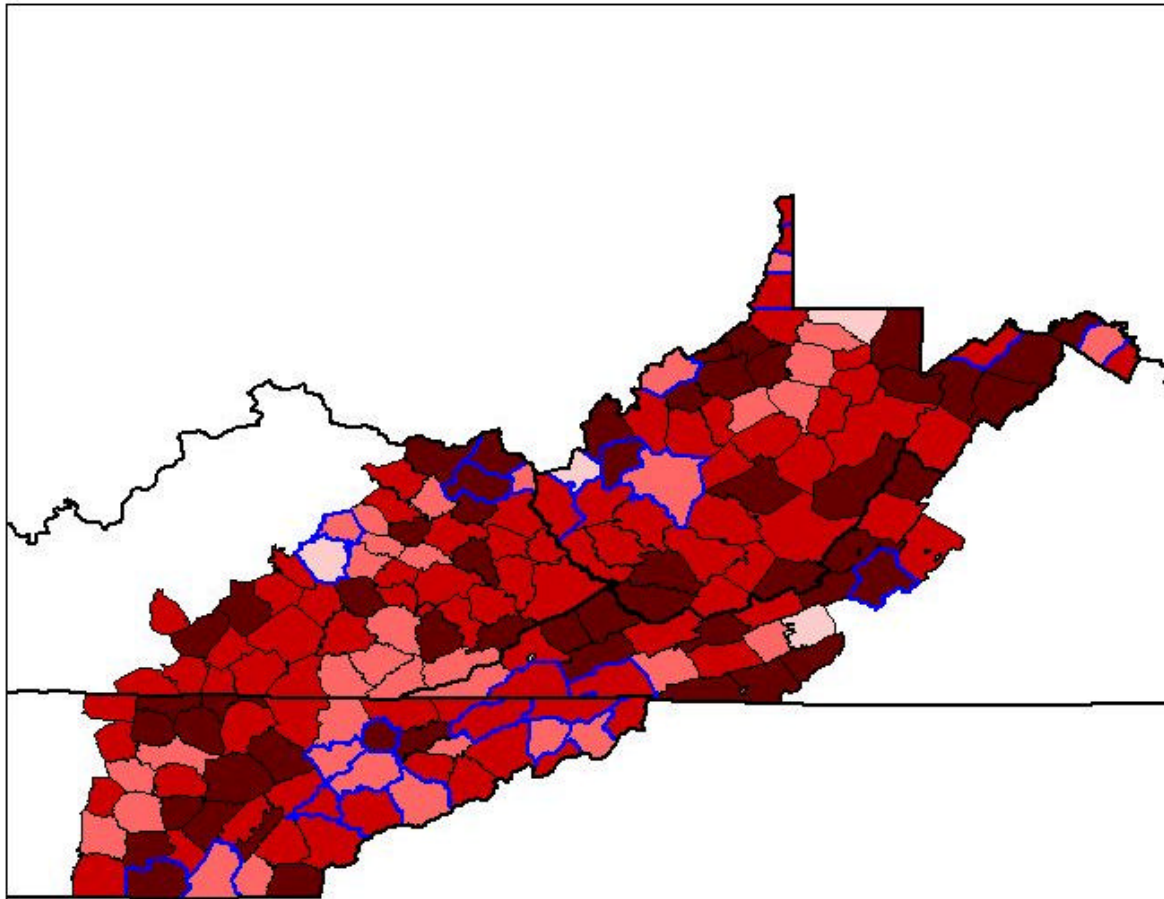
0 200 Miles



M-30

* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan designation from U.S. Census 1999 population estimates.
 * Data compiled from 1990 and 2000 U.S. Census.

