

# KENTUCKY ANNUAL ECONOMIC REPORT

# 2014

Center for Business and Economic Research  
Gatton College of Business and Economics  
University of Kentucky





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The **Center for Business and Economic Research (CBER)** is the applied economic research branch of the Carol Martin Gatton College of Business and Economics at the University of Kentucky. Its purpose is to disseminate economic information and provide economic and policy analysis to assist decision makers in Kentucky's public and private sectors. In addition, CBER performs research projects for federal, state, and local government agencies, as well as for private-sector clients nationwide. The primary motivation behind CBER's research agenda is the belief that systematic and scientific inquiries into economic phenomena yield knowledge which is indispensable to the formulation of informed public policy.

CBER's research includes a variety of interests. Recent projects have been conducted on manpower, labor, and human resources; tourism economics; transportation economics; health economics; regulatory reform; public finance; technology use and adoption; education policy; and economic growth and development.

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## From the Director . . .

This report is one of the important ways that the Center for Business and Economic Research fulfills its mandated mission as specified in the Kentucky Revised Statutes (KRS 164.738) to examine various aspects of the Kentucky economy. The analysis and data presented here cover a variety of issues that range from an economic forecast for Kentucky in 2014 to a comprehensive presentation of long-term economic, education, health, environmental, energy, community, public finance, and demographic factors affecting Kentucky's future economic prosperity.



*Dr. Chris Bollinger*

Along with our two partners in this endeavor – the Innovation Network for Entrepreneurial Thinking, which is organized and staffed by the College of Communication and Information, and the Von Allmen Center for Entrepreneurship, which is part of the Gatton College of Business and Economics – we have produced an *Annual Report* that paints a diverse and complicated picture of our state's economy, its communities, and its citizens. Despite the constant change confronting us, there are timeless and enduring lessons. Pursuing educational excellence as well as economic innovation – since ideas, innovation, and intellectual capital form the foundation of the knowledge economy – is essential for Kentucky to improve its per capita income and achieve broad prosperity.



The **Innovation Network for Entrepreneurial Thinking**, better known as iNET, is designed to help students succeed in an entrepreneurial world and solve real world problems. iNET offers a continuum of learning opportunities to develop entrepreneurial thinking, skills and experience. The College of Communication and Information hosts this University-wide academic program ([iNET.uky.edu](http://iNET.uky.edu)). **Deb Weis** is the director of iNET and she can be contacted at 859.257.8296 or [deb.weis@uky.edu](mailto:deb.weis@uky.edu).



The **Von Allmen Center for Entrepreneurship** is the epicenter for entrepreneurship and commercialization at the University of Kentucky and in the Bluegrass Region. The Center brings together students, researchers, clinicians, mentors, service providers, and investors to create new businesses and jobs in the Commonwealth. The Von Allmen Center has been part of the Kentucky Innovation Network since its inception in 2002 ([gatton.uky.edu/VACE](http://gatton.uky.edu/VACE)). **Dean Harvey** is the Executive Director of the Von Allmen Center and he can be contacted at 859.257.1930 or [harvey@uky.edu](mailto:harvey@uky.edu).

## ..... Acknowledgments .....

The inspiration and framework for this report rests, of course, on the foundation constructed by prior CBER staff and the previous forty-one *Annual Reports* they produced. Moreover, we have melded their tradition of academic rigor with the intellectual breadth found in the biennial reports on trends affecting Kentucky’s future once produced by the staff of the Kentucky Long-Term Policy Research Center—*Michal Smith-Mello, Billie Dunavent, Amy Watts (Burke), Mark Schirmer, Peter Schirmer, and Suzanne King.*

We are grateful to *Dan O’Hair*, Dean of the College of Communication and Information, *Merl Hackbart*, Director of the Martin School of Public Policy and Administration, and *James Ziliak*, Director of the Center for Poverty Research, for their input, guidance, and support as we worked to identify the variables to include here. *Dean Harvey*, Executive Director of the Von Allmen Center for Entrepreneurship, provided important substantive input and financial support for this report. *Derek Jenniges* and *Alex Wolfe* provided invaluable research assistance, as did CBER’s interns, *Ben Childress* and *Rachel Masterson*. Finally, *Anna Stewart* was a dutiful proofreader.

*Michal Price*, a demographer at the University of Louisville’s Urban Studies Institute for over 25 years, provided an important framework for presenting and understanding the population section of this report—and wrote the Population Overview on page 125. And, much of the public finance section is based on the work of *William Hoyt, William Fox, Michael Childress, and James Saunoris*, who produced the *Final Report to the Governor’s Blue Ribbon Commission on Tax Reform* in September, 2012. While many played a role in producing this report, the authors are solely responsible for any errors.

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# The U.S. and Kentucky Economies in 2014: The Long and the Short of It All

Chris Bollinger

The recovery from the 2007-2009 recession has been frustratingly slow. Simply put, this recovery is not typical of previous recoveries and economists—certainly this one—are as puzzled by this as anyone else. Pundits and economists have suggested that the current state represents a “new normal” consisting of lower growth rates and higher unemployment than we are “used to.” Others suggest that the main issue is one of uncertainty caused by many highly volatile situations both politically and economically. There is evidence that recessions coupled with significant financial crises tend to have slower recoveries. We are also certainly facing a significant change in our population, with the oldest baby boomers now reaching retirement age. Still others decry our loss of manufacturing jobs as a part of the problem or that growing inequality has destroyed the middle class. In this Economic Outlook article I take a much longer term perspective than in previous years in an effort to place the current economy in a broader perspective. In particular, I will focus upon gross domestic product, employment and unemployment, and two sectors, manufacturing and health.

## ***National Perspective***

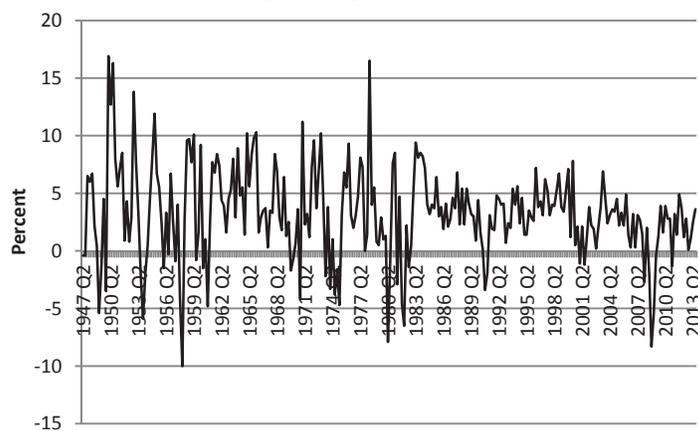
### **Gross Domestic Product**

Figure 1 presents the U.S. gross domestic product quarterly growth rate since 1948. One striking aspect is the much lower volatility since the early 1980's. There is also a general trend toward somewhat lower overall growth rates, especially after the 2001 recession. While the high peaks of the 1950's and 1960's are much more extreme than even the “roaring 90's” growth, the troughs in recent years—with the exception of 2007-2009—have been significantly more muted and less frequent. Between 1947 and 1976, the U.S. experienced 24 quarters of negative quarterly growth, with 7 of them below -4%. However, between 1977 and 2007, we experienced only 10 quarters with negative growth rates, and only 3 were below 4%. Of those three, all of them were associated with the 1980 and 1981-1982 recessions. The economy is different today than in previous years, but those changes clearly began as early as the late 1970's. Indeed, probably the best perspective here is that there is no “normal,” only changes, because the early 2000's look very different than the 1990's and the 1990's certainly look different than other periods.

Focusing on the last 10 years, the period following the recession looks remarkably similar to the period preceding it. The average quarterly growth rate from 2002Q1 (after the end of the 2001 recession) through 2007Q3 (last quarter prior to the 2007-2009 recession), was 2.9%. The average quarterly growth rate from 2009Q3 (after the 2007-2009 recession) through 2013Q3 (latest available) is 2.3%. With every recession since the 1973-1974 recession, with exception of the 1981-1982 recession, the average quarterly growth rate afterwards has been lower than the period prior to it. Indeed, if we combine the 1980 and 1981-1982 recessions (there were only three quarters between them), then there is no recession since the 1973 period with higher growth rates after the recession. Economists have typically expected growth during a recovery to be stronger than the typical patterns in order to “make up” for lost output and return to a long run growth path. For example, the recession in 1953-1954 was followed by a quarter of growth well over 10%. Similarly the 1981-82 recession was followed by quarters with growth rates approaching 10%. However, the growth rates immediately following the 1990-1991 recession peaked at only 4.8%. What makes the 1991 recession interesting is that it too was associated with a financial crisis, the so-called savings and loan crisis. It was not as deep or long as the 2007-2009 recession, and the recovery was rather lackluster.

First quarter growth in 2013 was somewhat disappointing at only 1.1%. However second quarter growth, in spite of the sequestration, improved to 2.5% and third quarter growth was 3.6%. It is likely that fourth quarter growth will be lower again, largely due to the October government shut down and inventory buildup in the third quarter, but we should end 2013 with growth over 2% for the year. Unfortunately, the economy does not appear to be picking up steam, and I forecast another year of 2.5% overall GDP growth.

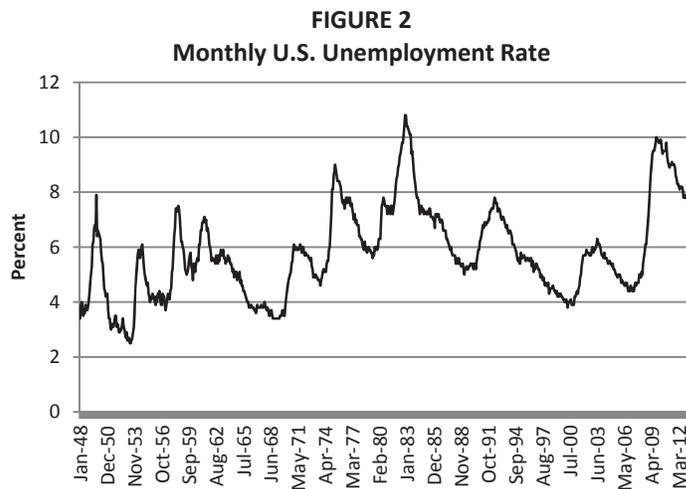
**FIGURE 1**  
**Percentage Change in Real GDP, U.S.**



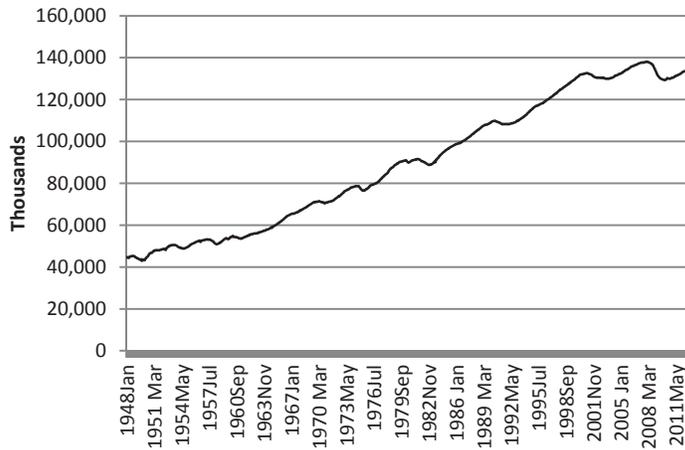
## Employment and Unemployment

Figure 2 presents the U.S. monthly unemployment rate since 1947. The “sawtooth” pattern associated with recessions and recoveries is readily apparent. At 10%, the 2007-2009 recession has the second highest peak of all recessions in the post-war era. Only the 1981-82 recession is higher, with a peak of 10.8% in December of 1982. However, the recent recession has the largest change in the unemployment rate of any recession. The difference between the October 2006 unemployment rate of 4.4% and the October 2009 unemployment rate of 10% is a staggering 5.6 percentage points. Since the peak in January of 2010, the trend has been clearly down. In the 1981 recession, the unemployment rate did stay below 7% until November of 1986, some four years after the peak in December of 1982. December of 2013 is four years after the peak in October of 2009. There is really nothing particularly remarkable about the overall trend in the unemployment rate except the extraordinary upward jump associated with the recent recession. The 2007-2009 recession stands out not because of the pattern in the unemployment rate, but because of the remarkable jump from what can only be described as historically low unemployment rates.

Unemployment trended down through 2013 relatively steadily. The 7.9% January 2013 unemployment rate has given way to a 7.0% rate in November. We expect the slow but steady decline to continue, and we should finish the year with unemployment near or even below 7%, for an annual unemployment rate of around 7.5%. In spite of both the January 2013 “fiscal cliff” and the March sequestration, the trend has been relatively steady. I expect this trend to continue and we should see unemployment rates below 7% in 2014, possibly ending the year just above 6%.



**FIGURE 3**  
**Total U.S. Non-Farm Employment**



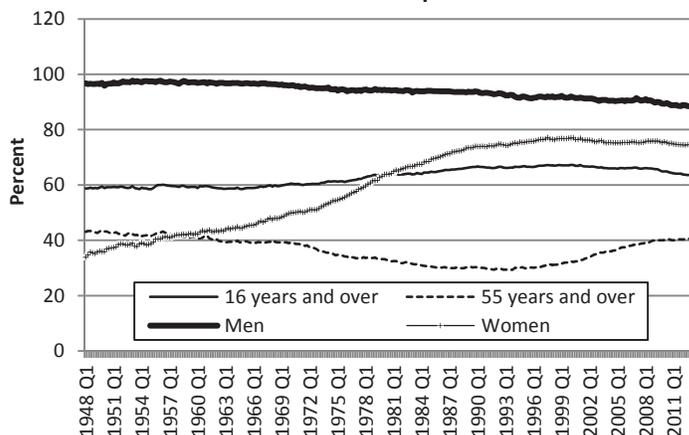
Employment growth mirrors unemployment in Figure 3. The sharp decline associated with the recent recession is strikingly obvious in this figure. Indeed, the economy shed 6% of jobs during the recession. However, the growth trend in employment has been steadily upward. Employment is recovering in ways very similar to those historically. It is slow but steady and we had a deep trough to dig our way out of. Overall employment grew about 1.3% in 2013. The growth rate should begin to accelerate as unemployment falls. I expect employment growth to be closer to 2% in 2014

One important recent change is the decline in labor force participation rates. Figure 4 shows labor force participation rates since 1948. Labor force participation began rising slightly in the mid 1960's with increasing female labor supply and the entrance of the baby boomers, peaking at 67.3% in the first quarter of 2000. Prime aged male labor force participation has declined, steadily but slowly, since 1948. Meanwhile, prime aged female rates appear to have peaked in recent years. Labor force participation of those over the age of 55 declined until the early 1990's, but has started to return to the levels associated with the 1950's and 1960's. It remains significantly lower than for workers in the 25-54 age range. In 1948, 29% of the working age population was over aged 55. Today 40% of the working aged population is over 55. The recent decline is due to many factors, but the most obvious is the aging population.

**A Tale of Two Sectors: Manufacturing and Health**

The manufacturing sector is often considered a bellwether of the economy. Recently much attention has been given to the decline in manufacturing. However, as Figure 5 shows, the decline in manufacturing employment as a percentage of total non-farm employment has been quite steady since 1947. A number of

**FIGURE 4**  
**U.S. Labor Force Participation Rate**



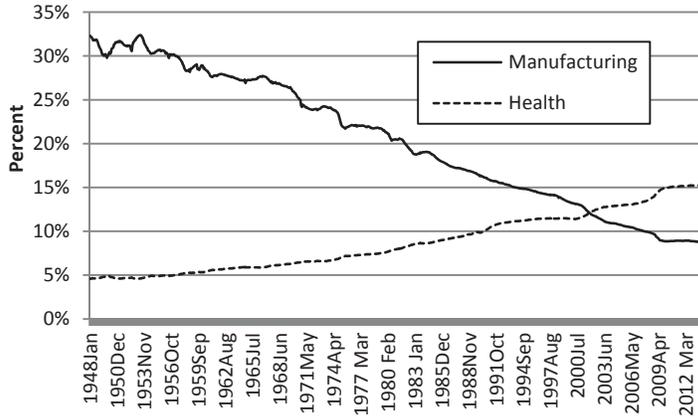
factors contribute to this, but primary among them are changes in technology. Manufacturing production measured in real dollars has increased steadily since 1972 (the earliest date for which data are available) in total, per worker, and per capita terms. Far from a “declining” sector, manufacturing is a vibrant part of the U.S. GDP and production. The high growth in manufacturing during 2010-2012 appears to have been a part of the recovery, and manufacturing employment growth seems to have slowed during 2013. I expect this slow growth in manufacturing employment to continue during 2014 and forecast manufacturing employment growth at 0.5%.

Figure 5 also displays the growth in health services. In 1948 health services were a mere 5% of overall employment, but now is over 15% of employment. The number of workers in the health field has increased by a factor of 10. Health care workers have high salaries as well, with the average health care worker (across all education and jobs) earning \$24.70 per hour compared to \$24.46 for all manufacturing workers. For production and non-supervisory roles, health care workers earn \$21.51 per hour compared to manufacturing workers who earn \$19.35 per hour. The health care sector is predicted to grow quite robustly, at over 20% in the next decade. These predictions owe, in large part, to our aging population, but also long-run trends in health care utilization.

**Inflation**

Figure 6 shows the inflation rate using annual percentage change in the Current Price Index since 1956. The inflation rate over the last year has been relatively steady at an annual rate of around 2%. Compared to the longer history, we are experiencing low inflation and low volatility in prices. This pattern appears to have been established in the early 1980’s. Food prices have been slightly more volatile,

**FIGURE 5**  
**Manufacturing and Health Services,**  
**Percent of Non-Farm Employment**



but range in the 2.5% neighborhood with some recent spikes to 5%. Energy prices have been extremely volatile since the 1970s, with year-on-year price increases rising as high as 20%. This volatility was perhaps most apparent the early 2000's. However, during the last few months, energy CPI changes have been muted and in the -5% to 5% range. Clearly energy prices are important in the economy and worth watching. The recent period of relative stability may reflect changes in technology. I predict inflation to continue in the 2.5% range through 2014.

**Focus on Kentucky**

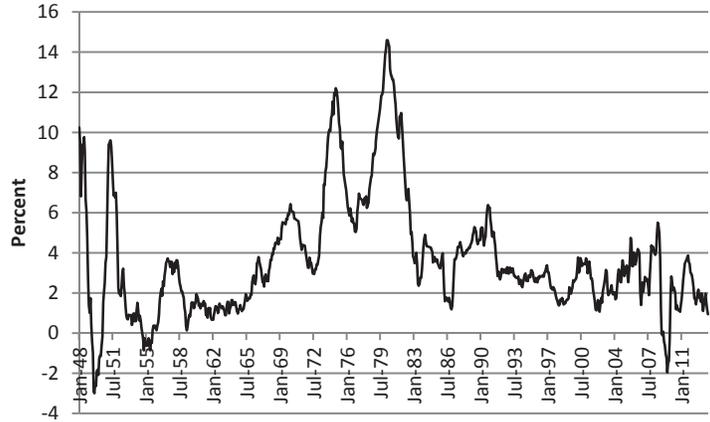
**Gross Domestic Product**

Kentucky's recent GDP growth does not match recent U.S. trends. Figure 7 presents the GDP growth series for the last decade for Kentucky as well as Cincinnati, Lexington and Louisville. During 2012, the U.S. grew at a 2.8% rate, while Kentucky grew at a more disappointing 1.4% rate. Louisville has seen declining, but somewhat stronger rates over this same period, experiencing 5.4% growth in 2010 and 3.8% growth in 2012. Lexington was fastest out of the gate at a whopping 6.5% rate in 2010, but saw an extremely disappointing 2012 growth of only 0.6%. Cincinnati has mimicked the U.S. rates, growing at 2.2% in 2010, 1.9% in 2011 and 2.7% in 2012. Early indications suggest that 2013 should see Kentucky's growth lower than the U.S. as a whole. In part this may be due to a disproportionate share of employment in sectors impacted by sequestration. I predict Kentucky's GDP growth to be in the neighborhood of 2% for 2014.

**Employment and Unemployment**

Unemployment for Kentucky as a whole rose during 2013. Figure 8 shows the unemployment rates for Kentucky, Cincinnati, Lexington and Louisville. In

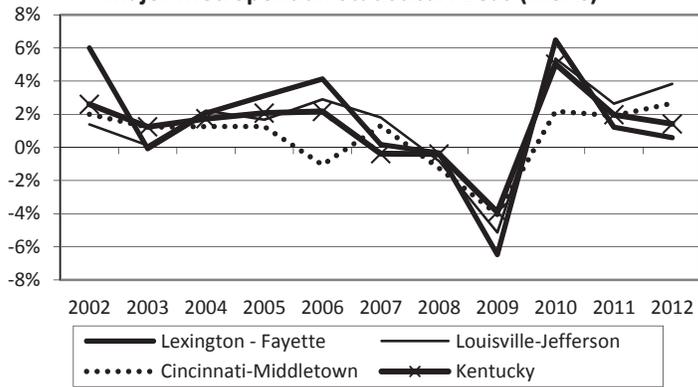
**FIGURE 6**  
**Percent Change in CPI, Monthly, One Year Earlier**



January, like the U.S., Kentucky’s unemployment rate stood at 7.9%. Unlike the U.S., Kentucky’s unemployment rose to 8.5% in July. Preliminary numbers suggest it is beginning to trend down again. The sequestration cuts in March, in particular, appear to have had a larger impact on Kentucky’s economy than in other states, perhaps because of the defense sector and other government related industries such as health and education. The slow employment growth in manufacturing may have also been more apparent in Kentucky.

