HOUSEHOLD WEALTH AND FINANCIAL SECURITY IN APPALACHIA

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Executive Summary

With the onset in 2007 of the deepest economic recession in the United States since the Great Depression, Americans lost jobs and experienced sharp declines in the value of their homes and investments. Decreases in household wealth impact not only individual and household financial security, but also community and regional economic prosperity and growth. Given the history of economic difficulties in the Appalachian Region, the Appalachian Regional Commission (ARC) commissioned this research report to analyze the effects of the recent recession on household wealth and economic well-being in Appalachia and to assess whether Appalachia has been disproportionately affected by the economic downturn.

Using data from the 2000 Census (1999 data for income) and the Census Bureau's American Community Survey for the period from 2005 through 2011, this study examines changes in indicators of household wealth and economic well-being for Appalachian counties, subregions, county types, and economic status designations; analyzes the most current (2007-2011) indicators of household wealth and economic well-being in Appalachia to assess the degree of recovery from the recession; and uses multiple regression analysis to identify how closely county differences in aggregate housing value are associated with county differences in economic status.

Median household income declined by seven percent in Appalachia between 1999 and 2005-2009 compared with five percent for the U.S. as a whole. But there was diversity across Appalachian subregions, with median household income declining by almost 10 percent in South Central Appalachia across this period and only three percent in Central Appalachia. While the poverty rate for the U.S. rose by only one percentage point between 1999 and 2005-2009, the poverty rate increased by two percentage points in Appalachia, and by three percentage points in the South Central subregion.

As property values dropped and foreclosures reached record highs between 2007 and 2009, the homeownership rate in the United States declined for the first time in many years. The rate of homeownership in Appalachia was higher in 2007 than in the U.S., and declined slightly less by 2009 than the U.S. rate. However, there was considerable variation within Appalachia. Among subregions, homeownership decreased most (1.4 percentage points) in North Central Appalachia and least (0.4 percentage points) in South Central Appalachia. Between 2007 and 2009, homeownership rates declined by almost two percentage points among both Appalachian counties located in large metropolitan areas and those located in rural areas that were not adjacent to a metro area. Homeownership also declined in all five economic status groups, ranging from a high of three percentage points for Attainment counties to a low of 0.7 percentage points for Appalachian counties in the Transitional group. Attainment counties are among the economically strongest in the nation, but they also appear to have been hardest hit by declines in employment, household income, and home values during the recession.

Homeowners who spend more than 30 percent of their monthly income on housing costs are considered to have a housing cost burden. While the share of homeowners with a housing cost burden was considerably lower in 2007 in Appalachia (21.5 percent) than in the U.S. (30 percent), this share increased to 22 percent in Appalachia by 2009, but remained at 30 percent for the nation. The share with a housing burden increased in both the South Central and Southern subregions during the recession, but decreased slightly in the North Central subregion. The share of homeowners with a housing burden also increased for every county type except those located in large metropolitan areas. Although housing burden increased by one to two percentage points for counties in the Distressed, Transitional, and Competitive economic status groups, it decreased by three percentage points between 2007 and 2009 for Attainment counties. This decline in housing burden likely reflects homeowners losing their homes to foreclosure during the recession, and is consistent with the decline in homeownership across this period.

Income from sources other than wages and salaries can help households offset income declines due to job losses during a recession. However, a slightly smaller share of households in Appalachia (21.8 percent) than in the nation (24.9 percent) had income in 2007 from interest, dividends, net rental income, royalty income, and estates and trusts, and there was considerable variation across subregions. About 25 percent of households in the Northern subregion reported such income compared with only about 15

percent in the Central subregion. The share of households with interest and other income dropped in Appalachia by one percentage point between 2007 and 2009, but this decline reached at least 1.5 percentage points in both the Northern and the South Central subregions. During the recession, the share with interest and other income also declined for every county type except those located in rural areas that were not adjacent to a metro area, and for counties in the Distressed, Transitional, and Competitive economic status groups.

The recession also had an impact on average home values, average household income, and the average amount of household income from interest, dividends, and other sources. Between 2007 and 2009, average home value in the U.S. decreased by 10 percent, average household income by four percent, and average income from interest and other sources by 14 percent. In 2007, average home value in Appalachia was 45 percent lower than in the nation, although this varied from 63 percent less in the Central subregion to only 37 percent less in the Southern subregion. Although average home values remained considerably lower in the Appalachian Region than in the U.S. in 2009, the gap shrank by about 4 percentage points during the recession. This indicates that home values dropped less in Appalachia than they did in the nation as a whole during the recession, and this is consistent with other data indicating that the housing crisis affected metropolitan areas more than nonmetropolitan and rural areas.

Average household income in Appalachia was 22 percent lower than the national average in 2007, ranging from 40 percent lower in Central Appalachia to only 16 percent lower in Southern Appalachia. The household income gap between Appalachia and the U.S. also shrank slightly between 2007 and 2009, and this pattern was consistent across all of the subregions. As of 2009, then, these data indicate that average household income did not drop as much in Appalachia as in the nation as a whole.

The share of households with income from interest, dividends, and other non-wage sources is lower in the Appalachian Region than in the United States. In addition, the average amount of such income is also much lower in Appalachia. In 2007, average household interest income in Appalachia was 36 percent lower than in the U.S., ranging from 66 percent less in the Central subregion to only 22 percent less in the South Central subregion. However, the change between 2007 and 2009 was not consistent across the subregions. The gap in interest and other income declined in the Northern, North Central, and Central subregions, but increased in the South Central and Southern subregions. The average amount of household interest income was also lower in 2007 in Appalachian counties than in the nation in every county type and economic status group. However, unlike average household income, the interest income gap widened between 2007 and 2009 for Appalachian counties in large metropolitan areas and in rural areas, and for those in the Competitive and Attainment economic status groups. Appalachian counties in these four categories fared worse on average during the recession than counties in the nation, and Appalachian households had fewer dollars from other sources to help them weather job and income losses during the recession.

To assess the degree of recovery from the recession in Appalachia, we use five-year ACS data for the period 2007-2011 and construct six indices that measure the relative status of Appalachian subregions, county types, economic status groups, and counties compared with the nation as a whole. Although it would be ideal to use 2011 ACS data for this assessment, single-year ACS data are only available for geographic areas with a population of at least 65,000, which excludes many of the counties in the Appalachian Region. Therefore, to examine household wealth and economic well-being with comparable data for all counties, subregions, county types, and economic status groups in Appalachia, we must use five-year data. These data include both the recession period from 2007 to 2009 and the post-recession recovery period from 2009 to 2011, and provide the most current picture of the status of the Appalachian Region, subregions, and counties compared with the United States.

For the 2007-2011 period, the rate of homeownership was nine percent higher in the Appalachian Region than in the United States. This is one percentage point higher than it was in 2007 when the recession began. Homeownership levels were highest in the North Central and Central Appalachian subregions exceeding the U.S. rate by about 11 percent. Although the relative homeownership rate in Appalachia was higher for 2007-2011 than 2007 in all subregions and county types, it was 3 percentage points lower in Attainment counties in 2007-2011 than in 2007, indicating that post-recession recovery from 2009-2011 had not yet returned homeownership in these counties to pre-recession levels.

In 2007, the share of homeowners whose housing costs exceeded 30 percent of their monthly income was 29 percent lower in Appalachia compared with the nation, but this gap decreased slightly to 23 percent for the entire period from 2007-2011. The increase in housing cost burden in Appalachia during the recession was not reduced enough in the first two years of recovery to bring it back down to its pre-recession level. The housing burden index was higher in 2007-2011 than in 2007 for every Appalachian subregion and county type, and all economic status groups except Attainment counties.

The share of households with income from interest, dividends, and other non-wage sources was 10 percent lower in the Appalachian Region than in the nation in 2007-2011, and this gap was slightly smaller than it was in 2007. In Northern Appalachia, the share of households with interest income was almost nine percent higher than the share for the U.S., but it was lower than the U.S. share in every other subregion and county type. Among economic status groups, only Competitive counties registered a higher share of households with interest income than the U.S. as a whole, while the share was 45 percent lower among Distressed counties. These gaps between Appalachia and the nation were slightly smaller in the 2007-2011 period than they were in 2007, but this relative improvement reflects a slow rate of recovery for such assets in the U.S. rather than an increase in the share of Appalachian households with non-wage income.

Average home values in Appalachia were 45 percent lower than the U.S. average in 2007, and this gap shrank slightly to 39 percent for the 2007-2011 period. In 2007-2011, Appalachian home values were only 30 percent lower than the U.S. average in large metro areas, but were 54 percent lower in rural areas. The gap in average home values between the Appalachian Region and the U.S. was smaller in the 2007-2011 period than it was in 2007 when the recession began. This is not due to rising home values in Appalachia, but rather to the slow rate of recovery in home prices that plummeted during the housing crisis in areas such as Florida, Nevada, Arizona, and California.

In 2007-2011, average household income in Appalachia was 20 percent below the U.S. average, and this gap ranged from a low of four percent to a high of 43 percent across subregions, county types, and economic status groups. Only Appalachian counties in the Attainment group had an average household income that exceeded the U.S. average. Once again, the gap between Appalachian subregions and the nation was slightly smaller in 2007-2011 than it was in 2007, but this reflects a slower pace of recovery in employment and income in the nation rather than a relative increase in average household income in Appalachia.

Although the share of households with interest income was only 10 percent lower in Appalachia, the average amount of interest income was 35 percent lower than the U.S. average in 2007-2011. Moreover, the average amount of interest income was lower in every Appalachian subregion, county type, and economic status group than in the nation. While the gap in average interest income between Appalachia and the U.S. was slightly smaller in 2007-2011 than in 2007 for most subregions, county types, and economic status groups, it was larger in 2007-2011 for counties in the Southern subregion, in large metro counties, and in Distressed counties. The impact of the recession in these Appalachian counties had not been offset by post-recession gains between 2009 and 2011.

Owner-occupied housing is widely held in the United States and represents a large share of the wealth of many households. Between 2000 and 2010, around two thirds of all households held equity in a home. Such equity represented 20 percent of household wealth in 2000 and 25 percent in 2011. The downturn in the U.S. housing market after its peak in 2006 and the associated financial crisis had significant implications for the economic well-being of households and their communities.

For the Appalachian Region, particularly Appalachian counties where asset levels are low, the potential impact of housing prices on economic development might be small compared to the impact of overall employment and the concentration of employment in particular sectors. In this report, multiple regression analysis is used to identify how closely county differences in aggregate value of housing are associated with county differences in economic status. The results suggest that housing wealth is just as important to county economic well-being as employment. Higher housing wealth in a county is associated with better economic status, and a county's economic conditions affect its wealth accumulation. Thus, counties with higher aggregate wealth might have a buffer when economic conditions begin to deteriorate, and counties

with a history of worse economic status will not only suffer immediately but will experience more difficult economic conditions for a longer period than counties that have historically been better off.

During the recent recession, the Appalachian Region did experience a disproportionate decline in median household income and increase in the poverty rate, compared with the U.S. as a whole. However, although homeownership rates and average home values did decline in Appalachia, these declines were not as steep as those for the rest of the nation. In contrast, the share of homeowners with a housing cost burden increased in Appalachia, and both the share of households with interest and other non-wage income and the average amount of such income declined more in Appalachia than in the rest of the United States. Just as economic development policies can be crafted to increase income security in the Region, policies that stimulate asset accumulation could also improve the economic stability of households and help them offset income and wealth losses in future recessions. Raising levels of education and household income, along with boosting the level of assets, could help Appalachian households and communities better withstand future economic downturns, as well as reduce the amount of time needed for recovery.

1. Introduction

With the onset in 2007 of the deepest economic recession since the Great Depression, Americans lost jobs and experienced sharp declines in the value of their homes and investments. Decreases in household wealth impact not only individual and household financial security, but also community and regional economic prosperity and growth. As a result, the Appalachian Regional Commission (ARC) has an increased interest in understanding the effects of the recent recession on economic well-being and commissioned this research report. Using data from the American Community Survey and other sources, this report examines changes between 2007 and 2009 in household wealth and financial security in the Appalachian Region.

Trends in household wealth are important for individuals and families because household wealth provides a financial and psychological safety net to weather tough economic times.[1] People use household assets to leverage funds that in turn can create additional opportunities to produce more wealth. Wealth is largely transferable from one generation to the next and is a key component of intergenerational mobility. It creates opportunities for expanded social networks, provides social and economic prestige, and contributes to political power.[2] At the community level, household wealth provides a "pool of savings" that is a prerequisite for business development and for consumers to feel confident about their economic futures.[3]

Although many economists acknowledge the link between household wealth and economic growth, the size and nature of this relationship are not precisely quantified.[4] The Kansas City Federal Reserve argues that household wealth, as a key source of financial stability for families, is closely linked to a region's economic prosperity and potential for growth. They found that at the county level, three key components of household wealth—home values, agricultural land value, and financial investments—are positively correlated with job growth and income. Given the decline in household wealth across the United States between 2007 and 2009, this report expands previous analyses and investigates the relationship between household wealth and broader economic indicators. Given the history of economic difficulties in the Appalachian Region, this report assesses the degree to which Appalachia has been disproportionately affected by the recent economic downturn.

In Appalachia and across the United States, homeownership is the single most important source of wealth and financial security. In 2000, there were 6.6 million owner-occupied homes in Appalachia, and the homeownership rate in the Region (73 percent) exceeded the national average (66 percent).[5] Historically, buying a home has been a key part of the American dream—an important step for families to improve their quality of life.

But in recent years, homeownership has become a potential liability for many families. Home values have dropped dramatically; foreclosures have hit record levels; and many families are trapped in unaffordable subprime mortgages. In 2008, net household wealth[6] in the United States declined by $11 billion, the largest loss of wealth since the federal government started keeping records of wealth accumulation 50 years ago.[7] Although the recession officially ended in 2009, the pace of economic recovery has been

[1] Lisa A. Keister and Stephanie Moller (2000), "Wealth Inequality in the United States," *Annual Review of Sociology* 26:63-81.

[2] Ibid.

[3] Sarah A. Low (2005), "Regional Asset Indicators: The Wealth of Regions," *The Main Street Economist: A Commentary on the Rural Economy* (September).

[4] Ibid.

[5] Mark Mather (2004), "Housing and Commuting Patterns in Appalachia," *Demographic and Socioeconomic Change in Appalachia* (January).

[6] This net worth estimate includes all family assets (e.g., housing, stocks, property), minus total debts.

[7] S. Mitra Kalita (2009), "Americans See 18% of Wealth Vanish," *The Wall Street Journal* (March 13).

slow and has varied considerably across different regions of the United States. This report also examines indicators of household wealth and economic well-being for the 2007-2011 period to compare the degree of recovery in Appalachia with the rest of the United States.

Diversity within Appalachia

The Appalachian Region covers 205,000 square miles and includes all of West Virginia and portions of twelve other states from New York to Mississippi. The 420 counties of the Region are grouped into five subregions, based on similarities in economic and demographic characteristics and geographic location (see Figure 1.1). More than 25 million people live in the Appalachian Region, with 42 percent residing in rural areas—much higher than the national average of 20 percent. While Appalachia is a distinct part of the United States, the Region is far from homogeneous, covering both rural areas and major metropolitan areas such as Pittsburgh. This range of county types is shown in the map in Figure 1.2. Although the Region has historically had high rates of poverty (33 percent in 1965) and an economy dominated by mining, forestry, agriculture, chemical industries, and heavy industry, economic development efforts have reduced poverty and diversified the economy in some communities. To track the economic status of Appalachian counties, the Appalachian Regional Commission has developed an index-based county economic classification system based on unemployment rates, per capita market income, and poverty rates.[8] The five economic status designations are:

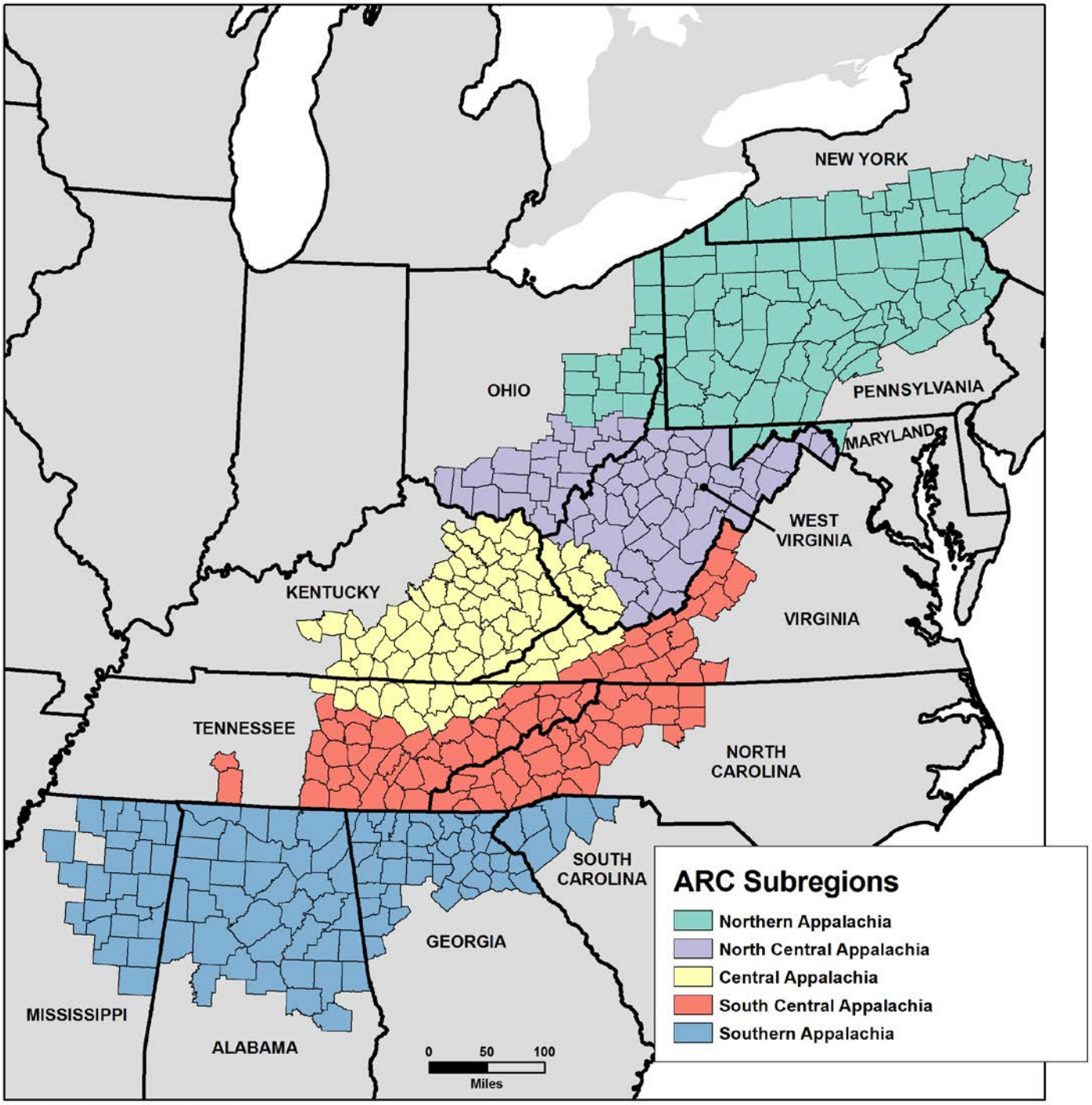
- **Distressed:** the most economically depressed counties that rank in the worst 10 percent of the nation's counties;
- **At-Risk:** counties at risk of becoming economically distressed that rank between the worst 10 percent and 25 percent of the nation's counties;
- **Transitional:** counties transitioning between strong and weak economies that rank between the worst 25 percent and the best 25 percent of the nation's counties;
- **Competitive:** counties that are able to compete in the national economy and rank between the best 10 percent and 25 percent of the nation's counties;
- **Attainment:** the economically strongest counties that rank in the best 10 percent of the nation's counties.

Tracking changes from fiscal year (FY) 2007 to FY 2011 in the economic status designations of counties within the 13 Appalachian states can help assess the impact of the recession on the Region. For example, before the onset of the recession in December, 2007, 78 Appalachian counties were Distressed and 84 were classified as At-Risk (see Figure 1.3). By 2009, the number of Distressed counties had risen to 81, and the number of transitional counties had increased from 225 to 232 (See Figure 1.4). Although the recession officially ended in June of 2009, by 2011, the number of Distressed counties had increased to 82 and the number of At-Risk counties had risen to 86 (see Figure 1.5). Thus, between 2007 and 2011, the number of counties that were Distressed increased by 5 percent, while between 2009 and 2011, the number that were At-Risk increased by 6 percent. Because of the diversity within the Appalachian Region, we analyze changes in household wealth and economic well-being for subregions, county types, and economic status designations as well as for the 420 counties.[9]

[8] For a detailed description of the data sources and methodology, see Appalachian Regional Commission (2013), "Distressed Designation and County Economic Status Classification System, FY 2007 – FY 2014," available at http://www.arc.gov/research/SourceandMethodologyCountyEconomicStatusFY2007FY2014.asp .

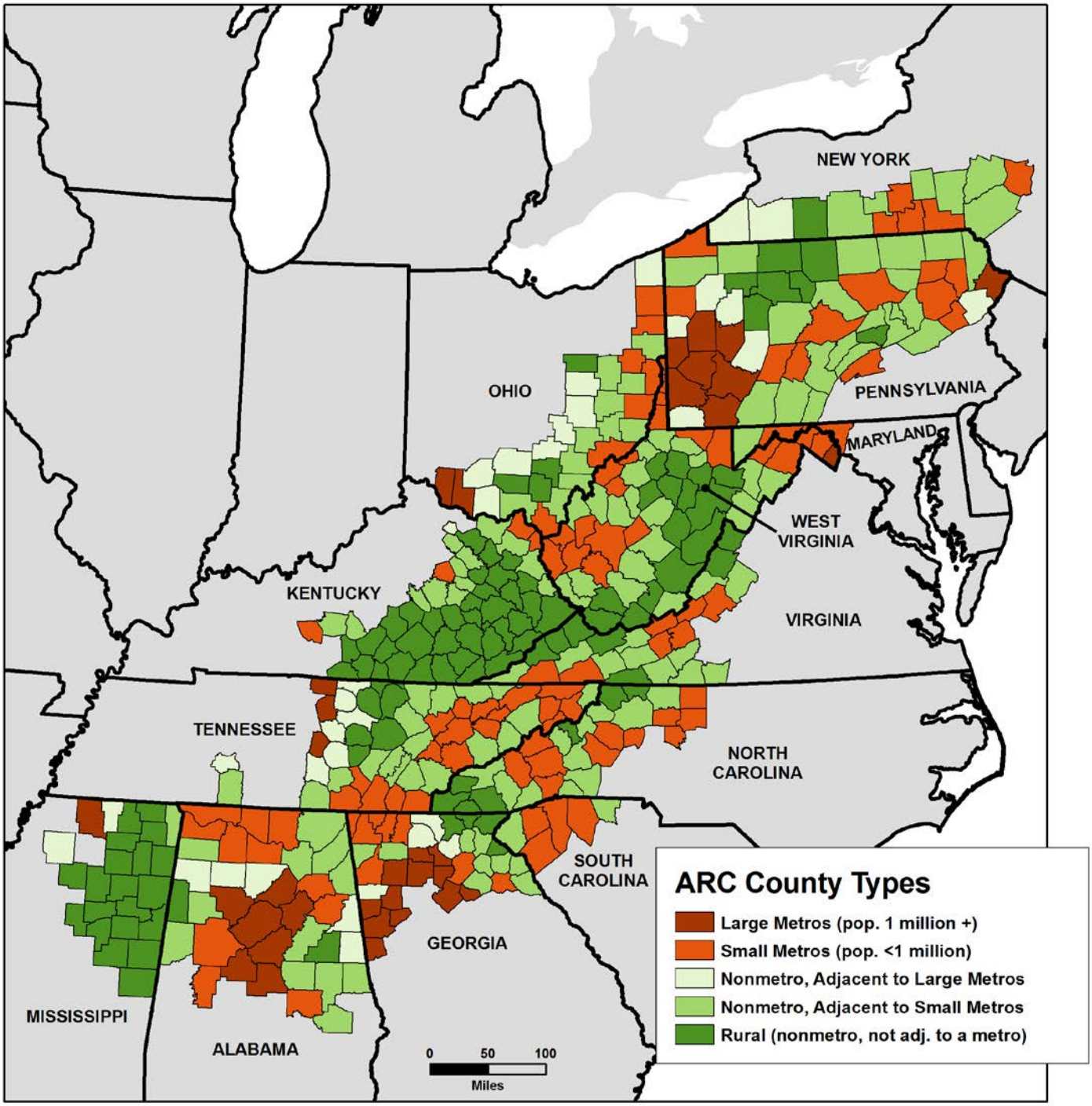
[9] In FY 2007 there were 410 counties in the Appalachian Region. Between FY 2007 and FY 2009, 10 counties were added to the Appalachian Region. To create a comparable county geography over time to facilitate direct comparison between FY 2007 and FY 2009, we use the FY 2009 definition of counties included in the Appalachian Region for all analyses and maps in this report.