Homeownership Rate, 2000



Homeownership Rate for U.S. = 66.2%

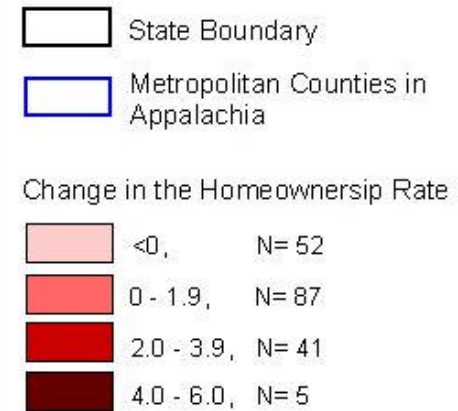
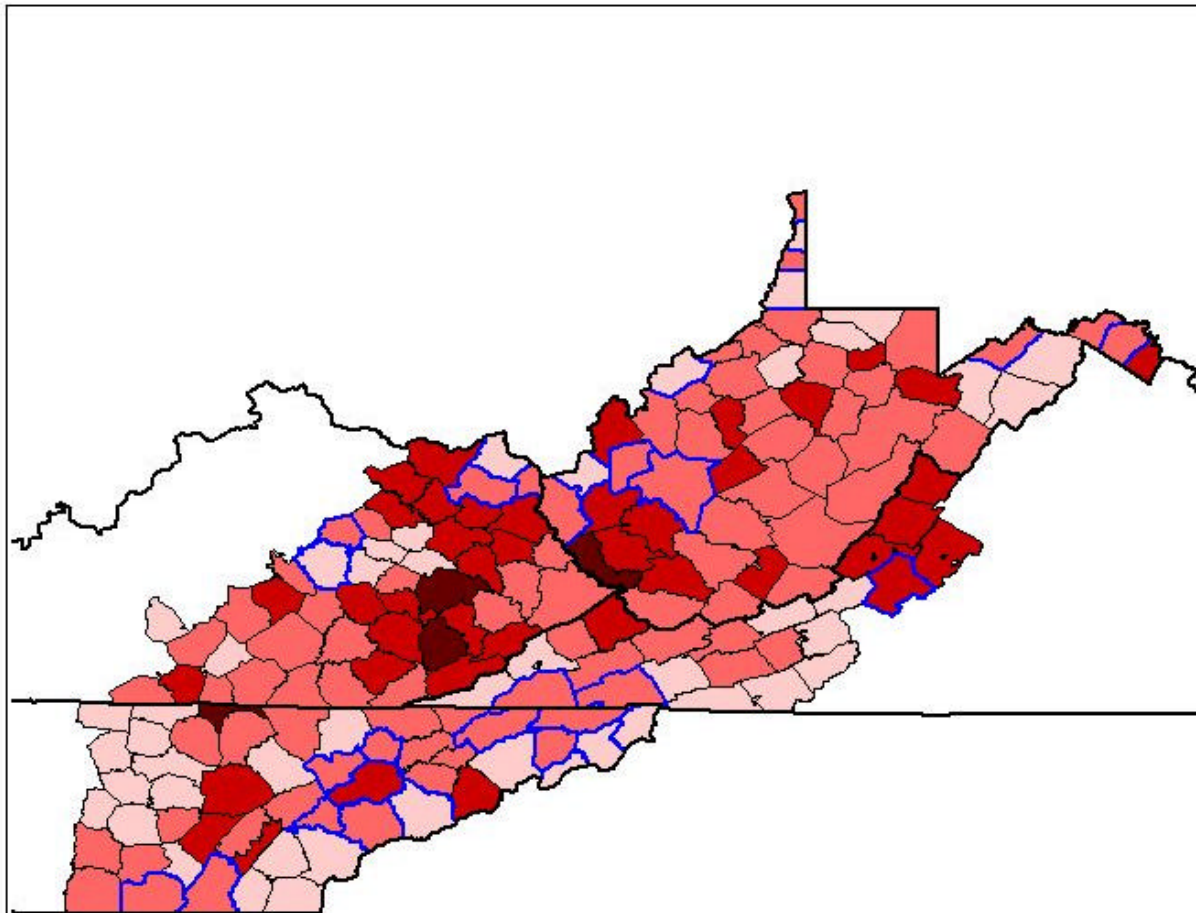


0 200 Miles

* Designation of Appalachian counties from Appalachian Regional Commission.
* Metropolitan designation from U.S. Census 1999 population estimates.
* Data compiled from 2000 U.S. Census.

M-31

Change in the Homeownership Rate 1990 - 2000



Change in the Homeownership Rate for U.S., 1990 to 2000 = 2.0



0 200 Miles

M-32

* Designation of Appalachian counties from Appalachian Regional Commission.
 * Metropolitan designation from U.S. Census 1999 population estimates.
 * Data compiled from 1990 and 2000 U.S. Census.