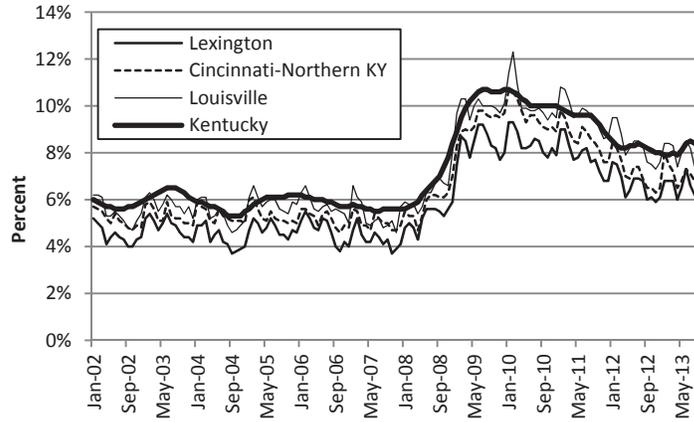
Like the unemployment rate for Kentucky, the unemployment rates for Lexington, Cincinnati and Louisville stalled their decline during the summer. In June, Lexington saw an unemployment rate of 7.3%, a surprise after hitting a low of 6% in April. Similarly, Louisville experienced unemployment of 7.3% in June after

**FIGURE 7**  
**Percentage Change in GDP in Kentucky and Its Major Metropolitan Statistical Areas (MSAs)**



Source: U.S. Department of Commerce, Bureau of Economic Analysis

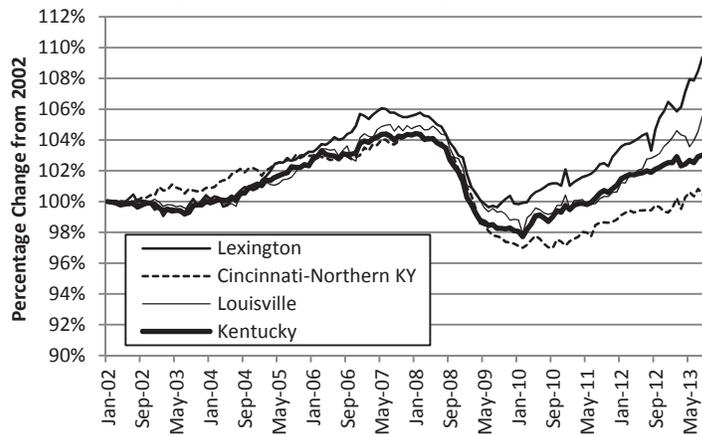
**FIGURE 8**  
**Unemployment Rate, Kentucky and Major MSAs**



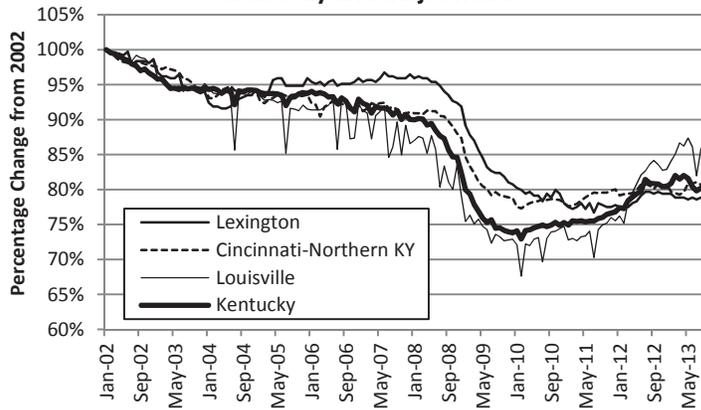
an April low of 6.5%. Cincinnati reached 8% in June, compared to a 7.4% rate in April. However, in all three cases, the unemployment rate dropped in July through September—returning to rates closer to the April lows. I expect to see Lexington and Louisville below 6% by mid-2014. Louisville should return to unemployment rates in the high 6% range by mid-2014, with Kentucky as a whole being quite similar.

Employment did not grow in Kentucky during 2013, as is seen in Figure 9. The three metropolitan areas had different experiences. Lexington saw rather strong employment growth of 2.7%. Louisville and Cincinnati grew at more modest and nationally representative rates of 1.3% and 1% respectively. The stronger growth in

**FIGURE 9**  
**Employment Growth, Kentucky and Major MSAs**



**FIGURE 10**  
**Manufacturing Employment Growth,**  
**Kentucky and Major MSAs**



the metropolitan areas is consistent with historical trends and should lead Kentucky as a whole in 2014. I expect Lexington’s employment to continue to grow relatively robustly, and both Cincinnati and Louisville should see somewhat accelerated growth. Overall Kentucky’s employment growth should increase during 2014 to a rate of 1.5%.

Manufacturing employment in Kentucky, as in the U.S., has seen no appreciable growth in 2013. Figure 10 demonstrates that while growth early in the recovery did replace many of the lost manufacturing jobs, manufacturing employment during most of 2013 appears to have returned to the long-run downward trend. The state pattern is largely driven by the three metropolitan areas. Louisville experienced the strongest recovery of the three cities, with strong employment growth during 2012. However, by 2013, all three cities appear to be at a steady level, with little or no signs of growth. I expect manufacturing growth in Kentucky to be quite slow, at around 0.6%.

**Uncertainty, Deficits and the Government**

Regardless of one’s political views, the events in Washington during 2013 can only be viewed as frustrating and difficult. January saw a showdown over the tax structure, although ultimately the worries of late 2012 never materialized. In many ways the worries over the consequences of sequestration cuts in March never really materialized, although they are likely responsible for the increases in unemployment seen during mid-summer. While the impact of the government shut down in October is still being measured at the time of this writing.

The Affordable Care Act may be the most sweeping reform of at least the last 50 years. It is unclear what the implications of the policy will be on growth and employment, and even uncertainty about the details of the policy itself.

The federal deficit is one of the more serious problems facing the U.S. right now. Our current federal tax policy has overall tax rates at the lowest we have seen during the post-World War II era, and it seems unlikely that these low rates can be maintained. Similarly, our expenditures are the highest we have seen with only a few exceptions and these certainly cannot be maintained. It is clear to most observers that significant budgetary changes will occur, but what these changes will look like remains uncertain.

This collection of policy uncertainty is remarkable in the historic context. It makes it difficult for businesses and households to make decisions about long-run investments. This is likely the most compelling reason for the rather lackluster and slow recovery. Over the next year, we might expect much of this to begin to resolve itself, except for Washington’s tendency to “kick the can down the road.” If Washington begins to make hard decisions, and commit to implementing policies, we may have significant adjustments (policies always create winners and losers), but the economy will likely, even in the relatively short run, react positively. However, if Washington continues to fail to address the policy issues in meaningful long run ways, the miasma and uncertainty will continue.

#### Forecast for 2014

TABLE 1 Forecast for 2014			
	2013 Forecast	2013 Actual or Best Available	2014 Forecast
Real GDP Growth—U.S.	2.5%	2.2%	2.5%
Unemployment Rate—U.S.	7.5%	7.5%	6.5%
Inflation—U.S.	1.5%	1.0%	2.0%
Employment Growth—U.S.	2.0%	1.5%	2.0%
Growth in Manufacturing Employment—U.S.	1.5%	0.2%	0.5%
Real GDP Growth—Kentucky	3.0%	---	2.0%
Unemployment Rate—Kentucky	7.5%	8.2%	6.5%
Employment Growth—Kentucky	2.0%	0.7%	1.5%
Growth in Manufacturing Employment—Kentucky	1.5%	-1.5%	0.6%

## OVERVIEW

IN THE SECTIONS THAT FOLLOW WE PRESENT A BROAD ARRAY OF data on Kentucky's economy—including information on many factors that are not necessarily economic—but still exercise an important impact on the economy. We have organized the data into eleven broad thematic areas: Community, Economic, Economic Security, Education, Energy, Environment, Health, Infrastructure, Innovation, Population, and Public Finance.

Many of the variables presented in the *2014 Kentucky Annual Economic Report* include data for Kentucky over many years which allows one to assess change over time. Also, we have included data on the U.S. and the competitor states—which are Alabama, Georgia, Illinois, Indiana, Mississippi, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Virginia, and West Virginia—to see how Kentucky compares on these many dimensions of economic prowess and social well-being. These twelve states are considered to be Kentucky's competitors with respect to economic development prospects.

Overall, the data presented here represent a comprehensive accounting of many—although not all—of the factors that affect the state's economy—both in the short-term as well as over the long-term. The breadth of these data demonstrates that the no single factor determines the state's economic prospects—it is an amalgamation of many disparate factors which shape and determine our economic trajectory.

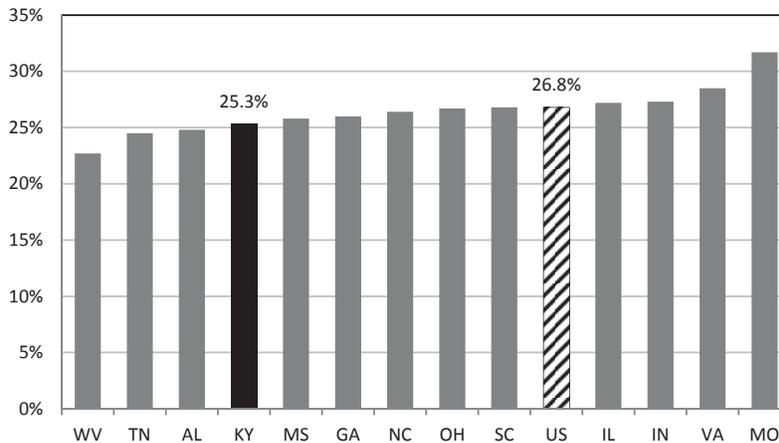
Economic activities take place in our communities, so this is where we begin. Because of fiscal constraints, it is likely that governments will look increasingly to community-based organizations, nonprofits, businesses and citizens to forge partnerships and relationships to meet new challenges—and for good reason. Since Robert Putnam's seminal work in 1993, *Making Democracy Work*, researchers have connected the dots on how high levels of community-level civic engagement are associated with higher levels of economic prosperity. Civil society—volunteerism—can help address problems such as poverty, illiteracy, and drug abuse that governments and the market have failed to eradicate. Addressing issues like illiteracy and improving the health of the workforce can improve a community's economic development prospects.

Kentucky has historically enjoyed a relatively low crime rate, but national data show that our volunteer rates, hours volunteered, and charitable giving lag the national average. It will likely become increasingly important in the future for Kentucky to develop a foundation of strong social capital to help achieve vital economic development objectives.

## VOLUNTEER RATE

Some studies have linked participation in civil society—volunteering for example—to higher levels of community prosperity, higher achievement in schools, and improved individual health. Volunteers can tackle problems such as poverty, illiteracy, and drug abuse that government and the market have not adequately addressed—making a community more attractive for economic development. Some research even suggests that members of communities with high levels of civic participation enjoy better health and live longer. About one-quarter of Kentucky’s population 16 and older, 25.3 percent, volunteered at some point during 2011. This is about the same percentage of volunteers at the national level, 26.8 percent. As is evident by the figure below, there is actually little difference between the competitor states, which range from 22.7 percent in West Virginia to 31.7 percent in Missouri. Missouri, by the way, is the only state shown in the figure that is statistically different from Kentucky. The Corporation for National and Community Service reports that, in Kentucky, “25.3% of residents volunteer—ranking them 39th among the 50 states and Washington, DC.” Utah has the nation’s highest volunteer rate at 40.9 percent and Louisiana the lowest at 19.4 percent.

**Volunteer Rate, 2011,  
Kentucky, Competitor States, and the U.S.**  
(percentage of those 16 and older who volunteer during the year)

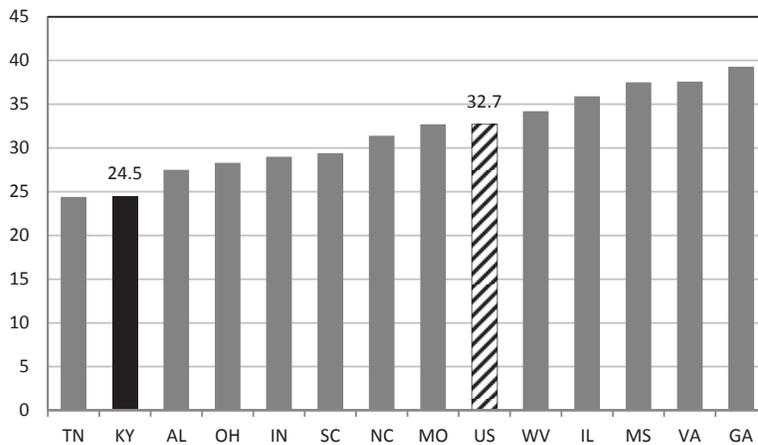


Source: *VolunteeringInAmerica.gov* (based on Current Population Survey data)

## VOLUNTEER HOURS

Based on data from the Corporation for National and Community Service, Kentucky had over 857,000 volunteers in 2011 who contributed nearly 83 million hours of service. This is equal to 24.5 hours per resident, which ranks Kentucky 50th among the 50 states and Washington, DC (Tennessee was ranked 51st or last with 24.4 hours per resident). The total annual estimated value of volunteer service in Kentucky in 2011 was between \$1.5 and \$1.8 billion, which is based on the Independent Sector’s annual estimate of the value of a volunteer hour, which for Kentucky was \$17.91 in 2011. By comparison, the national value for an hour of volunteer service is \$21.79. Among the competitor states, Georgia has the highest estimated number of volunteer hours per resident at 39.3 and Utah led the nation with 70.3. The U.S. average is 32.7 hours per resident.

**Volunteer Hours, 2011,  
Kentucky, Competitor States, and the U.S.**  
(average hours served in a year per resident 16 and older)

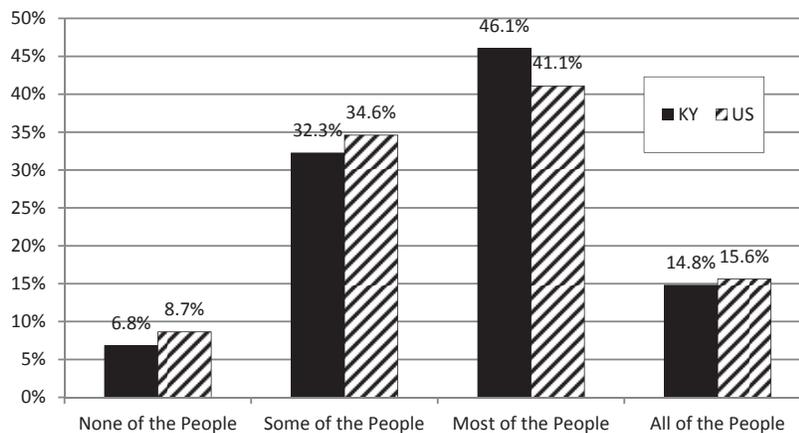


Source: *VolunteeringInAmerica.gov* (based on Current Population Survey data)

## TRUST

High levels of trust in a community help bind people together to work for the greater good in a host of ways. Trust has been called the lubricant that facilitates charitable acts, community development, and everyday commerce. When asked whether they trust people in their neighborhood, 46 percent of Kentuckians indicated “most of the people,” and nearly 15 percent said “all of the people.” With 60.9 percent showing a high level of trust toward their neighbors, the Kentucky percentage exceeds the national average of 56.7 percent. Extending the question to include all people, not just neighbors, Kentuckians have expressed even higher levels of trust compared to the typical American. Surveys sponsored by the Kentucky Long-Term Policy Research Center found that most Kentuckians, approximately 55 percent in 2008, said that, generally speaking, you can usually trust people. By comparison, the percentage of Americans expressing this belief has been 20 to 25 percentage points lower going back several years. For example, in 2008 approximately 32 percent of U.S. adults said that, generally speaking, most people can be trusted.

**Trust People in Neighborhood, 2011**  
**Kentucky and the U.S.**  
 (percent expressing trust)

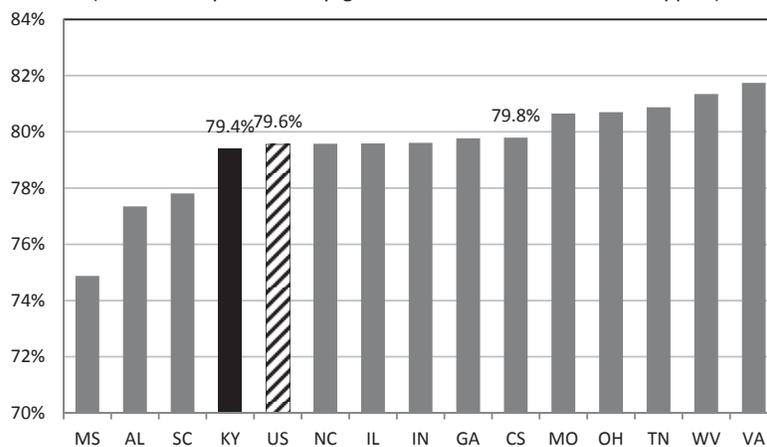


Source: *VolunteeringInAmerica.gov (based on Current Population Survey data)*

## SOCIAL AND EMOTIONAL SUPPORT

Research shows that feelings of social isolation are associated with poor health outcomes—which can have an important effect on one’s productivity. One measure of social isolation and community support is from the Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System (BRFSS): *How often do you get the social and emotional support you need?* In most states around 8 out of 10 adults indicate they always or usually get the needed social and emotional support. The Kentucky percentage of 79.4 is not statistically different from the U.S., North Carolina, Illinois, Indiana, Georgia, or the competitor state averages.

**Emotional Support and Life Satisfaction, 2008-2010,  
Kentucky, Competitor States, and the U.S.**  
(% who 'always' or 'usually' get needed social and emotional support)

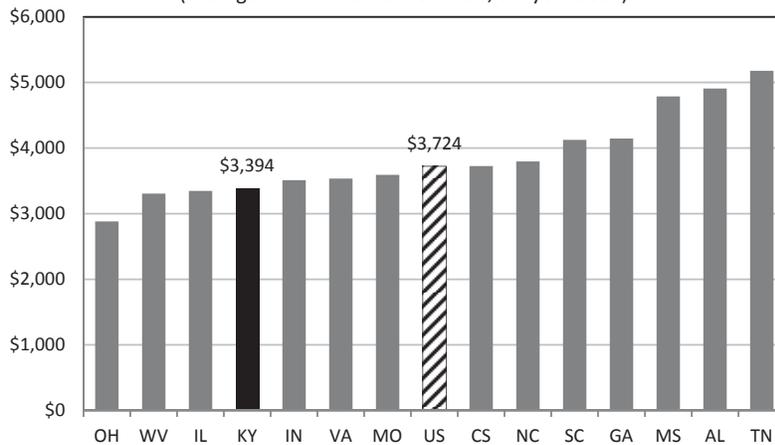


Source: Author's analysis from CDC Behavioral Risk Factor Surveillance System data, 2008-2010  
Note: CS is the competitor state weighted average

## CHARITABLE CONTRIBUTIONS

Despite continued economic uncertainty, America’s giving spirit continued to rise in 2012 with giving by individuals increasing by an estimated 3.9 percent in 2012 (an increase of 1.5 percent adjusted for inflation) according to *The Giving Institute*. At \$228 billion, charitable giving by individuals in 2012 was equal to about 72 percent of the estimated total contributions from all sources, \$316 billion. Nationally the average charitable contribution among those who itemize deductions—which is about a third of all taxpayers—equaled \$3,724 for the 2011 tax year, compared to \$3,394 in Kentucky. Among the competitor states, Tennessee has the highest amount at \$5,178 and Ohio the lowest at \$2,882. Obviously those who do not itemize deductions on their tax returns also make charitable contributions, but it is estimated that itemizers account for about 83 percent of all charitable contributions from individuals.

**Charitable Contributions in 2011,  
Kentucky, Competitor States, and the U.S.**  
(average contribution of itemizers, tax year 2011)

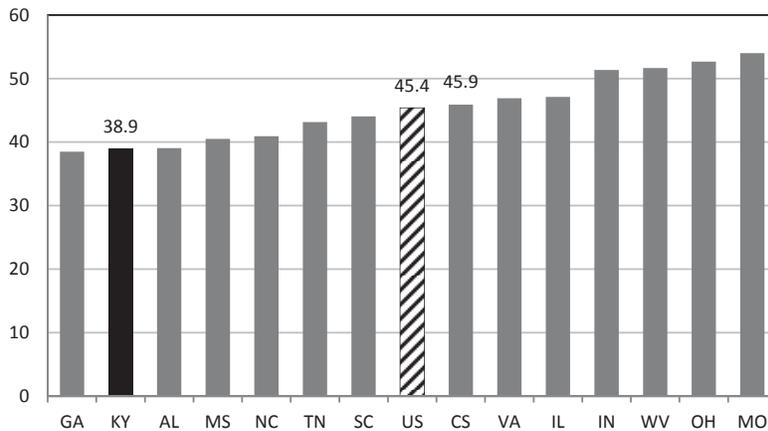


Source: Internal Revenue Service, *Statistics of Income, Historical Table 2*  
 Note: CS is the competitor state weighted average

## NONPROFITS

Like the number of volunteers in a community or the amount of money donated to charity, the number of nonprofits is an indicator of the level of organized community action. Nonprofits also have a direct economic impact. According to data from the Urban Institute and the Independent Sector, nonprofits employed 13.7 million individuals or approximately 10 percent of the country’s workforce in 2010. Moreover, nonprofit employment grew an estimated 18 percent between 2000 and 2010, faster than the overall U.S. economy. The average number of nonprofits per 10,000 population in the U.S. is 45.4, compared to Kentucky’s 38.9. Among the competitor states, only Georgia has fewer nonprofits—38.5 per 10,000 population. At 54 per 10,000 population, Missouri has the most among competitor states. These numbers on nonprofits do not include churches, mosques, synagogues, temples, or other similar religious entities.