Figure 1.1: Appalachian Subregions



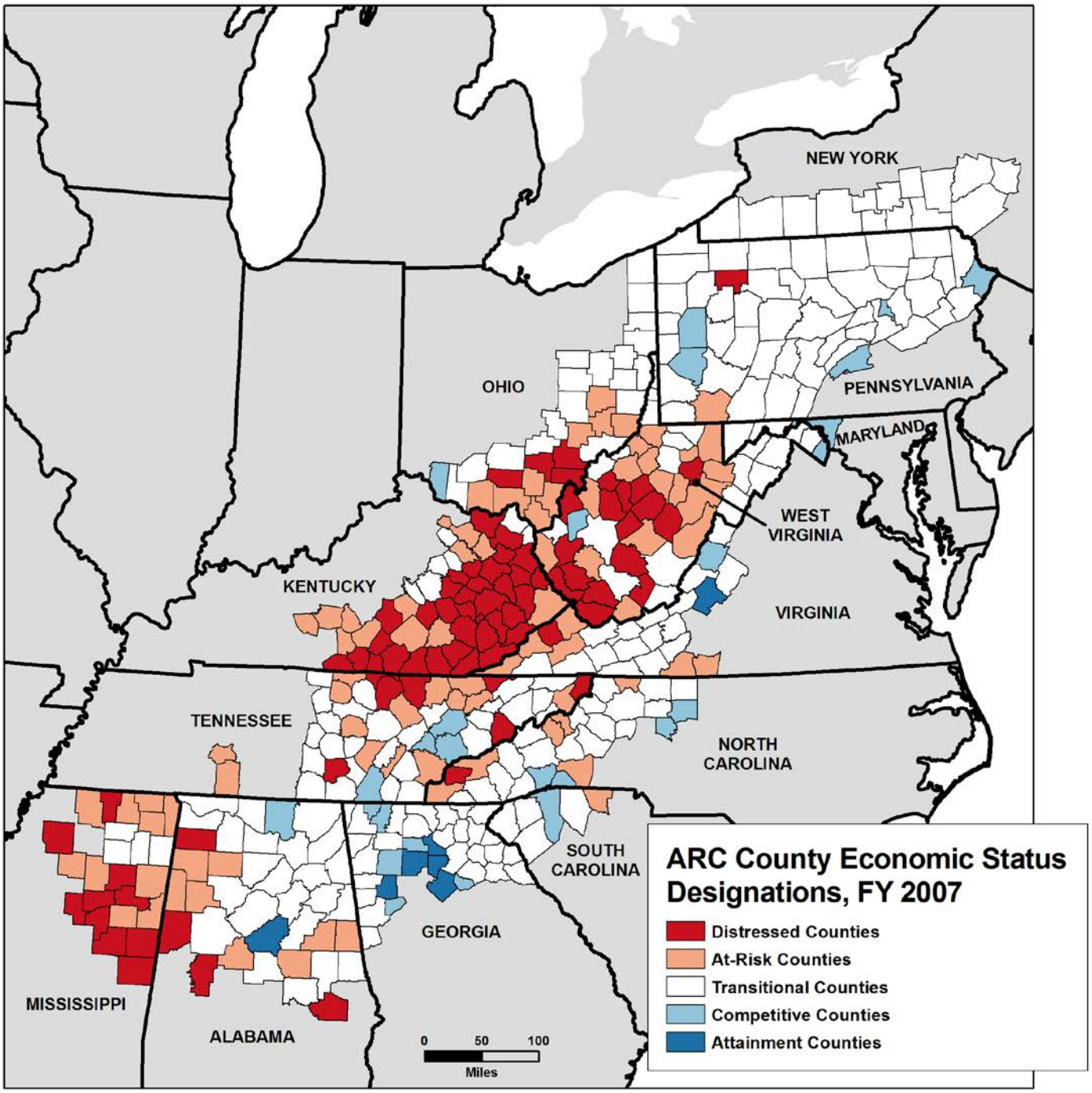
Map Title: Appalachian Subregions
Data Source: Appalachian Regional Commission.

Figure 1.2: County Types in the Appalachian Region



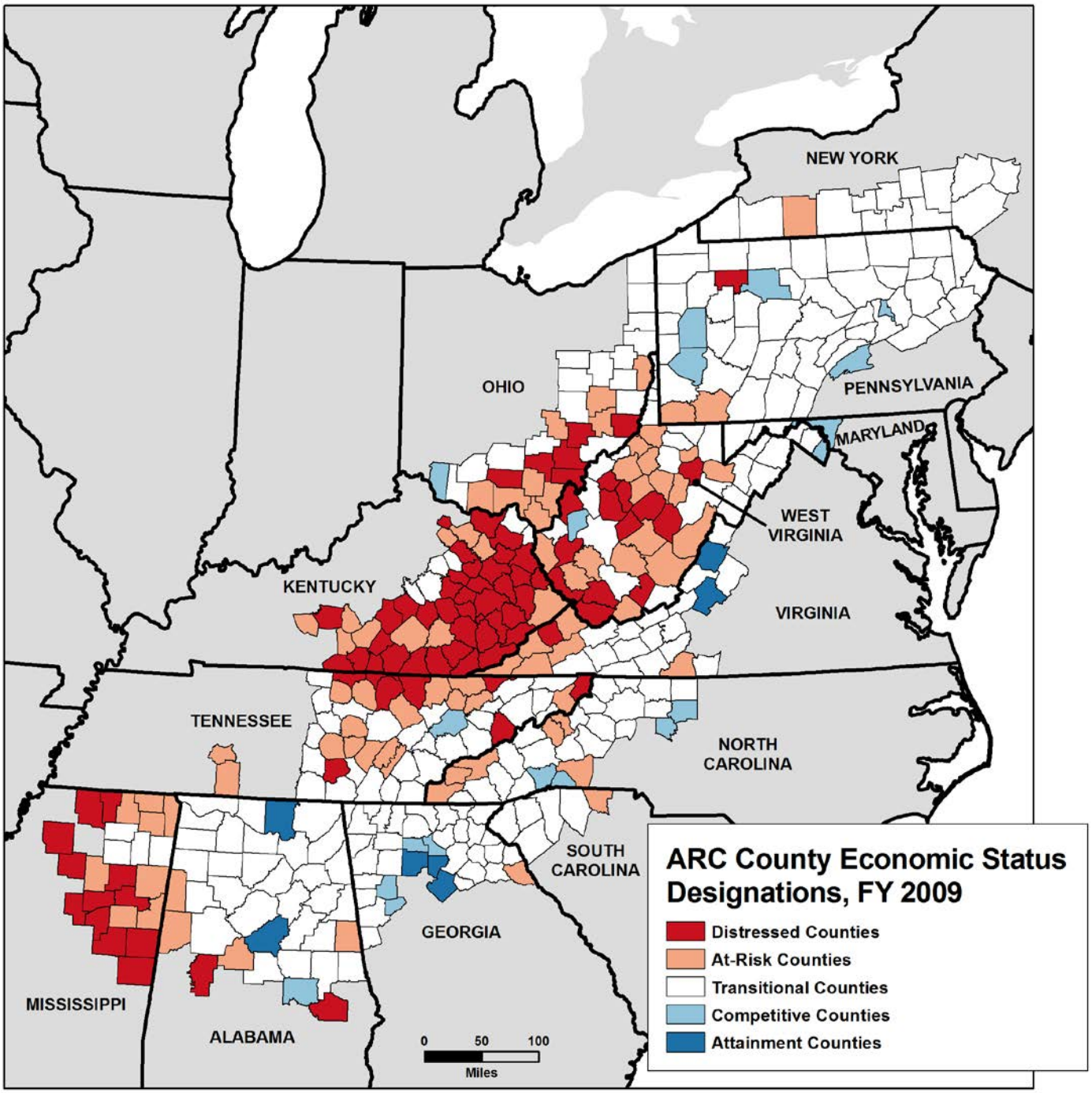
Map Title: County Types in the Appalachian Region
Data Source: Appalachian Regional Commission.

Figure 1.3: County Economic Status Designations in the Appalachian Region, Fiscal Year 2007



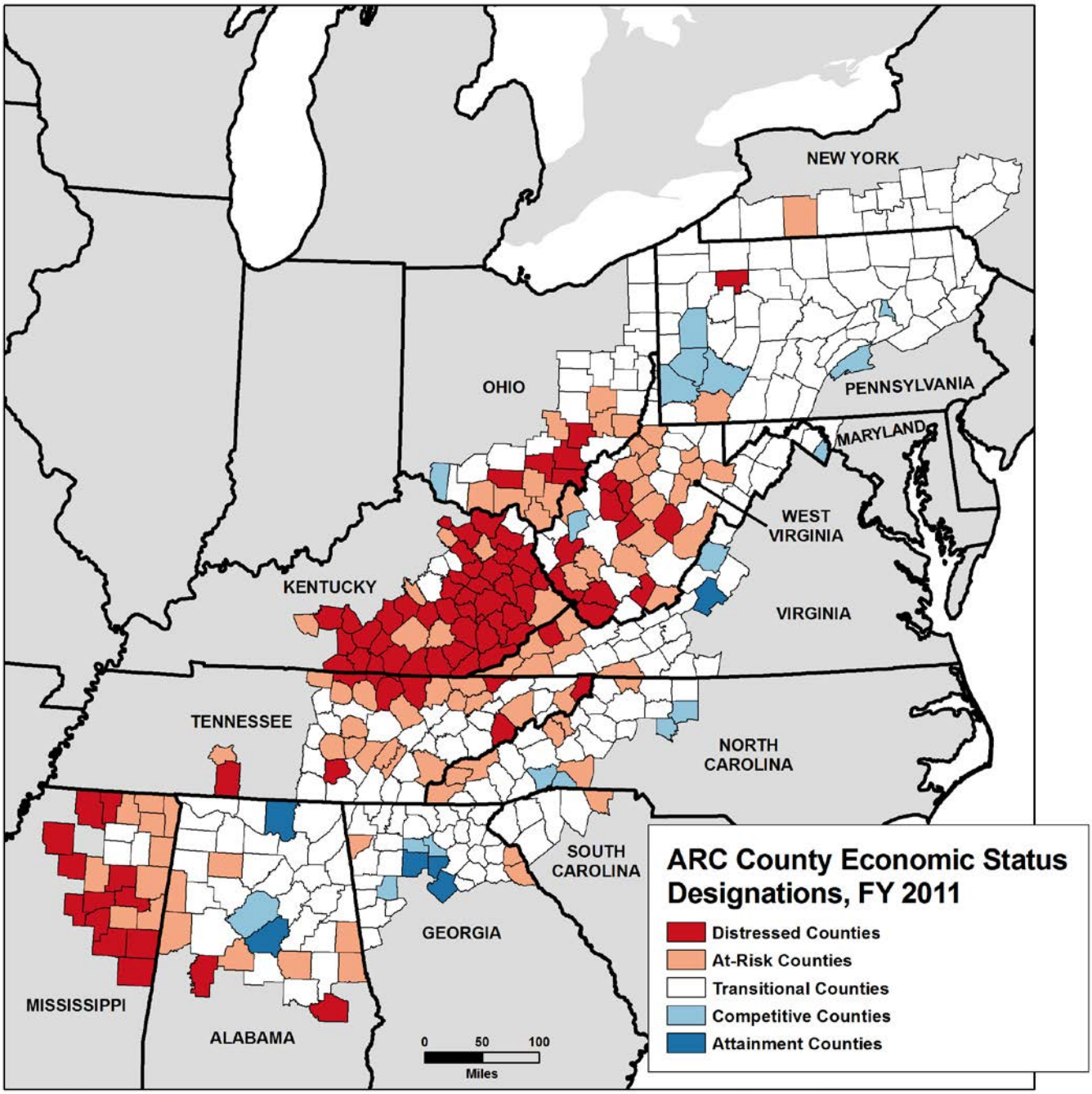
Map Title: County Economic Status Designations in the Appalachian Region, Fiscal Year 2007
Data Source: Appalachian Regional Commission.
Note: This map includes the 10 counties added to the Appalachian region between FY 2007 and FY 2009.

Figure 1.4: County Economic Status Designations in the Appalachian Region, Fiscal Year 2009



Map Title: County Economic Status Designations in the Appalachian Region, Fiscal Year 2009
Data Source: Appalachian Regional Commission.

Figure 1.5: County Economic Status Designations in the Appalachian Region, Fiscal Year 2011



Map Title: County Economic Status Designations in the Appalachian Region, Fiscal Year 2011
Data Source: Appalachian Regional Commission.

2. Background and Objectives

2.1 Defining Household Wealth

Measuring changes in household wealth is one important way to assess the impact of the recent recession on economic well-being and financial security in Appalachia. Wealth is a measure of an individual or household's economic well-being that can be broadly defined as the value of assets minus debts. Wealth is distinct from other important measures of well-being because it represents a stock of non-human capital whereas measures such as income and earnings represent flows of resources often based on returns to human capital. Many assets provide valuable services such as housing and transportation. In addition, many of the same assets may also be liquidated, allowing individuals to meet their consumption needs if income flows are interrupted. For this reason, household wealth may be considered a financial safety net and an indicator of consumption potential during tough times.[10]

Household wealth is also an important economic asset for local areas. A potential source of capital for new businesses, it can spur economic activity, and as a consumption stabilizer, it can soften the effects of a recession. Savings—one component of wealth—may also provide a foundation for economic development.[11] Savings are a source of investment capital and as such may affect economic activity in the short-term, particularly in cases where capital investment improves the productivity of workers.[12]

On the individual and household level, wealth is built through savings and investments in long-term, appreciable assets such as housing. Homeownership has been the main repository of household wealth in the United States, with values growing steadily and remaining stable over the long-term. For households, wealth accumulation is important because it often provides retirement income, emergency funds, and supplements income to increase current consumption. Changes in household wealth, particularly housing wealth, can influence household consumption.[13]

2.2 Study Objectives

This study has three objectives:

1. To examine changes in indicators of household wealth and economic well-being in Appalachia between 2007 and 2009 using household-level data and compare to trends in the nation as a whole;

2. To analyze current (2007-2011) indicators of household wealth and economic well-being of the counties in Appalachia by subregion, county type, and economic status designation to assess the degree of recovery from the recession and compare to the nation as a whole;

3. To identify how closely county differences in aggregate housing value are associated with county differences in economic status.

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[10] James B. Davies (2009), "Wealth and Economic Inequality," pp.127-149 in *The Oxford Handbook of Economic Inequality,* edited by Wiemer Salverda *et al.* (Oxford: Oxford University Press); Edward N. Wolff (2010), "Recent Trends in Household Wealth in the United States: Rising Debt and the Middle-Class Squeeze—An Update to 2007" (Levy Economics Institute of Bard College, Working Paper No. 589).

[11] Franco Modigliani (1986), "Life Cycle, Individual Thrift, and the Wealth of Nations," *The American Economic Review*, 76(3):297-313.

[12] Federal Reserve Board (2003), "Aging global population," Chairman Alan Greenspan's Testimony Before the Special Committee on Aging, U.S. Senate, Washington D.C. (February 27), available at http://www.federalreserve.gov/boarddocs/testimony/2003/20030227/.

[13] John D. Benjamin, Peter Chinloy, and G. Donald Jud (2004), "Real Estate Versus Financial Wealth in Consumption," *Journal of Real Estate Finance and Economics,* 29(3):341-354; Karl E. Case, John M. Quigley, and Robert J. Shiller (2005), "Comparing Wealth Effects: The Stock Market Versus the Housing Market," *Advances in Macroeconomics,* 5(1):1-32.

3. Data Sources and Limitations

Household wealth data at the national level are available from two key sources: the Federal Reserve's Flow of Funds Report and the Survey of Consumer Finances Report. These data allow users to estimate current net worth (assets less liabilities). In addition, other nationally representative survey data such as the Panel Study of Income Dynamics and the Survey of Income and Program Participation can potentially accommodate estimates of other measures of household wealth at the national level. However, comparable data for household wealth at the state and county level are not readily available. Appendix A provides an overview of key household wealth concepts and the availability of county-level data. In general, the Census Bureau's American Community Survey (ACS) is the most promising source for county-level data, albeit for a limited number of indicators of wealth. The ACS was collected continuously from 2005 through 2011 and provides reliable demographic, social, and economic data for the period before, during, and after the 2007-2009 recession.

Until 2010, the decennial census was the primary source of demographic, economic, and housing information for geographies down to the block group level for the entire United States. Unlike previous censuses—which consisted of a "short form" of basic demographic and housing questions and a "long form" (used for a sample of households) that also asked detailed questions about social, economic, and housing characteristics—the 2010 census only had a short form. The decennial long form has been replaced by the American Community Survey (ACS). Fully implemented in 2005, the ACS is a relatively new survey designed for continuous collection of demographic, housing, social, and economic information from 3.5 million addresses per year in every county in the United States. The ACS is designed to provide communities with reliable and timely demographic, social, economic, and housing data each year. The ACS provides detailed information about education, employment, income, housing characteristics, commuting, and other key social and economic characteristics. Traditionally, such information was available only once a decade, several years after the decennial census date. With the ACS, a continuous stream of updated information of unprecedented usefulness is available to researchers and organizations working to improve social and economic conditions. And, because ACS data were collected before, during, and after the recent recession, the ACS provides a unique opportunity to study the impact of the recession on household wealth and economic well-being.

The annual sample size of the ACS is much smaller than the sample size of the decennial census long form. As a result, single-year estimates are only published for geographic areas with at least 65,000 people. ACS data for multiple years must be combined to provide reliable estimates for geographic areas with less than 65,000 people. For example, data for three consecutive years must be combined to provide estimates for areas with populations between 20,000 and 65,000, while data for five years must be combined to provide reliable estimates for geographic areas with fewer than 20,000 people.

Previous estimates[14] of state and regional household wealth have used dividend income as a proxy for financial assets (e.g., stocks and pension fund reserves) held by households and median housing prices as an estimate of gross housing wealth. The ACS provides an estimate of household income from interest, dividends, net rental income, royalty income, and income from estates and trusts. Housing prices are generally available for relatively few metropolitan areas on an annual basis; but owner-reported values of houses are reported each year in the ACS. For counties with at least 20,000 people, we obtain estimates of housing value from the 2006-2008 ACS 3-year estimates, and we use a method to estimate aggregate housing value for counties with populations under 20,000 (see Appendix C). For many Americans, their home is their largest and most valuable asset, accounting for approximately 30 percent of total household assets on average. Because homes constitute such a large portion of household wealth, price changes in homes can have a significant effect on total wealth for both households and communities.

[14] Chad R. Wilkerson and Megan D. Williams (2011), "Booms and Busts in Household Wealth: Implications for Tenth District States," *Economic Review* (Second Quarter); Sarah A. Low (2005), "Regional Asset Indicators: The Wealth of Regions," *The Main Street Economist: A Commentary on the Rural Economy* (September).

A sizeable number of counties in the Appalachian Region have fewer than 65,000 residents (see Table 3.1), and many of these have populations that are below 20,000.[15] Therefore, we must use the 2005-2009 five-year ACS data files to have comparable statistics at the county level for all 420 counties in the Appalachian Region. However, by using the Census Bureau's full ACS microdata files we are able to aggregate household-level data for 2007 and 2009 to the Appalachian and non-Appalachian portions of the 13 states in the Region with three exceptions—Maryland, South Carolina, and West Virginia (see Table 3.1). There are only three counties in the Appalachian portion of Maryland, and only one of these has less than 65,000 people. Therefore, we are not able to show data for the non-Appalachian portion of Maryland because it would be possible to derive the data for the county with less than 65,000 people by subtracting the estimates for the two counties with more than 65,000 people from the totals for the non-Appalachian portion of the state. Similarly, there are six counties in the Appalachian portion of South Carolina and only one of these has less than 65,000 people. As a result, in both Maryland and South Carolina we are able to show data only for the metropolitan counties in the Appalachian portion of the state, and the nonmetropolitan counties in both the Appalachian and non-Appalachian portions of the state must be combined to avoid data disclosure for counties with a population of less than 65,000 people. In West Virginia, all of the counties are part of the Appalachian Region so there is no non-Appalachian portion within West Virginia. Finally, we are also able to aggregate household-level data for 2007 and 2009 to several of the key classifications of counties within the Appalachian Region—subregions, county types, and economic status groups, all of which meet the 65,000 population threshold for use of single-year ACS estimates (see Table 3.2).[16] The ACS data allow us to examine the impact of the recession from 2007 to 2009 in Appalachia and make comparisons to the nation as a whole. For comparison purposes, Table 3.3 provides the population size characteristics for 2007 and 2009 of the non-Appalachian counties in the 13 Appalachian states.

The five-year ACS estimates for 2005-2009 and 2007-2011 used in this report represent concepts that are fundamentally different from those associated with data from the decennial census. While the main function of the census is to provide *counts* of people for congressional apportionment and legislative redistricting, the primary purpose of the ACS is to measure the changing *characteristics* of the U.S. population. Moreover, while the decennial census provides a "snapshot" of the U.S. population once every 10 years, the ACS has been described as a "moving video image" that is continually updated. Finally, while the census provides "point in time" estimates designed to approximate an area's characteristics on a specific date, the ACS provides "period" estimates that represent data collected over a period of time. The five-year estimates in this report, therefore, are data collected over the five-year (or 60-month) period from 2005 through 2009 and 2007 through 2011. These ACS estimates are *not* averages of monthly or annual values, but rather an *aggregation* of data collected over the five-year period.

For areas with consistent population characteristics throughout the calendar year, ACS period estimates might not differ much from those that would result from a point-in-time survey like the decennial census. However, ACS period estimates might be noticeably different from point-in-time estimates for areas with seasonal populations or those that experience a natural disaster such as a hurricane. For example, a resort community in the upper Midwest might be dominated by locals in the winter months and by temporary workers and tourists in the summer months, with a corresponding decrease in employment rates during the winter and increase in these rates during the summer. In such a community, the ACS period estimate of the percent of persons in the labor force, which is based on data across the entire calendar year, would likely be higher than the decennial census point-in-time estimate from April 1. While five-year ACS data are needed to provide reliable estimates for areas with small populations, they can make it difficult to track trends in these areas. The 2005-2009 ACS data illustrate this problem. The 2005-2009 time period covers three distinct periods of economic activity: the months of economic growth that preceded the recession of December 2007 to June 2009, the recession period itself, and the

[15] Population thresholds for counties in the ACS are based on the Census Bureau's county definitions, not those of the Bureau of Economic Analysis. Therefore, Tables 3.1, 3.2, and 3.3 show the number of counties based on Census Bureau definitions.

[16] To create a comparable county geography over time to facilitate direct comparison between FY 2007 and FY 2009, we use the FY 2009 definition of counties included in the Appalachian Region for all analyses in this report.

beginning of the economic recovery that followed the downturn. Since the 2005-2009 ACS pools data from all three periods, it smooths out the extreme variations in economic measures that would be evident in annual data from the recent severe recession. Similarly, the 2007-2011 ACS data cover the recession period and the initial recovery period from June 2009 through December 2011.

Table 3.1: Population of 13 Appalachian States by Appalachian and Non-Appalachian Status, 2007 and 2009

Geographic Area	2007 Population	2009 Population	Number of Counties	Number of Counties with <65,000 Population, 2007	Number of Counties with <65,000 Population, 2009
Alabama					
Appalachian Alabama	2,973,246	3,024,719	37	21	21
Non-Appalachian Alabama	1,664,658	1,683,989	30	25	25
Georgia					
Appalachian Georgia	2,810,645	2,924,921	37	26	26
Non-Appalachian Georgia	6,723,116	6,904,290	122	101	101
Kentucky					
Appalachian Kentucky	1,189,048	1,194,500	54	52	52
Non-Appalachian Kentucky	3,067,230	3,119,613	66	56	55
Maryland					
Appalachian Maryland, Metropolitan	217,664	218,442	2	0	0
Non-Appalachian Maryland, Metropolitan	5,116,624	5,177,441	15	2	2
Maryland, Nonmetropolitan	299,954	303,595	7	6	6
Mississippi					
Appalachian Mississippi	620,674	623,260	24	23	23
Non-Appalachian Mississippi	2,301,049	2,328,736	58	49	49
New York					
Appalachian New York	1,052,512	1,049,686	14	8	8
Non-Appalachian New York	18,370,265	18,491,767	48	16	16
North Carolina					
Appalachian North Carolina	1,635,530	1,662,282	29	22	22
Non-Appalachian North Carolina	7,428,544	7,718,602	71	41	41
Ohio					
Appalachian Ohio	2,023,170	2,013,203	32	21	21
Non-Appalachian Ohio	9,497,645	9,529,442	56	29	29
Pennsylvania					
Appalachian Pennsylvania	5,740,943	5,736,617	52	29	28
Non-Appalachian Pennsylvania	6,781,588	6,868,150	15	0	0
South Carolina					
Appalachian South Carolina, Metropolitan	1,004,208	1,041,295	4	0	0
Non-Appalachian South Carolina, Metropolitan	2,364,525	2,451,754	17	5	5
South Carolina, Nonmetropolitan	1,055,499	1,068,193	25	20	20
Tennessee					
Appalachian Tennessee	2,721,180	2,768,846	52	42	42
Non-Appalachian Tennessee	3,451,682	3,527,408	43	34	33
Virginia					
Appalachian Virginia	758,430	760,060	33	32	32
Non-Appalachian Virginia	6,961,319	7,122,530	101	74	74
West Virginia (entire state)	1,811,198	1,819,777	55	48	48

Note: Number of counties includes 29 independent cities in Virginia. Appalachian and Non-Appalachian status based on county designations for FY 2009.

Data Source: U.S. Census Bureau, Vintage 2009 Population Estimates.

Table 3.2: Population of Appalachian Counties in 13 Appalachian States Aggregated to Subregion, County Type, and Economic Status Classification, 2007 and 2009

Geographic Area	2007 Population	2009 Population	Number of Counties	Number of Counties with <65,000 Population, 2007	Number of Counties with <65,000 Population, 2009
ALL APPALACHIAN COUNTIES IN 13 STATES (428 counties)	**24,712,934**	**24,993,391**	**428**	**326**	**325**
Subregions					
Northern Appalachia	8,311,909	8,292,750	86	47	46
North Central Appalachia	2,365,840	2,378,968	63	53	53
Central Appalachia	1,910,567	1,917,025	83	80	80
South Central Appalachia	4,591,007	4,664,225	92	75	75
Southern Appalachia	7,533,611	7,740,423	104	71	71
County Types					
Large Metros (pop. 1 million +)	5,658,747	5,773,210	34	14	14
Small Metros (pop. <1 million)	9,928,554	10,070,650	110	60	60
Nonmetro, Adjacent to Large Metros	1,671,348	1,676,106	35	25	25
Nonmetro, Adjacent to Small Metros	4,938,725	4,951,058	139	120	119
Rural (nonmetro, not adj. to a metro)	2,515,560	2,522,367	110	107	107
Economic Status, FY 2007					
Distressed	1,430,261	1,427,040	78	78	78
At-Risk	2,377,017	2,378,194	86	83	83
Transitional	14,788,012	14,891,371	231	152	151
Competitive	4,617,593	4,714,751	26	11	11
Attainment	1,500,051	1,582,035	7	2	2
Economic Status, FY 2009					
Distressed	1,427,612	1,424,622	81	81	81
At-Risk	2,414,167	2,416,167	82	78	78
Transitional	15,944,553	16,089,321	239	156	155
Competitive	3,257,601	3,308,230	19	9	9
Attainment	1,669,001	1,755,051	7	2	2

Note: Number of counties includes eight independent cities in Virginia, and the counties that were added to the Appalachian Region between FY 2007 and FY 2009.

Data Source: U.S. Census Bureau, Vintage 2009 Population Estimates.