Appendix B – Employment Industries by State

Chart 1, Kentucky Employment Industries

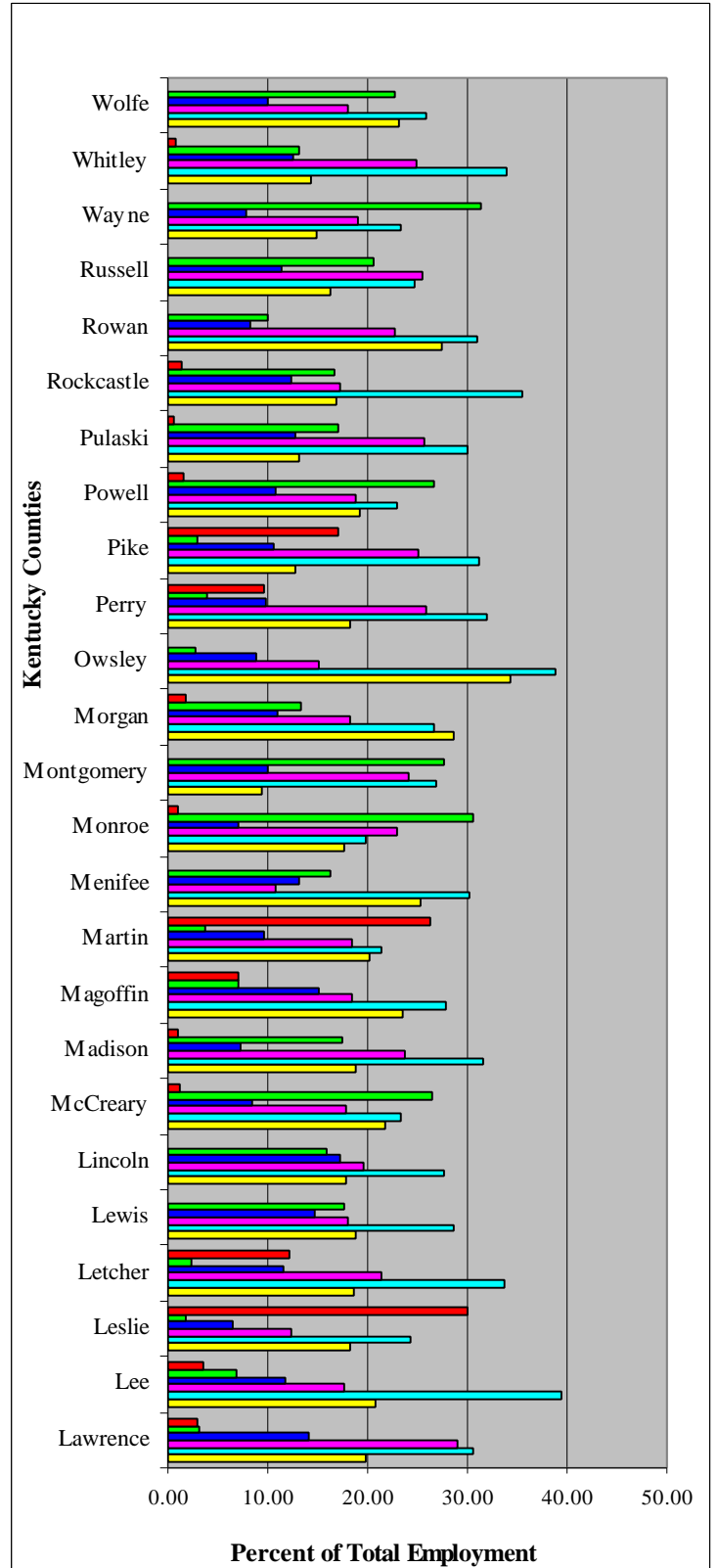
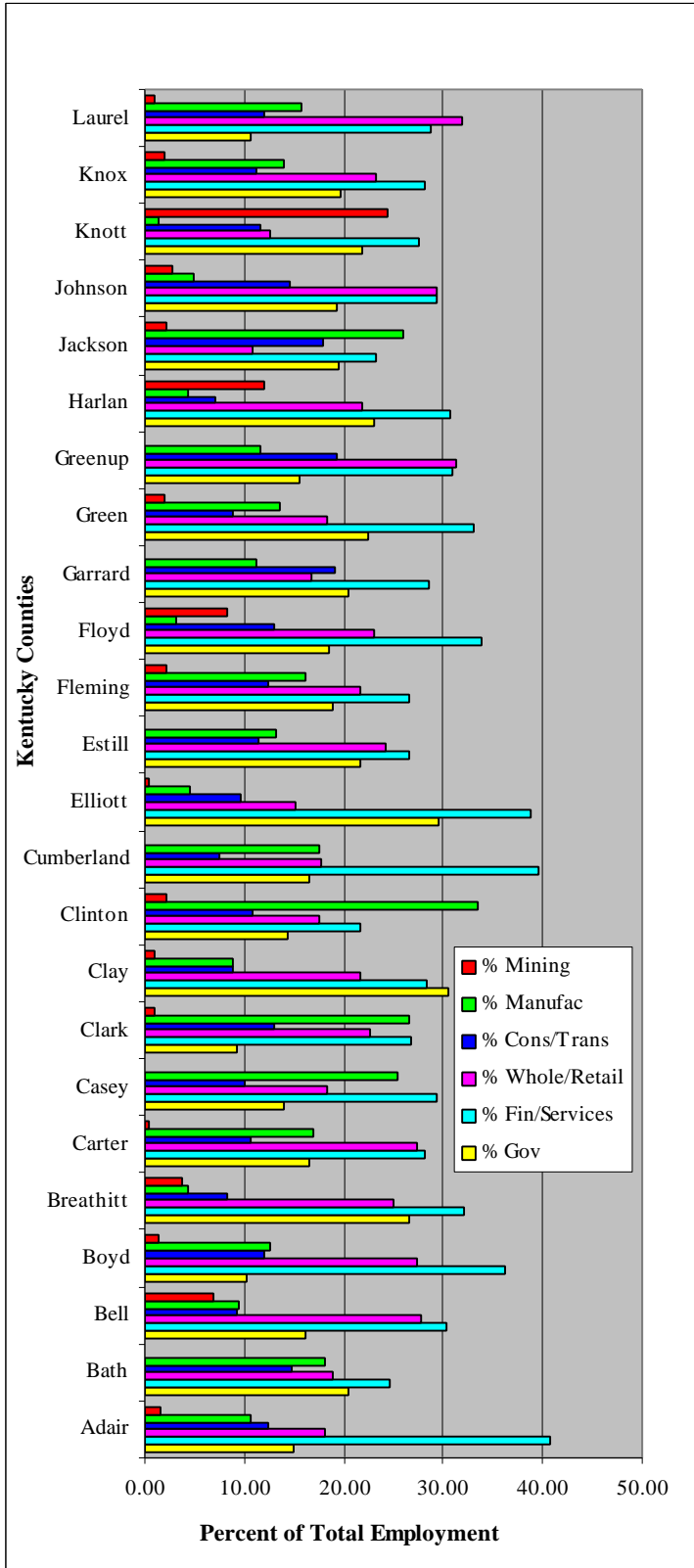