**Registered Nonprofit Organizations, 2013,  
Kentucky, Competitor States, and the U.S.**  
(per 10,000 population)



Source: Internal Revenue Service, Exempt Organizations Business Master File (2013, Jul) & U.S. Census, 2012  
Note: CS is the weighted average of the competitor states

## CRIMINAL OFFENSES

Any discussion of community would be incomplete without consideration of the role of crime, which can instill fear, undermine trust, and fray connections—and impact economic development decisions and outcomes. The table below shows Kentucky’s Group A offenses for 2011 and 2012. Note, however, that missing from these totals is a significant number of offenses from Scott and Jefferson Counties. As a matter of fact, no offenses reported by the Louisville Metro Police Department are included because of the way the department categorizes crime statistics. Nonetheless, the table illustrates the relative distribution of various crimes in Kentucky as well as the annual percent change. Nearly 72 percent of offenses fall into one of four categories: larceny/theft (29.5%), drug/narcotic (18.2%), assault (13.4%), or burglary/breaking and entering (10.5%). The total number of offenses increased by 7.1 percent from 2011 to 2012.

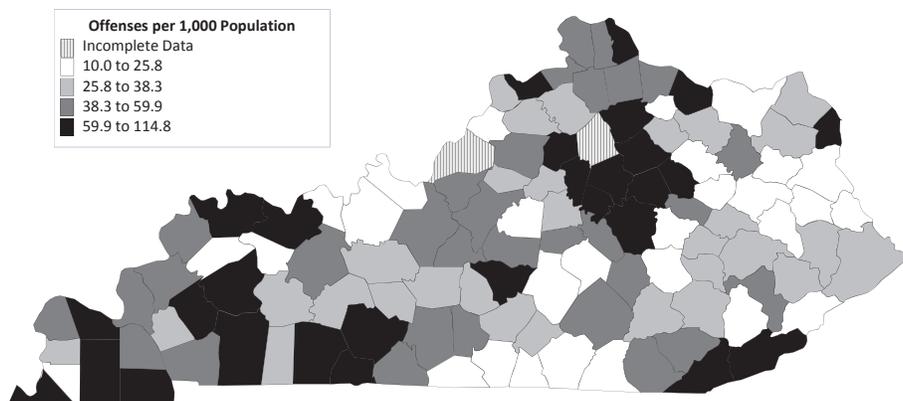
State Offense Data (Group-A Offenses)				
Classification	Offenses Reported			
	2011	2012	% Change	% Total
Arson	426	488	14.6%	0.2%
Assault Offenses	26,978	28,517	5.7%	13.4%
Bribery	67	101	50.7%	0.0%
Burglary/Breaking and Entering	22,028	22,356	1.5%	10.5%
Counterfeiting/Forgery	8,924	7,545	-15.5%	3.5%
Destruction/Damage/Vandalism of Property	18,634	21,045	12.9%	9.9%
Drug/Narcotic Offenses	35,665	38,724	8.6%	18.2%
Embezzlement	-	-	-	0.0%
Extortion/Blackmail	27	28	3.7%	0.0%
Fraud Offenses	7,100	8,455	19.1%	4.0%
Gambling Offenses	10	10	0.0%	0.0%
Homicide Offenses	223	277	24.2%	0.1%
Kidnapping/Abduction	459	545	18.7%	0.3%
Larceny/Theft Offenses	55,765	62,799	12.6%	29.5%
Motor Vehicle Theft	4,400	4,669	6.1%	2.2%
Pornography/Obscene Material	2,590	3,702	42.9%	1.7%
Prostitution Offenses	112	234	108.9%	0.1%
Robbery	1,774	2,149	21.1%	1.0%
Sex Offenses, Forcible	8,033	5,468	-31.9%	2.6%
Sex Offenses, Nonforcible	550	385	-30.0%	0.2%
Stolen Property Offenses (e.g., Receiving)	3,401	3,401	0.0%	1.6%
Weapon Law Violations	1,723	2,036	18.2%	1.0%
<b>Total Group-A Offenses</b>	<b>198,889</b>	<b>212,934</b>	<b>7.1%</b>	<b>100.0%</b>

*Source: Crime in Kentucky, 2012, Kentucky State Police*

## CRIMINAL OFFENSE RATE BY COUNTY

This map shows the number criminal offenses per 1,000 population at the county level. Unsurprisingly, Kentucky's metro areas have the highest rates. The map shows there is incomplete data for Jefferson and Scott Counties. The remaining 118 counties are categorized into four roughly equal groups. The county with the lowest rate is Monroe with 10.4 while Caldwell is the highest at nearly 114 offenses per 1,000 population. Kentucky's overall rate is 48.6. From 1995 to 2010, the crime rate for Part I offenses—which are slightly different from Part A crimes shown in the map, but include murder, rape, robbery, assault, burglary, larceny, auto theft, and arson—decreased among Kentucky's 35 urban counties from 43.5 per 1,000 population to 34.9, a decrease of 20%. Likewise, the rate for the 25 slightly rural counties decreased from 26.9 to 22.9, a 15% decrease. Among Kentucky's 60 mostly rural counties, however, the rate remained more or less stable with a rate of 15.7 in 1995 and 15 in 2010—a 4% decrease. There were 1,456 arsons reported statewide in 1995 but they are not included in the 127,621 county-level Part I offenses. Arsons are included in the 2010 data.

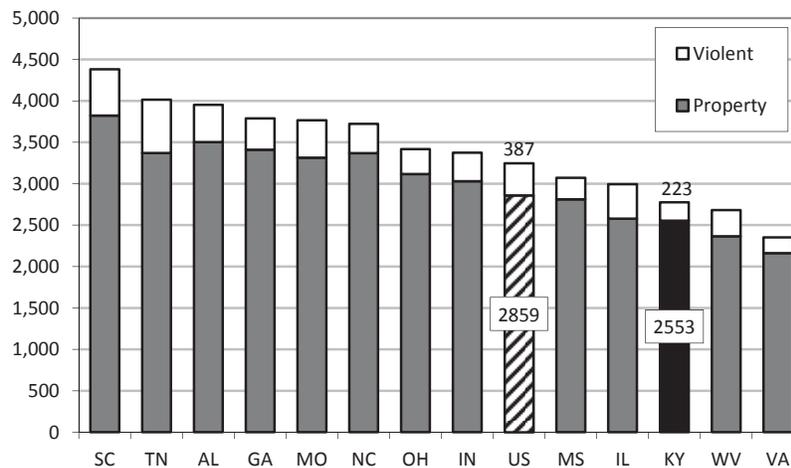
### Group-A Offenses in Kentucky, 2012



## CRIME RATE

The number of reported incidents of property crime, such as burglary, larceny-theft, and motor vehicle theft, has declined in the United States every year since 2007. Kentucky has a relatively low crime rate. The number of reported property crimes per 100,000 persons in Kentucky is 2,776 (2012), a rate significantly lower than all competitor states except for Virginia and West Virginia. Reports of violent offenses, including murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault, also were well below the national rate here in 2012 and below the rates reported by eleven of twelve competitor states (Virginia's rate is lower). Kentucky's comparatively low crime rate remains a strong asset that contributes to a sense of well-being and trust which, in turn, helps create caring places that nurture productive lives.

**Crime Rate,  
Kentucky, Competitor States, and the U.S., 2012**  
(rate per 100,000 persons)



Source: US Federal Bureau of Investigation

## OVERVIEW

**W**E PRESENT OUR 2014 ECONOMIC FORECAST FOR KENTUCKY in the first section of this report. Discussing the future trajectory of gross domestic product, employment, and inflation, we highlight the influence of policy uncertainty on basic economic outcomes. Here we refocus the lens on the wider economic landscape and present data on a broader collection of economic indicators.

We describe how Kentucky's economy has gradually changed, such as the movement away from goods-production and toward service-providing, the growing reliance on transfer payments—especially in Kentucky's 60 mostly rural counties, the likelihood that individuals will remain in the labor force longer, the growing importance of international trade and foreign direct investment, the consistently growing disparity in wages between urban and rural regions, and the declining fortunes of the coal industry.

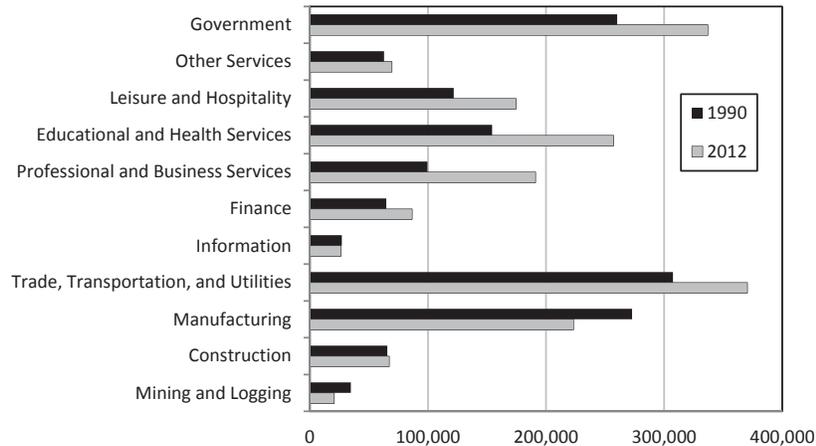
Despite all the economic change, a lot has stayed the same. Incomes, for example, have not gained on the national average—especially earned income, and housing prices have not been through the extreme boom-and-bust cycle felt nationally.

These data show that economic change frequently travels along a gradual glide path and unfolds over many years. These indicators also show that Kentucky lags both the competitor states and the U.S. on many important economic indicators. Together these trends show that our economic path does not typically change direction quickly and that transformational progress will be required to gain ground on the U.S. and competitor states.

## EMPLOYMENT BY SECTOR

Kentucky’s economy has changed since 1990. There were, for example, almost 354,000 more people employed in 2012 compared to 1990—an increase of 24 percent. Over the same time period Kentucky’s population increased nearly 19 percent. While the overall number of jobs increased, the distribution of employment among these eleven major sectors changed significantly—reflecting the fundamental forces affecting all states. Two sectors lost a significant number of workers during this period—manufacturing, which had about 50,000 less workers in 2012 (an 18% decline) and mining and logging, which lost around 14,000 jobs (a 40% decline). Conversely, the largest increases in employed occurred in educational and health services (103,000 more jobs—67% increase), professional and business services (92,000 more jobs for an increase of 92%), government (77,000 more jobs—30% increase), trade, transportation, and utilities (63,000 more jobs—21% increase), leisure and hospitality (53,000 more jobs—43% increase), and finance (22,000 more jobs—34 percent increase). There was not a significant change in the number of employed individuals in the information, construction, and other services sectors.

**Employment in Major Economic Sectors, Kentucky  
1990 and 2012**

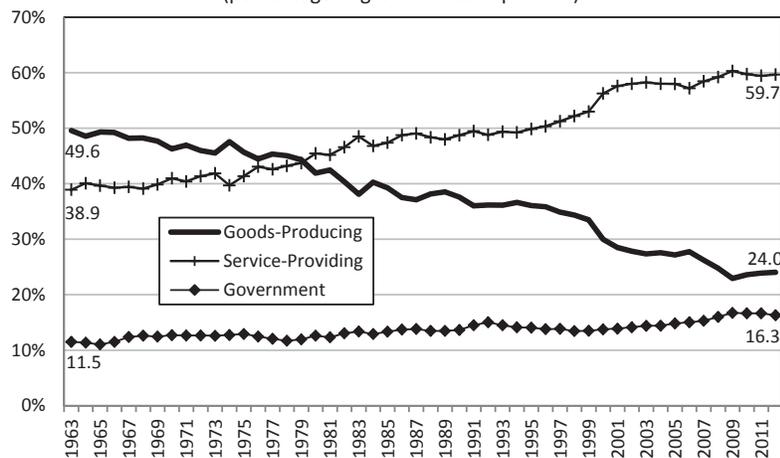


Source: U.S. Department of Labor, Bureau of Labor Statistics

## TRANSITION FROM GOODS TO SERVICES

Economic activity in Kentucky has been changing for the last several decades. Specifically, economic activity has been shifting away from the production of goods and toward the provision of services. The data in this figure illustrates the major sectors in Kentucky’s economy as components of the total state gross domestic product (GDP). In the early 1960s services accounted for about 40 percent of Kentucky’s economic output and goods amounted to about 50 percent. However, around 1980 the provision of services contributed more to the state’s economy than the production of tangible goods. And now services account for nearly 60 percent of Kentucky’s economy while goods amount to about 24 percent. Government has increased as a percentage of the economy during this time period too, growing from 12 to 16 percent. Changes in consumption patterns have followed a similar trajectory. As the state’s economy and consumption tilt away from goods and toward services, the sales and use tax base has slowly diminished. This is because most services, such as haircuts or automobile mechanic labor, are not subject to the sales tax. The result has been a gradual reduction in the elasticity of the sales and use tax—still an important source of revenue for the state.

**Goods, Services, and Government,  
Kentucky Gross Domestic Product, 1963-2012**  
(percentage of gross domestic product)

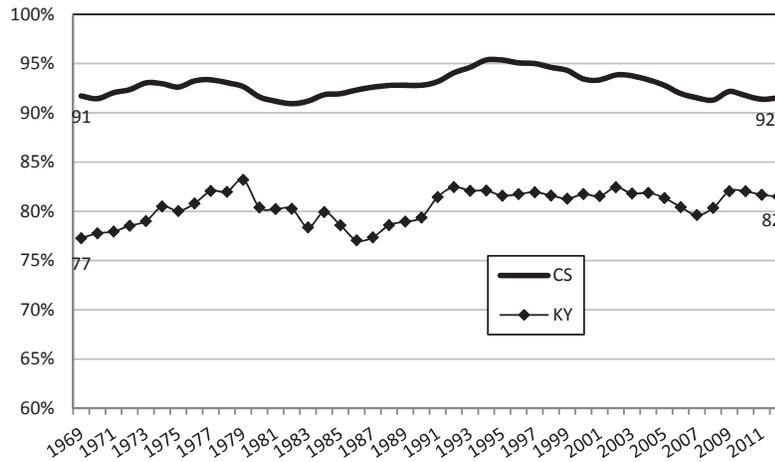


Source: Bureau of Economic Analysis

## PER CAPITA PERSONAL INCOME

While Kentucky's per capita personal income has grown since 1969, its position relative to the nation has not demonstrably improved. Instead, per capita income has oscillated around 80 percent of the national average over the years. In 2012 it was 82 percent of the U.S. average while the average of the competitor states was 92 percent. Lagging growth in per capita income has kept Kentucky ranked in the bottom 10 states (i.e., 44th in 2012). Within Kentucky there are marked differences between urban, somewhat rural, and mostly rural counties—as reflected in their respective 2011 per capita income levels of \$37,400, \$30,500, and \$27,900.

**Per Capita Personal Income as a Percentage of the U.S. Average, Kentucky and Competitor States, 1969 to 2012**

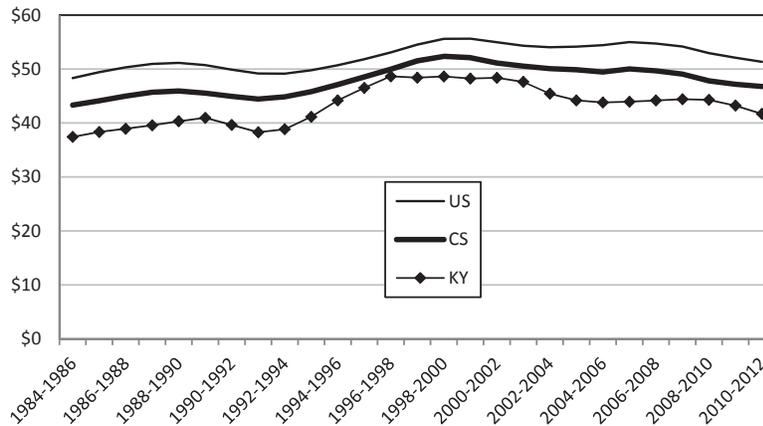


Source: U.S. Department of Commerce, Bureau of Economic Analysis

## HOUSEHOLD INCOME

Similar to the trajectory of per capita personal income, median household income in Kentucky is currently about 81 percent of the U.S. average; it is 91 percent for the competitor states. However, since the mid-1980s, Kentucky’s median household income increased significantly more than the competitor states or the U.S. For example, Kentucky’s median household income increased by \$4,264 in real terms from the mid-1980s to the 2010-2012 period, compared to \$3,437 for the competitor states and \$3,001 for the U.S.—representing increases of 11.4, 7.9, and 6.2 percent for Kentucky, the competitor states, and the U.S., respectively. However, Kentucky’s 3-year average of \$41,687 (2012 constant dollars) during the 2010-2012 period is at its lowest point—in 2012 constant dollars—since 1993-1995 when it was \$41,161. During the 2010-2012 time period nearly one third of Kentucky households—31.1 percent—reported less than \$25,000 in income, compared to 24.1 percent nationally.

**Median Household Income, Kentucky, Competitor States, and the U.S., 1984-2012**  
(2012 dollars, thousands, 3-year average)

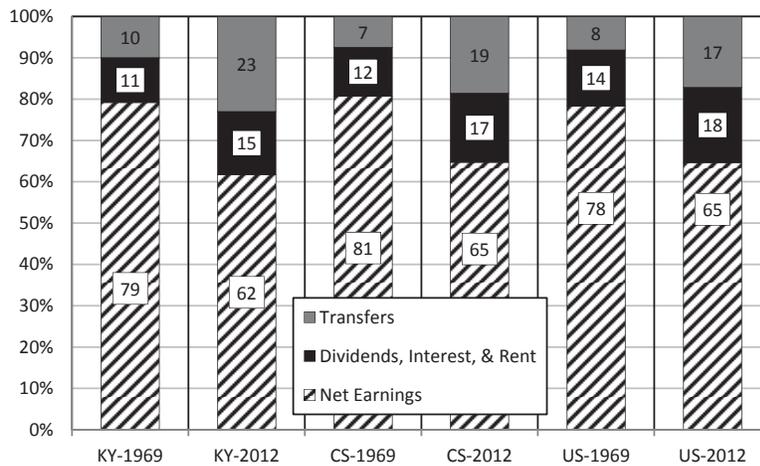


Source: U.S. Census, Annual Social and Economic Supplement

## SOURCES OF PERSONAL INCOME

The composition of personal income and its changing nature can exercise a large effect on state and local revenue growth since the personal income tax combined with the occupational tax constitutes the largest portion of Kentucky’s state and local revenue receipts. Over the last several years, Kentucky, like the competitor states and the U.S., has experienced a shift in the composition of personal income that has affected revenue adequacy. In 1969, net earnings comprised 79 percent of total personal income in Kentucky. Dividends, interest, and rent, made up another 11 percent. Transfer payments, which consist of government programs like Social Security, Medicare, Temporary Assistance for Needy Families (TANF), and Supplemental Security Income (SSI) payments (to name a few), are essentially untaxed and made up the remaining 10 percent. By 2012, however, net earnings had declined to 62 percent of total personal income while transfer payments increased to 23 percent. By comparison, in 2012 transfer payments constituted 19 percent and 17 percent of personal income in the competitor states and the U.S., respectively.

**Sources of Personal Income, 1969 and 2012,  
Kentucky, Competitor States, and the U.S.**  
(percent of total personal income)

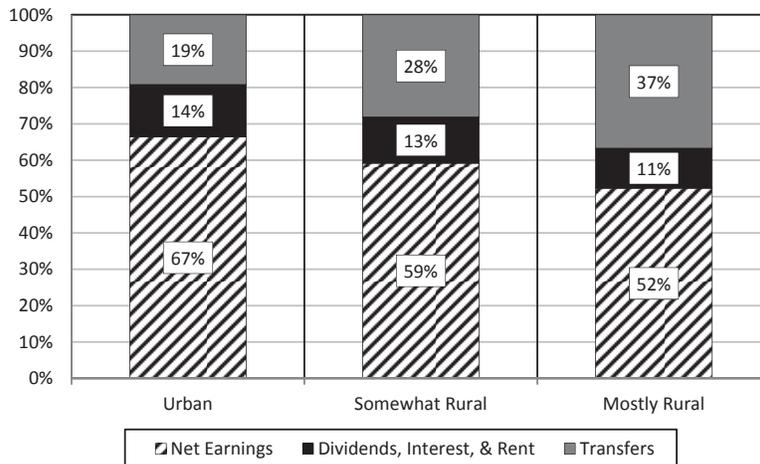


Source: U.S. Department of Commerce, Bureau of Economic Analysis

## INCOME SOURCES BY LOCATION

There are significant differences across Kentucky’s urban, somewhat rural, and mostly rural counties in the composition of income. In 2011 there were three rural counties where transfer payments as a share of total personal income topped 50 percent and 28 that exceeded 40 percent. Among the 35 urban counties transfer payments constituted 19 percent while net earnings made up 67 percent of total personal income. These percentages shift away from net earnings and toward transfer payments for the 25 somewhat rural and 60 mostly rural counties. Clearly, there are systemic, deep-seated development hurdles in these counties that are difficult to clear despite the multiple attempts to do so over the last several decades.