Table 3.3: Population of Non-Appalachian Counties in 13 Appalachian States Aggregated to County Type and Economic Status Classification, 2007 and 2009

Geographic Area	2007 Population	2009 Population	Number of Counties	Number of Counties with <65,000 Population, 2007	Number of Counties with <65,000 Population, 2009
ALL NON-APPALACHIAN COUNTIES IN 13 STATES (671 counties)	**74,929,212**	**76,139,727**	**671**	**456**	**454**
County Types					
Large Metros (pop. 1 million +)	43,498,439	44,200,027	156	66	65
Small Metros (pop. <1 million)	20,613,896	21,032,423	175	81	81
Nonmetro, Adjacent to Large Metros	2,203,775	2,242,270	58	49	49
Nonmetro, Adjacent to Small Metros	6,225,977	6,272,283	184	167	167
Rural (nonmetro, not adj. to a metro)	2,387,125	2,392,724	98	93	92
Economic Status, FY 2007					
Distressed	3,045,156	3,043,943	84	82	82
At-Risk	7,927,080	7,990,977	122	110	110
Transitional	28,718,328	29,069,571	286	191	190
Competitive	14,824,121	15,181,424	92	42	41
Attainment	20,414,527	20,853,812	87	31	31
Economic Status, FY 2009					
Distressed	3,201,417	3,203,505	87	84	84
At-Risk	8,710,549	8,793,703	135	117	117
Transitional	29,366,783	29,737,844	285	190	189
Competitive	12,212,403	12,487,002	75	31	30
Attainment	21,438,060	21,917,673	89	34	34

Note: Number of counties includes 21 independent cities in Virginia, and excludes the counties that were added to the Appalachian Region between FY 2007 and FY 2009.

Data Source: U.S. Census Bureau, Vintage 2009 Population Estimates.

4. Trends in Household Income and Poverty in Appalachia

4.1 Household Income

Household income in Appalachia has historically lagged behind the rest of the country, and this gap was still evident prior to the onset of the recession in 2007. The 2000 Census found a mean household income in Appalachia of $58,702 in 1999, compared with $72,917 for the nation as a whole. Table 4.1 shows the variation in mean and median household income within the 13 Appalachian states and across subregions and county types. Among subregions, mean household income is highest in Southern Appalachia and lowest in Central Appalachia. Appalachian counties that are part of metropolitan areas with a million or more people had a mean household income in 1999 that was almost $11,000 higher than the Appalachian average, while the mean in rural counties was more than $11,000 lower. There are only three states in the Appalachian Region where average household income in 1999 was higher in the Appalachian than in the non-Appalachian counties—Alabama, Georgia, and South Carolina. Median household income is also lower in Appalachia compared with the nation, and the patterns across subregions, county types, and the Appalachian states are the same as those for mean household income.

The impact of the 2007-2009 recession on household income is also evident in Table 4.1. As described in Section 3, five years of ACS data must be combined to provide reliable estimates for all 420 counties in the Appalachian Region. Because the ACS was not fully implemented nationwide until 2005, the first five-year ACS file available is for the period from 2005 to 2009. Although this period also includes data for the pre-recession years, it is the closest approximation to the recession period available in ACS data. While median household income decreased by 5 percent in the United States between 1999 and 2005-2009, it decreased by almost 7 percent in Appalachia, indicating that the Region may have suffered a disproportionate impact (see Table 4.1).[17] Among subregions, median income declined most in South Central (9.7 percent) and Southern Appalachia (8.7 percent) and least (3.3 percent) in Central Appalachia. During the recession, job losses were highest among African Americans, those without a high school diploma, and those working in the construction, manufacturing, retail, and service industries. Counties in the South Central subregion have older populations and lower levels of education, while those in the Southern subregion have higher shares of African Americans and adults who have not completed high school. The South Central subregion also has a higher share of vacant housing units, many of which are seasonal vacancies indicating second or vacation homes. Declines in tourism and associated retail spending during the recession may also be one of the factors affecting income in the South Central subregion. Median income loss was lowest (5 percent) for households located in large metropolitan areas, but rose to almost 8 percent for those living in nonmetro counties adjacent to small metropolitan areas. Those who lost their jobs in large metro areas likely had more opportunities to find alternative employment, while those who lost jobs in nonmetro areas may have had fewer opportunities to find another job. Also, many homeowners who lost their jobs were unable to sell their homes to move to another area with more employment opportunities. The maps in Figures 4.1 and 4.2 display the variations in mean and median household income across the Appalachian Region for the 2005-2009 period.

4.2 Poverty

The poverty rate is the most widely used measure of economic well-being for individuals and families. Poverty status is determined by a series of income thresholds that are defined based on family size and composition. For example, the poverty threshold in 2009 for a family of two adults and two children was $21,756. Poverty status also determines eligibility for many federal and state assistance programs.

Poverty rates have historically been higher in Appalachia than in the rest of the United States. While the poverty rate in Appalachia was only about one percentage point higher in 1999, the gap between the U.S. and Appalachian poverty rates widened to two percentage points between 1999 and the 2005-2009

[17] All dollar values have been adjusted to 2009 constant dollars so changes represent shifts in real income after accounting for inflation.

period. These results also suggest that the Appalachian Region may have been disproportionately affected by the 2007-2009 recession. Table 4.2 and Figure 4.3 show the wide variation in poverty rates within the Appalachian Region.

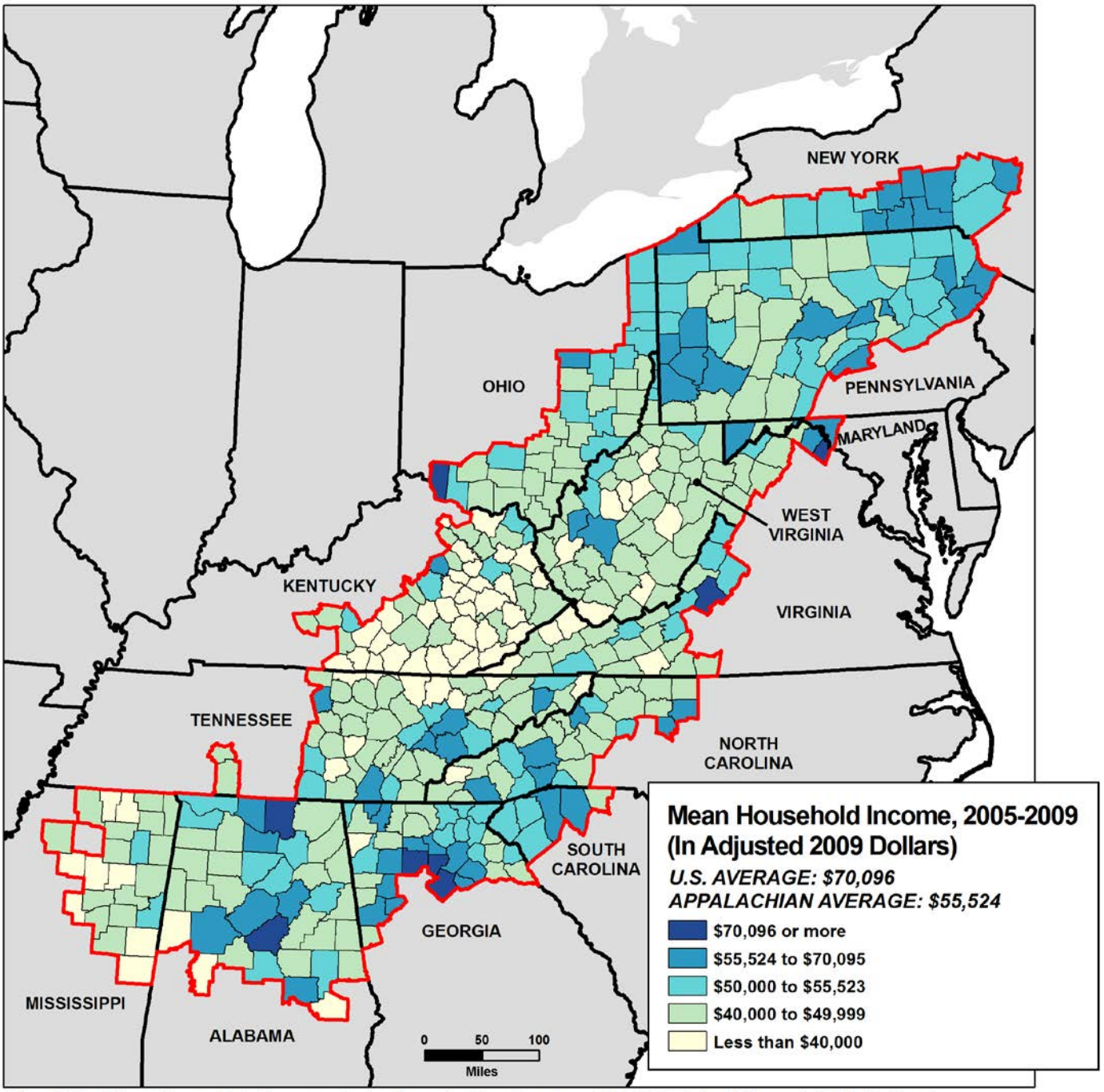
While poverty was highest in Central Appalachia in both 1999 and 2005-2009, it increased most in the South Central and Southern subregions (see Table 4.2). This is consistent with the declines in household income across this period. The poverty rate remained highest in rural counties, but increased the most between 1999 and 2005-2009 in nonmetro counties that were adjacent to large metro areas. The housing crisis affected metropolitan areas more than nonmetropolitan areas, and these effects together with declines in employment and income seem to have spilled over to adjacent counties in the Appalachian Region. With the exception only of Kentucky and Tennessee, the Appalachian portions of the 13 Appalachian states saw larger increases in their poverty rates between 1999 and 2005-2009 than the non-Appalachian portions. However, the poverty rate in the Appalachian portions of both Kentucky and Tennessee was still higher than in the non-Appalachian portions of these states.

Table 4.1: Mean and Median Household Income in the Appalachian Region (In Adjusted 2009 Dollars), 1999 and 2005-2009

Household Income (In Adjusted 2009 Dollars)	Mean Household Income			Median Household Income		
	1999	2005-2009	Percent Change	1999	2005-2009	Percent Change
United States	**72,917**	**70,096**	**-3.9**	**54,058**	**51,425**	**-4.9**
Appalachian Region	**58,702**	**55,524**	**-5.4**	**44,782**	**41,876**	**-6.5**
Subregions						
Northern Appalachia	58,691	56,316	-4.0	45,495	43,247	-4.9
North Central Appalachia	54,098	51,535	-4.7	41,138	39,121	-4.9
Central Appalachia	44,776	42,834	-4.3	32,374	31,321	-3.3
South Central Appalachia	58,632	54,016	-7.9	44,489	40,178	-9.7
Southern Appalachia	64,518	60,277	-6.6	49,698	45,369	-8.7
County Types						
Large Metros (pop. 1 million +)	69,633	66,820	-4.0	53,684	51,014	-5.0
Small Metros (pop. <1 million)	59,962	56,463	-5.8	46,094	42,637	-7.5
Nonmetro, Adjacent to Large Metros	54,632	50,955	-6.7	43,222	40,012	-7.4
Nonmetro, Adjacent to Small Metros	52,054	48,230	-7.3	40,543	37,335	-7.9
Rural (nonmetro, not adj. to a metro)	47,075	44,220	-6.1	35,003	32,623	-6.8
Alabama	**59,117**	**56,458**	**-4.5**	**43,942**	**41,216**	**-6.2**
Appalachian Alabama	61,082	58,350	-4.5	45,619	42,801	-6.2
Non-Appalachian Alabama	55,590	53,091	-4.5	41,416	38,559	-6.9
Georgia	**72,877**	**66,899**	**-8.2**	**54,624**	**49,466**	**-9.4**
Appalachian Georgia	73,771	67,268	-8.8	59,446	52,883	-11.0
Non-Appalachian Georgia	72,556	66,750	-8.0	53,495	48,016	-10.2
Kentucky	**58,245**	**55,091**	**-5.4**	**43,346**	**41,197**	**-5.0**
Appalachian Kentucky	44,511	42,942	-3.5	31,615	30,793	-2.6
Non-Appalachian Kentucky	63,737	59,650	-6.4	49,005	45,305	-7.6
Maryland	**86,832**	**89,803**	**3.4**	**68,056**	**69,475**	**2.1**
Appalachian Maryland	58,072	61,126	5.3	46,797	46,050	-1.6
Non-Appalachian Maryland	88,209	91,203	3.4	70,027	70,916	1.3
Mississippi	**54,471**	**50,995**	**-6.4**	**40,331**	**36,796**	**-8.8**
Appalachian Mississippi	50,687	45,112	-11.0	38,354	32,766	-14.6
Non-Appalachian Mississippi	55,559	52,638	-5.3	41,249	38,131	-7.6
New York	**79,627**	**79,862**	**0.3**	**55,859**	**55,233**	**-1.1**
Appalachian New York	57,580	55,596	-3.4	45,060	43,495	-3.5
Non-Appalachian New York	81,007	81,382	0.5	57,138	56,520	-1.1
North Carolina	**65,941**	**61,166**	**-7.2**	**50,441**	**45,069**	**-10.7**
Appalachian North Carolina	59,984	54,807	-8.6	46,458	40,588	-12.6
Non-Appalachian North Carolina	67,412	62,634	-7.1	51,664	46,214	-10.5
Ohio	**68,016**	**61,506**	**-9.6**	**52,722**	**47,144**	**-10.6**
Appalachian Ohio	56,923	51,933	-8.8	44,879	40,626	-9.5
Non-Appalachian Ohio	70,403	63,526	-9.8	54,797	48,747	-11.0
Pennsylvania	**67,817**	**66,294**	**-2.2**	**51,628**	**49,737**	**-3.7**
Appalachian Pennsylvania	59,399	57,389	-3.4	45,734	43,801	-4.2
Non-Appalachian Pennsylvania	75,736	74,459	-1.7	58,110	56,140	-3.4
South Carolina	**62,240**	**58,368**	**-6.2**	**47,735**	**43,572**	**-8.7**
Appalachian South Carolina	63,820	57,938	-9.2	49,462	43,641	-11.8
Non-Appalachian South Carolina	61,678	58,518	-5.1	47,491	43,615	-8.2
Tennessee	**62,676**	**58,540**	**-6.6**	**46,806**	**42,943**	**-8.3**
Appalachian Tennessee	57,241	53,233	-7.0	42,835	39,451	-7.9
Non-Appalachian Tennessee	67,259	62,903	-6.5	50,892	45,919	-9.8
Virginia	**79,320**	**80,851**	**1.9**	**60,087**	**60,316**	**0.4**
Appalachian Virginia	51,978	47,551	-8.5	39,289	36,682	-6.6
Non-Appalachian Virginia	82,816	84,777	2.4	63,671	64,139	0.7
West Virginia (entire state)	**51,530**	**49,727**	**-3.5**	**38,227**	**37,356**	**-2.3**

Data Sources: U.S. Census Bureau, 2000 Decennial Census and 2005-2009 American Community Survey.

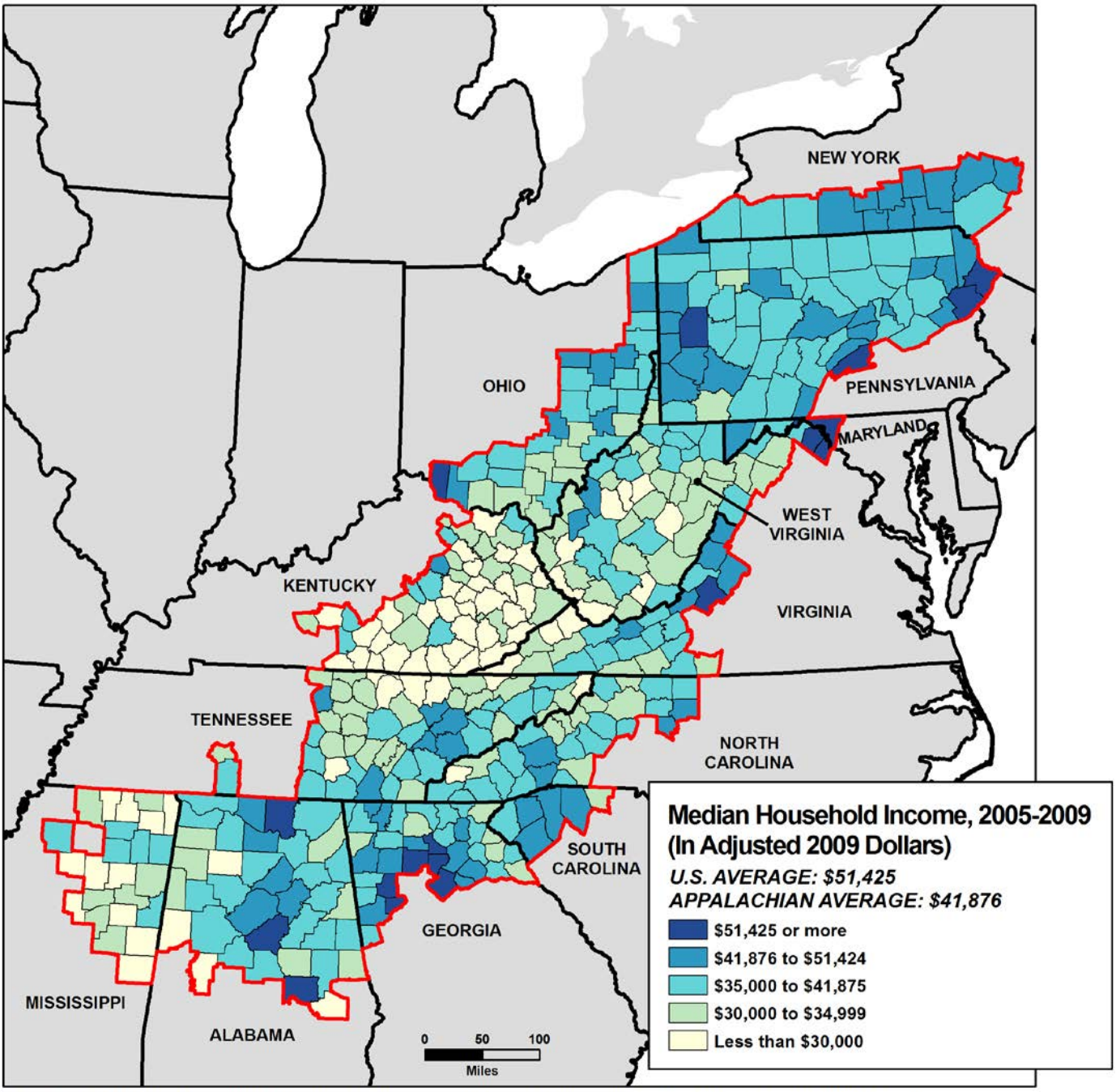
Figure 4.1: Mean Household Income in the Appalachian Region (In Adjusted 2009 Dollars), 2005-2009



Map Title: Mean Household Income in the Appalachian Region, 2005-2009 (In Adjusted 2009 Dollars)
Data Source: U.S. Census Bureau, 2005-2009 American Community Survey.

Only eight counties in the Appalachian Region have a mean household income that matches or exceeds the U.S. average of $70,096, while more than three-fifths have mean household incomes below $50,000. The counties with mean household incomes at or above the Appalachian average can be found in every state, but tend to be concentrated in metropolitan areas such as Birmingham, Alabama, Atlanta, Georgia, and Pittsburgh, Pennsylvania. In contrast, the 66 counties with an average household income less than $40,000 are primarily found outside metropolitan areas in West Virginia, Kentucky, Tennessee, and Mississippi.

Figure 4.2: Median Household Income in the Appalachian Region (In Adjusted 2009 Dollars), 2005-2009



Map Title: Median Household Income in the Appalachian Region, 2005-2009 (In Adjusted 2009 Dollars)
Data Source: U.S. Census Bureau, 2005-2009 American Community Survey.

At $41,876, median household income in Appalachia was only 81 percent that of the United States during the 2005-2009 period. Only 18 counties in Appalachia had median household incomes that matched or surpassed the national average in 2005-2009. Counties with median household incomes at or above the Appalachian average are scattered across the Region but tend to be more concentrated in metropolitan areas. Although median household income declined less in Central Appalachia between 1999 and 2005-2009 than in South Central and Southern Appalachia, the counties with median incomes of less than $30,000 were still concentrated in the Central subregion in 2005-2009.

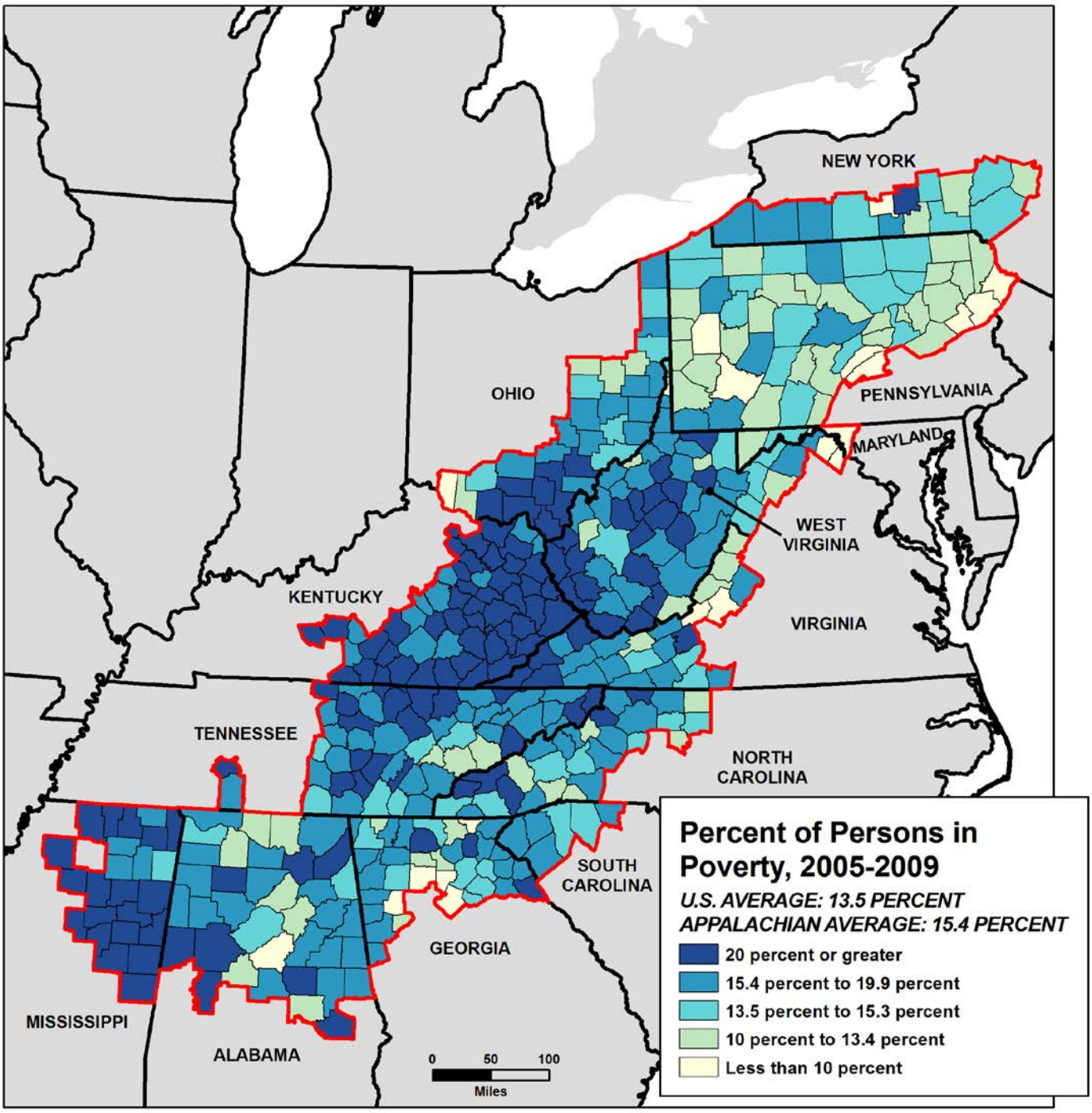
Table 4.2: Poverty Status of Persons in the Appalachian Region, 1999 and 2005-2009

Poverty Status	Persons Below Poverty Level, 1999		Persons Below Poverty Level, 2005-2009		Percentage Point Change, 1999 to 2005-2009
	Number	Percent	Number	Percent	
United States	**33,899,812**	**12.4**	**39,537,240**	**13.5**	**1.1**
Appalachian Region	**3,120,197**	**13.6**	**3,677,476**	**15.4**	**1.8**
Subregions					
Northern Appalachia	961,743	11.8	1,065,348	13.3	1.5
North Central Appalachia	362,048	16.1	392,408	17.1	1.0
Central Appalachia	423,219	23.0	430,944	23.2	0.2
South Central Appalachia	541,824	13.0	708,798	16.0	3.0
Southern Appalachia	831,363	12.7	1,079,978	14.7	2.0
County Types					
Large Metros (pop. 1 million +)	523,496	10.3	638,942	11.5	1.2
Small Metros (pop. <1 million)	1,178,863	12.8	1,436,994	15.0	2.2
Nonmetro, Adjacent to Large Metros	218,223	13.8	264,275	16.4	2.6
Nonmetro, Adjacent to Small Metros	702,496	15.0	815,931	17.2	2.2
Rural (nonmetro, not adj. to a metro)	497,119	20.4	521,334	21.4	1.0
Alabama	**698,097**	**16.1**	**757,833**	**16.8**	**0.7**
Appalachian Alabama	397,223	14.4	446,528	15.4	1.0
Non-Appalachian Alabama	300,874	19.2	311,305	19.3	0.1
Georgia	**1,033,793**	**13.0**	**1,384,518**	**15.0**	**2.0**
Appalachian Georgia	200,543	9.2	336,319	12.3	3.1
Non-Appalachian Georgia	833,250	14.4	1,048,199	16.2	1.8
Kentucky	**621,096**	**15.8**	**719,746**	**17.4**	**1.6**
Appalachian Kentucky	274,818	24.4	282,739	24.5	0.1
Non-Appalachian Kentucky	346,278	12.4	437,007	14.7	2.3
Maryland	**438,676**	**8.5**	**449,770**	**8.2**	**-0.3**
Appalachian Maryland	25,719	11.7	26,475	11.4	-0.3
Non-Appalachian Maryland	412,957	8.4	423,295	8.0	-0.4
Mississippi	**548,079**	**19.9**	**604,204**	**21.4**	**1.5**
Appalachian Mississippi	116,283	19.4	135,564	22.5	3.1
Non-Appalachian Mississippi	431,796	20.1	468,640	21.1	1.0
New York	**2,692,202**	**14.6**	**2,615,897**	**13.8**	**-0.8**
Appalachian New York	138,586	13.6	150,801	15.1	1.5
Non-Appalachian New York	2,553,616	14.6	2,465,096	13.8	-0.8
North Carolina	**958,667**	**12.3**	**1,320,816**	**15.1**	**2.8**
Appalachian North Carolina	173,822	11.7	242,490	15.3	3.6
Non-Appalachian North Carolina	784,845	12.4	1,078,326	15.0	2.6
Ohio	**1,170,698**	**10.6**	**1,526,350**	**13.6**	**3.0**
Appalachian Ohio	257,780	13.0	313,519	16.0	3.0
Non-Appalachian Ohio	912,918	10.1	1,212,831	13.1	3.0
Pennsylvania	**1,304,117**	**11.0**	**1,462,191**	**12.1**	**1.1**
Appalachian Pennsylvania	639,853	11.4	701,758	12.7	1.3
Non-Appalachian Pennsylvania	664,264	10.6	760,433	11.6	1.0
South Carolina	**547,869**	**14.1**	**676,555**	**15.8**	**1.7**
Appalachian South Carolina	117,314	11.7	161,567	14.8	3.1
Non-Appalachian South Carolina	430,555	14.9	514,988	16.2	1.3
Tennessee	**746,789**	**13.5**	**967,189**	**16.1**	**2.6**
Appalachian Tennessee	349,934	14.2	441,371	16.7	2.5
Non-Appalachian Tennessee	396,855	12.9	525,818	15.7	2.8
Virginia	**656,641**	**9.6**	**752,446**	**10.1**	**0.5**
Appalachian Virginia	112,528	15.4	127,977	17.7	2.3
Non-Appalachian Virginia	544,113	8.9	624,469	9.3	0.4
West Virginia (entire state)	**315,794**	**17.9**	**310,368**	**17.6**	**-0.3**

Note: Poverty status is determined by a series of income thresholds that are determined by family size and composition. In 2009, the poverty threshold for a family of two adults and two children was $21,756.