Chart 2, Tennessee Employment Industries

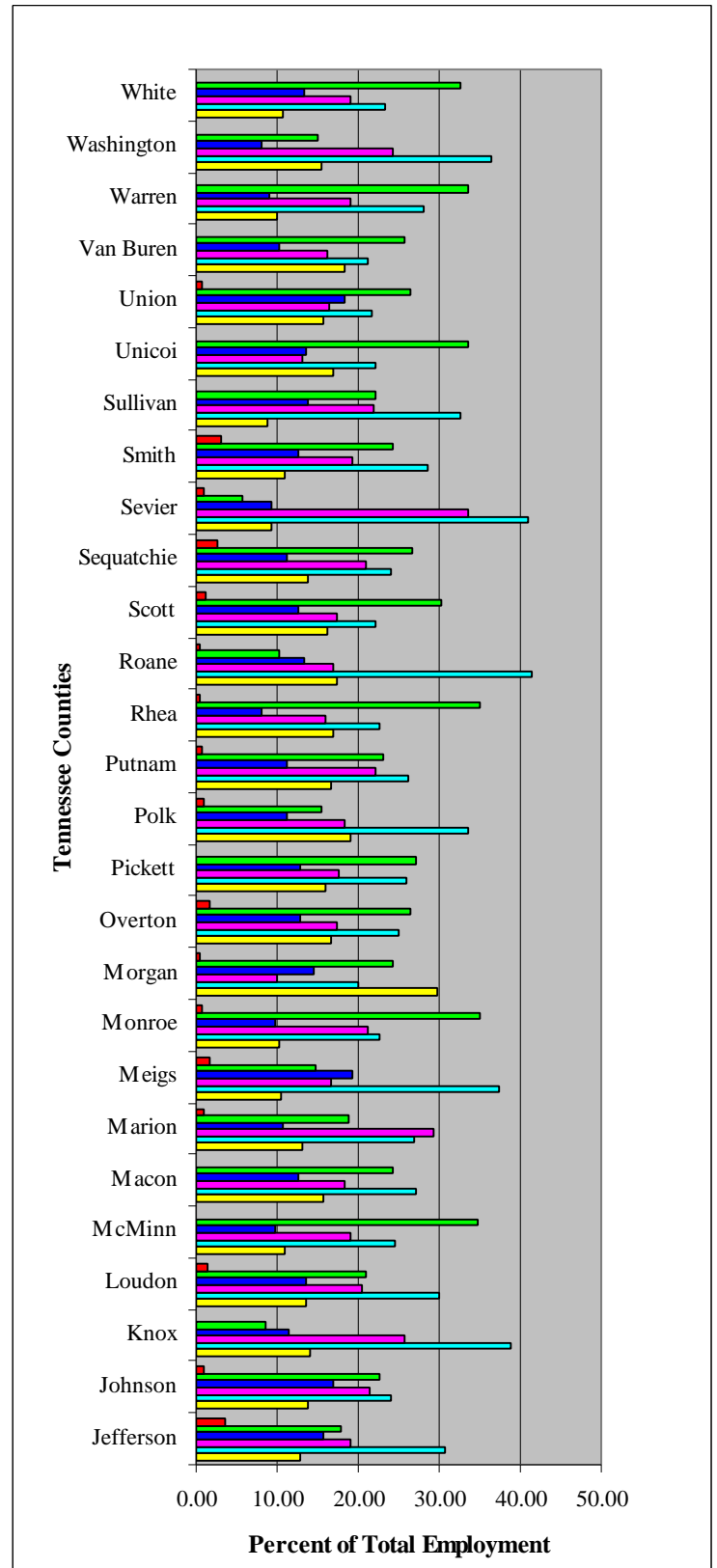