**Kentucky Sources of Personal Income, 2011,  
Urban, Somewhat Rural, & Mostly Rural Counties**  
(percent of total personal income)

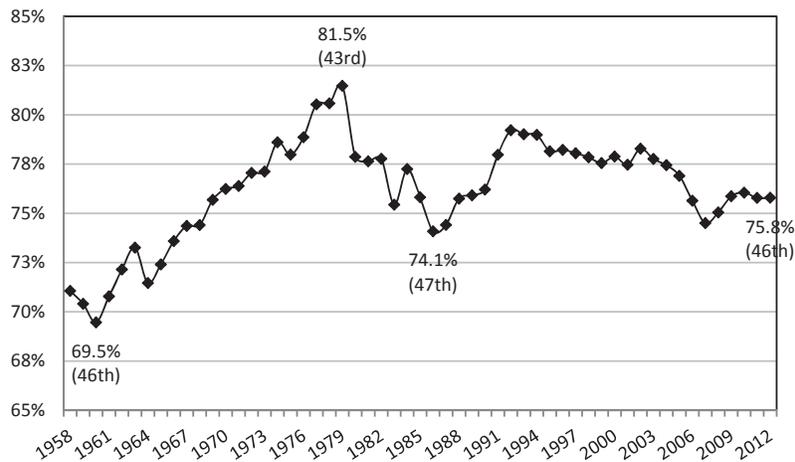


Source: U.S. Department of Commerce, Bureau of Economic Analysis

## EARNED INCOME PER CAPITA

Because earned income is the portion of personal income that does not include transfer payments from various social assistance or public welfare programs, it is a good indicator of the underlying economic vitality of a state, county, or region. Kentucky's earned income per capita relative to the U.S. average increased steadily from 1960 to 1979, resulting in an improvement in the state's national ranking from 46th to 43rd. For the last 25 years, however, Kentucky's national rank has remained at about 45th and its earned income level at about three-fourths of the U.S. level. Kentucky's earned income per capita is \$27,453, significantly below the highest state, Connecticut (\$51,390) and just above the lowest state, Mississippi (\$25,385).

**Earned Income Per Capita in Kentucky as a Percentage of the U.S. Average, 1958 to 2012**

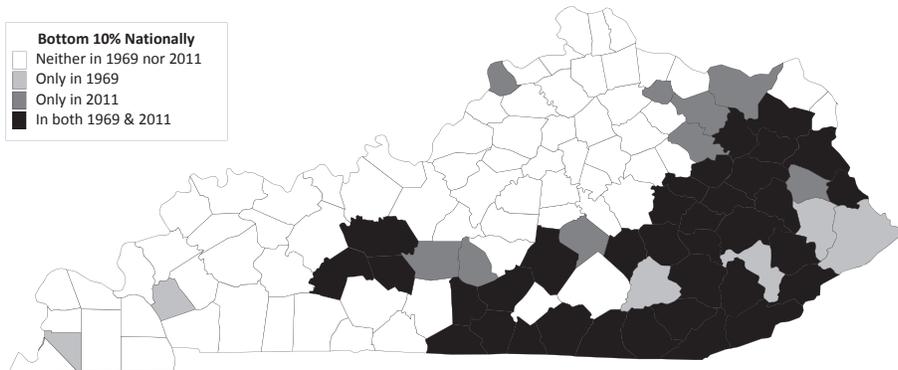


Source: U.S. Department of Commerce, Bureau of Economic Analysis. Earned income = personal income minus current transfers

## EARNED INCOME PER CAPITA BY COUNTY

When President Johnson's War on Poverty was gathering steam in late 1960s, 41 of Kentucky's 120 counties had per capita earned income levels placing them in the bottom ten percent of the 3,000-plus counties in the United States. By 2011—42 years later—35 of these counties, or 85%, were still in the bottom ten percent. About half of the counties nationally and around 60% in the dozen nearby competitor states that were in the bottom ten percent in 1969 were still there in 2011. While most of these persistently poor counties are in Eastern Kentucky, the map shows several counties in the south central part of the state.

### Ranking Kentucky Counties by Earned Income Per Capita, Bottom 10 Percent Nationally, 1969 and 2011



Source: Bureau of Economic Analysis

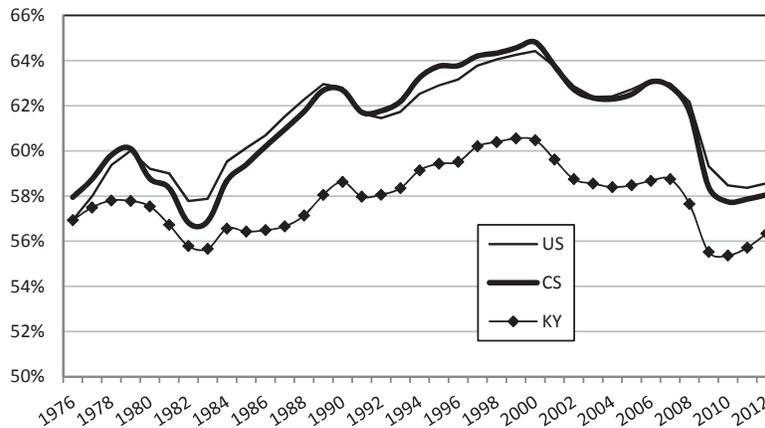
Note: Earned Income is calculated by subtracting current transfers from personal income and dividing by the total population.

## EMPLOYMENT-POPULATION RATIO

This ratio is the proportion of the civilian non-institutional population aged 16 years and older that is employed. According to the U.S. Department of Labor, Bureau of Labor Statistics (BLS), some believe the employment-population ratio is a better indicator of economic activity and economic performance than the unemployment rate. North Dakota and West Virginia had the highest and lowest employment-population ratios in 2012, 69.7 and 50.2 percent, respectively. Kentucky's 2012 value was 56.3 percent—somewhat lower than both the competitor states (58.1) and the U.S. (58.6) averages. In 1976 Kentucky and the competitor states had identical employment-population ratios of 56.9 percent, but, as evidenced in the figure below, the competitor states have more or less tracked the U.S. average and experienced employment-population ratios 2 to 4 percentage points higher than Kentucky since the mid-1980s.

**Employment-Population Ratio, Kentucky, Competitor States, and the U.S., 1976 to 2012**

(percentage of civilian noninstitutional population over 16 employed)

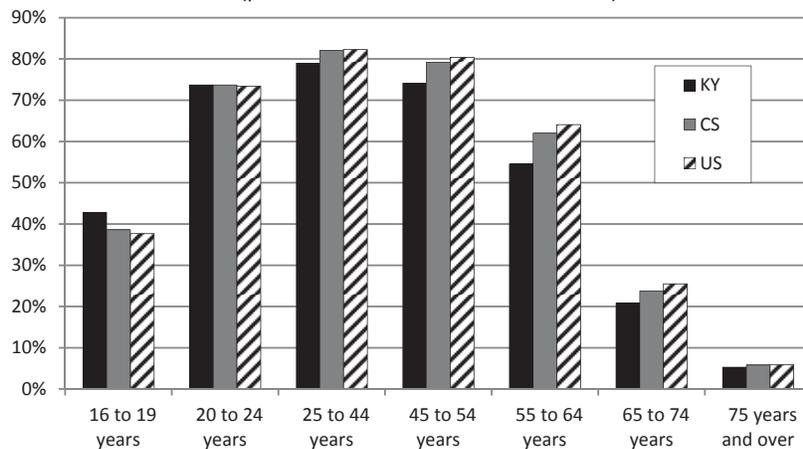


Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics

## LABOR FORCE PARTICIPATION

The labor force participation rate is the proportion of the civilian noninstitutional population that is in the labor force. The national labor force participation rate increased from around 60 percent in 1970 to about 67 percent in 2000, driven in large part by the increased participation by women. In 2012, the participation rates ranged from 70.8 percent in North Dakota to 54.1 percent in West Virginia. Over the last few years the labor force participation rate among Americans 16 to 24 years old has been decreasing while the rate for older Americans (65 and older) has been steadily increasing. Analysts have attributed these trends to the nation’s economic downturn and the impact it has had on the job market as well as retirement savings. Workers are delaying retirement or reentering the workforce while younger Americans are opting for school (instead of work) or simply unable to find work. Kentucky’s labor force participation rate for those 20 to 24 looks very similar to both the competitor states and the U.S. However, the labor force participation rate for Kentuckians 25 to 54—the prime working years—is 77.2 percent compared to 81.1 percent for the competitor states.

**Labor Force Participation by Various Age Groups, Kentucky, Competitor States, and the U.S., 2012**  
(percent of individuals in the labor force)

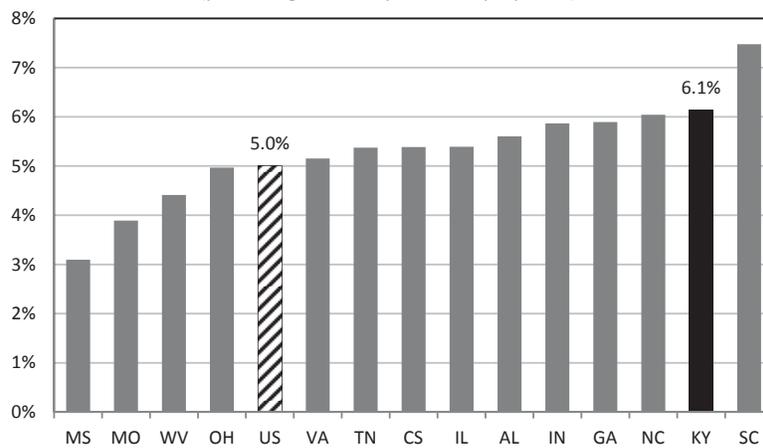


Source: 2012 American Community Survey 1-Year Estimates

## EMPLOYMENT BY FOREIGN COMPANIES

Foreign companies create important economic benefits for the American economy. These companies invest billions of dollars in the U.S. economy and create hundreds of thousands of jobs. Kentucky has worked hard to capitalize on the opportunities presented by globalization—reflected by the presence in the state of more than 400 international companies from nearly 30 countries. A majority-owned U.S. affiliate is an American business enterprise in which there is a foreign direct investment that accounts for at least 50 percent of the ownership. In Kentucky there are an estimated 92,200 individuals employed by majority-owned U.S. affiliates. As a percentage of total private industry employment, it has been around 6 percent since 2007—evidenced by 6.1 percent in 2011. This is much higher than the U.S. average of 5.0 percent and leads all competitor states except for South Carolina.

**Employment of Majority-Owned U.S. Affiliates, 2011,  
Kentucky, Competitor States, & the U.S.**  
(percentage of total private employment)



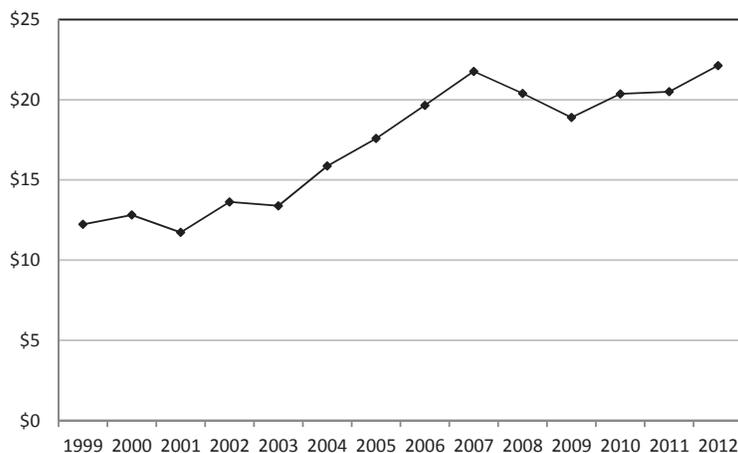
Source: Author's calculations using data from the Bureau of Economic Analysis, Regional Economic Accounts & International Data.

Note: CS is a weighted average of the competitor states

## EXPORTS

The value of Kentucky's exports of goods doubled in the last decade. Indeed, from 1999 to 2012 the compound annual growth rate of Kentucky's exports is 7.3 percent; this is slightly higher than the U.S. compound annual growth rate of 6.3 percent as well as the 7.2 percent experienced by the competitor states. The value of Kentucky's exports of goods in 2012 was \$22.1 billion, which is equivalent to almost 13 percent of Kentucky's gross domestic product; it was 8.9 percent for the competitor states and 9.9 percent for the U.S. Most of Kentucky's exported goods go to Canada, which accounted for 33.2 percent of the total value of exported goods. Mexico was second (7.7), followed by the United Kingdom (6.9), Japan (5.9), and Brazil (5.2). Kentucky exported to 198 different countries in 2012, but the top 5 countries accounted for almost 59 percent of the total value of exported goods. Over one-third (37 percent) of the value of exported goods was transportation equipment, followed by chemicals (19), machinery-except electrical (8.8), computer and electronic products (7.5), and primary metal manufacturing (3.4). Combined, the top 5 categories accounted for over three-fourths of Kentucky's exports in 2012.

**Kentucky Exports of Goods, 1999-2012**  
(constant 2012 billions)

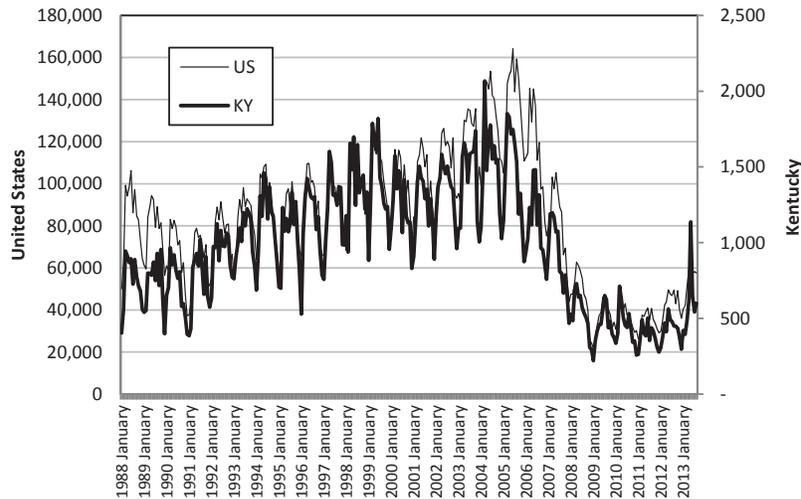


Source: Office of Trade and Industry Information (OTII), Manufacturing and Services, International Trade Administration, U.S. Department of Commerce.

## HOUSING STARTS

A housing start is when a new foundation is laid. Because housing starts represent the first step in a series of cascading future purchases, such as furniture, appliances, and landscaping, a housing start is considered a leading economic indicator and a foundation of determining future economic trends. Going back to 1988, Kentucky’s housing starts peaked in March 2004 with 2,066 and declined steadily until hitting its nadir of 221 in January 2009. Following the U.S. trend, Kentucky housing starts have stabilized since then and reached 1,136 in May 2013—the most since June 2007. Citing rising mortgage interest rates, economists have noted, however, that housing starts nationally have stalled somewhat relative to expectations.

**Housing Starts Authorized by Building Permits, Kentucky and the U.S., January 1988 to August 2013**

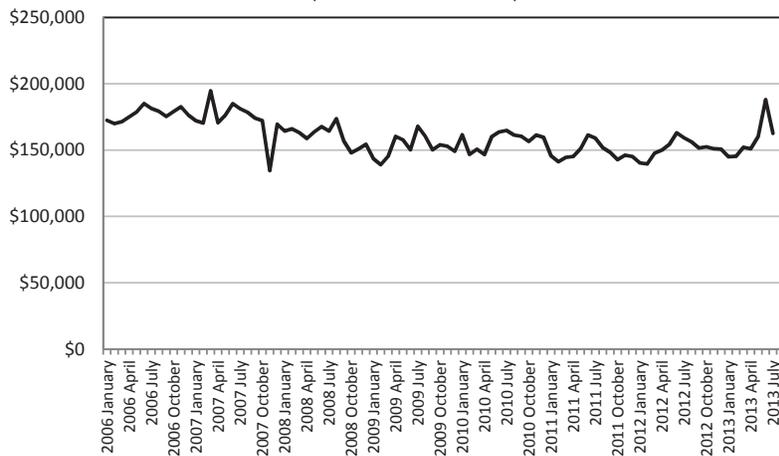


Source: Federal Reserve Bank of St. Louis, GEOFRED.

## HOUSE SALE PRICE

When calculating net worth, a house is the biggest asset for most homeowners. During the time period shown in the figure below, there were approximately 3,300 houses sold, on average, each month in the 26 separate regions around Kentucky represented by the various Boards of REALTORS®. The monthly average sale price from January 2006 to July 2013 has been about \$160,000 in constant 2012 dollars. Keeping pace with inflation, these slowly rising housing values have helped maintain a sense of economic security—for those who can afford them of course—which is an important factor in consumer spending and economic growth.

**Kentucky Average House Sale Price,  
January 2006 to July 2013**  
(constant 2012 dollars)



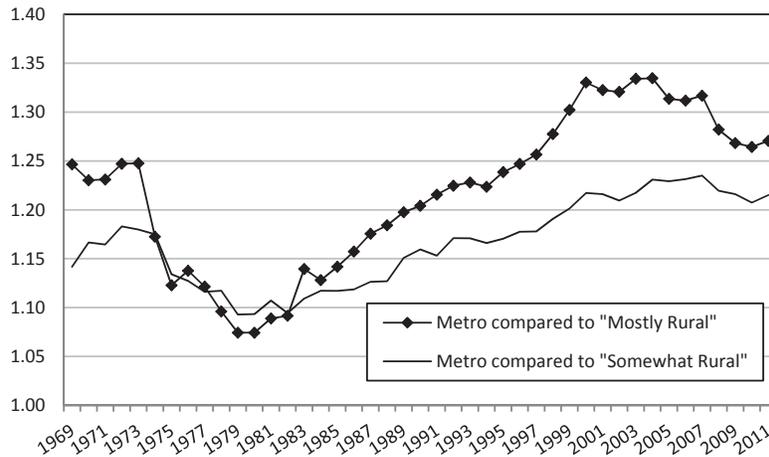
Source: Author's calculations using monthly CPI-U deflators on data from the Kentucky Board of REALTORS®.

## WAGES

This figure illustrates the gap in wages between Kentucky workers in metro counties (Beale Codes 1-2-3) and those in “slightly rural” (4-5-6) and “mostly rural” counties (7-8-9). Going back to 1969, wages in metro areas have been consistently higher than those in rural counties—especially Kentucky’s 60 mostly rural counties. In 2011, for example, wages in metro counties were 27 percent higher than those in mostly rural counties and 22 percent higher than wages in somewhat rural counties. The rising wage differential between the 35 so-called metro counties and rural counties increased steadily from the late 1970s to 2000. This trend did not change much until the Great Recession. Since 2007 the trend has reversed, indicating that the recession dampened wages in metro counties disproportionately. Nonetheless, rural Kentucky is struggling to find its place in the constantly changing global economic landscape. Based on his studies of rural communities across America, economist Mark Drabenstott outlined an approach a decade ago for rural America to tap into the power of the new economy. His framework for improving rural prosperity has relevance for Kentucky: think and act regionally; find a new economic niche in high-value knowledge industries that leverage the region’s strengths; and place a premium on homegrown entrepreneurs.

**Wage Ratio in Kentucky by Geographic Area, 1969-2011**

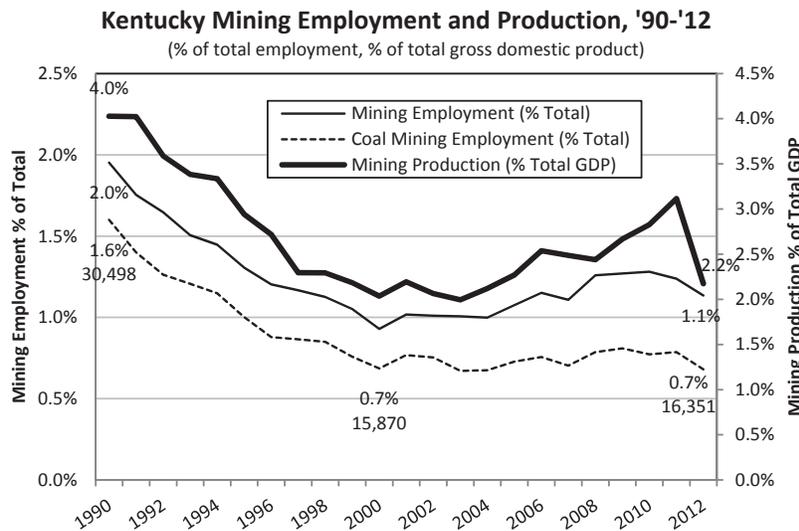
(Ratio Between Beale Codes 9-8-7, 6-5-4, and 3-2-1)



Source: Bureau of Economic Analysis, CA34, Wage and Salary Summary

## MINING & COAL

According to the Kentucky Energy and Environment Cabinet, the number of coal jobs in the state is at its lowest point since it began tracking these numbers in 1927. While Kentucky mines a significant amount of coal in both Western and Eastern Kentucky, the bulk of the job losses have been in Eastern Kentucky. When viewed within the context of the state's wider economy, mining employment and coal mining employment are 1.1 and 0.7 percent of total employment, respectively. Similarly, mining production accounts for 2.2 percent of Kentucky's gross domestic product. While the effects of declining production and loss of jobs are small relative to the size of the state's overall economy, the communities where these jobs are concentrated have been hit extremely hard. Despite these losses, the total number of coal miners in 2012 (16,351) was actually higher than in 2000 (15,870). These employment numbers include all employees engaged in production, preparation, processing, development, maintenance, repair, shop or yard work at mining operations, mining operations management and all technical and engineering personnel; it does not include office workers.