Data Sources: U.S. Census Bureau, 2000 Decennial Census and 2005-2009 American Community Survey.

Figure 4.3: Percent of Persons in the Appalachian Region in Poverty, 2005-2009



Map Title: Percent of Persons in the Appalachian Region in Poverty, 2005-2009
Data Source: U.S. Census Bureau, 2005-2009 American Community Survey.

During the 2005-2009 period, 15 percent of Appalachian residents lived below the poverty level, nearly two percentage points above the national average. In 129 Appalachian counties at least one-fifth of all residents were poor, and in another 146 counties the poverty rate matched or surpassed the Appalachian average. Most of these counties were outside metropolitan areas and concentrated in Central, South Central, and Southern Appalachia. In contrast, there were 84 counties in 2005-2009 whose poverty rates were below the U.S. average and nearly half were located in Northern Appalachia.

5. Wealth and Economic Indicator Indices

5.1 Key Indicators of Household Wealth and Economic Well-Being

As indicated in Section 3, the ACS does not provide measures of all household assets and liabilities. However, there are six key indicators of household wealth and economic well-being that are available in the 2007, 2009, and 2007-2011 American Community Surveys:

1. Homeownership rate: percent of occupied housing units that are owned.
2. Percent of homeowners who spend more than 30 percent of their monthly income on housing costs, and have a housing cost burden.[18]
3. Percent of households with income from interest, dividends, net rental income, royalty income, and estates and trusts.
4. Average household income.
5. Average home value.
6. Average value of income from interest, dividends, net rental income, royalty income, and estates and trusts.[19]

Table 5.1 shows the impact of the recession on these six key indicators for the United States.

Table 5.1: Changes in U.S. Household Economic Indicators, 2007 to 2009

Economic Indicators	2007	2009
Homeownership rate	67.2%	65.9%
Percent of homeowners with a cost burden	30.4%	30.4%
Percent of households with interest income*	24.9%	23.5%
Average household income**	$71,579	$68,914
Average household income from interest**	$4,024	$3,460
Average home value**	$287,744	$258,527

* Includes income from interest, dividends, net rental income, royalty income, and estates and trusts.
**In constant 2009 dollars.

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

As property values dropped and foreclosures reached record highs between 2007 and 2009, the homeownership rate in the United States declined for the first time in many years. Average home value decreased by $29,000 or about ten percent over this period, although the share of homeowners with a housing cost burden did not increase. The share of households with income from interest, dividends, and other non-wage sources declined by one percentage point, while the average amount of such income decreased by 14 percent. Average household income also dropped by 4 percent between 2007 and 2009.

[18] The 30 percent threshold for housing costs is based on research on affordable housing by the U.S. Department of Housing and Urban development (HUD). According to HUD, households that must allocate more than 30 percent of their income to housing expenses are less likely to have enough resources for food, clothing, medical care or other needs.

[19] For ease of readability, we refer to this as "interest income" throughout the rest of this report, although it represents other household income from all of these sources.

5.2 Trends in Household Wealth and Economic Well-Being within the Appalachian States

Rates of homeownership have historically been higher in Appalachia than in the U.S., due in part to differences in the type and cost of the housing stock in the Appalachian Region.[20] This pattern continued during the recession period from 2007 through 2009 (see Table 5.2). Homeownership also decreased in Appalachia between 2007 and 2009, but the decrease was less than in the U.S. as a whole. However, there was some variation across the subregions. For example, homeownership decreased by 1.4 percentage points in North Central Appalachia but by less than half a percentage point in South Central Appalachia.

The share of homeowners with a housing cost burden is considerably lower in Appalachia than in the U.S.—22 percent versus 30 percent. Unlike the nation, however, the share of homeowners in Appalachia with a housing cost burden did increase by half a percentage point between 2007 and 2009, and this share jumped by 2.2 percentage points in South Central Appalachia. This is consistent with the data in Table 4.1 showing that the South Central subregion experienced the largest decrease in both mean and median household income between 1999 and 2005-2009. Apparently, homeowners were able to hold on to their homes, but declines in household income resulted in a larger share having to spend more than 30 percent of their monthly income for housing costs.

A slightly smaller share of households in Appalachia than in the nation have income from interest, dividends, net rental income, royalty income, and estates and trusts, but there is considerable variation across subregions. For example, about 25 percent of households in the Northern subregion report such income compared with only about 15 percent in the Central subregion. The share with interest income also dropped in Appalachia by about one percentage point between 2007 and 2009, but this decline reached at least 1.5 percentage points in both the Northern and the South Central subregions.

Table 5.3 shows the impact of the recession on homeownership, housing burden, and the share of households with interest income for both the Appalachian and non-Appalachian portions of the 13 Appalachian states. In 2007, homeownership rates were higher in the Appalachian than non-Appalachian portion in every county type except for those in nonmetro areas adjacent to large metros. The lower homeownership rates among non-Appalachian counties in large and small metros likely reflect higher home prices compared with Appalachian counties in these same size metropolitan areas. Homeownership decreased between 2007 and 2009 among all county types in the 13 states except for Appalachian counties in nonmetropolitan areas adjacent to large metros.

As described in Section 1, ARC classifies each county into one of five economic status groups using an index based on unemployment rates, poverty rates, and per capita market income. Homeownership rates are higher among the Appalachian than non-Appalachian counties in every economic status group, with the largest gaps among counties in the Distressed and At-Risk groups (see Table 5.3). Between 2007 and 2009, homeownership decreased for all economic status groups in the Appalachian counties, but increased slightly among non-Appalachian counties in the Distressed and At-Risk groups. The largest decline in homeownership (3.1 percentage points) occurred among Appalachian counties in the Attainment group. Counties in this group are among the economically strongest in the nation, but they also appear to have been hardest hit by declines in employment, household income, and home values during the recession. The decrease in homeownership was almost twice as high in the Appalachian Attainment counties than in the non-Appalachian counties in this economic status group.

In both Appalachian and non-Appalachian counties, the share of homeowners with a housing cost burden was highest in large metropolitan areas both before and during the recession (see Table 5.3). This is not surprising given higher home prices in these areas. The share with a housing burden increased during the recession in almost all Appalachian and non-Appalachian county types, but the increases were larger among nonmetro Appalachian counties than non-Appalachian nonmetro counties. Between 2007 and

[20] For more detailed information about the housing stock in Appalachia, see Mark Mather (2004), "Housing and Commuting Patterns in Appalachia," available online at http://www.prb.org/Articles/2004/HousingandCommutinginUSAppalachiaPDF513KB.aspx.

2009, the share of homeowners with a housing cost burden rose among Appalachian counties in the Distressed, Transitional, and Competitive groups, but declined considerably among those in the Attainment group. Given the decline in homeownership in this economic status group, the decline in housing burden likely resulted from homeowners losing their homes during the recession. That is, homeowners who were already spending more than 30 percent of their monthly income on housing before the recession were more likely to be at risk of losing their homes during the recession than those without a housing cost burden. The share of homeowners with a housing burden is higher in non-Appalachian than Appalachian counties in every economic status group, but this share in non-Appalachian counties decreased between 2007 and 2009 for those in the Distressed and At-Risk groups even though these groups experienced slight increases in homeownership rates during the recession.

Almost 25 percent of households in Appalachian counties in large metropolitan areas had interest and dividend income compared with only 16 percent of households in rural Appalachian counties (see Table 5.3). The share of households with such income declined between 2007 and 2009 in each county type, but decreases were largest (almost two percentage points) among counties in metropolitan areas. The pattern is very similar among non-Appalachian counties. In 2007, the share of households with interest income was the same or higher in Appalachian counties than in non-Appalachian counties in every economic status group except Attainment, where the share in non-Appalachian counties exceeded that in Appalachian counties by almost ten percentage points. While the share of households with such income in non-Appalachian counties decreased in every status group between 2007 and 2009, among Appalachian counties it increased slightly in the At-Risk and Attainment groups.

Table 5.2: Change in Indicators of Economic Well-Being for Appalachia, 2007 to 2009

	Homeownership Rate		Percent with Housing Burden		Percent with Interest Income	
	2007	2009	2007	2009	2007	2009
United States	**67.2**	**65.9**	**30.4**	**30.4**	**24.9**	**23.5**
Appalachian Region	**72.7**	**71.8**	**21.5**	**22.0**	**21.8**	**20.7**
Subregions						
Northern Appalachia	72.3	71.5	22.2	22.2	26.5	25.0
North Central Appalachia	74.1	72.7	18.7	17.4	19.1	18.5
Central Appalachia	73.7	72.5	18.7	18.7	14.9	14.4
South Central Appalachia	71.6	71.2	20.1	22.3	22.3	20.7
Southern Appalachia	73.1	71.9	23.0	24.1	18.7	17.9

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

Table 5.3: Change in Economic Indicators by County Type and Economic Status, 2007 to 2009

	Homeownership Rate			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	73.6	72.1	62.5	61.4
Small Metros (pop. <1 million)	71.0	70.3	68.1	66.8
Nonmetro, Adjacent to Large Metros	73.3	73.2	73.4	71.8
Nonmetro, Adjacent to Small Metros	74.1	73.5	71.9	70.6
Rural (nonmetro, not adj. to a metro)	74.6	72.7	71.2	70.2
Economic Status				
Distressed	74.2	72.8	47.5	48.7
At-Risk	74.5	72.6	53.8	54.2
Transitional	72.5	71.8	63.1	61.4
Competitive	70.5	69.2	67.8	67.7
Attainment	78.0	74.9	74.5	72.8
	Percent with Housing Burden			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	24.9	24.6	30.5	30.7
Small Metros (pop. <1 million)	20.4	21.0	24.1	24.8
Nonmetro, Adjacent to Large Metros	22.8	24.3	24.9	24.4
Nonmetro, Adjacent to Small Metros	20.2	21.2	23.0	23.7
Rural (nonmetro, not adj. to a metro)	19.8	20.4	24.1	24.7
Economic Status				
Distressed	19.1	21.0	29.1	27.9
At-Risk	19.7	19.2	29.6	28.2
Transitional	21.0	22.0	25.6	26.5
Competitive	22.3	23.0	25.1	25.8
Attainment	29.0	25.7	30.9	30.7
	Percent with Interest Income			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	24.2	22.5	25.6	24.0
Small Metros (pop. <1 million)	23.0	21.5	23.1	21.1
Nonmetro, Adjacent to Large Metros	20.6	20.2	20.6	20.2
Nonmetro, Adjacent to Small Metros	20.0	19.3	18.7	17.6
Rural (nonmetro, not adj. to a metro)	16.2	16.1	18.8	17.2
Economic Status				
Distressed	13.4	12.5	10.4	9.4
At-Risk	15.7	16.1	15.7	14.9
Transitional	22.4	21.1	21.8	20.3
Competitive	25.6	24.5	25.0	23.1
Attainment	21.8	22.1	31.6	29.6

Note: Economic status reflects fiscal years; data reflect calendar years.

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

5.3 Indices of Household Wealth and Economic Well-Being, 2007 to 2009

Use of indices, rather than exact values, makes it easier to assess the "relative" status or well-being of the Appalachian Region compared with the United States as a whole. We construct an index for each of the six key indicators of household wealth and economic well-being for both 2007 and 2009. As defined in Table 5.4, each index is calculated by dividing the indicator value for a specific geography by the indicator value for the United States and multiplying by 100. Index values greater than 100 indicate that the level of the indicator is *higher* in the specific geography than in the U.S., while values less than 100 indicate the level of the indicator in the specific geography is *lower* than the level in the nation. For example, an index of 106 would indicate that the level of the indicator for that geography was six percent higher than the level in the nation. Table 5.5 shows the source variables used to calculate values for the six key indicators for the United States for 2007 and 2009.

Table 5.4: Definitions of Household Wealth and Economic Well-Being Indices

Variable	Definition	Potential Values
Homeownership Index	Percent of households that are owned in the geographic area divided by the percent of households that are owned in the U.S., multiplied by 100.	1 to 200
Housing Burden Index	Percent of homeowners in the geographic area who spend more than 30 percent of their monthly income on housing costs divided by the percent of homeowners in the U.S. who spend more than 30 percent of their monthly income on housing costs, multiplied by 100.	1 to 200
Percent With Interest Income Index	Percent of households in the geographic area with any income from interest, dividends, net rental income, royalty income, and estates and trusts divided by the percent of households in the U.S. with any income from interest, dividends, net rental income, royalty income, and estates and trusts, multiplied by 100.	1 to 200
Home Value Index	Average home value in the geographic area divided by the average home value in the U.S., multiplied by 100.	1 to 200
Household Income Index	Average household income in the geographic area divided by the average household income in the U.S., multiplied by 100.	1 to 200
Interest Income Value Index	Average value of household income from interest, dividends, net rental income, royalty income, and estates and trusts in the geographic area divided by the average value of household income from interest, dividends, net rental income, royalty income, and estates and trusts in the U.S., multiplied by 100.	1 to 200

Table 5.5: Housing and Household Wealth Variables for the United States for Index Calculations, 2007 and 2009

Data Item	2007		2009	
	Estimate	MOE (+/-) 90-percent	Estimate	MOE (+/-) 90-percent
Total number of housing units	127,895,430	3,737	129,949,960	8,690
Number of vacant units	15,517,453	146,414	16,333,731	165,940
Number of occupied units (households)	112,377,977	144,356	113,616,229	161,397
Number of owner-occupied units	75,515,104	227,236	74,843,004	217,682
Number of households where selected monthly owner costs exceed 30 percent of monthly household income	22,995,894	74,675	22,726,648	75,703
Number of households that have income from interest, dividends, net rental income, and estates and trusts	27,985,152	118,120	26,725,960	121,103
Aggregate value (sum) of household income from interest, dividends, net rental income, and estates and trusts	437,135,738,800	4,604,630,713	393,126,514,600	4,196,380,083
Aggregate value (sum) of total household income	7,775,818,743,200	16,634,178,575	7,829,705,455,700	18,101,144,325
Aggregate value (sum) for home value	21,004,708,385,000	50,938,584,780	19,348,970,528,400	58,535,537,966
Aggregate value (sum) for selected monthly owner costs	102,017,424,400	282,896,885	103,209,159,700	283,706,448

Source: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

Relative differences between the Appalachian Region and the U.S. in homeownership rates, and the share of households with interest income and housing cost burden are shown in Table 5.6. The homeownership rate was eight percent higher in Appalachia than in the nation in 2007 and this relative difference increased to nine percent in 2009, indicating that homeownership rates dropped less in Appalachia during the recession than in the U.S. as a whole. This pattern was consistent across Appalachian subregions and the Appalachian portions of the 13 Appalachian states. However, the homeownership index declined between 2007 and 2009 in some of the non-Appalachian portions of the Appalachian states.

The share of homeowners with a housing cost burden was almost 30 percent lower in Appalachia in 2007 compared to the U.S., but this gap shrank slightly to about 27 percent by 2009, indicating an increase in housing burden in Appalachia during the recession. Unlike the homeownership index, change between 2007 and 2009 in the housing burden index varied considerably across the subregions. In particular, the gap in housing burden between the South Central and Southern Appalachian subregions and the U.S. decreased considerably during the recession. These subregions seem to have been disproportionately impacted by the recession compared to other Appalachian subregions.

The share of households in Appalachia with income from interest, dividends, and other sources is about 12 percent lower than in the U.S., and this gap did not change between 2007 and 2009. However this gap varies widely across the Appalachian Region. For example, the share of households in Northern Appalachia with interest income is almost seven percent higher than in the nation, while in Central Appalachia the share is 40 percent lower. There is no consistent pattern of increase or decrease between 2007 and 2009 in the gap between Appalachian subregions and the United States. In some areas in Table 5.6, the gap lessened indicating that some parts of Appalachia were not as negatively impacted by the recession as the U.S. as a whole, but in others—such as the Appalachian portion of North Carolina—this gap widened.

Table 5.7 shows the impact of the recession on home value, average household income, and average household income from interest, dividends, and other sources. In 2007, average home value in Appalachia was 45 percent lower than in the nation, although this varied from 63 percent less in the Central subregion to only 37 percent less in the Southern subregion. In all Appalachian states except Alabama, the gap in home values between the U.S. and the Appalachian portion of the state is larger than between the U.S. and the non-Appalachian portion of the state. Although average home values remained considerably lower in the Appalachian Region than in the U.S. in 2009, the gap shrank by about 4 percentage points during the recession. This indicates that home values dropped less in Appalachia than they did in the nation as a whole during the recession, and this is consistent with other data indicating that the housing crisis affected metropolitan areas more than nonmetropolitan and rural areas.

Average household income in Appalachia was 22 percent lower than the national average in 2007, ranging from 40 percent lower in Central Appalachia to only 16 percent lower in Southern Appalachia (see Table 5.7). Again, with the exception of Alabama, the household income index was lower in the Appalachian portion of each state than in the non-Appalachian portion. The household income gap between Appalachia and the U.S. also shrank slightly between 2007 and 2009, and this pattern was consistent across all of the subregions. As of 2009, then, these data indicate that average household income did not drop by as much in Appalachia as in the nation as a whole.

Not only is the share of households with interest income lower in the Appalachian Region, but also the average amount for each household that does have such income. In 2007, average household interest income in Appalachia was 36 percent lower than in the U.S., ranging from 66 percent less in the Central subregion to only 22 percent less in the South Central subregion (see Table 5.7). With the exceptions of North Carolina and Alabama, the household interest income index was lower in the Appalachian than the non-Appalachian portions of each state. However, the change between 2007 and 2009 was not consistent across the subregions. The gap in interest income declined in the Northern, North Central, and Central subregions, but increased in the South Central and Southern subregions. Among the Appalachian portions of the 13 states, the gap widened most in Mississippi, dropping from 48 percent of the U.S. average in 2007 to only 32 percent by 2009.

Table 5.6: Housing and Household Wealth Indices in the Appalachian Region, 2007 and 2009

Indices (U.S. = 100)	Homeownership Index		Housing Burden Index		Percent with Interest Income Index	
	2007	2009	2007	2009	2007	2009
United States	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Appalachian Region	**108.2**	**108.9**	**70.5**	**72.5**	**87.7**	**87.8**
Subregions						
Northern Appalachia	107.6	108.6	73.2	73.0	106.5	106.2
North Central Appalachia	110.3	110.4	61.6	57.4	76.6	78.8
Central Appalachia	109.7	110.0	61.5	61.5	59.8	61.3
South Central Appalachia	106.6	108.1	66.1	73.3	89.4	87.9
Southern Appalachia	108.8	109.2	75.6	79.4	75.1	76.0
Alabama	**105.5**	**105.6**	**70.2**	**72.7**	**75.5**	**73.7**
Appalachian Alabama	107.7	107.9	68.1	71.1	79.0	76.8
Non-Appalachian Alabama	101.7	101.7	74.4	75.8	69.4	68.2
Georgia	**102.0**	**101.8**	**89.1**	**91.0**	**75.9**	**74.9**
Appalachian Georgia	111.0	112.3	90.6	93.9	72.1	77.1
Non-Appalachian Georgia	98.3	97.5	88.4	89.7	77.5	74.0
Kentucky	**105.2**	**104.2**	**65.0**	**68.1**	**80.5**	**79.1**
Appalachian Kentucky	108.4	108.1	62.0	65.9	56.8	57.8
Non-Appalachian Kentucky	104.1	102.8	66.1	68.9	89.2	87.0
Maryland	**104.1**	**104.1**	**101.9**	**103.0**	**110.8**	**111.6**
Appalachian Maryland, Metropolitan	99.3	99.2	75.4	79.9	103.2	98.4
Non-Appalachian Maryland, Metropolitan	103.8	103.8	102.7	104.1	111.7	111.6
Maryland, Nonmetropolitan	111.4	112.5	106.7	102.6	101.0	120.4
Mississippi	**106.1**	**105.5**	**78.0**	**77.5**	**63.3**	**58.3**
Appalachian Mississippi	109.4	108.1	68.7	79.3	57.2	56.6
Non-Appalachian Mississippi	105.2	104.8	80.6	76.9	64.9	58.8
New York	**82.6**	**83.5**	**107.9**	**108.4**	**102.9**	**101.4**
Appalachian New York	102.6	105.1	72.4	71.0	106.2	110.7
Non-Appalachian New York	81.4	82.2	110.6	111.4	102.7	100.8
North Carolina	**101.6**	**102.0**	**78.0**	**81.6**	**86.9**	**86.2**
Appalachian North Carolina	107.7	108.5	69.1	73.8	95.4	90.4
Non-Appalachian North Carolina	100.2	100.5	80.2	83.5	84.9	85.3
Ohio	**103.7**	**103.3**	**78.9**	**79.6**	**97.1**	**94.3**
Appalachian Ohio	109.4	110.8	72.9	69.8	83.7	82.4
Non-Appalachian Ohio	102.5	101.7	80.2	81.9	99.9	96.7
Pennsylvania	**106.6**	**107.1**	**82.5**	**83.1**	**112.8**	**114.0**
Appalachian Pennsylvania	108.3	108.8	73.8	73.9	110.3	109.9
Non-Appalachian Pennsylvania	105.1	105.4	90.6	91.8	115.0	117.7
South Carolina	**104.2**	**106.5**	**77.3**	**78.6**	**76.7**	**79.3**
Appalachian South Carolina, Metropolitan	106.4	105.7	64.6	66.8	82.2	84.3
Non-Appalachian South Carolina, Metropolitan	103.3	105.6	80.2	81.6	79.2	81.2
South Carolina, Nonmetropolitan	104.3	109.3	83.1	83.0	65.5	70.1
Tennessee	**104.1**	**105.0**	**73.7**	**79.2**	**81.1**	**79.7**
Appalachian Tennessee	106.7	108.8	66.8	72.5	83.7	83.5
Non-Appalachian Tennessee	101.9	101.8	79.6	85.1	78.9	76.6
Virginia	**103.4**	**103.4**	**89.8**	**92.2**	**110.2**	**107.5**
Appalachian Virginia	106.5	107.1	56.8	64.3	78.6	82.8
Non-Appalachian Virginia	103.1	103.0	93.8	95.6	113.9	110.3
West Virginia (entire state)	**111.4**	**111.8**	**54.8**	**51.3**	**77.4**	**79.0**

Note: Data cannot be shown for the entire Appalachian portions of Maryland and South Carolina due to data disclosure issues.

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

Table 5.7: Home Value and Household Wealth Value Indices in the Appalachian Region, 2007 and 2009

Indices (U.S. = 100)	Home Value Index		Household Income Index		Interest Income Value Index	
	2007	2009	2007	2009	2007	2009
United States	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Appalachian Region	**55.1**	**59.5**	**77.6**	**79.3**	**64.2**	**64.2**
Subregions						
Northern Appalachia	50.7	55.8	78.6	81.3	66.4	67.4
North Central Appalachia	49.4	51.4	71.3	76.6	45.7	56.9
Central Appalachia	36.6	40.4	59.8	61.0	33.6	38.9
South Central Appalachia	61.1	66.4	75.7	76.0	78.0	75.8
Southern Appalachia	63.1	67.3	84.2	84.9	66.6	62.0
Alabama	**55.7**	**60.6**	**79.0**	**80.7**	**68.4**	**66.9**
Appalachian Alabama	56.8	61.5	81.7	83.7	72.0	66.3
Non-Appalachian Alabama	53.6	59.1	74.0	75.4	61.8	67.9
Georgia	**78.0**	**80.8**	**94.6**	**93.6**	**81.6**	**71.6**
Appalachian Georgia	78.0	79.3	92.9	93.3	59.8	57.3
Non-Appalachian Georgia	78.0	81.6	95.2	93.7	90.5	77.4
Kentucky	**52.6**	**57.0**	**77.3**	**78.5**	**62.3**	**69.9**
Appalachian Kentucky	36.1	37.6	60.4	60.4	34.1	36.4
Non-Appalachian Kentucky	59.0	64.6	83.6	85.3	72.8	82.4
Maryland	**144.3**	**145.0**	**125.9**	**132.0**	**110.0**	**124.3**
Appalachian Maryland, Metropolitan	84.8	83.0	84.7	82.4	59.1	53.5
Non-Appalachian Maryland, Metropolitan	148.1	147.7	129.1	135.5	113.4	122.6
Maryland, Nonmetropolitan	125.5	145.8	103.9	111.6	93.6	202.1
Mississippi	**46.6**	**52.7**	**72.5**	**73.0**	**45.8**	**47.8**
Appalachian Mississippi	37.2	44.5	62.9	64.0	48.2	32.3
Non-Appalachian Mississippi	49.3	55.1	75.2	75.6	45.1	52.2
New York	**137.3**	**152.8**	**110.7**	**116.1**	**111.2**	**111.8**
Appalachian New York	45.6	49.9	77.0	79.1	64.3	61.5
Non-Appalachian New York	144.5	161.0	112.8	118.4	114.2	115.0
North Carolina	**69.8**	**76.4**	**86.2**	**86.7**	**82.2**	**81.9**
Appalachian North Carolina	67.0	71.8	77.1	76.2	96.6	91.6
Non-Appalachian North Carolina	70.4	77.6	88.4	89.1	78.9	79.7
Ohio	**60.4**	**62.0**	**86.6**	**87.0**	**77.4**	**73.2**
Appalachian Ohio	46.7	50.2	71.9	75.8	51.6	59.2
Non-Appalachian Ohio	63.4	64.7	89.7	89.3	82.8	76.2
Pennsylvania	**73.2**	**79.5**	**92.5**	**96.5**	**86.3**	**90.8**
Appalachian Pennsylvania	51.6	57.6	80.2	83.4	68.9	72.0
Non-Appalachian Pennsylvania	93.4	100.2	103.8	108.7	102.1	108.1
South Carolina	**67.5**	**73.4**	**82.5**	**82.9**	**78.6**	**81.9**
Appalachian South Carolina, Metropolitan	59.0	67.6	83.8	82.1	80.2	79.0
Non-Appalachian South Carolina, Metropolitan	72.1	76.7	87.1	87.1	79.5	77.2
South Carolina, Nonmetropolitan	65.4	71.3	70.4	73.6	74.9	95.8
Tennessee	**62.7**	**68.0**	**82.7**	**82.5**	**77.5**	**66.9**
Appalachian Tennessee	56.5	62.4	74.3	75.1	65.6	66.5
Non-Appalachian Tennessee	68.1	72.9	89.5	88.5	87.3	67.3
Virginia	**122.9**	**121.1**	**113.3**	**116.7**	**99.7**	**106.7**
Appalachian Virginia	49.4	56.0	66.0	69.3	52.2	56.5
Non-Appalachian Virginia	131.8	128.9	118.9	122.2	105.2	112.5
West Virginia (entire state)	**47.1**	**47.8**	**69.7**	**73.6**	**45.8**	**48.4**

Note: Data cannot be shown for the entire Appalachian portions of Maryland and South Carolina due to data disclosure issues.