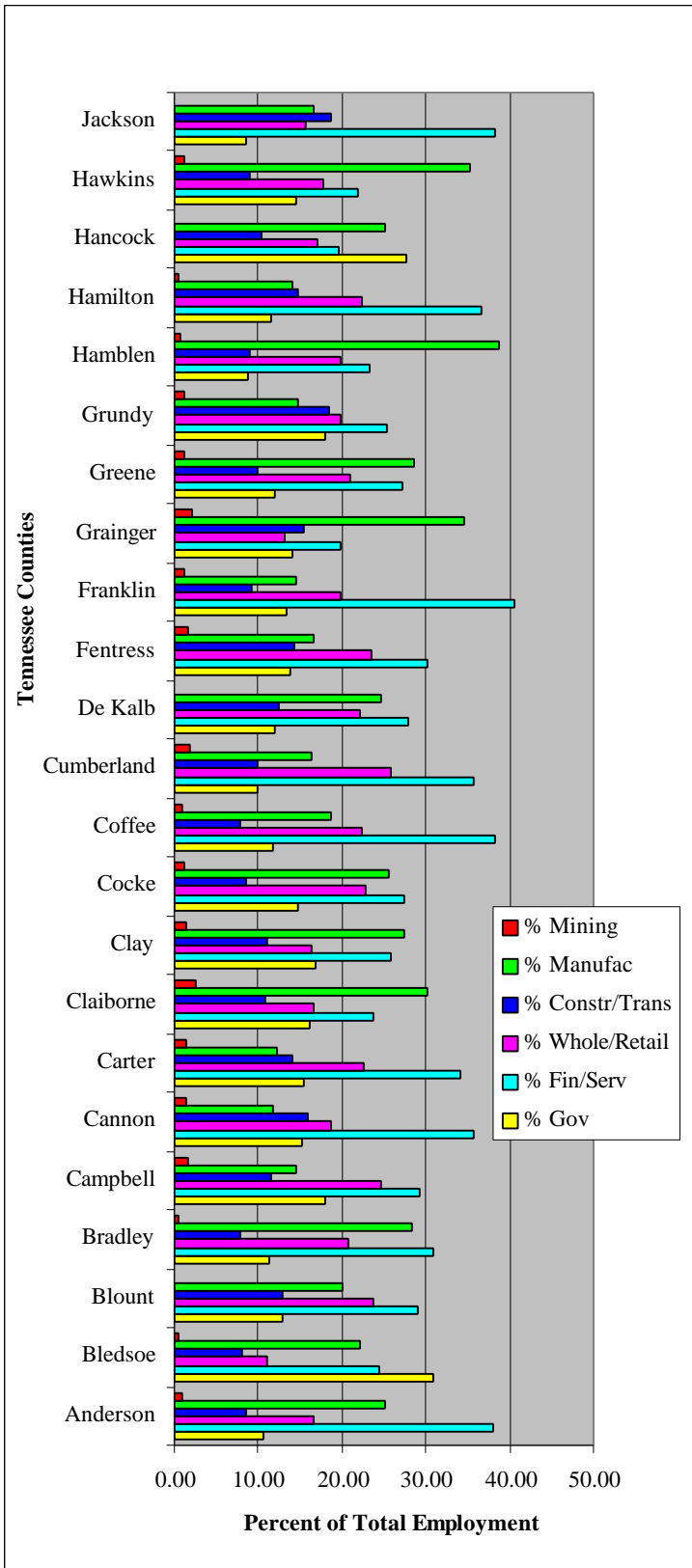