Source: Bureau of Economic Analysis & Energy Information Administration, Annual Coal Report, various years



## OVERVIEW

**T**HE GREAT RECESSION OFFICIALLY ENDED FOUR YEARS AGO but its wake is still felt by a vast number of Americans. Buffeted by constant change and uncertainty, many workers, retirees, students, and their families feel their aspirational grip on the American Dream slowly loosening. These omnipresent forces are engulfing a broad segment of society—affecting children and elderly alike, as well as workers—and serve as a constant reminder that economic security is an elusive dream for many. With over one-quarter of Kentucky’s children (26.5 percent) living in poverty, the resulting consequences will likely ripple throughout society for years to come. Meanwhile, there are more immediate manifestations of economic insecurity for the 12 percent of Kentucky adults over 65 living in poverty, as well as for others nearing retirement with depleted savings, outdated skills, and an uncertain job market.

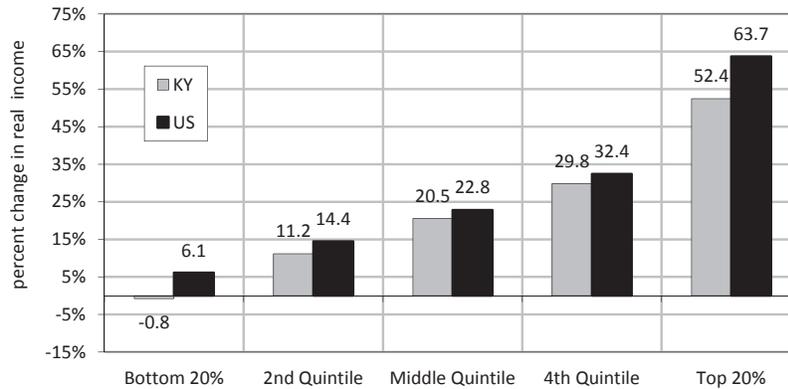
Generating a sense of free-floating anxiety for many, a lot has been written about the growing fragility of economic security—especially for lower and middle-class Americans. Stagnant incomes, growing debt, bankruptcies, and foreclosures, the seemingly constant threat of being downsized, and the growing cost of education are casting a long shadow over a wide swath of American society. While some of these problems are tied to the business cycle, there are important structural changes taking place, such as the increasing economic returns to high-level skills, which have permanently shifted the economic ground for many Americans. Globalization of the economy, growing automation of routine tasks—for both low- and high-skilled tasks, declining unionization, and tax policies have all been cited as factors putting downward pressure on incomes—especially for the least skilled.

Here we present data on the income distribution, bankruptcies, poverty rates, and food insecurity. We also present data on participation in various government programs that form an economic safety net for those experiencing hardship, such as the Food Stamp Program, Temporary Assistance for Needy Families, and Medicaid. The data show that Kentucky has a higher percentage of its population experiencing economic insecurity—such as living in poverty or not having enough food—compared to the U.S. and most competitor states. And, perhaps unsurprisingly, a larger percentage of Kentucky’s population uses governmental assistance programs. While there is no perfectly safe harbor for sheltering oneself from the buffeting waves of economic change, investing in marketable skills and educational excellence can be an important bulwark against economic insecurity.

## INCOME DISTRIBUTION

Since the mid-to-late 1970s, income inequality has grown here and nationally, as households at the higher end of the income distribution have experienced substantially greater income growth compared to those at the lower end. For Kentucky families, this roughly three-decade-long trend of inequality has more or less followed the national trend. Incomes in the 20th percentile declined about 1 percent here compared to modest growth nationally of 6.1 percent in real dollars. By comparison, average household incomes in the middle quintile for Kentucky and the U.S. increased by around 21 and 23 percent, respectively, in real dollars, during the 30 years from the late 1970s to the late 2000s. While incomes in the bottom quintile were stagnant and incomes in the middle quintile experienced modest growth, average incomes in the upper quintile increased in Kentucky and the U.S. by 52 and 64 percent, respectively. Many factors have been cited as possible contributors to the widening gap, including the rise of globalization and outsourcing, increasing returns to high-level skills, the automation of routine jobs, declining unionization, immigration, and tax policies.

**Changes in Household Income, by Income Level, from 1977-79 to 2008-10, Kentucky and the U.S.**  
(based three-year averages of 2009 dollars)

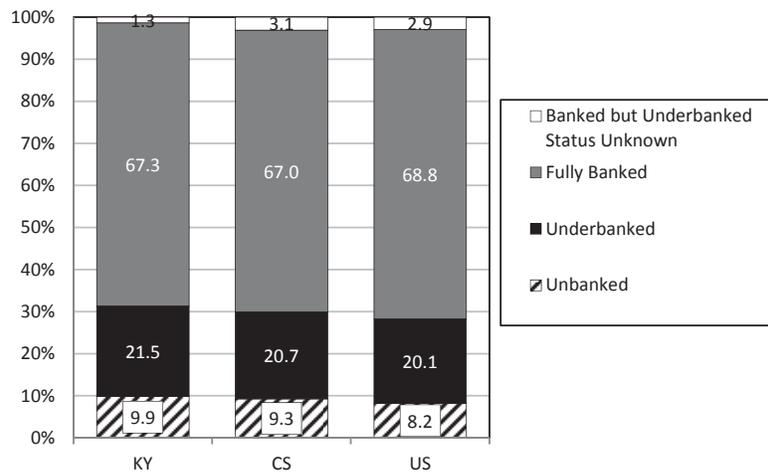


Source: Economic Policy Institute/Center on Budget and Policy Priorities analysis of data from the U.S. Census Bureau's Current Population Survey

## BANKING STATUS

Whether someone has a bank account can have important implications for their financial well-being. According to the Federal Deposit Insurance Corporation (FDIC), “access to an account at a federally insured institution provides households with the opportunity to conduct basic financial transactions, save for emergency and long-term security needs, and access credit on fair and affordable terms.” Moreover, it can help protect “households from theft and reduces their vulnerability to discriminatory or predatory lending practices.” Surveys done by FDIC find that low-to-moderate income Americans are less likely to “access mainstream financial products such as bank accounts and low-cost loans.” At 9.9 percent, Kentucky households are slightly more likely to be unbanked than either the competitor states (9.3%) or the U.S. (8.2%), and the same is true for being “underbanked,” which are households that use both traditional banks as well as alternative financial services.

**Household Banking Status, 2011,  
Kentucky, Competitor States, and the U.S.**  
(percent of households)

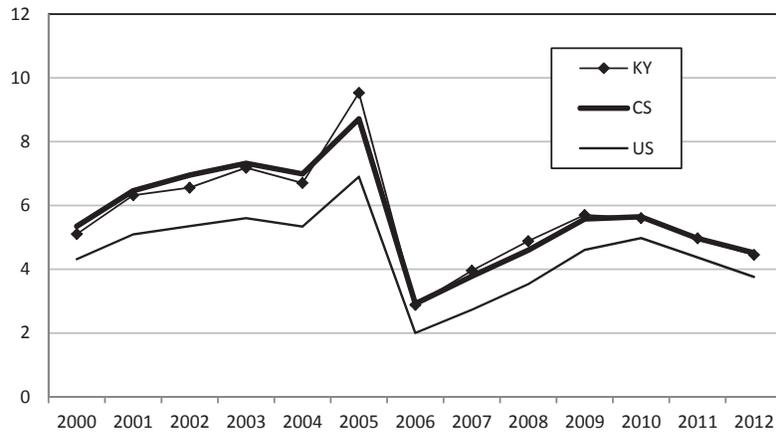


Source: FDIC National Survey of Unbanked and Underbanked Households, 2011

## PERSONAL BANKRUPTCIES

Bankruptcy is defined as “a legal proceeding involving a person or business that is unable to repay outstanding debts.” The idea is to develop a plan that enables the individual (or business) to gain a fresh financial start while providing creditors with some prospect of repayment for outstanding debts. The personal bankruptcy rate provides an indication of the overall financial health of individuals and families. As consumers acquire excessive debt or economies are in recession, for example, the threat of personal bankruptcy increases. The laws governing bankruptcy changed in 2005, which had the immediate effect of reducing the number of individuals filing for bankruptcy. The personal bankruptcy rate in Kentucky has essentially been the same as the competitor states, which in 2012 were about 4.5 bankruptcies per 1,000 population. The U.S. average has been somewhat lower over the 2000-2012 period, and stood at 3.76 in 2012.

**Personal Bankruptcies,  
Kentucky, Competitor States, and the U.S., 2000-2012**  
(bankruptcies per 1,000 population)

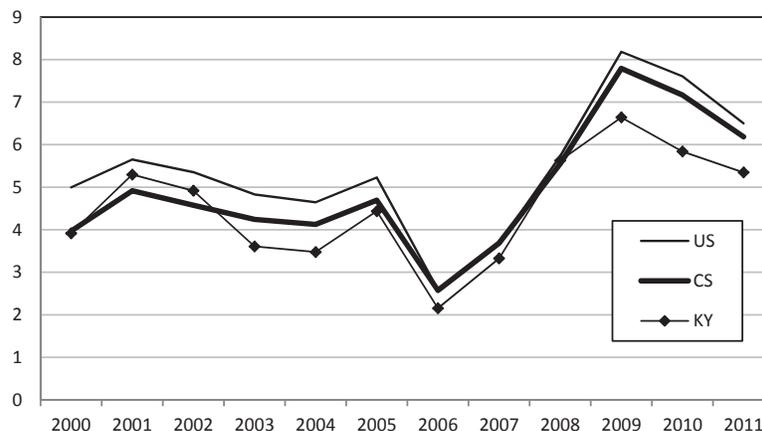


Source: Administrative Office of the U.S. Courts & Census data provided by the Indiana Business Research Center, Indiana University, Kelley School of Business

## BUSINESS BANKRUPTCIES

According to the National Bureau of Economic Research (NBER), the trough of the most recent recession was in the second quarter of 2009. It is perhaps no surprise, then, that 2009 is the peak year, as shown in the graph below, for the number of businesses that filed for bankruptcy. Across the various Circuit and District Courts in 2009, there were 60,837 bankruptcy business filings (Chapters 7, 11, 12, 13)—but this has steadily declined since then with 40,075 in 2012. Business filings across the U.S. in the first three quarters of 2013 are 16.7 percent lower than the number filed in the first three quarters of 2012. When expressed as a percentage of business establishments, Kentucky has been lower than the competitor states and the U.S. during the last few years but has historically had similar rates.

**Business Bankruptcies,  
Kentucky, Competitor States, and the U.S., 2000-2011**  
(bankruptcies per 1,000 business establishments)

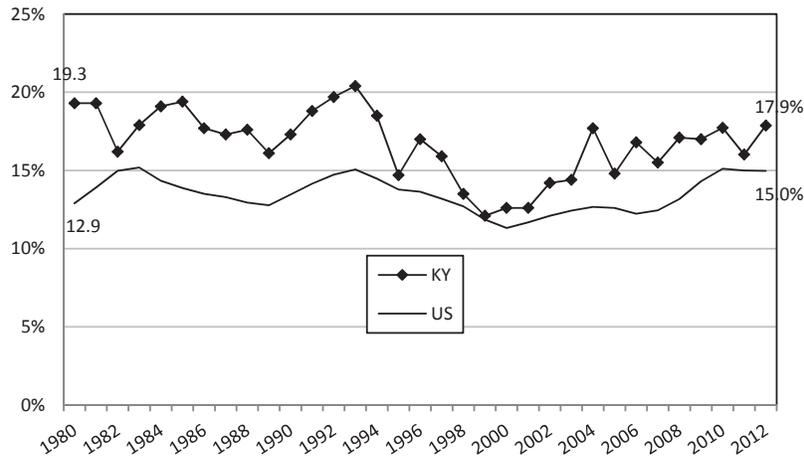


Source: Administrative Office of the U.S. Courts data provided by the Indiana Business Research Center, Indiana University, Kelley School of Business. The establishment data are U.S. Census, County Business Patterns, various years.

## POVERTY RATE

Living in poverty can have far-reaching economic, social, and cultural consequences for families and entire populations. Studies reveal that those who grow up in poverty not only experience a lack of basic needs, but that this scarcity can shape their lives and families for generations. In addition, the concentrations of poverty have a significant negative effect on the fiscal health of cities and regions that, as a result, must shoulder higher spending. The U.S. poverty rate increased during the Great Recession and currently stands at about 15 percent—the highest level since the recession of the early 1990s. Kentucky’s poverty rate has been on an upward trend for the last dozen years and currently is approaching 18 percent.

**Poverty Rate in Kentucky and the U.S., 1980-2012**  
(percentage of individuals)

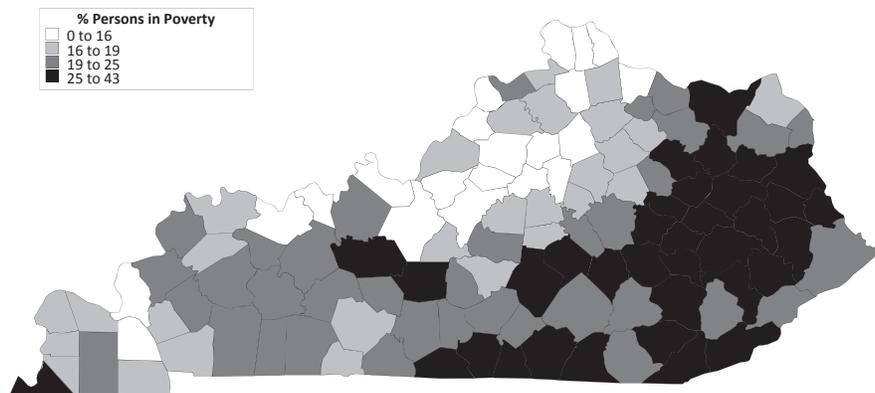


Source: U.S. Census Bureau, Current Population Survey, March supplement, various years

## POVERTY RATE BY COUNTY

Kentucky’s persistently poor counties are concentrated in Eastern Kentucky, but high poverty is found across the state. Poverty rates in Bell, Clay, Martin, and Owsley Counties are hovering around 40 percent—the highest in the state—while Boone, Oldham, and Spencer Counties have rates in the single digits. There can be, of course, concentrated pockets of poverty within counties with relatively low rates. At nearly 25 percent, the “mostly rural” counties generally have higher poverty rates than “slightly rural” (20%) and metro counties (15.5%).

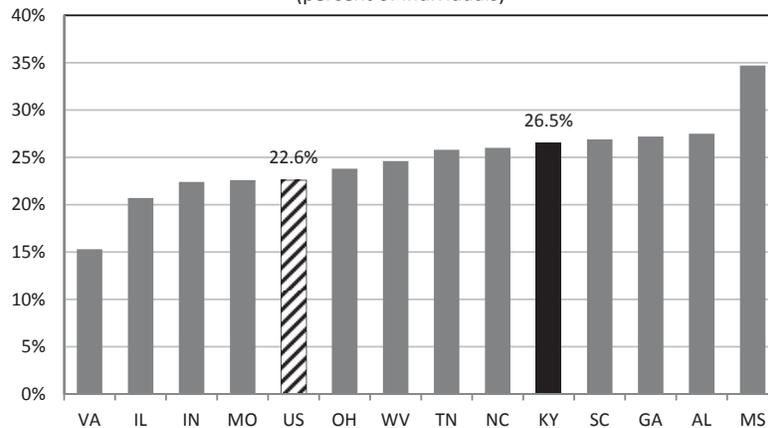
Estimated County Poverty Rates, 2011



## CHILD POVERTY

Child poverty and all that it bodes for the future continue to be disturbing and vexing problems for Kentucky. Here we illustrate child poverty rates for Kentucky, the competitor states, and the U.S. The rates shown are for children who live in households with incomes below 100 percent of the federal poverty level. Kentucky's poverty rate in 2012 was 26.5 percent, a significant increase over the last decade—it was 20 percent in 2000. While Kentucky ranks the fifth highest among the competitor states, there is not a statistically significant difference between Kentucky and several other states, such as West Virginia, Tennessee, North Carolina, South Carolina, Georgia, and Alabama (using a 90 percent margin of error). Kentucky's child poverty rate is significantly higher than the U.S. rate of 22.6 percent. At 34.7 percent, Mississippi has the highest child poverty rate in the nation.

**Poverty Rate, 2012, Children Under 18,  
Kentucky, Competitor States and the U.S.**  
(percent of individuals)

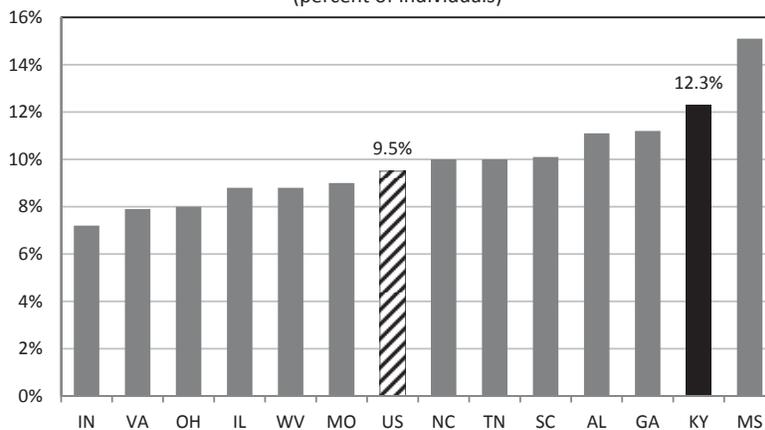


Source: 2012 American Community Survey 1-Year Estimates

## ELDERLY POVERTY

The first wave of Baby Boomers started hitting the traditional retirement age of 65 in 2011 and many are financially ill-prepared for retirement. The Employee Benefit Research Institute's 2013 Retirement Confidence Survey finds, among other insights, that 18 percent of retirees are "very confident" about having enough money to live comfortably throughout their retirement years, which is significantly lower than the 44 percent who felt very confident in the 2007 survey—just before the Great Recession. Forty-four percent are "somewhat" confident, 14 percent are "not at all" confident, and 22 percent are "not too" confident. According to the survey, 71 percent of retirees saved money for retirement—which obviously means that nearly a third did not. This widespread lack of saving for retirement places many seniors in a precarious position for their retirement years. At 12.3 percent, Kentucky's population of persons aged 65 and older who live below the poverty level is higher than most of the competitor states as well as the U.S. average of 9.5 percent.

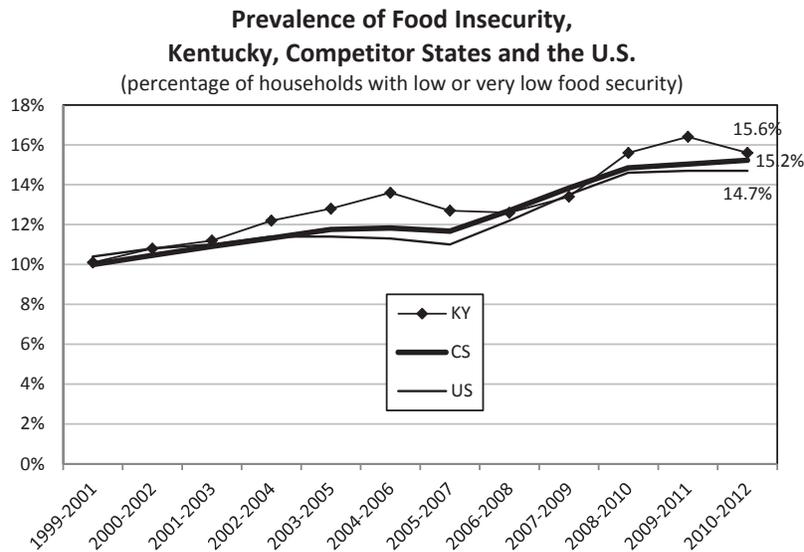
**Poverty Rate, 2012, Adults 65 and Over**  
**Kentucky, Competitor States and the U.S.**  
(percent of individuals)



Source: 2012 American Community Survey 1-Year Estimates

## FOOD INSECURITY

Annual surveys conducted by the U.S. Department of Agriculture show that the prevalence of food insecurity has been steadily increasing over the last decade. Food security is defined as having “access at all times to enough food for an active, healthy life for all household members,” while food insecurity means “that the food intake of one or more household members was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food.” An estimated 10.1 percent of Kentucky households experienced food insecurity during the 1999-2001 period, and this increased to 15.6 percent in the most recent period. The competitor states and the U.S. averages were lower than Kentucky’s, at 15.2 and 14.7 percent respectively. Generally, national data show that rates of food insecurity tend to be higher for certain groups, such as households with children—especially young children (under age 6), households with children headed by a single parent—especially a woman, households headed by a minority—especially Black and Hispanic, and those with lower incomes.