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

Tables 5.8 and 5.9 examine changes from 2007 to 2009 in the indices for these six key indicators by county type and economic status classification for the Appalachian and non-Appalachian counties within each category. At the onset of the recession in 2007, the homeownership rate in Appalachian counties ranged from six to ten percent above the average for the United States for all county types (see Table 5.8). Competitive counties had a homeownership rate that was 5 percent higher than the nation, while the rate in Attainment counties was 16 percent higher. The gap in homeownership rates between Appalachian counties and the nation changed only slightly between 2007 and 2009 across county types, but the gap widened by two percentage points among counties in the Attainment economic status group. Among all non-Appalachian counties in the 13 Appalachian states, the homeownership rate was 7 percent lower than the nation for counties in large metro areas, but ranged from one to nine percent higher for other county types. However, the homeownership rate was lower than the U.S. average for non-Appalachian counties in three economic status groups—Distressed, At-Risk, and Transitional counties, although the gaps shrank between 2007 and 2009 for the Distressed and At-Risk groups.

Housing burden is lower among all Appalachian county types, ranging from 18 percent lower for counties in Large Metros to 35 percent lower for counties in rural areas (see Table 5.8). During the recession, the gap between Appalachian counties and the U.S. shrank for all county types except Large Metros. This indicates an increase in housing burden in most Appalachian counties relative to the nation. For example, among nonmetro Appalachian counties that are adjacent to large metros, the housing burden index increased by 5 percentage points between 2007 and 2009. Housing burden ranges from five to 37 percent less than in the nation for Appalachian counties in the five economic status groups. Between 2007 and 2009, there is no consistent pattern of increase or decrease for these five groups. The gap shrank most among Appalachian counties in the Distressed, Transitional, and Competitive economic status groups, indicating housing burden increased most relative to the U.S. in these economic groups. In non-Appalachian counties, housing burden is lower than in the U.S. among most county types and economic status groups, but it is not as low as it is among the Appalachian counties. Between 2007 and 2009, the housing burden gap shrank slightly for all non-Appalachian county types except Large Metros and Nonmetros Adjacent to Large Metros, and for all economic status groups except Distressed and At-Risk.

In 2007, the share of households with interest income was lower in Appalachian counties than in the nation for all county types, ranging from 35 percent lower in rural counties to only three percent lower in counties in large metro areas (see Table 5.8). Since sources of income other than wages and salary can help to buffer income declines from job loss, these data indicate that households in Appalachian counties were much less likely to have this type of income to fall back on during the recession. The gap in households with interest income increased among metropolitan counties between 2007 and 2009, indicating that these counties experienced a relative disadvantage compared to the nation as a whole during the recession. This is consistent with other economic data suggesting that job and income loss were greater in metro than nonmetro areas during the recession. Appalachian counties in all economic status groups except Competitive also had lower shares of households with interest income than the U.S.—ranging from 46 percent less among Distressed counties to only 10 percent less among Transitional counties. However, the gap between Appalachian counties and the nation shrank slightly between 2007 and 2009 among all economic status groups except Distressed. Among the non-Appalachian counties, the share with interest income is also lower than the nation for most county types and economic status groups, but the gaps between these counties and the U.S. were more likely to increase slightly during the recession than among the Appalachian counties.

Home values in Appalachia ranged from 33 to 59 percent across county types compared with the nation as a whole in 2007 (see Table 5.9). This home value gap shrank slightly by 3 to 5 percentage points during the recession, indicating that home values dropped less in Appalachian counties in each county type than among other counties in the U.S. Home values are considerably lower among Appalachian counties in the Distressed and At-Risk groups than in the nation—60 to almost 70 percent less. However, these gaps also shrank somewhat during the recession. Home values are also lower among non-Appalachian counties in the 13 Appalachian states than in the U.S., with the exception of those in large metros and those in the Attainment economic status group.

In 2007, average household income ranged from six to 39 percent less for Appalachian counties than for the nation in each county type (see Table 5.9). This income gap decreased slightly between 2007 and 2009 again suggesting that average household income decreased comparatively less in Appalachian counties than among all counties in the nation. Among economic status groups, household income in Appalachian Attainment counties exceeded the U.S. average in 2007 by 13 percent, and the income gap decreased slightly or stayed the same during the recession for all economic status groups. The patterns are very similar among non-Appalachian counties in the 13 Appalachian states.

The average amount of household interest income was also lower in 2007 in Appalachian counties than in the nation in every county type and economic status group (see Table 5.9). However, unlike average household income, the interest income gap widened between 2007 and 2009 for Appalachian counties in large metropolitan areas and in rural areas, and for those in the Competitive and Attainment economic status groups. Appalachian counties in these four categories fared worse on average during the recession than counties in the nation. Not only did fewer Appalachian households have interest income, but those that did had much lower average amounts than households in the U.S. as a whole. Thus, Appalachian households had fewer dollars from other sources to help them weather job and income losses during the recession. Non-Appalachian counties in the Appalachian states also had lower household interest income amounts than the U.S. average with the exception again of counties in large metro areas or in the Attainment economic status group.

Table 5.8: Housing and Household Wealth Indices by County Type and Economic Status, 2007 and 2009

Indices (U.S. = 100)	Homeownership Index			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	109.5	109.5	93.0	93.1
Small Metros (pop. <1 million)	105.6	106.7	101.3	101.5
Nonmetro, Adjacent to Large Metros	109.2	111.2	109.2	109.0
Nonmetro, Adjacent to Small Metros	110.2	111.5	107.1	107.1
Rural (nonmetro, not adj. to a metro)	111.0	110.4	106.0	106.6
Economic Status				
Distressed	110.4	110.5	70.7	74.0
At-Risk	110.9	110.2	80.1	82.3
Transitional	107.9	109.0	93.9	93.2
Competitive	105.0	105.0	100.9	102.8
Attainment	116.0	113.7	110.8	110.5

Indices (U.S. = 100)	Housing Burden Index			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	81.8	80.9	100.1	101.1
Small Metros (pop. <1 million)	67.0	69.2	79.2	81.8
Nonmetro, Adjacent to Large Metros	74.8	80.0	81.9	80.4
Nonmetro, Adjacent to Small Metros	66.3	69.7	75.7	78.1
Rural (nonmetro, not adj. to a metro)	64.9	67.3	79.2	81.4
Economic Status				
Distressed	62.7	69.3	95.4	91.9
At-Risk	64.6	63.3	97.1	92.7
Transitional	69.1	72.4	84.0	87.2
Competitive	73.1	75.7	82.5	85.1
Attainment	95.1	84.6	101.5	101.2

Indices (U.S. = 100)	Percent with Interest Income Index			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	97.1	95.6	102.9	101.8
Small Metros (pop. <1 million)	92.4	91.5	92.9	89.9
Nonmetro, Adjacent to Large Metros	82.7	86.0	82.6	85.8
Nonmetro, Adjacent to Small Metros	80.4	81.9	75.1	75.0
Rural (nonmetro, not adj. to a metro)	65.1	68.7	75.4	73.3
Economic Status				
Distressed	53.9	53.0	41.9	40.1
At-Risk	63.0	68.6	63.2	63.3
Transitional	89.9	89.8	87.6	86.3
Competitive	103.0	104.0	100.5	98.1
Attainment	87.6	94.0	126.7	126.0

Note: Economic status reflects fiscal years; data reflect calendar years.

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

Table 5.9: Housing and Household Wealth Value Indices by County Type and Economic Status, 2007 and 2009

Indices (U.S. = 100)	Home Value Index			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	67.0	70.1	124.5	131.3
Small Metros (pop. <1 million)	56.9	62.0	69.1	74.2
Nonmetro, Adjacent to Large Metros	48.4	52.0	67.6	72.8
Nonmetro, Adjacent to Small Metros	47.5	52.2	52.7	57.9
Rural (nonmetro, not adj. to a metro)	41.1	46.0	53.4	61.1
Economic Status				
Distressed	32.8	36.9	56.0	59.8
At-Risk	39.7	44.9	81.3	86.0
Transitional	52.8	58.7	74.8	85.5
Competitive	66.5	69.4	80.3	84.1
Attainment	90.9	90.5	146.0	145.3
Indices (U.S. = 100)	**Household Income Index**			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	93.7	95.2	114.1	117.7
Small Metros (pop. <1 million)	78.8	80.7	88.1	89.2
Nonmetro, Adjacent to Large Metros	70.1	71.9	80.8	82.2
Nonmetro, Adjacent to Small Metros	67.3	69.3	71.9	73.3
Rural (nonmetro, not adj. to a metro)	61.5	63.0	70.1	71.1
Economic Status				
Distressed	56.2	56.0	60.9	63.3
At-Risk	60.7	64.5	74.0	77.6
Transitional	74.6	77.2	89.1	92.5
Competitive	91.7	94.0	98.4	97.2
Attainment	113.1	114.1	136.5	139.1
Indices (U.S. = 100)	**Interest Income Value Index**			
	Appalachian		Non-Appalachian	
	2007	2009	2007	2009
County Types				
Large Metros (pop. 1 million +)	80.7	73.3	111.2	112.9
Small Metros (pop. <1 million)	67.8	69.7	78.0	74.2
Nonmetro, Adjacent to Large Metros	51.8	55.5	63.0	72.3
Nonmetro, Adjacent to Small Metros	51.4	56.8	56.5	59.5
Rural (nonmetro, not adj. to a metro)	46.4	42.5	69.2	74.4
Economic Status				
Distressed	35.1	35.6	32.1	33.5
At-Risk	36.5	43.7	53.0	52.6
Transitional	62.4	64.8	85.8	86.1
Competitive	89.0	84.6	95.5	89.4
Attainment	75.8	72.1	131.8	137.6

Note: Economic status reflects fiscal years; data reflect calendar years.

Data sources: U.S. Census Bureau, 2007 and 2009 American Community Surveys.

5.4 Indices of Household Wealth and Economic Well-Being, 2007-2011

In this section, we use the most current five-year ACS data to assess the degree of recovery from the recession in Appalachia compared with the nation as a whole. Although it would be ideal to use 2011 ACS data for this assessment, single-year ACS data are only available for geographic areas with a population of at least 65,000, which excludes many of the counties in the Appalachian Region. Therefore, to examine household wealth and economic well-being with comparable data for all counties, subregions, county types, and economic status groups in Appalachia, we use five-year ACS data for the period 2007-2011. These data include both the recession period from 2007 to 2009 and the post-recession recovery period from 2009 to 2011, and provide the most current picture of the status of the Appalachian Region, subregions, and counties compared with the United States. We calculate indices for the same six key indicators as defined in Table 5.4.

Table 5.10 shows the relative differences between the Appalachian Region and the United States in homeownership rates, the share of homeowners with a housing cost burden, the share of households with income from interest, dividends, and other sources, average home values, average household income, and average household interest income. For the 2007-2011 period, the rate of homeownership was nine percent higher in the Appalachian Region than in the United States. This is one percentage point higher than it was in 2007 when the recession began (see Table 5.6). Homeownership levels were highest in the North Central and Central Appalachian subregions exceeding the U.S. rate by about 11 percent. In fact, the rate of homeownership in Appalachia exceeded that for the nation in every county type and economic status category, including both Distressed and Attainment counties. Although the relative homeownership rate in Appalachia was higher for 2007-2011 than 2007 (see Table 5.8) in all subregions and county types, it was 3 percentage points lower in Attainment counties in 2007-2011 than in 2007. Compared with the U.S., homeownership was also higher in the Appalachian portion than non-Appalachian portion of the 13 Appalachian states (see Table 5.10). The variation in the homeownership index across counties in the Appalachian Region is shown in Figure 5.1.

In 2007, the share of homeowners whose housing costs exceeded 30 percent of their monthly income was 29 percent lower in Appalachia compared with the nation, but this gap decreased slightly to 23 percent for the entire period from 2007-2011 (see Table 5.10). The increase in housing cost burden in Appalachia during the recession was not reduced enough in the first two years of recovery to bring it back down to its' pre-recession level. The housing burden index was higher in 2007-2011 than in 2007 for every Appalachian subregion and county type, and all economic status groups except Attainment counties. The variation in housing cost burden across Appalachian counties is shown in Figure 5.2.

Income from non-wage sources is an indicator of income-producing assets which can be an important source of wealth for some households. The share of households with income from interest, dividends, and other non-wage sources was 10 percent lower in the Appalachian Region than in the nation in 2007-2011, and this gap was slightly smaller than it was in 2007. In Northern Appalachia, the share of households with interest income was almost nine percent higher than the share for the U.S., but it was lower than the U.S. share in every other subregion and county type. Among economic status groups, only Competitive counties registered a higher share of households with interest income than the U.S. as a whole, while the share was 45 percent lower among Distressed counties. Again, these gaps between Appalachia and the nation were slightly smaller in the 2007-2011 period than they were in 2007, but this relative improvement reflects a slow rate of recovery for such assets in the U.S. rather than an increase in the share of Appalachian households with non-wage income. The strong regional pattern in the interest income index is displayed in Figure 5.3.

Average home values in Appalachia were 39 percent lower than the U.S. average, with indices ranging from a low of 42 in Central Appalachia to a high of 68 in South Central Appalachia. In 2007-2011, Appalachian home values were only 30 percent lower than the U.S. average in large metro areas, but were 54 percent lower in rural areas. The gap in average home values between the Appalachian Region and the U.S. was smaller in the 2007-2011 period than it was in 2007 when the recession began. This is not due to rising home values in Appalachia, but rather to the slow rate of recovery in home prices that

plummeted during the housing crisis in areas such as Florida, Nevada, Arizona, and California. County variations in the home value index are displayed in Figure 5.4.
In 2007-2011, average household income in Appalachia was 20 percent below the U.S. average, and this gap ranged from a low of four percent to a high of 43 percent across subregions, county types, and economic status groups. Only Appalachian counties in the Attainment group had an average household income that exceeded the U.S. average. Once again, the gap between Appalachian subregions and the nation was slightly smaller in 2007-2011 than it was in 2007, but this reflects a slower pace of recovery in employment and income in the nation rather than a relative increase in average household income in Appalachia. County variations in the household income index are displayed in Figure 5.5.

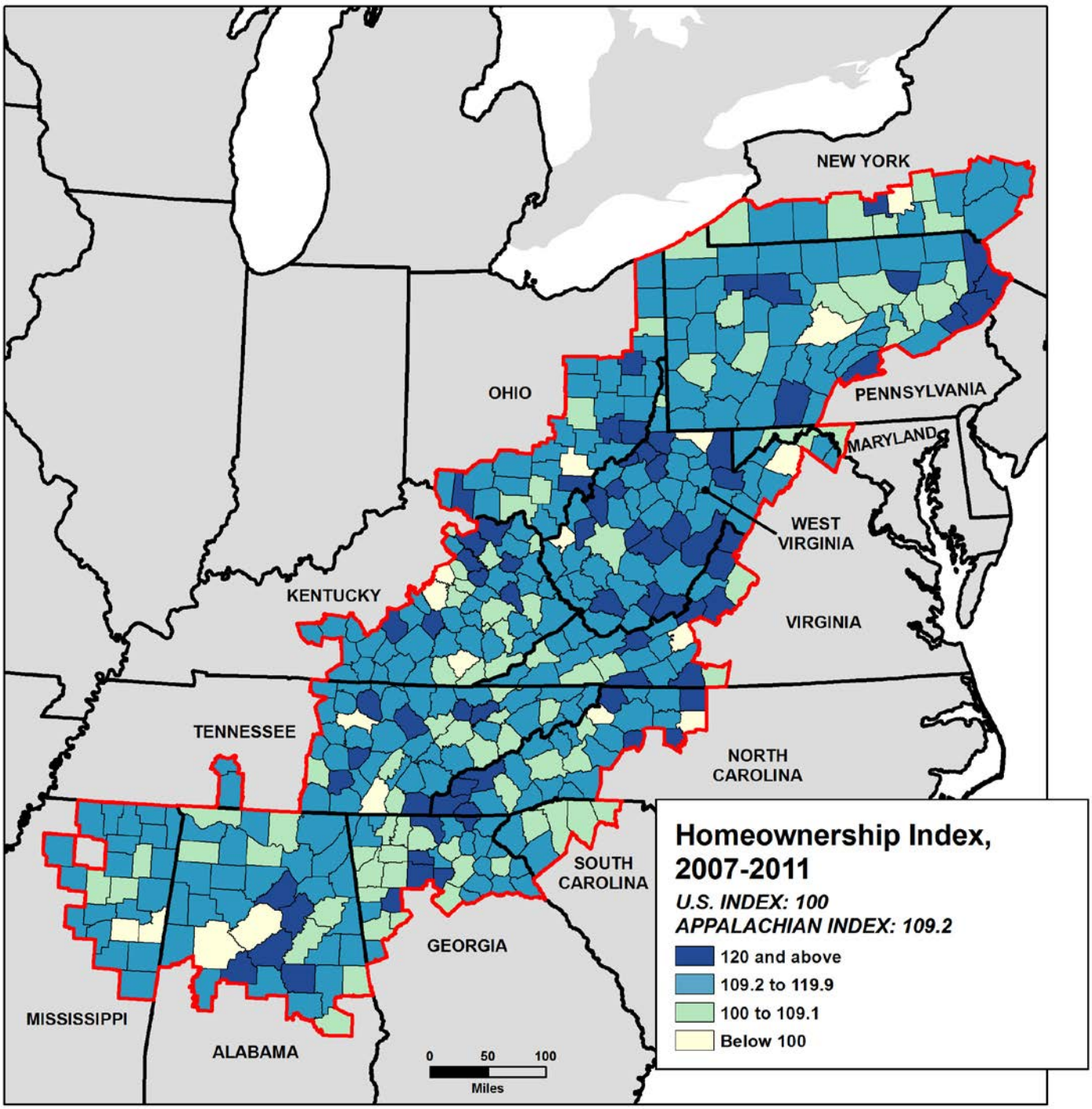
Although the share of households with interest income was only 10 percent lower in Appalachia, the average amount of interest income was 35 percent lower than the U.S. average (see Table 5.10). The average amount of interest income was lower in every Appalachian subregion, county type, and economic status group than in the nation. While the gap in average interest income between Appalachia and the U.S. was slightly smaller in 2007-2011 than in 2007 for most subregions, county types, and economic status groups, it was larger in 2007-2011 for counties in the Southern subregion, in large metro counties, and in Distressed counties. The impact of the recession in these Appalachian counties had not been offset by post-recession gains between 2009 and 2011. The diversity in the interest income index across the Appalachian Region is shown in Figure 5.6.

Table 5.10: Household Wealth and Economic Well-Being Indices in the Appalachian Region, 2007-2011

Indices (U.S. = 100)	Homeownership Index	Housing Burden Index	Percent with Interest Income Index	Home Value Index	Household Income Index	Interest Income Value Index
United States	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Appalachian Region	**109.2**	**77.0**	**90.0**	**60.7**	**79.8**	**64.7**
Subregions						
Northern Appalachia	108.9	77.2	108.5	56.7	81.6	67.5
North Central Appalachia	111.4	64.6	80.9	53.5	75.2	52.9
Central Appalachia	111.5	67.3	63.1	42.1	62.3	37.8
South Central Appalachia	107.7	75.6	91.4	68.0	76.8	77.6
Southern Appalachia	109.3	84.3	77.3	67.8	85.6	63.7
County Types						
Large Metros (pop. 1 million +)	109.7	86.5	98.0	71.1	95.7	74.8
Small Metros (pop. <1 million)	106.6	73.5	93.8	63.1	81.1	69.8
Nonmetro, Adjacent to Large Metros	111.0	83.2	86.8	54.2	72.3	52.3
Nonmetro, Adjacent to Small Metros	112.0	73.7	84.3	53.9	69.6	55.0
Rural (nonmetro, not adj. to a metro)	112.3	72.1	69.8	46.5	63.9	49.1
Economic Status, FY 2011						
Distressed	112.6	74.7	54.8	38.2	57.4	33.9
At-Risk	112.1	70.0	71.3	46.3	64.4	44.3
Transitional	108.7	76.0	91.1	60.0	77.4	63.8
Competitive	107.0	79.7	107.8	68.8	93.7	88.2
Attainment	113.0	93.1	95.8	91.4	113.4	75.7
Alabama	**106.9**	**78.5**	**76.6**	**61.9**	**81.3**	**64.0**
Appalachian Alabama	108.6	76.3	79.1	63.1	83.8	65.7
Non-Appalachian Alabama	103.7	82.6	72.1	59.7	76.9	61.0
Georgia	**101.0**	**97.8**	**76.0**	**79.8**	**93.2**	**70.8**
Appalachian Georgia	111.5	99.0	76.4	79.5	93.7	60.2
Non-Appalachian Georgia	96.8	97.3	75.9	80.0	93.0	75.2
Kentucky	**105.1**	**72.5**	**80.3**	**58.2**	**79.2**	**63.2**
Appalachian Kentucky	109.6	70.5	59.7	40.8	62.1	34.2
Non-Appalachian Kentucky	103.4	73.3	87.9	65.0	85.5	73.9
Maryland	**103.8**	**108.9**	**112.6**	**144.4**	**129.6**	**109.8**
Appalachian Maryland	104.4	85.9	96.8	87.9	86.0	72.8
Non-Appalachian Maryland	103.8	110.0	113.4	147.1	131.7	111.5
Mississippi	**106.8**	**82.2**	**61.7**	**51.9**	**74.2**	**49.0**
Appalachian Mississippi	108.9	80.6	59.1	43.2	65.5	47.5
Non-Appalachian Mississippi	106.2	82.7	62.4	54.4	76.7	49.4
New York	**82.9**	**114.0**	**102.6**	**142.4**	**114.0**	**112.0**
Appalachian New York	105.3	74.6	112.3	50.6	79.9	63.3
Non-Appalachian New York	81.5	117.2	102.0	149.8	116.1	115.1
North Carolina	**102.5**	**87.5**	**89.7**	**76.8**	**87.2**	**82.3**
Appalachian North Carolina	108.5	79.2	95.5	72.9	77.0	93.1
Non-Appalachian North Carolina	101.1	89.6	88.3	77.7	89.6	79.8
Ohio	**103.8**	**85.0**	**97.9**	**63.7**	**87.5**	**72.5**
Appalachian Ohio	111.0	76.7	86.5	51.0	74.3	53.6
Non-Appalachian Ohio	102.3	86.9	100.3	66.6	90.3	76.4
Pennsylvania	**106.8**	**88.9**	**115.3**	**79.8**	**95.5**	**86.3**
Appalachian Pennsylvania	109.2	78.0	112.3	58.5	83.6	70.7
Non-Appalachian Pennsylvania	104.6	99.0	118.1	99.6	106.1	100.2
South Carolina	**105.5**	**84.2**	**80.6**	**72.9**	**82.9**	**78.3**
Appalachian South Carolina	106.2	72.5	83.9	66.1	82.5	75.1
Non-Appalachian South Carolina	105.2	88.3	79.4	75.2	83.0	79.4
Tennessee	**104.4**	**81.6**	**82.4**	**68.9**	**83.4**	**70.3**
Appalachian Tennessee	108.1	74.7	85.8	63.5	75.8	66.4
Non-Appalachian Tennessee	101.3	87.8	79.6	73.6	89.8	73.7
Virginia	**103.5**	**95.1**	**112.6**	**123.7**	**117.6**	**103.3**
Appalachian Virginia	108.8	64.9	85.2	58.9	70.2	62.9
Non-Appalachian Virginia	102.9	98.8	115.7	131.6	123.0	107.9
West Virginia (entire state)	**112.3**	**56.5**	**80.1**	**50.4**	**73.0**	**51.7**

Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

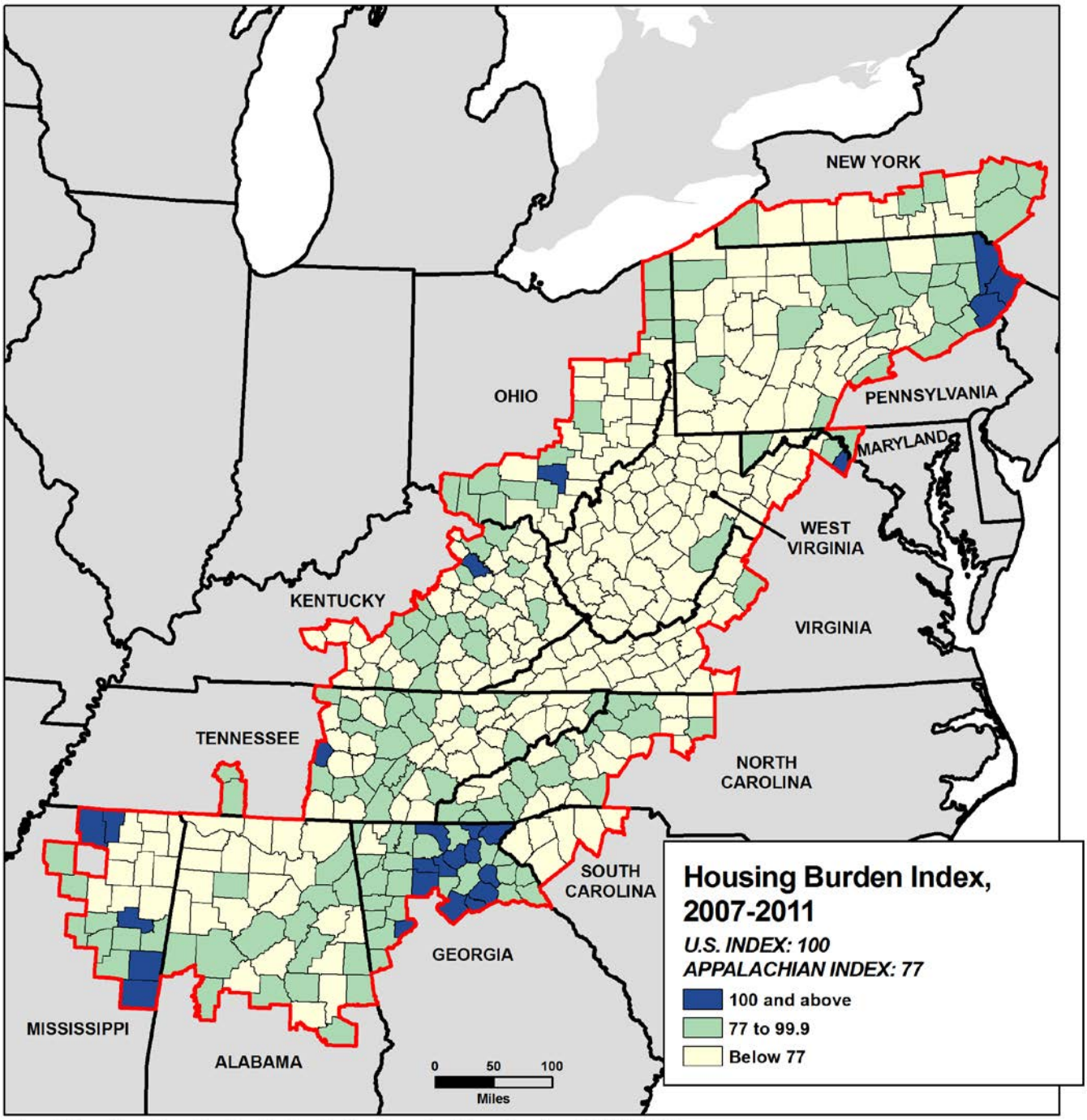
Figure 5.1: Homeownership Index in the Appalachian Region, 2007-2011



Map Title: Homeownership Index in the Appalachian Region, 2007-2011
Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

In all but 18 counties, the homeownership rate matched or exceeded the U.S. average (index of 100 or above), and more than half of these 18 counties were in small metropolitan areas with less than one million people. The homeownership rate exceeded the U.S. average by 20 percent or more in 72 Appalachian counties which were distributed throughout the Region. Almost 60 percent of Appalachian counties have homeownership rates that are between 9.2 and 19.9 percent higher than the national rate, and 72 percent of these are located in nonmetropolitan and rural areas.