Chart 3, Virginia Employment Industries

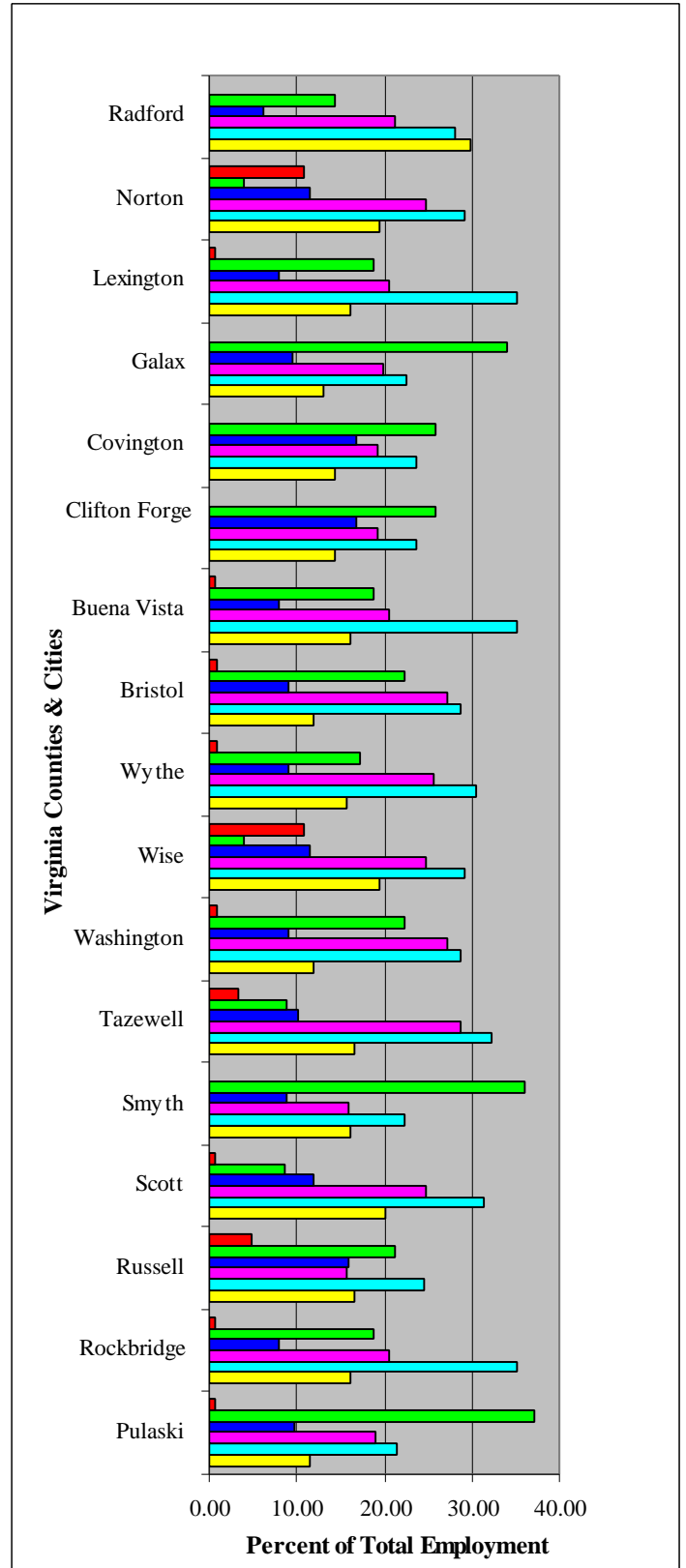
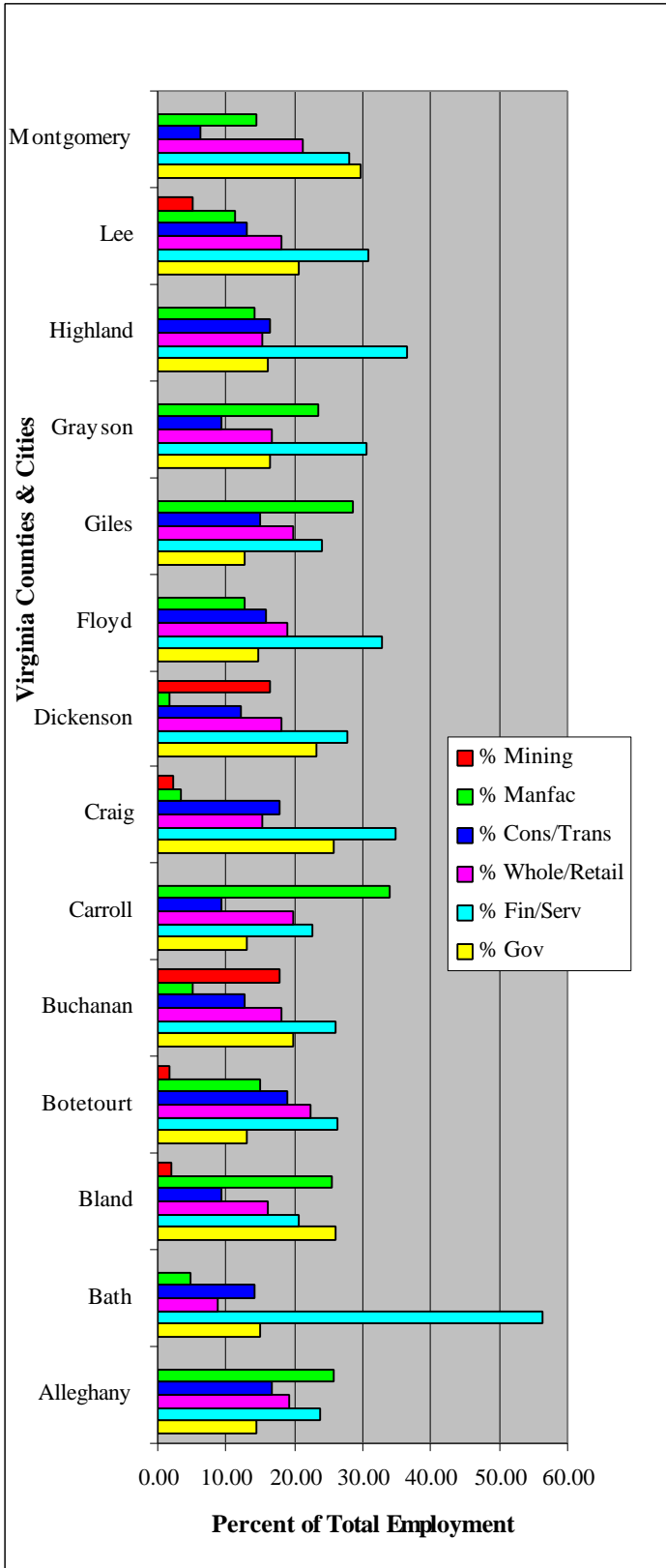