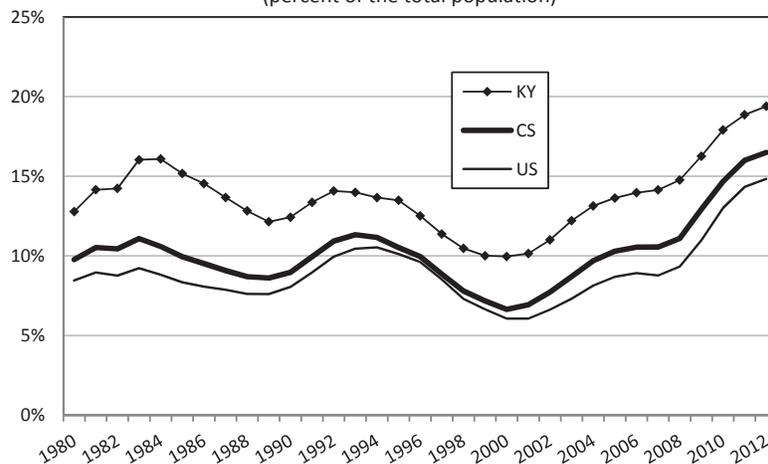


Source: United States Department of Agriculture, Household Food Security in the United States, various years.

## FOOD STAMP PARTICIPATION

Many Americans rely on the Food Stamp Program (FSP) to purchase food for their families. The Food Stamp Act of 1977 defines this federally-funded program as one intended to “permit low-income households to obtain a more nutritious diet.” Nationally almost 75 percent of FSP participants are in families with children and more than one-quarter of participants are in households with seniors or people with disabilities. From 1980 to 1999, Kentucky’s average monthly participation in the Food Stamp Program—known as the Supplemental Nutrition Assistance Program (SNAP)—was approximately 500,600 individuals. The low point in participation was in 1999 when it was 396,400. Since then, however, the number of participants has climbed precipitously and, at 849,250 in 2012, was over double the 1999 total. This number represents 19.4 percent of Kentucky’s population. By comparison, about 16.5 percent of the population in the competitor states and 14.8 percent in the U.S. received SNAP benefits in 2012. SNAP benefits are dependent on, among other factors, family size and income levels—with the average SNAP recipient in the U.S. receiving about \$133.41 a month in fiscal year 2012; the average per person benefit in Kentucky is \$127.43.

**Food Stamp Program, Average Monthly Participation, Kentucky, Competitor States, and the U.S., 1980-2012**  
(percent of the total population)

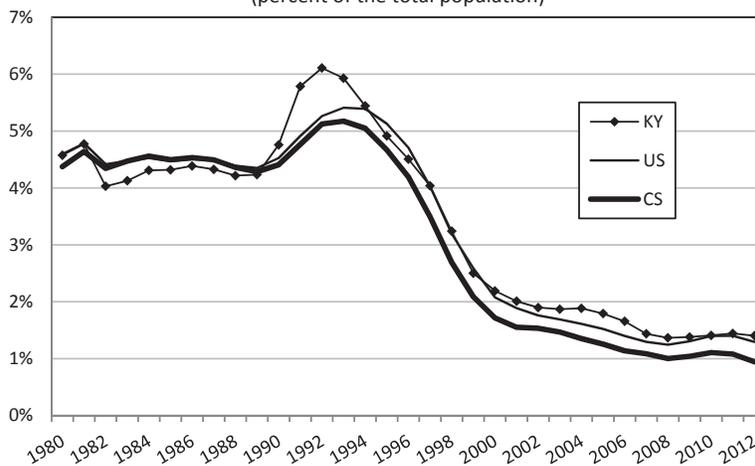


Source: U.S. Department of Agriculture Food and Nutrition Service and U.S. Census

## TEMPORARY ASSISTANCE FOR NEEDY FAMILIES

The number of Kentuckians receiving Aid to Families with Dependent Children (AFDC)—known as Temporary Assistance to Needy Families (TANF) since the 1996 welfare reform law—has decreased significantly from its highpoint of 229,400 in 1992 to 61,500 in 2012; roughly 80 percent of the recipients in 2012 were children. This decline is not unique to Kentucky. For example, marking the 16th anniversary of the 1996 legislation that fundamentally changed the program, the Center on Budget and Policy Priorities (CBPP) issued a report in August, 2012, noting that nationally the number of families receiving TANF (AFDC) benefits for every 100 families with children in poverty has declined sharply over time. In 1979, for instance, 82 families per 100 with children in poverty received benefits, compared to 68 in 1996—when TANF was enacted—to 27 in 2010. As a percentage of the total population, more Kentuckians received TANF benefits in 2012, about 1.4 percent, than the competitor state average of 0.9 percent. At 2.2 percent, Tennessee has the highest percentage among the competitor states and Georgia has the lowest at 0.4 percent. The benefits for a Kentucky family of three is \$262 per month, which is the same amount it was in 1996.

**AFDC/TANF Recipients,  
Kentucky, Competitor States, and the U.S., 1980-2012**  
(percent of the total population)

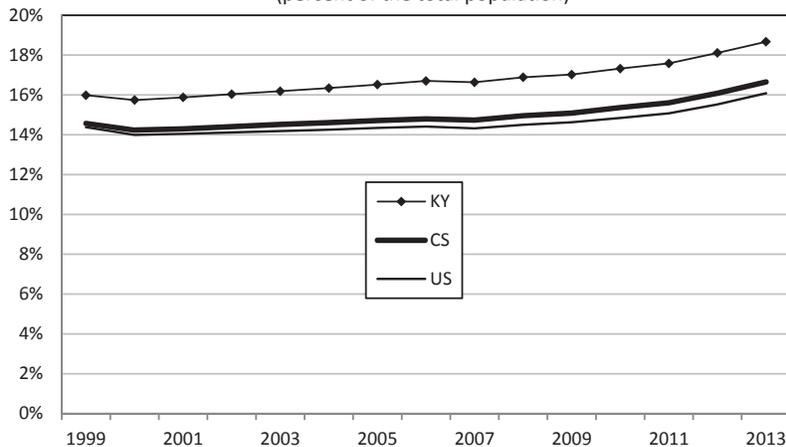


Source: The Administration for Children and Families, U.S. Department of Health and Human Services, and U.S. Census

## MEDICAID BENEFICIARIES

Medicaid is a state-federal partnership to provide health care coverage for people with lower incomes, older people, individuals with disabilities, and some families and children. The Medicaid program is jointly funded by states and the federal government, but the states administer Medicaid within broad federal rules and have a lot of flexibility to design their programs. The eligibility rules for Medicaid are different for each state, but most states offer coverage for adults with children at some income level. In Kentucky, the Department for Medicaid Services administers the \$5.7 billion program (FY2012). There are many types of services provided for Kentucky’s 817,700 Medicaid beneficiaries—from inpatient hospitalization to long-term care to prescription drugs for acute care. In the wider context of Kentucky’s state budget, Medicaid constitutes a significant portion of total state government spending. According to the National Association of State Budget Officers, *State Expenditure Report: Fiscal Years 2011-2013*, 22.5 percent of Kentucky state government expenditures were for Medicaid, which was second only to higher education (25.7 percent) and slightly higher than elementary and secondary education (19.8 percent). The percentage of the population on Medicaid in Kentucky, the competitor states, and the U.S. is 18.7, 16.7 and 16.1 percent, respectively.

**Medicaid Beneficiaries,  
Kentucky, Competitor States, and the U.S., 1999-2013**  
(percent of the total population)

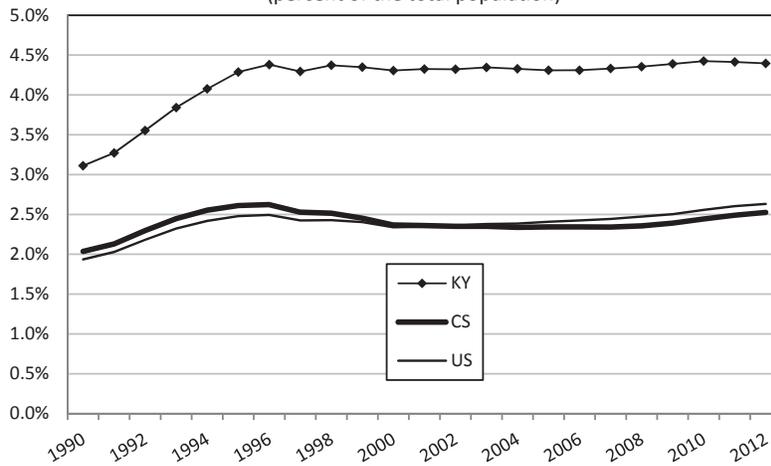


Source: Kaiser Family Foundation, Centers for Medicare & Medicaid Services, State /County Penetration File, March 2013, and U.S. Census

## SUPPLEMENTAL SECURITY INCOME (SSI)

The Supplemental Security Income (SSI) is a Federal income supplement program that is administered by the Social Security Administration (SSA) and funded by general tax revenues (not Social Security taxes). According to the SSA, "It is designed to help aged, blind, and disabled people, who have little or no income, and it provides cash to meet basic needs for food, clothing, and shelter." Of Kentucky's 192,600 recipients in 2012, 5 percent were aged and 95 percent were blind and/or disabled. One third of the recipients were either under 18 or over 64 years old. As is evident by the figure, the percentage of Kentuckians receiving SSI benefits, 4.4 percent, is much higher than the U.S. or competitive state averages of around 2.5 percent.

**Supplemental Security Income (SSI) Recipients,  
Kentucky, Competitor States, and the U.S., 1990-2012**  
(percent of the total population)

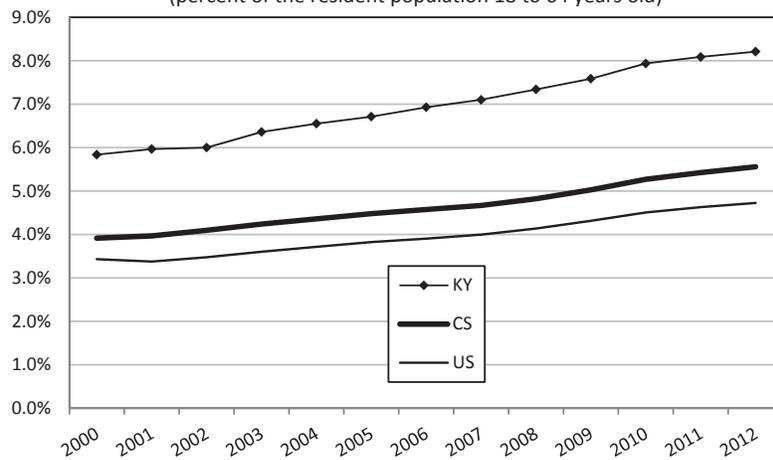


Source: Social Security Administration

## DISABILITY INCOME (DI)

According to the Social Security Administration, “Studies show that just over 1 in 4 of today’s 20 year-olds will become disabled before reaching age 67.” The Social Security Disability Insurance (DI) program pays benefits to disabled individuals and some family members if the individual worked long enough and paid Social Security taxes. Kentucky has a higher than average disability rate so it is not surprising that a higher percentage of the state’s population receive DI benefits. The percentage of Kentuckians between 18 and 64 years old who receive DI benefits is 8.2 percent, markedly higher than both the competitor state (5.6%) and U.S. (4.7%) averages. The average monthly benefit nationally for disabled workers is \$1,130.

**Disability Income (DI) Recipients (18-64 Years Old),  
Kentucky, Competitor States, and the U.S., 2000-2012**  
(percent of the resident population 18 to 64 years old)

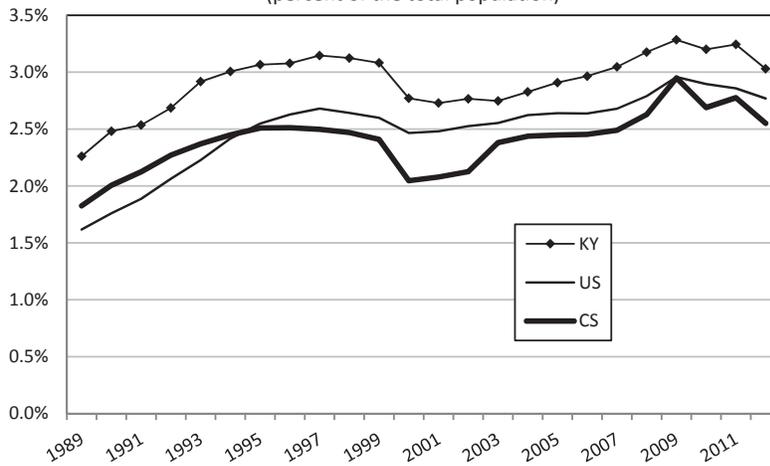


Source: Social Security Administration, Annual Statistical Report on the Social Security Disability Insurance Program, various years.

## WOMEN, INFANTS, AND CHILDREN (WIC)

Women, Infants, and Children (WIC) is a federal nutrition program for “supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk.” Around 3 percent of Kentucky’s population receives WIC benefits, which is essentially where it has been since the mid-1990s. Kentucky’s percentage is only slightly higher than the U.S. (2.8%) and competitor states (2.6%).

**Women, Infants, and Children (WIC) Recipients,  
Kentucky, Competitor States, and the U.S., 1980-2012**  
(percent of the total population)

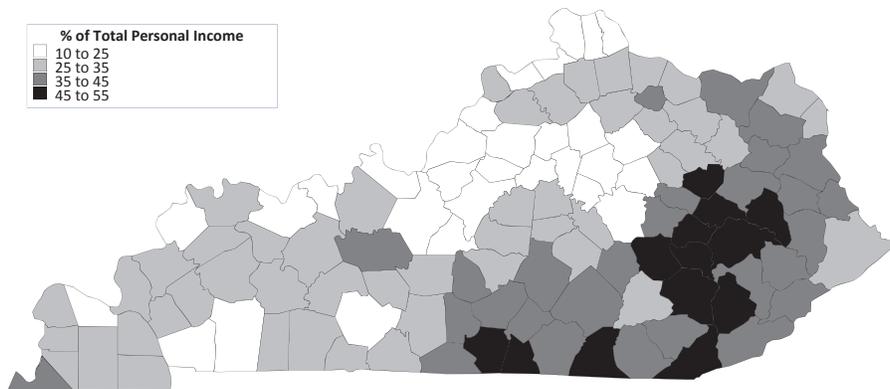


Source: U.S. Department of Agriculture Food and Nutrition Service and U.S. Census

## TRANSFER PAYMENTS BY COUNTY

Transfer payments are benefits transferred from local, state, or federal governments to an individual. These payments include, but are not limited to, retirement and disability insurance benefits like Social Security, medical benefits such as those provided through Medicaid and Medicare, income maintenance benefits like TANF and SNAP, unemployment insurance compensation, and veterans' benefits. Transfer payments account for about 18 percent of total personal income for the nation—but several Kentucky counties are significantly higher than the national average. There are three counties over 50 percent and 28 counties where transfer payments account for over 40 percent of personal income. The percentages for Kentucky's metro, slightly rural, and mostly rural counties are, respectively, 19.2, 28.1, and 36.7, with the highest percentages concentrated in the Eastern Kentucky counties.

Transfer Payments by County, 2011



Source: Bureau of Economic Analysis



## OVERVIEW

**K**ENTUCKY'S IMPROVING EDUCATIONAL OUTCOMES OVER the last several years offer much to celebrate. This summer, for example, Education Week reported in *Diplomas Count 2013: Second Chances* that Kentucky's high school graduation rate showed the third highest improvement among the states from 2000 to 2010. While the national graduation rate increased by 7.9 percentage points, there were ten states—including Kentucky—that experienced double-digit increases.

Not only are more students graduating from high school, they are increasingly better prepared academically. Governor Beshear and Commissioner of Education Holliday announced in a September 2013 press release that the college-and-career readiness rate, a measure of student preparation for life after high school, is up 20 percent from 2010. They note that "only about a third of high school graduates were considered ready three years ago, (but) initial data now show more than half—54 percent—are ready to take the next step into credit-bearing college courses or a postsecondary training program."

Based on multiple educational attainment and achievement factors combined into a single index, the Center for Business and Economic Research produced an education index a few years ago ranking Kentucky 33rd in 2009. This represented a marked improvement from 48th in 1990. The index shows that Kentucky has made educational improvements over the years and gained ground on other states. Only two states that were in the bottom ten in 1990 climbed out of that group with double-digit gains by 2009—Kentucky and North Carolina. Using more recent data from the National Assessment of Educational Progress (NAEP), a 2012 report from Harvard University found that Kentucky had the 8th highest annual rate of growth from 1992 to 2011 in student achievement in math, reading, and science among 41 states that could be compared using these exams.

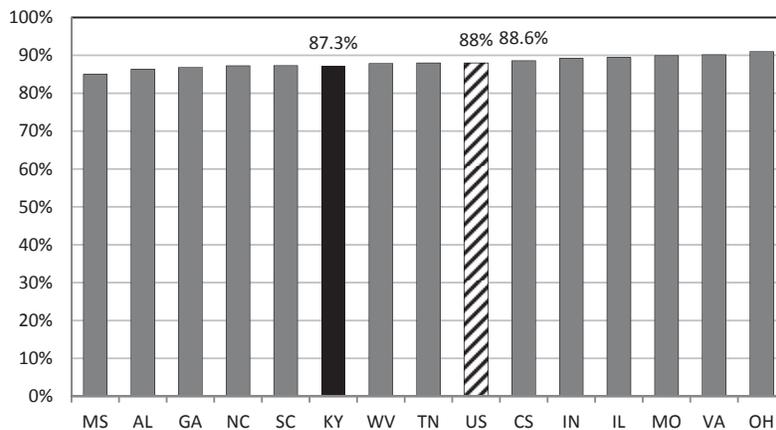
Despite the state's educational progress, there are substantial gaps between Kentucky and the competitor states and the U.S. in many areas—indicating there is still much work ahead. Moreover, while Kentucky has made substantial progress in the achievement levels of primary and secondary students, a renewed focus on disadvantaged students is warranted and the state still ranks low on measures likely to become more important in a high-tech global economy—such as the number of graduates with science and engineering degrees.

Improving educational outcomes will enhance economic prospects as well as several other socially beneficial factors, such as health status, volunteer rates, and technology use—just to name a few.

## HIGH SCHOOL ATTAINMENT

Kentucky's labor force increasingly competes in a global environment that demands rising levels of educational attainment. At a minimum, today's workers need a high school diploma. Following the education reforms of the early 1990s, Kentucky's adult population (25 and older) made significant gains, as the portion with a high school diploma or higher rose from 65 percent in 1990 to nearly 84 percent in 2012. At the same time, the nation improved to 86.4 percent. Looking just at those individuals 25 to 64—the traditional working age group—Kentucky's 87.3 percent trails the U.S. average of 88 percent and the competitor state average of 88.6 percent. What's more, over the past 30 years, nation after nation has surpassed the United States in the portion of workforce entrants with the equivalent of a high school diploma. Still others are on the verge of doing so. Given that an nearly 13 percent of adults 25 to 64 lack a high school diploma or its equivalent, the state not only lags the nation but also fares poorly in the global context, a circumstance that must change if we are to achieve broader prosperity.

**High School Graduate or Higher,  
Kentucky, Competitor States and the U.S., 2012**  
(percent of individuals 25 to 64 years old)

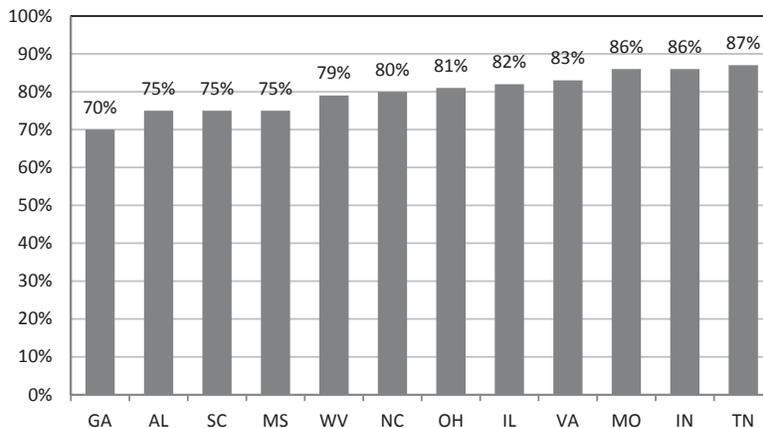


Source: 2012 American Community Survey 1-Year Estimate  
Note: CS is the weighted average of the competitor states.

## HIGH SCHOOL GRADUATION RATE

There are important economic consequences of dropping out of high school—for the individual, of course, but also for the wider community. The U.S. Department of Education data shown in the figure below are the latest data for the competitor states, which are for the 2011-2012 academic year. Unfortunately, comparable data for Kentucky are not available for the 2011-2012 academic year. However, preliminary data for the 2012-2013 academic year were released by the Kentucky Department of Education in September 2013 and show that Kentucky’s four-year regulatory adjusted cohort graduation rate was 86 percent. Next year when the national data are updated and released for the 2012-2013 academic year we will have a clearer picture of where Kentucky stands relative to the competitor states and the nation. Kentucky’s preliminary data, however, are encouraging.