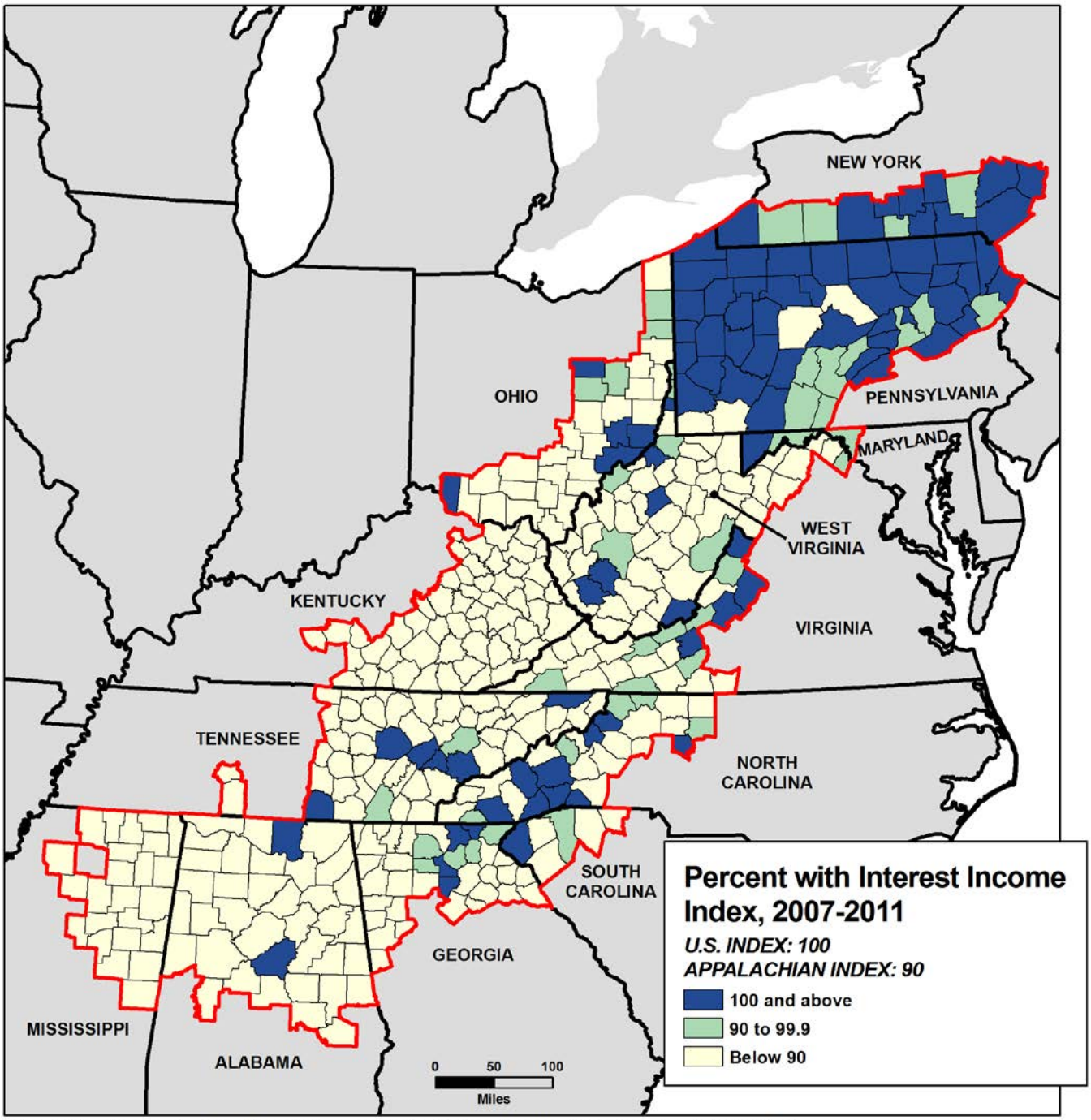
Figure 5.2: Housing Burden Index in the Appalachian Region, 2007-2011



Map Title: Housing Burden Index in the Appalachian Region, 2007-2011
Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

Appalachian homeowners are much less likely to spend more than 30 percent of their monthly income on housing costs, which is considered to constitute a housing cost burden. There were only 25 Appalachian counties where the share of homeowners with a housing burden matched or exceeded the national average, and three-fifths of these were located outside metropolitan areas. In more than 60 percent of Appalachian counties, the share of homeowners with a housing burden is 23 percent or more below the U.S. average. Lower levels of housing burden reflect the lower home values in the Appalachian Region. However, the share of Appalachian homeowners with a housing burden increased during the recession.

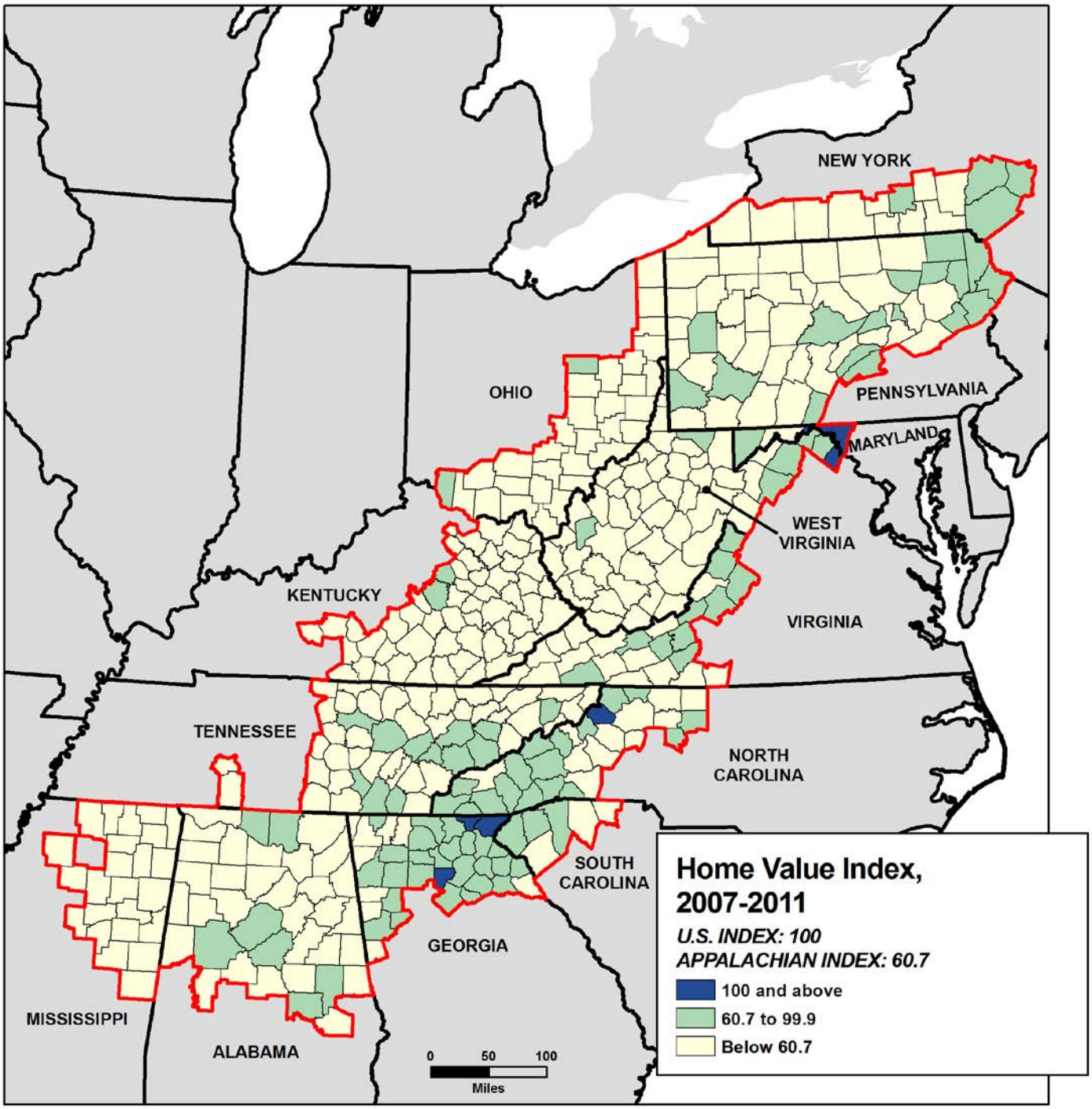
Figure 5.3: Percent with Interest Income Index in the Appalachian Region, 2007-2011



Map Title: Percent with Interest Income Index in the Appalachian Region, 2007-2011
Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

There were only 88 counties where the share of households with income from interest, dividends, net rental income, royalty income, and estates and trusts matched or exceeded the national average (index of 100), and the vast majority of these were located in Northern Appalachia. In almost 70 percent of Appalachian counties, the share of households with interest income was 10 percent or more below the U.S. average, and these counties were concentrated in the Central and Southern subregions. Income from non-wage sources provides financial security and helps households weather job and wage losses during a recession. Fewer Appalachian households had this other income to supplement declines in wage income both in 2007 and in the 2007-2011 period. This is likely one factor contributing to the rise in housing burden in Appalachia during the recession.

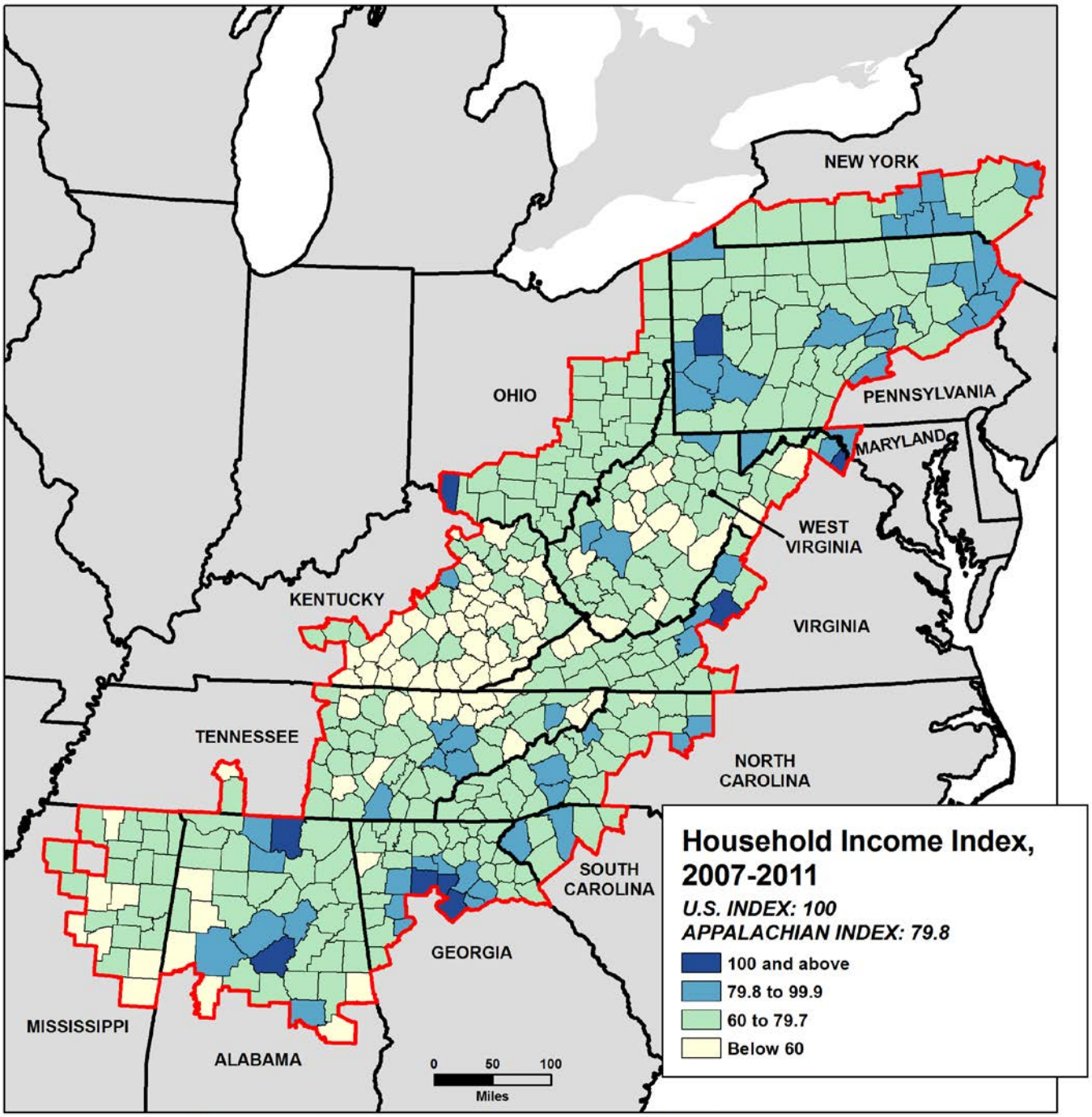
Figure 5.4: Home Value Index in the Appalachian Region, 2007-2011



Map Title: Home Value Index in the Appalachian Region, 2007-2011
Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

Although homeownership is the most important source of wealth for most Americans, home values in Appalachia are much lower than the national average. Indeed, there are only six Appalachian counties where home values matched or exceeded the national average (index of 100 or above), while in 308 of the 420 counties home values were 39 percent or more below the U.S. average (index of 60.7 or less). In 2007-2011, Appalachian homeowners continued to have lower levels of housing wealth, leaving them with fewer economic resources to buffer the effects of the recession.

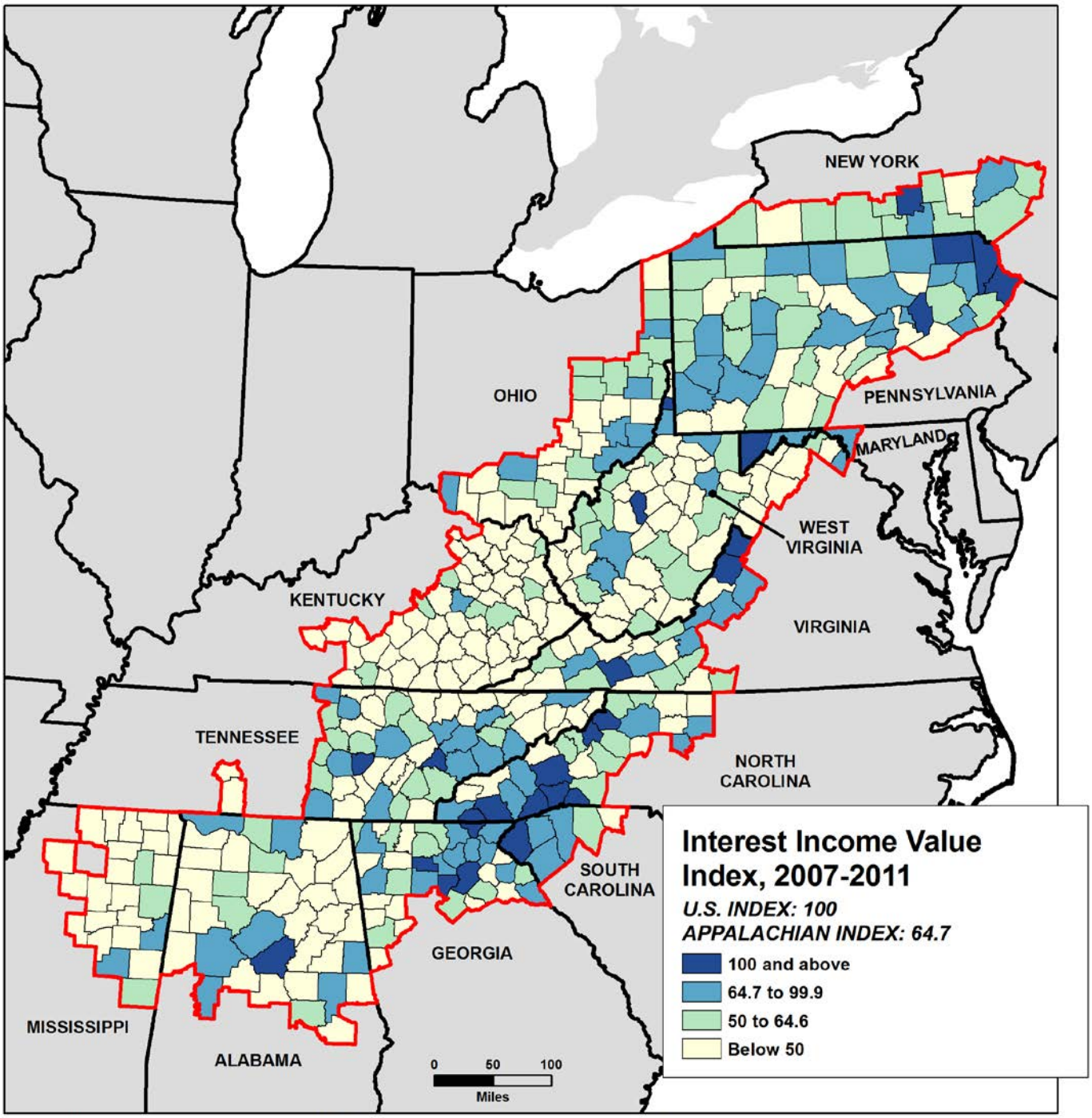
Figure 5.5: Household Income Index in the Appalachian Region, 2007-2011



Map Title: Household Income Index in the Appalachian Region, 2007-2011
Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

Average household income in Appalachia remained substantially below the national average in 2007-2011. Only nine counties had average household incomes at or above the national average (index of 100 and above), and all were located in metropolitan areas distributed throughout the Appalachian Region. The majority of counties—271 out of 420—had household incomes that were 20 to 40 percent below the U.S. average (index of 60 to 79.7), and less than 30 percent of these counties were in metropolitan areas. There were still 81 Appalachian counties in 2007-2011 with household incomes that were more than 40 percent below the national average (index of below 60), and these were concentrated in the North Central, Central, and Southern subregions.

Figure 5.6: Interest Income Value Index in the Appalachian Region, 2007-2011



Map Title: Interest Income Value Index in the Appalachian Region, 2007-2011
Data Source: U.S. Census Bureau, 2007-2011 American Community Survey.

Although the share of Appalachian households with interest income is only 10 percent lower than the national share, the average value of such income was 35 percent lower in Appalachia than in the United States. Only 27 counties had average interest income that matched or exceeded the national average (index of 100 or above), and 17 of these were in nonmetro or rural areas. Half of Appalachian counties had average household interest income that was 50 percent or more below the U.S. average (index of 50 or below), and they are most concentrated in the Central and Southern subregions.

6. Wealth Determinants of County Economic Status within the Appalachian Region

6.1 Introduction

Wealth, including housing equity, is distinct from other important measures of well-being as it represents a stock of non-human capital. Income and earnings, in contrast, represent flows of resources that are usually based on returns to human capital and are generally less stable. Individuals and families rely on assets, such as their house values, to store resources. This storehouse, which may be liquidated to subsidize consumption, assures households a certain standard of living and may also create opportunities for financial gain. Household net worth, the market value of assets owned by every member of the household minus liabilities owed by household members, tends to increase in times of prosperity and decrease during economic downturns. From 2000 to 2011, volatility in household net worth seems to have largely been driven by volatility in housing values.[21]

Owner-occupied housing is widely held in the United States and represents a large share of the wealth of many households. Between 2000 and 2010, around two thirds of all households held equity in a home.[22] Indeed, equity in one's primary residence has been the single most valuable asset held by U.S. households, representing between 20 percent of household wealth in 2000 and 25 percent in 2011.[23]

The downturn in the U.S. housing market after its peak in 2006 and the associated financial crisis had significant implications for the economic well-being of households. As a result ARC has increased interest in understanding the extent to which lower housing prices places economic stress on communities in the Region. Changes in economic conditions that affect income, the traditional measure of well-being impact household well-being. But households also respond to shifts in the value of assets. Certainly, the extent to which Americans drew on home equity to finance spending prior to 2008 underscores the potential consumption value of assets. The role of housing value in household economic security suggests that it might be another indicator of economic well-being worthy of continued monitoring. Just as economic development policies may be crafted to increase income security in the Region, policies might be crafted to stimulate asset accumulation in order to improve the economic stability of households and the communities they constitute.[24]

For the Appalachian Region, particularly Appalachian counties where asset levels are low, the potential impact of housing prices on economic development might be small compared to the impact of overall employment and the concentration of employment in particular sectors. Information about the relative importance of housing prices and employment in the Region could assist in assessing policy options, particularly in a time where government resources are stretched thin. A useful first step in analyzing the effect of the housing market on economic well-being in the Region is to develop a better understanding of how housing prices may be related to the overall economic state of Appalachian counties.

The Appalachian Regional Commission monitors the condition of Appalachian counties with the Economic Status Index. This Index measures the extent of a county's economic distress, if any, with higher values indicating worse conditions and values greater than 100 signaling that the county experiences worse conditions than U.S. counties do on average. In this report, we use multiple regression

[21] Alfred Gottschalck, Marina Vornovytskyy and Adam Smith (2013), "Household Wealth in the U.S.: 2000 to 2011," accessed at http://www.census.gov/people/wealth/files/Wealth%20Highlights%202011.pdf.

[22] Tables showing rates of asset ownership in the United States are available on the Wealth and Asset Ownership pages of the U.S. Census Bureau website: http://www.census.gov/people/wealth/.

[23] Gottschalck, Vornovytskyy, and Smith (2013).

[24] Asset accumulation may be encouraged by program regulations that stimulate savings (e.g., raising the threshold whereby liquid assets disqualify households from income assistance programs), by programs to help individuals leverage existing assets (affordable homeownership programs, small business assistance, and homebuyer education programs), and by stronger laws that address threats to retaining assets (e.g., laws against predatory lending and health insurance laws that protect against bankruptcy due to medical expenses).

analysis to identify how closely county differences in aggregate value of housing are associated with county differences in economic status as measured by the Index.

6.2 Data and Hypotheses

The regression analysis allows us to examine the effect of higher housing values on county economic status net of the level of employment and other factors that affect levels of employment, income, and poverty in the county. We examine the relationship between the following variables and economic status in fiscal year 2011 (as measured by the Index score): county economic status in fiscal year 2007, metropolitan status, proximity to a metropolitan area, racial and ethnic distribution of the working-age population, the proportion of the population at or near retirement age, the proportion of the population employed, the distribution of employment across industrial sectors (specifically manufacturing and construction). These statistical models also take into account the effect of extrapolating housing value from the 2000 Census for some counties and unmeasured effects of differences in state policies and administrations. Table 6.1 provides an overview of the Index in FY 2011 and FY 2007. Table 6.2 describes other variables used in the analysis and indicates the hypothesized direction of the association between the Index in FY 2011 and the other variables.