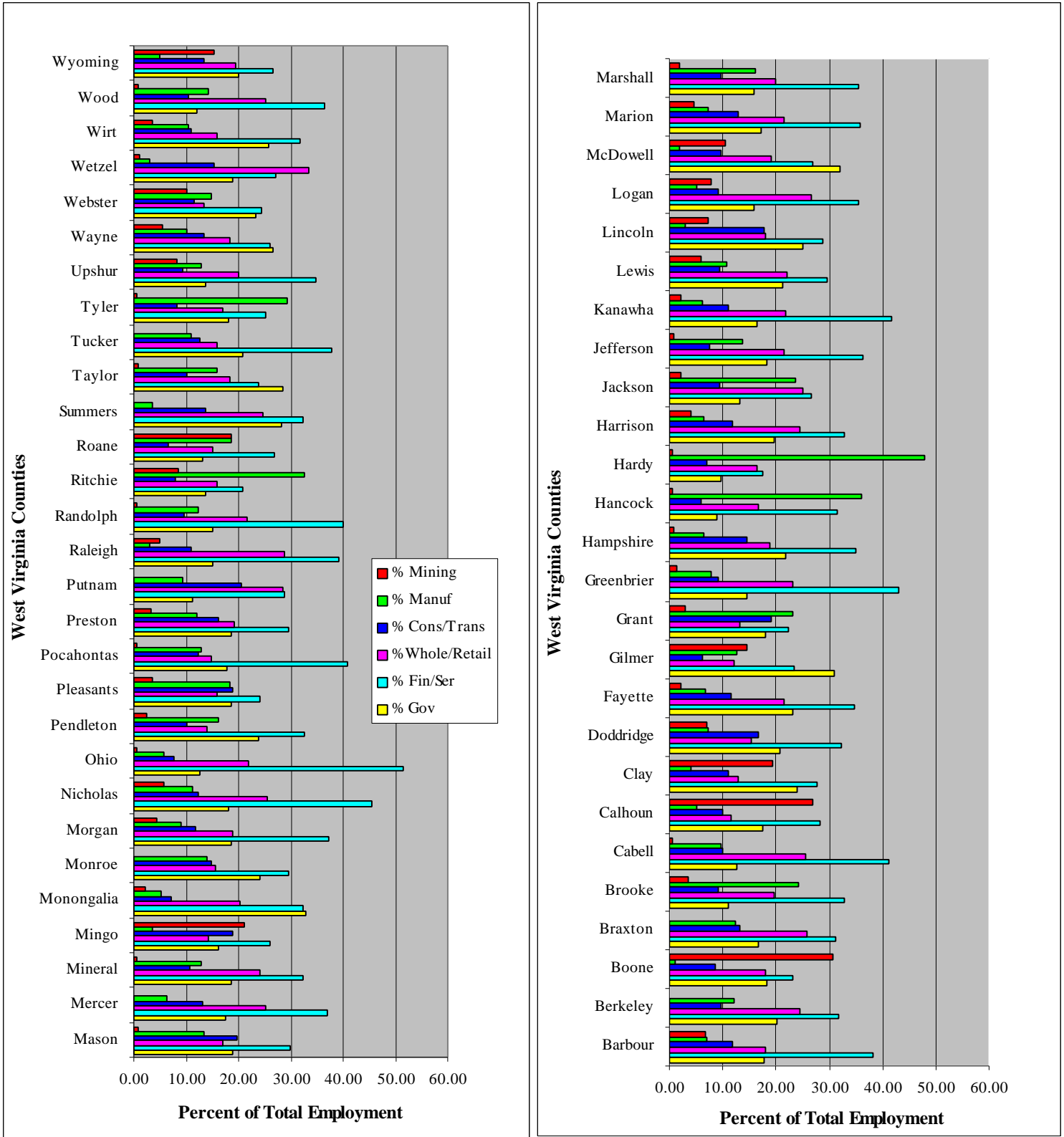


Chart 4, West Virginia Employment Industries



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