**Graduation Rate, 2011-2012 School Year,  
Competitor States Only**  
(four-year regulatory adjusted cohort graduation rate)

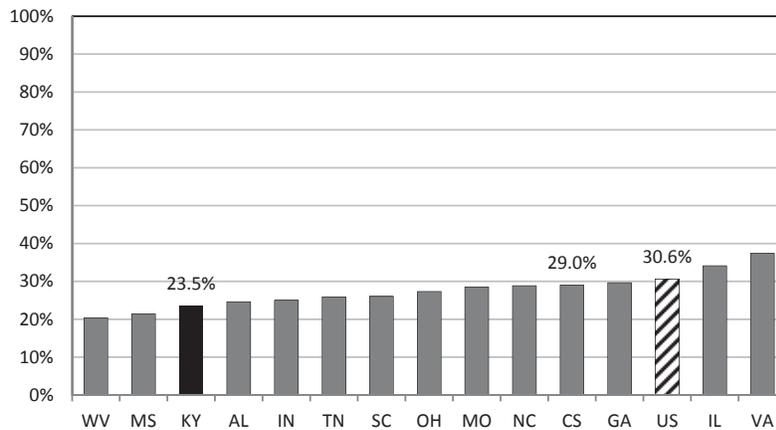


Source: U.S. Department of Education

## COLLEGE ATTAINMENT

In an increasingly interconnected and technologically advanced world, Kentucky workers not only face growing competition for low-wage, low-skill jobs, but also for high-skill jobs. Today, any “routine” job and a growing number of high-skill jobs can be automated and outsourced. Competition in such an environment requires providing something that others cannot. That “something” will come from workers who have high levels of preparation in math and science in particular, as well as the liberal arts. Essentially, the rigors of the global economy require creative, highly-skilled, college-educated workers. Since 1990, Kentucky has made important progress, as the proportion of adults 25 and older with a four-year degree or higher climbed from 13.6 percent to 21.8 percent in 2012; by comparison, the U.S. percentage in 2012 was 29.1. Among working age adults 25 to 64, however, the state continues to significantly lag the competitor states and the nation in educational attainment at the college level—23.5 percent for Kentucky compared to 29 and 30.6 percent for the competitor states and U.S. respectively.

**Bachelor's Degree or Higher,  
Kentucky, Competitor States and the U.S., 2012**  
(percent of individuals 25 to 64 years old)

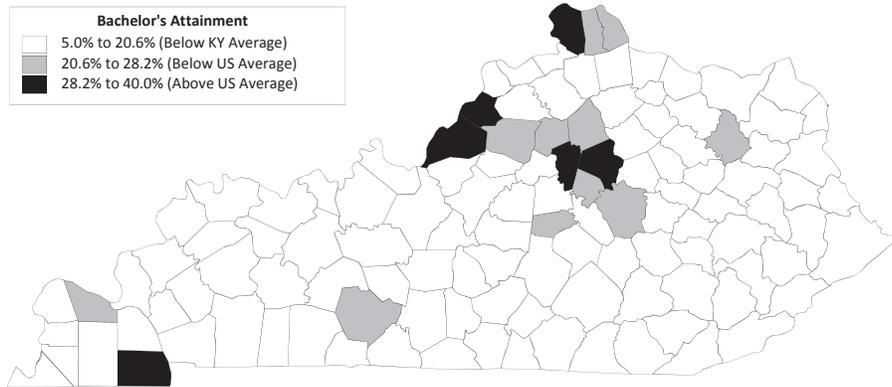


Source: 2012 American Community Survey 1-Year Estimates  
Note: CS is the weighted average of the competitor states.

## COLLEGE ATTAINMENT BY COUNTY

There are six Kentucky counties where the percentage of the population with a bachelor’s degree or higher (using the 2007-2011 five-year average) exceeds the U.S. average of 28.2 percent. Five of these counties anchor the so-called urban triangle—Fayette (39.3%), Oldham (38.3%), Woodford (30.4%), Jefferson (29.2%), and Boone (28.8%)—with Caldwell County (28.6%) an island in the west. There are eleven counties that are above the Kentucky average but below the U.S. average—ranging from McCracken County’s 21.4 percent to Warren County’s 27.8 percent. Kentucky’s remaining 103 counties are below the Kentucky average, with several in the single digits. Similarly, the concentration of educational attainment in metro areas is illustrated by the percentage of the population between 25 and 44 years old who have some college—but not a four-year degree. The percentage of this age group with some college in metro counties is 63 percent, compared to 50 percent in somewhat rural counties and 42 percent in mostly rural counties. It is extremely difficult for any geographic region—whether a city, a county, a state, or a country—to be globally competitive without a skilled and educated population.

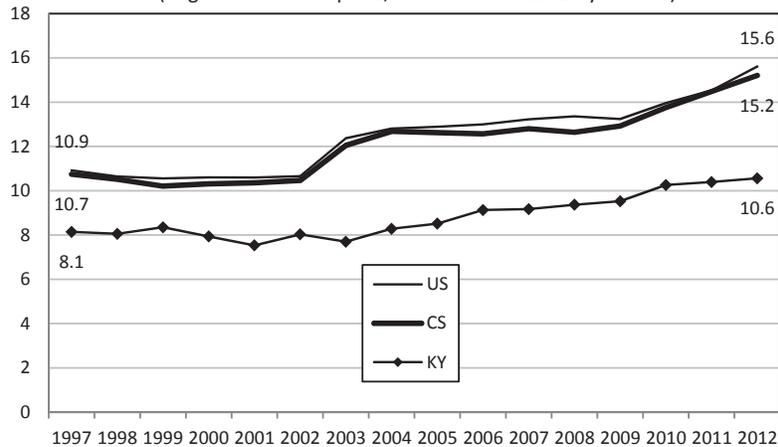
**Bachelor's Degree and Higher, 2007-2011  
(percentage of adults 25 and older)**



## SCIENCE AND ENGINEERING GRADUATES

Staying competitive in the global economy depends upon many things—including continuous innovation in products and services. An essential element for innovation is having a high-skilled workforce with science, technology, engineering, and mathematics (STEM) training and expertise. This point was reinforced by the November 2013 BEAM report, *Seizing the Manufacturing Moment: An Economic Growth Plan for the Bluegrass Economic Advancement Movement*. While remaining substantially below the competitor states and the U.S., the number of science and engineering degrees conferred on individuals 20 to 24 years old in Kentucky has increased since 1997—from 8.1 per 1,000 individuals in this age group to 10.6. By comparison, the competitor states (15.2) and the U.S. (15.6) awarded significantly more STEM-designated bachelor’s degrees in 2012.

**STEM-Designated Bachelor's Degrees Awarded, Kentucky, Competitor States, and the U.S., 1997-2012**  
(degrees conferred per 1,000 individuals 20-24 years old)



Source: Author's analysis of Integrated Postsecondary Education Data System (IPEDS) data using 2012 designated CIP Codes to identify STEM degrees & U.S. Census data for population estimates

## PERFORMANCE TEST SCORES

The National Assessment of Educational Progress (NAEP), commonly known as the “Nation’s Report Card,” gauges student progress in a variety of subject areas, including reading, mathematics, and science. Here we present the test results for 4th and 8th graders from 1998 to 2013. The percentages of Kentucky 4th and 8th graders scoring proficient or higher on the NAEP exams have steadily increased over the years. In 2013 the percentages of Kentucky 4th and 8th graders scoring at or above proficient for reading (36 and 38 respectively) was about the same as the U.S. average for 4th graders but statistically significantly higher for 8th graders. The proficiency percentages for Kentucky 4th and 8th graders in math (42 and 30) were statistically no different from the U.S. for 4th graders but statistically significantly lower for 8th graders. Kentucky’s 8th graders outperformed U.S. 8th graders in 2011 on the science test with 34 percent scoring proficient or higher, a percentage statistically significantly higher than the U.S.

**Kentucky’s Math, Reading, and Science NAEP Results,  
Percentage Scoring Proficient or Higher,  
By Subject, Grade, and Year**

	1998 2000	2002	2003	2005	2007	2009	2011	2013
Math 4	17 <sup>↓</sup>	-	22 <sup>↓</sup>	26 <sup>↓</sup>	31 <sup>↓</sup>	37	39	42
Math 8	20 <sup>↓</sup>	-	24 <sup>↓</sup>	23 <sup>↓</sup>	27 <sup>↓</sup>	27 <sup>↓</sup>	31 <sup>↓</sup>	30 <sup>↓</sup>
Reading 4	29 <sup>*</sup>	30	31	31	33	36 <sup>↑</sup>	35	36
Reading 8	30 <sup>*</sup>	32	34	31	28	33	36 <sup>↑</sup>	38 <sup>↑</sup>
Science 4	-	-	-	-	-	45 <sup>↑</sup>	-	-
Science 8	-	-	-	-	-	34 <sup>↑</sup>	34 <sup>↑</sup>	-

*Source: National Center for Education Statistics (NCES), Institute of Educational Sciences (IES), National Assessment of Educational Progress (NAEP), Kentucky State Profile.*

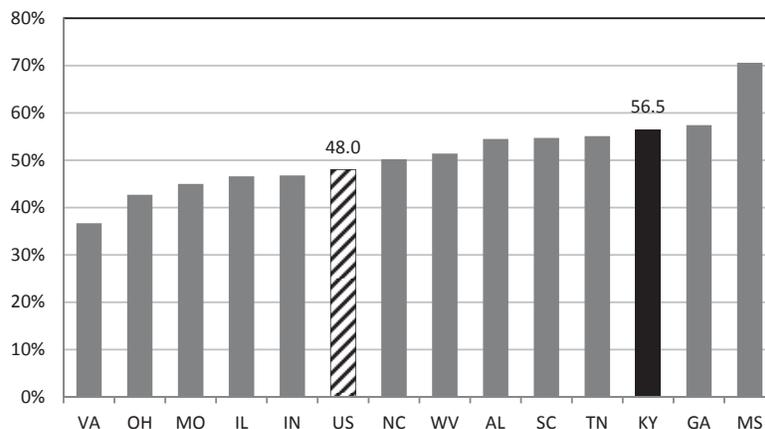
*Note: A dash (-) in the cell indicates that this test was not taken by Kentucky students. An arrow pointed down (<sup>↓</sup>) next to a number indicates that the percentage is statistically significantly lower than the National public percentage. Conversely, an arrow pointed up (<sup>↑</sup>) next to a number indicates that the percentage is significantly higher. No arrow indicates that the Kentucky percentage is not significantly different from the National public.*

*\*The reading results in the 1998/2000 column are 1998 results. The math results are from 2000.*

## FREE AND REDUCED-LUNCH ELIGIBILITY

Students here, like those nationally, who are eligible for free- or reduced-priced lunch, on average, do not score as high on, for example, the National Assessment of Educational Progress (NAEP), as those not eligible; the same is true for Kentucky’s various state-specific assessment tools, such as the Commonwealth Accountability Testing System (CATS), which was replaced during the 2011-12 academic year with a new system—Kentucky Performance Rating for Educational Progress (K-PREP). Regardless of the assessment system, less-advantaged students do not perform as well, on average, as more-advantaged students. Researchers at organizations like the Education Trust, for example, have examined the underlying reasons for the achievement gap and identified several systemic causes. A student’s eligibility for the so-called free-lunch program is determined by household income and size. During the 2010-2011 school year, Kentucky ranked 7th nationally with 56.5 percent of public school students eligible for free- or reduced-priced lunch. The national average is 48 percent and the average for the competitor states is 49.3 percent. Among the 50 states, Mississippi has the highest percentage at 70.6 percent while New Hampshire has the lowest at 25.2 percent.

**Students Eligible for Free or Reduced-Price Lunch, 2010-11, Kentucky, Competitor States, and the U.S.**  
(percent of public school students, school year 2010-11)

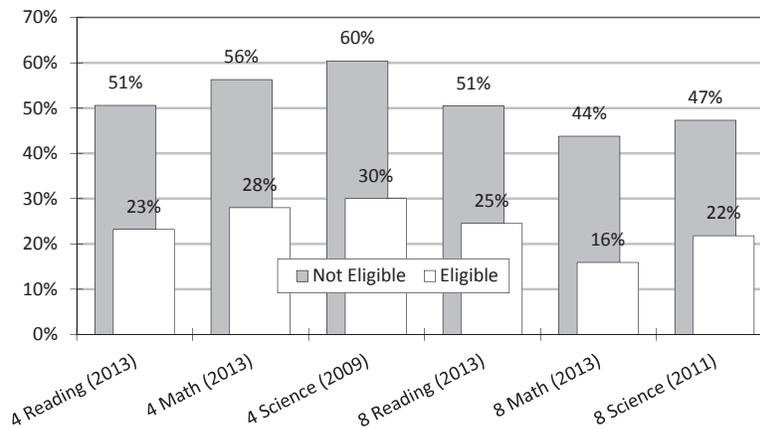


Source: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey," 2010-11, Version 1a.

## EDUCATIONAL ACHIEVEMENT GAP

The academic success of disadvantaged children will affect whether Kentucky’s future remains one of disproportionate poverty or gives way to rising prosperity. Economic disadvantage has a significant negative drag on academic performance, and the sheer number of economically disadvantaged students in Kentucky adversely affects overall performance on both state and national tests. Kentucky has the nation’s seventh highest population of students eligible for free or reduced-price (56.5 percent) lunches, a reliable proxy for poverty and need. The different outcomes on the National Assessment of Educational Progress (NAEP) exams are stark. The percentage of students scoring at or above proficiency is consistently and markedly lower for less-advantaged students in every subject area. Were we to close the substantial academic gaps associated with inequities, Kentucky students would be performing at dramatically higher levels relative to their national peers and our goals for education would be nearly realized. NAEP results for Kentucky students in math, reading, and science—for both 4th and 8th grades—illustrate the challenges and the necessity for an effective response. Proficiency levels for less-advantaged students are generally less than half the level of more-advantaged students.

**Kentucky NAEP Results by Free- and Reduced-Lunch Eligibility, 2009, 2011, and 2013**  
(percent of students scoring at or above proficient)

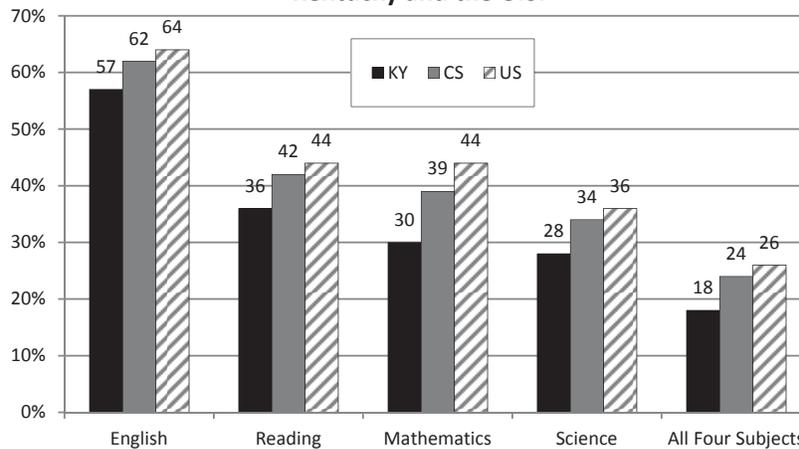


Source: National Center for Education Statistics

## COLLEGE READINESS

The Kentucky Department of Education (KDE) announced early in 2013 that Kentucky students scored higher on EXPLORE and PLAN tests in 2012—improving in every subject tested. The EXPLORE test is given to all 8th-grade public school students and the PLAN test is administered to every 10th grader. According to KDE, these gains show that more students are becoming “college ready.” These assessments are considered precursors to the ACT, the 2013 results of which are shown below. While Kentucky’s 8th and 10th graders improved from 2011 to 2012, the 2013 ACT results show that Kentucky significantly lags behind the competitor states and the U.S. average with respect to the percentage of our tested students who are deemed to be “college ready.” An estimated 18 percent of Kentucky’s tested students are considered college ready, compared to 24 percent for the competitor states and 26 percent for the U.S. However, a big reason for this difference is that Kentucky now requires all 11th graders in the public schools to take the ACT—even those who have no interest or intention of going to college. When this policy was initially implemented, Kentucky’s average ACT score declined from 20.9 in 2008 to 19.4 in 2009. This 1.5 drop suggests that Kentucky would be closer to the competitor states if all of their students took the ACT.

**Percent of 2013 ACT-Tested High School Graduates Meeting College Readiness Benchmarks by Subject, Kentucky and the U.S.**

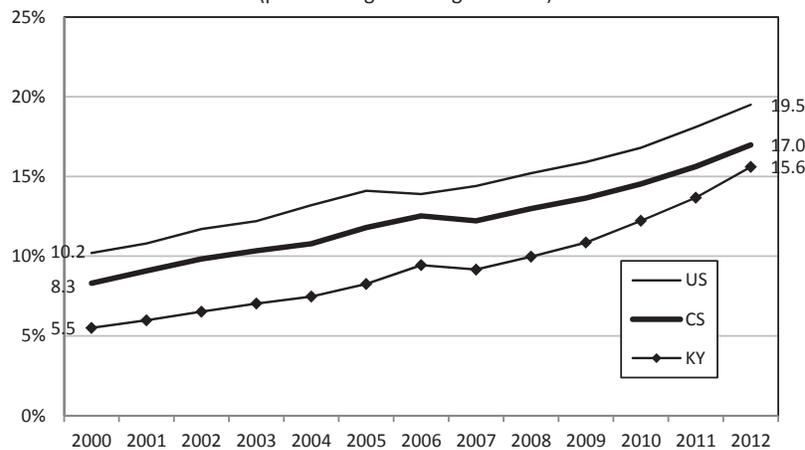


Source: *The Condition of College & Career Readiness, 2013, various state reports, ACT, Inc.*

## ADVANCED PLACEMENT EXAM MASTERY

In order to pass an AP Examination, a high school student must demonstrate mastery of college-level material. Indeed, many colleges and universities award college credit for students showing AP mastery (scoring 3+ on an exam). At a time when a large percentage of college freshman and sophomores require remediation nationally (nearly 38 percent in 2011), it is vitally important for American high school students to be challenged academically and perform at a high level. The College Board, which administers the advanced placement program, offers 34 different AP Exams each spring on subjects ranging from Art History to Calculus to World History. In 2012 there were 954,070 graduates leaving high school who took an AP Exam, with 573,472 of these graduates scoring a 3 or higher on an AP Exam at any point in high school—which represents 19.5 percent of America’s graduating high school students. This is a substantial increase from the 10.2 percent in 2000. Kentucky’s students have also increased their performance on AP Exams over the years, from 5.5 percent in 2000 to 15.6 percent in 2012. Despite this increase, Kentucky still lags the competitor states’ 17 percent. Among all states Maryland had the highest percentage of students in the class of 2012 scoring a 3 or higher on an AP Exam during high school—29.6 percent.

**High School Students Scoring 3+ on AP Exams,  
Kentucky, Competitor States, and the U.S., 2000-2012**  
(percent of graduating students)

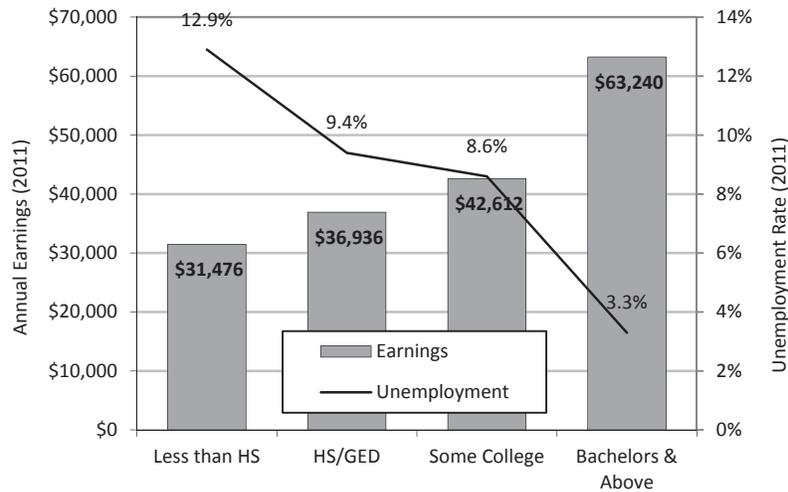


Source: College Board, AP Report to the Nation, various years

## EARNINGS & EMPLOYMENT BY EDUCATION

Despite the rising cost of postsecondary education, education still pays. Moreover, according to the Kentucky Council on Postsecondary Education, an estimated 56 percent of Kentucky’s jobs will require some college by 2020. On average, increasing education translates into higher earnings and better prospects for employment. Here we show the unemployment rates and earnings in 2011 for individuals 25 years and older in Kentucky for four broad education groups: individuals with less than a high school degree, individuals with a high school degree only, individuals with some college (including associates degrees), and individuals with at least a bachelor’s degree. Individuals 25 years and older are chosen because most individuals have completed schooling by age 25. The unemployment rate for those without a high school degree was 12.9 percent—compared to 3.3 percent for those with a 4-year degree. Likewise, earnings in 2011 for the least educated were substantially lower than those with a bachelor’s degree. Workers with only a high school diploma in Kentucky earned, on average, about \$37,000, compared to over \$63,000 for those with a 4-year college degree.