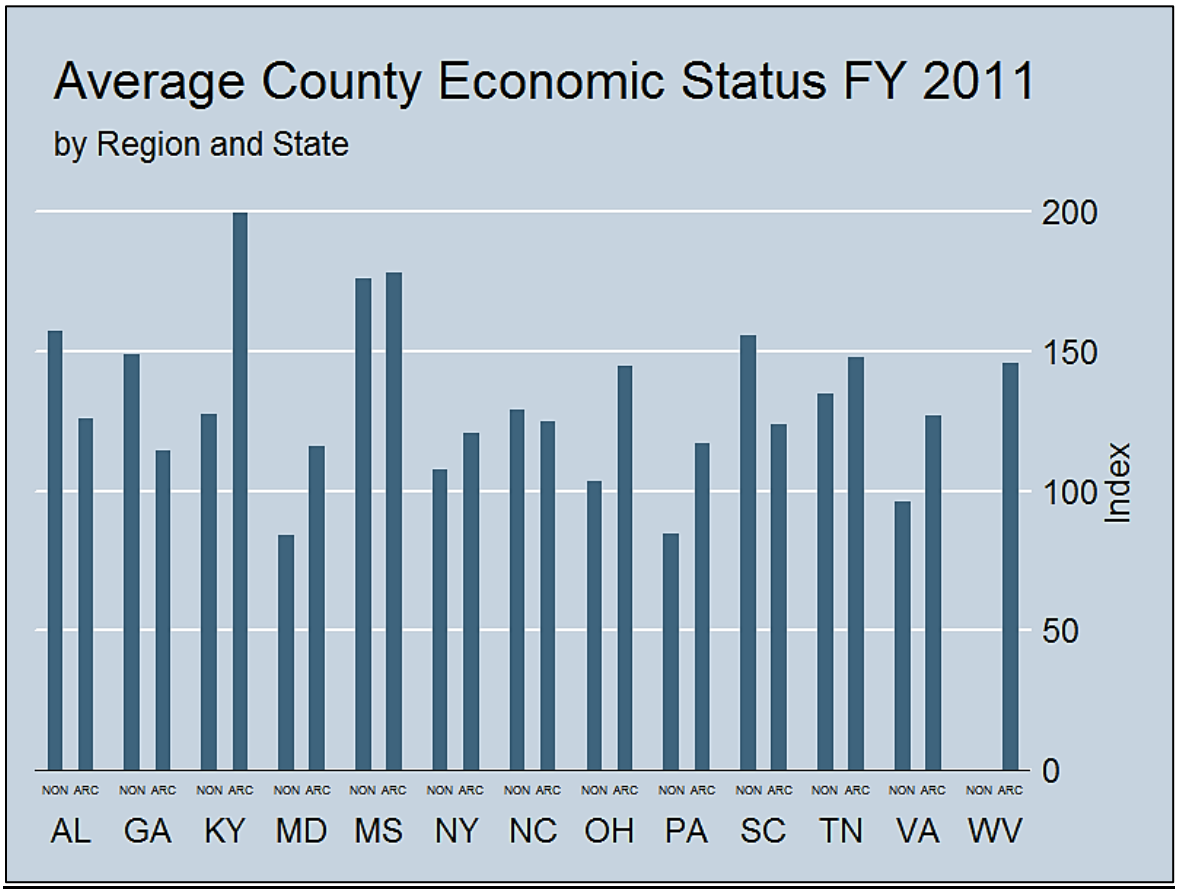
The Appalachian Regional Commission's Index of Economic Status for fiscal year 2011 is based on the three-year average county unemployment rate from 2006-2008, county per capita market income from 2007[25], and the county poverty rate from 2000 and is benchmarked against the average index value across U.S. counties. An index value of 100 represents the U.S. average. Table 6.1 below shows the inputs to the Index of Economic Status for fiscal years 2011 and 2007.

Table 6.1: Components of the Economic Status Index

Fiscal Year	Three-Year Average Unemployment Rate	Per Capita Market Income	Poverty Rate
2011 (Effective Oct. 1, 2010–Sept. 30, 2011)	2006–2008	2007	2000
2007 (Effective Oct. 1, 2006–Sept. 30, 2007)	2002–2004	2003	2000

[25] Per capita market income is a measure of an area's total personal income, less transfer payments, divided by the resident population of the area. Personal income is the income received by all persons from all sources. Personal income is the sum of net earnings by place of residence; dividends interest, and rental income (property income) of persons; and personal current transfer receipts. Personal income is measured before the deduction of personal income taxes and other personal taxes.

Figure 6.1: Average Fiscal Year 2011 Economic Status Index for Appalachian and Non-Appalachian Counties



On average, the Economic Status Index is higher in the Appalachian counties (denoted by "ARC" in Figure 6.1) within each state. Kentucky's Appalachian counties have the highest mean value for the FY 2011 Index. The mean value of the FY 2011 Index is greater than 100 for all Appalachian counties and nearly all non-Appalachian counties within each state, indicating that, on average, these counties experience higher levels of economic stress than U.S. counties generally do. Only the non-Appalachian counties for Maryland, Pennsylvania, and Virginia had an average FY 2011 Index that was lower (better) than the U.S. FY 2011 average. (Means for other variables used in the analysis and data sources from which their values were taken may be found in Appendix B, Table B.1.)

Conditions generally associated with economic strain include inflation, higher unemployment, and a drop in housing values.[26] Large changes in the value of housing often indicate substantial changes in the consumption potential of households. Housing also provides a valuable service even in the absence of much equity. With positive equity, housing may be liquidated to meet basic consumption needs if income flows cease. In this way, home equity provides a financial safety net and is an indicator of consumption potential during hard times.[27] These characteristics mean that similar to higher income levels, higher aggregate housing value in a county is expected to be associated with a lower economic status index value, indicating better economic conditions for a county.

[26] Robert A. Dye and Chad Sutherland (2009) "A New Metric to Gauge Household Stress: Improving on the Misery Index," *Business Economics* 44(2):109-113.

[27] Ibid.

The unemployment rate in the Appalachian Region is generally higher than the rate for the nation as a whole. However, the unemployment rate, or the proportion of the labor force not employed and actively seeking employment, does not fully take into account the disproportionate share of workers that may be discouraged from seeking employment because of the lack of available jobs, particularly during a recession. For this reason, many labor force analysts advocate the use of the employment ratio as an indicator of economic health. The employment ratio measures the employed as a proportion of the working age population. Employment grew more slowly in the Appalachian Region than in the nation as a whole during the housing-led economic expansion (2002-2007), and the job loss during the recession that followed was more severe in the Region, with total employment falling to its 2000 level.[28] A lower employment ratio in a county signals lower income security, so we hypothesize that the lower the employment ratio the higher the Economic Status Index value, and the worse off the county.

Unemployment rates are persistently high for some groups in the United States, namely some racial and ethnic minorities (Hispanics and blacks) and some age groups (young minority men and older people).[29] These individuals cannot avoid poverty as readily as other groups because their economic opportunities are limited due to age or health, inherently low productivity associated with poor health or low education level, and the unavailability of employment options.[30] In addition, "social norms of racism and prejudice… may result in economic discrimination as racist and discriminatory attitudes are reflected through individual behavior in the market."[31] Other groups that might face high levels of unemployment include workers in industries affected by rapid technological change, such as manufacturing. Mechanization and computer assistance in processes may result in worker displacement and unemployment. In addition, new jobs may not be open to workers with older or obsolete skills. Technology may also make it easier to substitute workers in one region (or country) with higher skilled or lower wage workers in another region. Groups with limited opportunity not only face higher unemployment but also higher poverty rates as a result of long-term unemployment. With greater limitations on the economic opportunities for Hispanics and blacks, counties with higher shares of these groups in their working-age population are expected to have a higher (worse) Economic Status Index value. Counties with greater shares of older persons are also likely to have a higher (worse) Economic Status Index value.

In Appalachia, relative to other sectors, the manufacturing sector has been viewed as a source of well-paid, stable employment. However, declines in manufacturing employment in the U.S. have also been felt in Appalachia. From 2000 to 2007, manufacturing employment declined by 22 percent in the Region, despite 15 percent growth in construction.[32] At the peak of the housing bubble in 2005, construction supported 5.1 percent of all U.S. employment.[33] Demand for new home construction creates not just construction jobs but also jobs in industries that supply the construction sector, including wood and pulp manufacturing, cement manufacturing, and construction machinery manufacturing. During the boom,

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[28] Appalachian Regional Commission (2010), *Economic Assessment of Appalachia: An Appalachian Regional Development Initiative Report*, (June), accessed in April 2013 at http://www.arc.gov/images/programs/ardi/EconomicAssessmentofAppalachiaJune2010.pdf.

[29] Unemployment rates for African American men between ages 16 and 24 are substantially higher than the unemployment rates for white men of the same age. While unemployment rates for individuals between ages 60 and 74 are not substantially higher than for individuals between ages 35 and 59, workers displaced in their 50s are less likely to become reemployed, and labor force participation rates are much lower after age 60 than before age 60. See Labor Force Statistics from the Current Population Survey reported on the Bureau of Labor Statistics site (http://www.bls.gov/cps/demographics.htm).

[30] Rebecca M. Blank (2003), "Selecting Among Anti-Poverty Policies: Can an Economist be Both Critical and Caring?" *Review of Social Economy,* 61(4):447-469.

[31] Ibid, p. 453.

[32] Appalachian Regional Commission (2010), *Economic Assessment of Appalachia: An Appalachian Regional Development Initiative Report* (June), accessed in April 2013 at http://www.arc.gov/images/programs/ardi/EconomicAssessmentofAppalachiaJune2010.pdf.

[33] Kathryn J. Buyn (2010), "The U.S. Housing Bubble and Bust: Impact on Employment," *Monthly Labor Review* (December):3-17.

construction grew less rapidly in the Appalachian Region than in the U.S. as a whole. Given the relationship between construction, manufacturing, and stable employment, counties with higher shares of manufacturing employment would be expected to have lower (better) Economic Status Index value. Similarly, counties with higher shares of construction employment would also be expected to have a lower (better) Economic Status Index value.

With urbanization, other sources of economic stability emerged, leaving many rural communities behind. Rural (nonmetropolitan) areas today often suffer from a decrease in job creation, outmigration of young and skilled workers, and a decrease in the demand for many rural products. [34] Nonmetropolitan Appalachian counties encompass a range of settlement patterns, with some nonmetro areas being more densely populated than others and with their economies influenced by proximity to metropolitan areas.[35] Given the challenges confronting more remote and less densely populated counties, we expect metropolitan areas and nonmetropolitan areas adjacent to metropolitan areas to have lower (better) Economic Status Index values than the more isolated rural (nonmetropolitan not adjacent to metropolitan areas).

The Appalachian Region historically has lagged behind the nation in economic achievement.[36] Many of its communities still confront an array of economic development challenges, including dependence on resource-based industries, needed improvements to basic education and infrastructure, and youth out-migration. In models that include Appalachian and non-Appalachian counties, Appalachian counties are expected to have a higher (worse) Economic Status Index value, even after taking into account the other factors that would be associated with lower employment, increased poverty, and lower income. (See Appendix B, Table B.3 for regression results based on analysis of all counties in the 13 states that include the counties of the Appalachian Region.)

Because all economies have a certain amount of momentum whereby past economic performance determines current economic status, we include the Economic Status Index measured in FY 2007 as one factor that explains the value of the FY 2011 Economic Status Index. A higher value of the FY 2007 Index is hypothesized to be associated with a higher (worse) value of the FY 2011 Index. This means that the effects of other variables on the FY 2011 Economic Status Index are net of a county's economic status four years earlier.

Table 6.2 summarizes the hypothesized effects of each explanatory variable included in the regression models. A positive effect ("+") means that a higher value for the variable is associated with a higher (worse) Economic Status Index value and the regression coefficient for the variable will be positive. A negative value ("-") means a higher value of the variable is associated with a lower (better) Economic Status Index value, and the regression coefficient for the variable will be negative.

[34] Jason R. Henderson (2002), "Will the rural economy rebound with the rest of the nation?" *The Main Street Economist* (Center for the Study of Rural America, Federal Reserve Bank of Kansas City); Mario Pezzini (2000), "Rural Policy Lessons from OECD Countries," *Economic Review*, Federal Reserve Bank of Kansas City (Third Quarter):47-57.

[35] The USDA Economic Research Service provides an overview of Rural-Urban Continuum Codes that form a classification system for distinguishing metropolitan areas by their size and nonmetropolitan areas by their urbanization and adjacency to metropolitan areas. See http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UgJUxW3LuSo.

[36] Appalachian Regional Commission (2010), *Economic Assessment of Appalachia: An Appalachian Regional Development Initiative Report* (June), accessed in April 2013 at http://www.arc.gov/images/programs/ardi/EconomicAssessmentofAppalachiaJune2010.pdf.

Table 6.2: Effect on Economic Status Index, Fiscal Year 2011

Variable Descriptions and Data Sources	Hypothesized Sign of Coefficient
Economic Status Index, FY 2007 The three-year average county unemployment rate from 2006-2008, county per capita market income from 2007, and county poverty rate from 2000, benchmarked against the average index value across U.S. counties.	+
Log (Housing Value) Log of the aggregate value of all the owner-occupied housing units in a county in 2006-2008 measured in millions of 2008 dollars. Value imputed for counties with population under 20,000.	-
Employment Ratio, 2007 Total employed as a percentage of the working age population.	-
Percent Manufacturing, 2007 Percentage of the total employed population in manufacturing.	-
Percent Construction, 2007 Percentage of the total employed population in construction.	-
Percent Black, 2008 Percentage of the population ages 15-64 that is Black.	+
Percent Hispanic, 2008 Percentage of the population ages 15-64 that is Hispanic.	+
Percent 60 and older, 2008 Percentage of the population that is sixty years and older.	+
Metro Area This variable is coded 1 when the county is part of a metropolitan area (as designated by OMB based on population and commuting status). Otherwise, the variable is coded 0.	-
Nonmetro Adjacent to Metro This variable is coded 1 when the county is not designated as part of a metropolitan area but is adjacent to an OMB designated metropolitan area. Otherwise the variable is coded 0.	-
Nonmetro Not Adjacent to Metro The variable is coded 1 when the county is nonmetropolitan and also not adjacent to an OMB designated metropolitan area. Otherwise the variable is coded 0. This variable does not appear in any of the regression models.	N/A
Appalachian County Designated as an Appalachian county by the Appalachian Regional Commission.	+

Note: "+" means the variable is associated with a higher (worse) economic status index level and "-" means it is associated with a lower (better) economic status index level. "N/A" means "not applicable." Metropolitan, nonmetropolitan adjacent to metro, and nonmetropolitan not adjacent to metro are county designations based on U.S. Department of Agriculture (USDA), Economic Research Service, Rural-Urban Continuum Codes, available at http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UgJUxW3LuSo.

Variables in the final regression analysis are dependent on data availability and various diagnostic procedures used to determine which variables and what type of model should be used to best explain the economic status of Appalachian counties. Of particular note is the choice to include aggregate housing value and to exclude measures of other types of wealth such as financial wealth (e.g., dividend and

interest income; proprietor's income). As noted above, many households in the U.S. hold housing wealth. In addition, housing wealth constitutes the major portion of all household wealth[37] and is highly correlated with other forms of wealth for which county-level data are available. Only models using data on Appalachian counties are discussed in the main text of the chapter. Appendix B provides detailed information about the variables included in the models, as well as models using data from all counties in states in the Appalachian Region.

6.3 How to Interpret Regression Results

Results of the regression models using data for the 420 counties in the Appalachian Region are summarized below in Table 6.3. Only results for the main variables of interest are included; effects of control variables are not. The full specification of these models may be found in Appendix B, Table B.4. Similar tables using data from the 1070 Appalachian and non-Appalachian counties in the 13 Appalachian states may be found in Appendix B, with Tables 6.3A showing only results for the main variables and Table B.5 the full specification.

For discussion of this analysis, variables significant at the 95 percent level ($p<.05$) are considered statistically significant and therefore contribute to the economic status of the counties as measured by the Economic Status Index. The size of the coefficients for each independent variable in the model determines the contribution each variable makes to the model, relative to all other independent variables. Each coefficient will be either positive or negative, indicating its association with economic status. Given the absolute value of the coefficient, larger values contribute more to the 2011 Index of Economic Status outcome than do smaller values. Below is an explanation of how to interpret each variable's coefficient within the regression models.

1. Log of county aggregate housing value:
    - A positive value indicates that one percent higher wealth is associated with an Economic Status Index value that is higher (by coefficient/100), signaling worse economic health.
    - A negative value indicates that one percent higher wealth is associated with an Economic Status Index value that is lower (by coefficient/100), signaling better economic health.
2. Metropolitan:
    - A positive value indicates that a metro county is associated with having a higher (worse) Economic Status Index value than a nonmetro county not adjacent to a metro county.
    - A negative value indicates that a metro county is associated with having a lower (better) Economic Status Index value than a nonmetro county not adjacent to a metro county.
3. Nonmetropolitan adjacent to metro:
    - A positive value indicates that a nonmetro county adjacent to a metro county is associated with having a higher (worse) Economic Status Index value than a nonmetro county not adjacent to a metro county.
    - A negative value indicates that a nonmetro county adjacent to a metro county is associated with having a lower (better) Economic Status Index value than a nonmetro county not adjacent to a metro county.

[37] In 2002, home equity, the largest share of household net worth, represented 41.7 percent of total household net worth, while stocks and mutual funds held outside retirement accounts represented 11.1 percent of total household net worth. In 2000, the share of household wealth held in home equity was 30 percent and in 2011, it was 25 percent. Stocks and mutual funds not in retirement accounts were 15 percent of all wealth in 2011. See Gottschalck, Vornovytskyy, and Smith (2013), cited above; and Alfred O. Gottschalck (2008), "Net Worth and the Assets of Households," Household Economic Studies P70-115, *Current Population Reports* (April), available at http://www.census.gov/prod/2008pubs/p70-115.pdf.

4. Employment ratio:
    - A positive value indicates that having higher percentages of the county working-age population employed is associated with higher (worse) Economic Status Index value in the county.
    - A negative value indicates that having higher percentages of the county working-age population employed is associated with lower (better) Economic Status Index value.
5. Percent employed in a certain industry (construction or manufacturing):
    - A positive value indicates that having higher percentages of persons employed in that industry is associated with higher (worse) Economic Status Index value.
    - A negative value indicates that having higher percentages of persons employed in that industry is associated with lower (better) Economic Status Index value.
6. Percentage black working-age population:
    - A positive value indicates that having higher percentages of black population (ages 15-64) is associated with higher (worse) county Economic Status Index value.
    - A negative value indicates that having higher percentages of black population (ages 15-64) is associated with lower (better) county Economic Status Index value.
7. Percentage Hispanic working-age population:
    - A positive value indicates that having higher percentages of Hispanic population (ages 15-64) is associated with higher (worse) county Economic Status Index value.
    - A negative value indicates that having higher percentages of Hispanic population (ages 15-64) is associated with lower (better) Economic Status Index value.
8. Percentage 60 and older population:
    - A positive value indicates that having higher percentages of the county population age 60 years and older is associated with higher (worse) economic status scores.
    - A negative value indicates that having higher percentages of the county population age 60 years and older is associated with lower (better) economic status scores.

In these results a negative coefficient ("Coeff") indicates that a higher value of the variable is associated with a lower (better) value for the FY 2011 Economic Status Index. A positive coefficient indicates the opposite, that a higher value of the variable is associated with a higher (worse) Economic Status Index value. For example in Table 6.3, the positive coefficient for economic status in FY 2007 indicates that counties with a higher (worse) Economic Status Index value in FY 2007 likely have a higher (worse) Economic Status Index value in FY 2011. This result is consistent with the concept of economic momentum, where the past economic conditions in a county strongly influence the current or future conditions. The coefficient for the employment ratio is negative. That is, a lower employment ratio is associated with a higher (worse) economic status index value, or fewer employed people in a county usually result in a more distressed economy. This means that counties with more members of the working age population employed are more likely to be in better economic condition.

6.4 Discussion of Regression Analysis Results

The regression analysis results shown in Table 6.3 include three separate regression models. Model 1 shows estimates of effects when past economic performance (FY 2007 Economic Status Index), aggregate wealth (Log of Housing Value), geographic settlement patterns (metropolitan county, nonmetropolitan county adjacent to a metropolitan county, and nonmetropolitan county not adjacent to a metropolitan county), employment, industrial sector (manufacturing, construction, and other), black share of the working-age population, Hispanic share of the working-age population, and people age 60 or older as a share of the population, and control variables are included. Model 2 includes only the FY 2007 Economic Status Index and control variables. Model 3 includes all variables except the FY 2007 Economic Status Index. The explanatory power of each model as given by R-squared points to the persistence of a county's past economic status.

Past economic status is the strongest predictor of current economic status for Appalachian counties. The results in regression models 1 and 2 show that even after taking into account other factors, the FY 2007

Economic Status Index value almost perfectly predicts the FY 2011 Economic Status Index value. A one point higher Index in FY 2007 is associated with nearly a one point higher FY 2011 Index. Just the FY 2007 index alone accounts for 97 percent of the variation in the FY 2011 Index across Appalachian counties. As Models 1 and 3 indicate, other factors are also significant, but the full effect of these factors is difficult to measure in the presence of past economic performance as this past performance is also determined by the same factors measured at an earlier point in time. These factors also do not change rapidly and their current values depend on past levels. Comparison of Model 1 and Model 3 show that the coefficients of housing value, metropolitan/nonmetropolitan settlement patterns, industrial sector, and demographic variables are generally much higher when the FY 2007 Index is excluded from the model. Though it is impossible to measure the effects of population and industrial sector in the absence of a county's past economic performance, Model 3 suggests that the influence of these factors is greater than we are able to observe in Model 1.

The regression results for Model 1 indicate that, net of other factors including past county economic performance, a one percent higher housing value is associated with a 1.88 lower FY 2011 Economic Status Index value in Appalachian counties. An employment ratio that is higher by one percentage point is associated with 0.05 lower FY 2011 Economic Status Index value in Appalachian counties. The regression results suggest that both housing values and employment contribute to county economic status.

Table 6.3: Effect of County Wealth, Demographic, and Employment Variables on Economic Status Index (Fiscal Year 2011), Appalachian Counties

Variables	Model 1			Model 2			Model 3		
	Coeff	Std Err (Robust)	t-stat	Coeff	Std Err (Robust)	t-stat	Coeff	Std Err (Robust)	t-stat
Economic Status Index (FY 2007)	0.93	0.02	39.48 **	0.99	0.02	61.64 **			
Log (Housing Value)	-1.88	0.66	-2.85 **				-15.86	1.88	-8.44 **
Metro	-2.92	1.07	-2.74 **				-20.98	3.53	-5.94 **
Nonmetro Adjacent to Metro	-1.56	0.94	-1.66 *				-9.98	3.08	-3.24 **
Employment Ratio	-0.05	0.02	-2.39 **				-0.49	0.06	-7.61 **
Percent Manufacturing	0.15	0.06	2.41 **				-0.52	0.14	-3.73 **
Percent Construction	0.15	0.16	0.91				-2.07	0.44	-4.69 **
Percent Black in Population, Ages 15-64	0.15	0.06	2.42 **				0.62	0.12	5.14 **
Percent Hispanic in Population, Ages 15-64	0.23	0.12	1.84 *				0.53	0.34	1.57
Percent Age 60+	-0.08	0.11	-0.68				-0.39	0.35	-1.12
Constant	19.85	8.80	2.26 **	-2.37	2.27	-1.05	315.27	17.19	18.34 **
R^2	0.97			0.97			0.78		
Adjusted R^2	0.97			0.97			0.77		
N	420			420			420		

Notes: **p<.05; *p<.10. Coefficients for control variables are not shown. These variables include: (1) states with Appalachian counties, with Alabama as the reference state and (2) control variable designating counties for which housing value was extrapolated from Census 2000 and the Housing Price Index (HPI). The full model specifications with the coefficients for control variables may be found in Appendix B. Appalachian county status based on designation for FY 2011.

The strong association between the Economic Status Index in FY 2007 and in FY 2011 suggests that economic conditions have a cumulative effect over time. Economic conditions might be particularly important to income generation necessary for wealth accumulation and the growth of capital intensive businesses in the county.

Despite the importance of past economic performance in Model 1, other factors should not be neglected in considering priorities for economic development. Including the Economic Status Index for fiscal year 2007 in the regression models allows us, in effect, to isolate which factors are associated with county variation in economic status over a period of four years between fiscal year 2011 and fiscal year 2007. In addition to higher housing values and employment, and being a county in a metropolitan area or a nonmetropolitan county adjacent to a metropolitan area are associated with lower (better) economic status. The significant negative coefficient for "metro area" indicates that among Appalachian counties, metropolitan counties have a lower (better) Economic Status Index value than nonmetropolitan counties not adjacent to metro counties but with otherwise similar characteristics. Nonmetro counties adjacent to metropolitan counties also fare better relative to nonmetro non-adjacent counties.

The results (in Model 1 and Model 3) for housing value, employment, and metropolitan counties are consistent with the effects hypothesized. Results (in both Model 1 and Model 3) for the percent black in the working-age population are also consistent with hypothesized effects. In Model 1, the significant positive coefficient for manufacturing, net of economic status in FY 2007, indicates that in Appalachian counties, having a higher share of workers engaged in the manufacturing sector is associated with a higher (worse) Economic Status Index value in FY 2011 which captures performance at the end of the U.S. housing-led expansion. This finding is consistent with the decrease in U.S. manufacturing production since 2007, with the slow recovery, and with the decline in manufacturing employment in the Appalachian Region between 2000 and 2007.[38] In contrast, the negative coefficient for manufacturing in Model 3 suggests that manufacturing is associated with lower (better) economic status when a county's past economic performance is not taken into account. This is consistent with the relative stability of manufacturing employment in comparison to mining and possibly seasonal farm employment.

6.5 Conclusion

The results of the above regression analysis suggest that housing wealth is just as important to county economic well-being as employment. Higher housing wealth in a county is associated with a lower (better) Economic Status Index value, and a county's economic conditions affect its wealth accumulation. If this is true, then counties with higher aggregate wealth might have a buffer when economic conditions begin to deteriorate, and counties with a history of worse economic status will not only suffer immediately but will experience more difficult economic conditions for a longer period than counties that have been historically better off.

[38] Federal Reserve Board (2012), "Federal Reserve Statistical Release (May 16) – Industrial Production and Capacity Utilization," accessed in May 2012 at http://www.federalreserve.gov/releases/g17/current/g17.pdf; Appalachian Regional Commission (2010), *Economic Assessment of Appalachia: An Appalachian Regional Development Initiative Report* (June), accessed in April 2013 at http://www.arc.gov/images/programs/ardi/EconomicAssessmentofAppalachiaJune2010.pdf.

7. Summary and Policy Implications

Trends in household wealth are important for individuals and families because household wealth provides a financial and psychological safety net to weather tough economic times. People use household assets to leverage funds that in turn can create additional opportunities to produce more wealth. Wealth is largely transferable from one generation to the next and is a key component of intergenerational mobility. It creates opportunities for expanded social networks, provides social and economic prestige, and contributes to political power. At the community level, household wealth provides a "pool of savings" that is a prerequisite for business development and for consumers to feel confident about their economic futures.

Between 2007 and 2009, the deepest economic recession in the United States since the Great Depression resulted in significant job and income losses for many Americans as well as sharp declines in the value of their homes and investments. As foreclosures hit record levels, homeownership rates dropped. Since home equity accounts for between 20 and 25 percent of household wealth in the U.S., the downturn in the U.S. housing market resulted in a decline of $11 billion in net household wealth by 2008—the largest loss of wealth since the federal government started keeping records of wealth accumulation 50 years ago. Although the recession officially ended in 2009, the pace of economic recovery has been slow and has varied considerably across different regions of the United States.

The Appalachian Region has a history of economic difficulties compared with the rest of the nation. As a result, the Appalachian Regional Commission (ARC) has an increased interest in understanding the effects of the recent recession on household wealth and economic well-being in Appalachia and commissioned this research report to assess whether the Appalachian Region was disproportionately impacted and to assess the degree of recovery compared with the rest of the nation.

During the recent recession, the Appalachian Region did experience a disproportionate decline in median household income and increase in the poverty rate, compared with the U.S. as a whole. However, although homeownership rates and average home values did decline in Appalachia, these declines were not as steep as those for the rest of the nation. In contrast, the share of homeowners with a housing cost burden increased in Appalachia, and both the share of households with interest and other non-wage income and the average amount of such income declined more in Appalachia than in the rest of the United States. While these findings characterize the Appalachian Region as a whole, it is important to note that there is considerable diversity within the Region, and the patterns for particular subregions, county types, and economic status groups do vary across the period from 2007 to 2009.

Although economic conditions in many parts of the Appalachian Region have improved substantially since the early 1960s, household incomes, home values, and income from interest, dividends and other non-wage sources remain considerably lower than in the rest of the United States. These lower levels of wealth—from both housing and other investments—result in Appalachian households and communities having fewer resources to fall back on to compensate for job, income, and wealth losses due to economic downturns such as the recent recession. In addition, counties with a history of worse economic status will not only suffer immediately but will experience more difficult economic conditions for a longer period after a recession than counties that have historically been better off.

Although not analyzed in this report, lower levels of education in Appalachia have been documented elsewhere and may have compounded the effects of the recent recession.[39] Adults with lower levels of education suffered much higher rates of unemployment during the recession, and were less able to move to other areas to find alternative employment.[40] Policies and programs that continue to increase the levels of education among adults in the Appalachian Region will not only help to raise individual and

[39] Kelvin Pollard and Linda A. Jacobsen (2013), "The Appalachian Region: A Data Overview from the 2007-2011 American Community Survey," (February). Available online at http://www.prb.org/Publications/Reports/2013/appalachia-overview-acs-2011.aspx .

[40] Linda A. Jacobsen and Mark Mather (2011), "A Post-Recession Update on U.S. Social and Economic Trends," (December). Available online at http://www.prb.org/Publications/Reports/2011/us-economicsocialtrends-update1.aspx.

household incomes, but may also ensure more labor mobility to help mitigate job losses during future economic downturns.

The key role of housing value in household economic security suggests that it may be another indicator of economic well-being worthy of continued monitoring in the Appalachian Region. Just as economic development policies can be crafted to increase income security in the Region, policies that stimulate asset accumulation could also improve the economic stability of households and help them offset income and wealth losses in future recessions. Such policies could include program regulations that stimulate savings such as raising the threshold whereby liquid assets disqualify households from income assistance programs, or programs that help individuals leverage existing assets such as affordable homeownership programs, small business assistance, or homebuyer education programs. Laws that address threats to retaining assets could also be strengthened such as laws that prevent predatory lending or protect against bankruptcy due to medical expenses. Raising levels of education and household income, along with boosting the level of assets, could help Appalachian households and communities better withstand future economic downturns, as well as reduce the amount of time needed for recovery.

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APPENDIX A: HOUSEHOLD WEALTH CONCEPTS

Table A.1: Household Wealth Concepts – Definitions, Indicators, and Data Availability

Concept	Indicators	Data Variables Available by County (*suppression/confidentiality data issues for some ARC counties OR public access issues)
Marketable Wealth current value of fungible assets less debt	**Assets** - gross value of owner-occupied housing; other real estate owned by the household; cash and demand deposits; time and savings deposits, certificates of deposit, and money market accounts; government bonds, corporate bonds, foreign bonds, and other financial securities; the cash surrender value of life insurance plans; the cash surrender value of pension plans, including IRAs, Keogh, and 401(k) plans; corporate stock and mutual funds; net equity in unincorporated businesses; and equity in trust funds.	**Assets** -Percent of All households That Are Owner-Occupied (ACS* 2006-08, 2007, 2009, 2007-11) -Percent of Households With $1,000 Or More Agriculture Sales (ACS* 2006-08, 2007, 2009, 2007-11) -Percent of All Households With Real Estate, Dividend, Trust Income (ACS* 2006-08, 2007, 2009, 2007-11) -County Share of Deposits in FDIC-Insured Institutions (FDIC SOD, annual 1994-2009, note—Household v. commercial ownership not determined) -County Value of Time and Savings Deposits in FDIC-Insured Institutions (FDIC SOD*, annual 1994-2009, note—Household v. commercial ownership not determined) -Proprietors Income, (BEA 2000, 2007, note—not clear that this is a household measure) -Dividend Interest and Rent, (BEA 2000, 2007, note not clear that this is a household measure)
	Debt - mortgage debt; consumer debt, including auto loans; and other debt	**Debt** -Percent of All Households With a Mortgage (ACS* 2006-08, 2007, 2009, 2007-11) -Median Monthly Housing Cost Among Owner-Occupied Households (ACS* 2006-08, 2007, 2009, 2007-11) -Percent of Households for which Housing Cost is More than 30 Percent of Income (ACS* 2006-08, 2007, 2009, 2007-11) -County Mortgage Delinquency Rate (FRB NY*, available dates unknown) -County Auto Loan Delinquency Rate (FRB NY*, available dates unknown) -County Bank Card Delinquency Rate (FRB NY*, available dates unknown)
Augmented Wealth sum of marketable and retirement wealth	**Assets** - see marketable wealth; current value of retirement benefits from social security and/or employer/union managed pensions	**Assets** -see marketable wealth -County Total OASDI Contributions (Table 3*, Earnings and Employment Data for Workers Covered Under Social Security and Medicare, by State and County, 2006)
	Debt - see marketable wealth	**Debt** -see marketable wealth

Table A.1: Household Wealth Concepts (continued)

Concept	Indicators	Data Variables Available by County (*suppression/confidentiality data issues for some ARC counties OR public access issues)
Financial Wealth marketable wealth minus net equity in owner-occupied housing	**Assets** - other real estate owned by the household; cash and demand deposits; time and savings deposits, certificates of deposit, and money market accounts; government bonds, corporate bonds, foreign bonds, and other financial securities; the cash surrender value of life insurance plans; the cash surrender value of pension plans, including IRAs, Keogh, and 401(k) plans; corporate stock and mutual funds; net equity in unincorporated businesses; and equity in trust funds. (These are the same as those listed in marketable wealth but exclude gross value of owner-occupied housing.) **Debt** - consumer debt, including auto loans; and other debt. (These are the same as those listed in marketable wealth but exclude mortgage value.)	**Assets** -Percent of Households With $1,000 Or More Agriculture Sales (ACS* 2006-08, 2007, 2009, 2007-11) -Percent of All Households With Real Estate, Dividend, Trust Income (ACS* 2006-08, 2007, 2009, 2007-11) -County Share of Deposits in FDIC-Insured Institutions (FDIC SOD, annual 1994-2009, note—Household v. commercial ownership not determined) -County Value of Time and Savings Deposits in FDIC-Insured Institutions (FDIC SOD, annual 1994-2009, note—Household v. commercial ownership not determined) -Proprietors Income, (BEA 2000, 2007, note—not clear that this is a household measure) -Dividend Interest and Rent, (BEA 2000, 2007, note not clear that this is a household measure) **Debt** -County Auto Loan Delinquency Rate (FRB NY*, available dates unknown) -County Bank Card Delinquency Rate (FRB NY*, available dates unknown)
Net Equity in Owner-Occupied House value of owner occupied housing less outstanding mortgage	**Asset** – value of home **Debt** – value of the mortgage balance owed on home	**Asset** -Percent of All Households That Are Owner-Occupied (ACS* 2006-08, 2007, 2009, 2007-11) **Debt** -Percent of All Households With a Mortgage (ACS* 2006-08, 2007, 2009, 2007-11) -Median Monthly Housing Cost Among Owner-Occupied Households (ACS* 2006-08, 2007, 2009, 2007-11) -Percent of Households for which Housing Cost is More than 30 Percent of Income (ACS* 2006-08, 2007, 2009, 2007-11) -County Mortgage Delinquency Rate (FRB NY*, available dates unknown)
Asset Poverty whether household wealth exceeds poverty threshold (or minimum consumption threshold)	-ratio of household wealth to poverty threshold -number of months of minimal consumption that household wealth would support	Not applicable (N/A) because determination of net worth at the household level is possible in only a few surveys, e.g., SIPP and PSID, but sample sizes at the county level would not allow reliable measure. Possible indicators if data were reliable would be: Percent of Households with Wealth-to-Poverty Ratio Greater Than One; Percent of Households with Wealth Equivalent of Three or More Months of Minimal Consumption.

APPENDIX B: SPECIFICATION OF THE REGRESSION MODELS

Variables Included in Models

Table B.1 shows the mean of each variable for Appalachian and non-Appalachian counties within the 13 Appalachian states; Table B.2 shows the bivariate correlations between each pair of continuous variables for Appalachian counties. Tables 6.4A and 6.5A show results for the full model specifications of Table 6.3 from the main text and Table B.3 from the Appendix, respectively.

Table B.1: Means of Variables

Variable Name	Data Source	Appalachian Counties	Non-Appalachian Counties
Economic Status Index, FY 2011	Appalachian Regional Commission	142.7	129.7
Economic Status Index, FY 2007	Appalachian Regional Commission	136.6	128.11
Housing Value (millions in 2008 dollars), 2008	U.S. Census Bureau, Department of Commerce, American Community Survey, 2006-2008 and Decennial Census 2000; Federal Housing Finance Agency, House Price Index All-Transactions Indexes	2,560.9	7,605.1
Metropolitan (percent)	USDA Economic Research Service, 2010	34	48
Nonmetro adjacent to metro (percent)	USDA Economic Research Service, 2010	26	15
Nonmetro not adjacent to metro (percent)	USDA Economic Research Service, 2010	40	37
Manufacturing (percent), 2007	Woods & Poole, Complete Economic & Demographic Data Source (CEDDS), 2011	12.4	11.5
Construction (percent), 2007	Woods & Poole, Complete Economic & Demographic Data Source (CEDDS), 2011	7.6	7.3
Employment Ratio (per 100 population), 2007	Woods & Poole, Complete Economic & Demographic Data Source (CEDDS), 2011	70.3	75.1
Age 60 and Older Population (percent), 2008	U.S. Census Bureau, Population Estimates, July 2008	21.4	19.1
Black Working-Age Population (percent), 2008	U.S. Census Bureau, Population Estimates, July 2008	17.4	24.3
Hispanic Working-Age Population (percent), 2008	U.S. Census Bureau, Population Estimates, July 2008	3.1	3.8

Table B.2: Correlation Matrix for Continuous Variables, All Counties in 13 Appalachian States

	Economic Status Index, FY 2011	Economic Status Index, FY 2007	Housing Value	Employment Ratio	Manufacturing	Construction	Black Working-Age Population	Hispanic Working-Age Population	60+ Population
Economic Status Index, FY 2011	**1.000**	0.943	-0.320	-0.404	0.057	-0.230	0.367	-0.210	0.124
Economic Status Index, FY 2007	0.943	**1.000**	-0.397	-0.505	-0.190	-0.193	0.082	-0.327	0.037
Housing Value	-0.320	-0.397	**1.000**	0.258	-0.183	-0.067	0.001	0.446	-0.178
Employment Ratio	-0.404	-0.505	0.258	**1.000**	0.072	-0.253	-0.022	0.176	-0.025
Manufacturing	0.057	-0.190	-0.183	0.072	**1.000**	-0.244	-0.057	0.019	0.060
Construction	-0.230	-0.193	-0.067	-0.253	-0.244	**1.000**	-0.185	-0.022	0.063
Black Working-Age Population	0.367	0.082	0.001	-0.022	-0.057	-0.185	**1.000**	0.059	-0.211
Hispanic Working-Age Population	-0.210	-0.327	0.446	0.176	0.019	-0.022	0.059	**1.000**	-0.319
60+ Population	0.124	0.037	-0.178	-0.025	0.060	0.063	-0.211	-0.319	**1.000**

The final regression models (Table 6.3 in the main text) present the effects of county aggregate housing value, demographics, and employment/industry variables on the FY 2011 Economic Status Index in Appalachian counties. These may be compared to results observed for all counties in the 13 states that are part of the Appalachian Region (Table B.3 below).

In the analyses presented, the natural logarithm was used for measures of housing value to make the specification more consistent with the assumption of a linear relationship between the dependent variable measure and the explanatory measures included in the regression. For these measures, the beta coefficient signals the effect (direction and strength) of a relative change in the variable (e.g., county housing value) on the Economic Status Index.

Regression models assess effects of county housing value, demographics, and employment/industry, both net of the county's economic status four years ago (Model 1) and without taking into account the county's past economic status (Model 3). Model 1 partially controls for important unmeasured factors that differ across counties but may remain the same over time. The inclusion of dummy variables for each state in all regression models also helps to control for unmeasured factors, including those attributable to differences in policies and regulations. For example, lending practices vary by state, partly due to state tax regulations, with the result that out-of-pocket closing costs for similar home loans may be much higher in one state than in another. Finally, the Stata procedure[41] used to estimate whether or not a particular variable's effect is significant produces reliable estimates even when some of the assumptions of the OLS linear regression model are violated. A key assumption of concern here is the independence of the observations. This assumption suggests that factors observed in each county occur independently of what is observed in other counties. This may not be true, for example, if one farming operation encompassed adjacent land in multiple counties. Also, counties with similar natural resource bases (or from the same subregion) may have some similar economic attributes because they benefit from the same geophysical structure.

Results for All Counties in Appalachian Region States

The regression results shown in Table B.3 include three separate regression models. Model 1 shows estimates of effects when the following measures are included: past economic performance (FY 2007 Economic Status Index), aggregate wealth (Log of Housing Value), geographic settlement patterns (metropolitan county, nonmetropolitan county adjacent to a metropolitan county, and nonmetropolitan county not adjacent to a metropolitan county), whether the county is in Appalachia or not, employment, industrial sector (manufacturing, construction, and other), black share of the working-age population, Hispanic share of the working-age population, and people age 60 or older as a share of the population, and control variables. Model 2 shows results when the regression includes only the FY 2007 Economic Status Index and control variables. Model 3 shows results when all variables except the FY 2007 Economic Status Index are included. The explanatory power of each model as given by R-squared suggests persistence of a county's past economic status.

Just the FY 2007 Economic Status Index alone accounts for 98 percent of the variation in the FY 2011 Index across all counties. As Model 1 and 3 indicate, other factors are also significant, but the full effect of these factors is difficult to measure in the presence of past economic performance.

Appalachian counties have a significantly higher (worse) level of economic status in fiscal year 2011 than do non-Appalachian counties, even after taking into account differences in economic status four years before (in FY 2007) as well as industrial and population characteristics of the counties. The coefficient for "Appalachian County" is both positive and statistically significant in Table B.3.

[41] The analyses were conducted in Stata, Version 9, using the regress procedure with the robust variance estimation option.

Table B.3: Factors Associated with County Economic Status Index (Fiscal Year 2011), All Counties in 13 Appalachian States

Variables	Model 1				Model 2				Model 3			
	Coeff	Std Err (Robust)	t-stat		Coeff	Std Err (Robust)	t-stat		Coeff	Std Err (Robust)	t-stat	
Economic Status Index (FY 2007)	0.96	0.01	69.17	**	1.02	0.01	133.08	**				
Log (Housing Value)	-0.94	0.34	-2.77	**					-12.37	0.92	-13.47	**
Appalachian County	1.81	0.56	3.22	**					21.26	1.62	13.10	**
Metro	-2.12	0.70	-3.01	**					-19.39	2.23	-8.71	**
Nonmetro Adjacent to Metro	-0.56	0.68	-0.83						-6.68	2.00	-3.34	**
Employment Ratio	-0.03	0.01	-2.37	**					-0.34	0.05	-6.46	**
Percent Manufacturing	0.11	0.03	3.07	**					-0.42	0.09	-4.55	**
Percent Construction	-0.12	0.09	-1.32						-1.95	0.26	-7.54	**
Percent Black in Population, Ages 15-64	0.06	0.02	2.41	**					0.96	0.06	15.97	**
Percent Hispanic in Population, Ages 15-64	-0.08	0.06	-1.40						0.91	0.20	4.46	**
Percent Age 60+	-0.20	0.07	-2.80	**					-0.14	0.22	-0.62	
Constant	12.06	4.60	2.62	**	-7.20	1.31	-5.51	**	247.86	9.19	26.98	**
R^2	0.98				0.97				0.78			
Adjusted R^2	0.98				0.97				0.77			
N	1,070				1,070				1,070			

Notes: **p<.05; *p<.10; Coefficients for control variables are not shown. These variables include: (1) states with Appalachian counties, with Alabama as the reference state and (2) control variable designating counties for which housing value was extrapolated from Census 2000 and the Housing Price Index (HPI). The full model specifications with the coefficients for control variables may be found in the Appendix to this report. Appalachian county based on designation for FY 2011.

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The regression results for Model 1 (Table B.3) indicate that, net of other factors including past county economic performance, a one percent higher county housing value is associated with a county FY 2011 Economic Status Index value that is lower (better) by 0.0094 (0.94/100). A county employment ratio that is higher by one percentage point is associated with a county FY 2011 Economic Status Index value that is lower (better) by 0.03. These results suggest that both housing values and employment are important to county economic health.

In both Model 1 and Model 3 in Table B.3, metropolitan counties and nonmetropolitan counties adjacent to metropolitan areas, as expected, also have lower (better) FY 2011 Economic Status Index values, as expected. And a higher share of blacks in the working-age population is associated with higher (worse) FY 2011 Economic Status Index values. Surprisingly, in models where it is significant, a greater share of people age 60 and older in the population is associated with lower (better) FY 2011 Economic Status Index values. This result regarding the share of older people in the population possibly reflects the importance of stable incomes provided by income safety net programs such as Social Security.

In Model 1 (Table B.3), the significant positive coefficient for manufacturing, net of the Economic Status Index in FY 2007, indicates that in Appalachian counties, having a higher share of workers engaged in the manufacturing sector is associated with a higher (worse) economic status as measured by the FY 2011 Index which captures economic performance at the end of the U.S. housing-led expansion. This finding is consistent with the decrease in U.S. manufacturing production since 2007, with the slow recovery, and with the decline in manufacturing employment in the Appalachian Region between 2000 and 2007.[42] In contrast, the negative coefficient for manufacturing and construction in Model 3 (Table B.3) suggests that manufacturing and construction are associated with lower (better) economic status when a county's past economic performance is not taken into account. This is consistent with the relative stability of manufacturing employment in comparison to mining and possibly seasonal farm employment.

[42] Federal Reserve Board (2012), "Federal Reserve Statistical Release (May 16) – Industrial Production and Capacity Utilization," accessed in May 2012 at http://www.federalreserve.gov/releases/g17/current/g17.pdf; Appalachian Regional Commission (2010), *Economic Assessment of Appalachia: An Appalachian Regional Development Initiative Report* (June), accessed in April 2013 at http://www.arc.gov/images/programs/ardi/EconomicAssessmentofAppalachiaJune2010.pdf.

Table B.4: Appalachian Counties (Full Specification)

Variables	Model 1			Model 2			Model 3		
	Coeff	Std Err (Robust)		Coeff	Std Err (Robust)		Coeff	Std Err (Robust)	
Economic Status Index (FY 2007)	0.93	0.02	**	0.99	0.02	**			
Log (Housing Value)	-1.88	0.66	**				-15.86	1.88	**
Metro	-2.92	1.07	**				-20.98	3.53	**
Nonmetro Adjacent to Metro	-1.56	0.94	*				-9.98	3.08	**
Employment Ratio	-0.05	0.02	**				-0.49	0.06	**
Percent Manufacturing	0.15	0.06	**				-0.52	0.14	**
Percent Construction	0.15	0.16					-2.07	0.44	**
Percent Black in Population, Ages 15-64	0.15	0.06	**				0.62	0.12	**
Percent Hispanic in Population, Ages 15-64	0.23	0.12	*				0.53	0.34	
Percent Age 60+	-0.08	0.11					-0.39	0.35	
Whether Housing Value Was Imputed with HPI (Yes)	0.47	1.18					-5.79	2.99	*
<u>States:</u>									
Georgia	14.65	1.70	**	15.57	1.52	**	-0.18	3.32	
Kentucky	23.07	2.08	**	20.40	1.82	**	42.20	5.37	**
Maryland	12.69	1.61	**	7.46	1.44	**	16.37	4.82	**
Mississippi	14.40	2.39	**	18.64	2.42	**	11.82	4.70	**
New York	9.64	2.00	**	6.29	1.60	**	1.71	4.36	
North Carolina	9.51	1.54	**	7.48	1.42	**	15.19	4.49	**
Ohio	16.05	1.55	**	12.99	1.36	**	18.30	3.95	**
Pennsylvania	9.02	1.44	**	5.73	1.16	**	3.92	3.79	
South Carolina	13.63	1.33	**	11.11	1.31	**	24.21	3.67	**
Tennessee	18.07	1.57	**	15.69	1.47	**	26.14	3.62	**
West Virginia	4.15	1.68	**	0.61	1.37		8.44	4.13	**
Virginia	6.79	2.03	**	5.55	1.68	**	-5.78	5.07	
Constant	19.85	8.80	**	-2.37	2.27		315.27	17.19	**
R^2	0.97			0.97			0.78		
Adjusted R^2	0.97			0.97			0.77		
N	420			420			420		

Note: **p<.05; *p<.10

Table B.5: All Counties in 13 Appalachian States (Full Specification)

Variables	Model 1			Model 2			Model 3		
	Coeff	Std Err (Robust)		Coeff	Std Err (Robust)		Coeff	Std Err (Robust)	
Economic Status Index (FY 2007)	0.96	0.01	**	1.02	0.01	**			
Log (Housing Value)	-0.94	0.34	**	0.76	0.47		-12.37	0.92	**
Appalachian County	1.81	0.56	**				21.26	1.62	**
Metro	-2.12	0.70	**				-19.39	2.23	
Nonmetro Adjacent to Metro	-0.56	0.68					-6.68	2.00	**
Employment Ratio	-0.03	0.01	**				-0.34	0.05	**
Percent Manufacturing	0.11	0.03	**				-0.42	0.09	**
Percent Construction	-0.12	0.09					-1.95	0.26	**
Percent Black in Population, Ages 15-64	0.06	0.02	**				0.96	0.06	**
Percent Hispanic in Population, Ages 15-64	-0.08	0.06					0.91	0.20	**
Percent Age 60+	-0.20	0.07	**				-0.14	0.22	
Whether Housing Value Was Imputed with HPI (Yes)	1.34	0.67	**				-2.80	1.95	
States:									
Georgia	17.19	0.99	**	18.20	0.96	**	-0.31	2.80	
Kentucky	17.62	1.19	**	17.24	1.07	**	31.49	3.55	**
Maryland	9.70	1.04	**	7.90	1.04	**	-4.06	4.18	
Mississippi	12.99	1.26	**	13.67	1.31	**	14.25	3.34	**
New York	9.15	1.15	**	6.73	1.09	**	10.82	3.35	**
North Carolina	7.36	0.97	**	6.17	0.95	**	5.86	2.99	*
Ohio	13.92	1.01	**	13.49	0.93	**	15.38	2.98	**
Pennsylvania	7.41	0.98	**	6.14	0.92	**	2.18	3.05	
South Carolina	14.12	1.37	**	13.36	1.41	**	17.75	3.43	**
Tennessee	15.93	1.06	**	15.36	1.06	**	22.43	2.86	**
West Virginia	1.05	1.27		-0.36	1.27		9.69	3.63	**
Virginia	6.32	1.01	**	6.15	0.99	**	-12.66	3.02	**
Constant	12.06	4.60	**	-7.20	1.31	**	247.86	9.19	**
R^2	0.98			0.97			0.78		
Adjusted R^2	0.98			0.97			0.77		
N	1,070			1,070			1,070		

Note: **p<.05; *p<.10

APPENDIX C: METHODOLOGY FOR ESTIMATING AGGREGATE HOUSING VALUE FOR COUNTIES WITH POPULATION UNDER 20,000

For counties with population of 20,000 or more, county-level estimates of housing market value were obtained from the 2006-2008 American Community Survey (ACS) 3-year estimates. However, estimates for counties with population under 20,000 were not available at the time of the analysis.

We applied the following procedure to obtain county-level estimates of housing market value in 2008 for counties with population of less than 20,000:

$$\mathbf{V_i = R_i \times O_i \times N_i \times I_i \times M_i}$$

V_i = aggregate value of owner-occupied housing in county i in the second quarter of 2008,

R_i = homeownership rate in county i in 2000,

O_i = occupancy rate in county i in 2000,

N_i = estimated number of housing units in county i as of July 1, 2008,

I_i = appreciation (depreciation) between the second quarter of 2000 and the second quarter of 2008 based on Federal Housing Finance Agency's House Price Index (HPI) for county i, with HPI assignment based on the county metropolitan status,

M_i = average home price for county i in the base year, 2000.

We obtained the baseline county-level average home price M_i from estimates of home values reported in the 2000 Census of Population and Housing. Several studies have tried to measure the level of bias in self-reported home values and found that these may be as high as six percent. However, in life cycle models of wealth, homeowners' perceived value may be the desirable measure because household consumption and savings behavior is likely to be based on perceived value. The average home prices are appreciated (depreciated) from 2000 to 2008 using the ratio of HPI in the second quarter of 2008 to HPI in the second quarter of 2000.

We assigned HPI values to each county based on metro/nonmetro status in the respective quarters. For nonmetro counties, we used the HPI reported for the nonmetropolitan part of the state. For metro counties, we used the HPI for the metropolitan area in which the country is located.

Homeownership and occupancy rates for smaller counties are not available after the 2000 Census. We used the homeownership and occupancy rates from the 2000 Census rather than attempting to extrapolate rates for 2008. Past research by the Census Bureau suggests that for areas with small populations, using rates from the Decennial Census are more accurate and less subject to unrealistically large variation than results of extrapolation methods.