**Kentucky Earnings and Unemployment by Education**  
(aged 25 and older)



Source: Kentucky Council on Postsecondary Education and Bureau of Labor Statistics

## HEALTH OUTCOMES BY EDUCATION

Improving educational attainment and achievement in general and health literacy in particular, defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions,” will determine whether the health of Kentuckians shows significant improvements. Reading and understanding prescription labels, doctor’s instructions, nutrition information, or basic health literature is essential for good health. Indeed, research confirms what commonsense suggests—higher levels of education attainment and enhanced health literacy are associated with improved health outcomes. Enhanced knowledge can lead to better health outcomes. Evidenced by data from the 2010 and 2012 Behavioral Risk Factor Surveillance System (BRFSS), increasing levels of educational attainment—a good proxy for health literacy and knowledge—are generally associated with better health behaviors. As education levels increase, the rate of poor or fair health, obesity, diabetes, and heart disease declines. Moreover, this relationship remains strong while controlling for other socioeconomic factors like income, race, ethnicity, and gender.

Selected Health Outcomes, Kentucky, 2010, 2012 (percent of adult population)					
Education Level	Fair/Poor Health Status	Obese	Diabetes*	Angina or Heart Disease*	Activity Limitation
Less than H.S.	47	33	16	10	40
H.S. or G.E.D.	25	32	12	7	27
Some Post H.S.	17	33	9	6	24
College Graduate	10	27	7	3	16
All Levels	24	31	10	6	26

*Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, various years.*

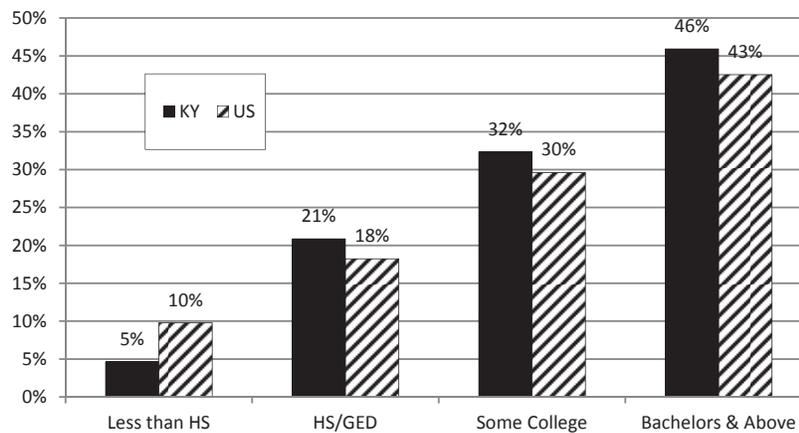
*\*Diabetes and Angina/Heart Disease data is for 2010*

## VOLUNTEER RATE BY EDUCATION

In the Community section of this report we present data on volunteer rates for Kentucky, its competitor states, and the U.S., and discuss some of the social and economic benefits that result from high levels of community service and volunteerism. In the figure below we present volunteer rates for Kentucky and the U.S. for four broad education groups (focusing on adults 25 and older): individuals with less than a high school degree, individuals with a high school degree only, individuals with some college (including associates degrees), and individuals with at least a bachelor’s degree. Kentucky’s volunteer rates are higher than the U.S. for all of the education categories except for those individuals with less than a high school diploma. Also, there is a clear and consistent relationship between increasing education levels and higher rates of volunteerism. Kentuckians with high school diplomas volunteer, on average, at a rate of 21 percent, which is about half the rate of those with a 4-year college degree—46 percent.

**Volunteer Rate by Education, 2011**  
**Kentucky and the U.S.**

(percentage 25 and older who volunteer during the year)

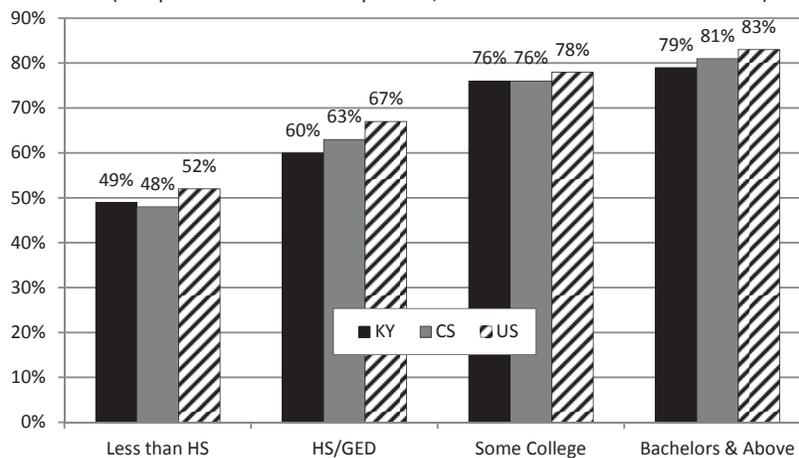


Source: Author's analysis of September 2011 Current Population Survey (CPS) Volunteer Supplement data

## TECHNOLOGY USE BY EDUCATION

Research shows that because the Internet permeates so many aspects of our lives, access to and use of it appear to be increasingly important for anyone becoming politically informed, socially integrated, and economically successful in the Information Age. Studies suggest that “Internet use increases employment and income, enhances consumer welfare, and promotes civic engagement,” (NTIA, 2013), and that enhancing the nation’s broadband infrastructure can improve innovation, entrepreneurship, and productivity. The importance of high-speed Internet access promises to become even more important in the future as online education becomes more firmly rooted. Recent analysis conducted by CBER shows that the independent effect of education is strong. For example, Kentucky households where the head of household has a bachelor’s degree or higher have a much higher probability of having high-speed Internet in their home (79%) than a household where the head of household has a high school diploma (60%). This relationship is consistent across all levels of education and all geographic regions shown.

**Estimated Households with Broadband by Education, Kentucky, Competitor States, and the U.S., 2012**  
(independent effect or net percent, head of household education level)



Source: "The Internet in Kentucky," CBER Issue Brief 9, Table 2, September 2013



## OVERVIEW

**T**HE GLOBAL ENERGY MARKET IS CHANGING IN FUNDAMENTAL ways. While technological improvements are stimulating increased oil and gas extraction, the price of natural gas and environmental concerns are dampening the demand for coal. At the same time, concerns over global warming are sparking conversations about the future of nuclear power as well as motivating governments, academics, and the private sector to explore renewable energy sources. All of this has caused major changes in energy and economic policies across the globe—importers are becoming exporters, and vice versa. Indeed, according to a November 2013 report from the Paris-based International Energy Agency, entitled *World Energy Outlook* ([www.worldenergyoutlook.org](http://www.worldenergyoutlook.org)), “the United States moves steadily towards meeting all of its energy needs from domestic resources by 2035.”

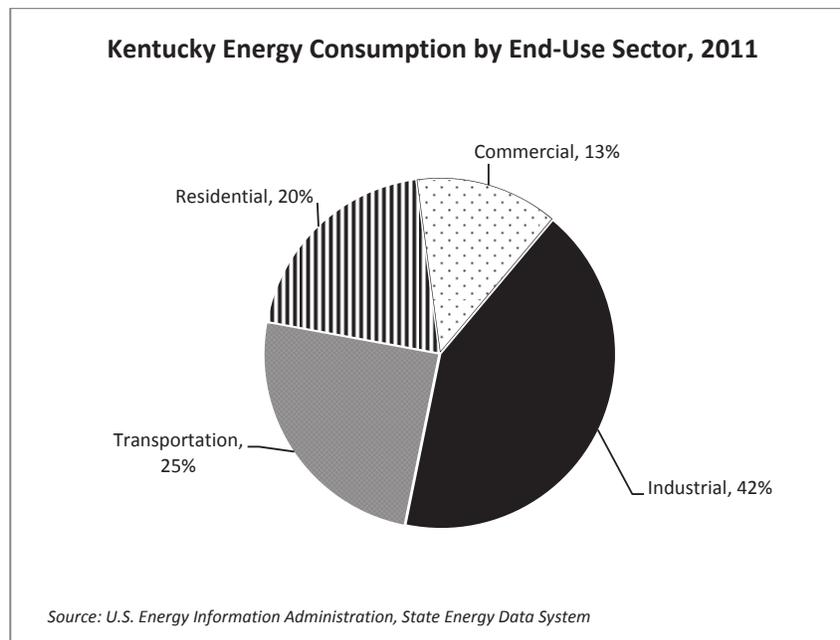
While the global demand for natural gas is expected to remain strong at least until 2035, the outlook for coal is less certain. According to the central scenario presented in the *World Energy Outlook*, “global coal demand increases by 17% to 2035, with two-thirds of the increase occurring by 2020.” In 2011 coal was the major supplier of the world’s total primary energy, but energy forecasters expect natural gas to supplant coal as the world’s dominant source of primary energy by 2035.

The future of coal is of keen interest to Kentucky policymakers. In our *Kentucky Annual Economic Report 2012* we noted that the developing regulatory environment would likely cause increases in the cost of (coal-fired) electric power generation and in the price of electricity. This, in turn, could have sizable negative effects on Kentucky’s gross domestic product and employment growth.

A truly comprehensive picture of energy and Kentucky can be found in the 2012 *Energy Profile*, produced by the Kentucky Department for Energy Development and Independence ([energy.ky.gov](http://energy.ky.gov)). Here we examine Kentucky’s energy utilization by sector and source, costs for industrial and retail customers, and the amount of energy used in the state’s economy. In many cases we provide comparative data—either showing Kentucky over time or relative to other states. This selective examination of energy in Kentucky broadly illustrates its place—and importance—in the state’s economy.

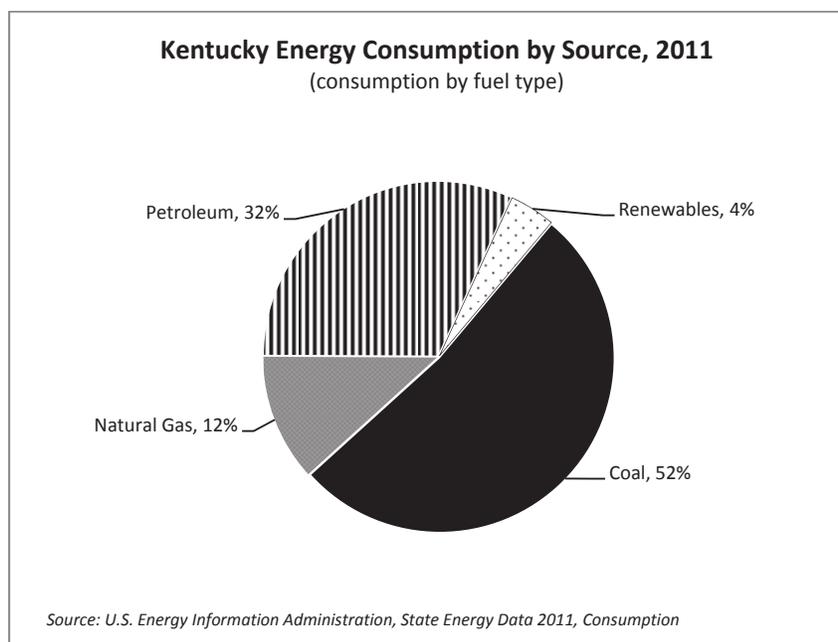
## ENERGY CONSUMPTION BY END-USE SECTOR

Energy consumption is categorized into four broad sectors: industrial, commercial, residential, and transportation. Industry consumes the bulk of energy in Kentucky, accounting for 42 percent of the total consumption (2011). According to the Kentucky Department for Energy Development and Independence, *2011 Energy Profile*, “the location of heavy industry operations, such as steel and aluminum production, and automotive manufacturing accounted for the significance and energy requirements of the industrial sector in Kentucky.” By comparison, industrial consumption by the competitor states and the U.S. as a percentage of total energy consumption is 30 and 32 percent, respectively. The transportation sector in Kentucky is the second largest consumer of energy, accounting for 25 percent, compared to 27 and 28 percent in the competitor states and the U.S. The residential sector in Kentucky, the competitor states, and the U.S., consumes 20, 24, and 22 percent. And while the commercial sector in Kentucky accounts for only 13 percent, it represents 19 and 18 percent of total energy consumption, respectively, for the competitor states and the U.S.



## ENERGY CONSUMPTION BY SOURCE

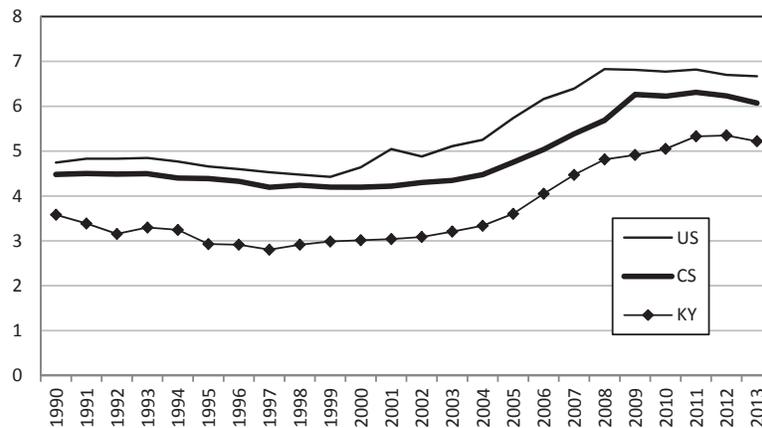
Of the four broad energy sources used in Kentucky—coal, natural gas, petroleum, and renewables—coal accounts for over half of the total consumption, 52 percent (2011). According to the Kentucky Department for Energy Development and Independence, *2011 Energy Profile*, “the predominance of coal in sourcing energy consumption was linked to the generation of electricity and manufacturing processes in the Commonwealth.” By comparison, coal consumption by the competitor states and the U.S. as a percentage of total energy consumption is 30 and 20 percent, respectively, and is declining. Petroleum products, such as gasoline and diesel, account for the second largest percentage in Kentucky, 32 percent. Natural gas is about 12 percent in Kentucky, but much higher and rising in the U.S. (26 percent) as well as in the competitor states (20 percent). Renewable energy sources account for about 4 percent in Kentucky, 6 percent in the competitor states, and 9 percent in the U.S. Finally, while Kentucky does not have nuclear power, this is an important source of energy in the competitor states (13 percent) and the U.S. (8 percent). The competitor states and the U.S. overall are moving away from coal and toward natural gas.



## ELECTRICITY COST FOR INDUSTRIAL CUSTOMERS

Frequently cited as an important factor to recruit new industries to Kentucky as well as keep existing industries competitive, electricity prices here are consistently below the U.S. and competitor state averages. Kentucky's industrial rates are lower because of an abundance of coal and coal-fired power plants in the state and region. However, the average retail price of electricity to industrial customers increased in Kentucky by 86 percent from its nadir of 2.80 cents in 1997 to 5.22 cents in the first six months of 2013. As prices have increased so too have the worries that Kentucky is losing its comparative advantage in low-cost utility rates. Nonetheless, in 1990 Kentucky had the seventh lowest industrial rate in the country and in 2013 the fourth lowest. Kentucky's annual rate in 2012—at 5.35 cents per kilowatt-hour—was well below the U.S. (6.70) and competitor states (6.23).

**Average Retail Price of Electricity, Industrial Customers, Kentucky, Competitor States, and the U.S., 1990-2013\***  
(Cents per Kilowatt-Hour)

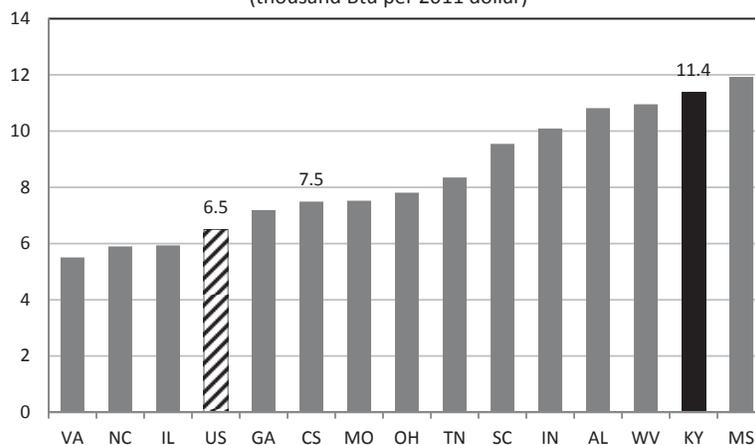


Source: U.S. Energy Information Administration  
\*2013 data represents January to June

## ENERGY CONSUMPTION PER GDP

Kentucky has an energy intensive economy. To generate \$1 in state gross domestic product, Kentucky consumes about 11,376 Btu (2011). By comparison, the U.S. average is around 6,500 Btu and the competitor state average is 7,500 Btu. This difference is driven, in part, by Kentucky's larger than average manufacturing sector, which, of course, depends greatly upon energy as an input. One implication of this higher dependence on energy as an economic input is that, compared to most of the competitor states, Kentucky's economy is more sensitive to energy prices.

**Energy Consumption per Real Dollar of GDP, 2011,  
Kentucky, Competitor States, and the U.S.**  
(thousand Btu per 2011 dollar)

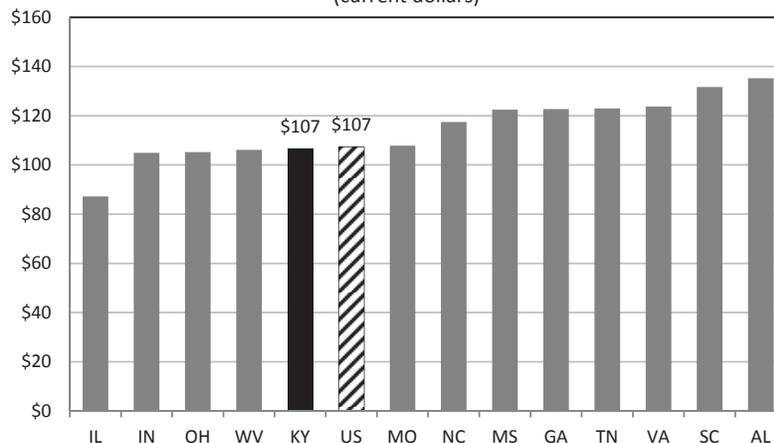


Source: U.S. Energy Information Administration and Bureau of Economic Analysis

## RESIDENTIAL ELECTRICITY COSTS

According to the U.S. Census Bureau, Consumer Expenditure Survey, the typical “consumer unit” had \$51,422 in average annual expenditures in 2012—with annual electricity expenses of \$1,388. In the South Region of the U.S.—where Kentucky and eight of the competitor states are located—average annual expenditures were \$47,757 and annual electricity expenses were \$1,625. Electricity costs range in these two examples from 2.7 to 3.4 percent of total expenditures. Using data from the U.S. Energy Information Administration, residential average monthly electricity bills, among the competitor states, ranged from a low of \$87 in Illinois to a high of \$135 in Alabama. At \$107, Kentucky’s average monthly bill is the same as the U.S. average. Like industrial customers of electricity, Kentucky’s residential customers enjoy somewhat lower rates.

**Residential Average Monthly Electricity Bill, 2012,  
Kentucky, Competitor States, and the U.S.**  
(current dollars)

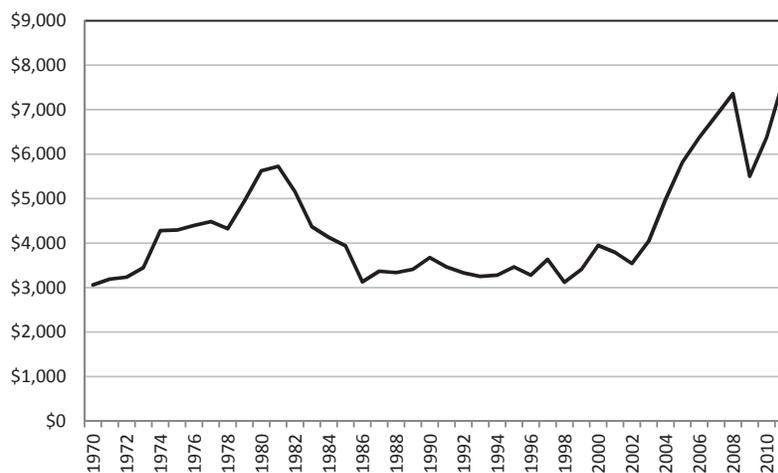


Source: U.S. Energy Information Administration

## MOTOR GASOLINE EXPENDITURES

The typical American “consumer unit,” what most would consider the average household, spent \$51,422 on various products and services in 2012 according to the Consumer Expenditure Survey; “gasoline and motor oil” accounted for \$2,756 of the total—about 5.4 percent of the total. Going back as far as 1984, there is no practical difference between what citizens in Kentucky, the competitor states, or any other state, pay for gasoline. The amount spent by Kentuckians in 2011, the most recent year these data are available, was at its highest point going back to 1970 (in constant 2012 dollars).

**Motor Gasoline Total Expenditures, Kentucky, 1970-2011**  
(constant 2012 millions)



Source: Energy Information Administration, State Energy Data System



## OVERVIEW

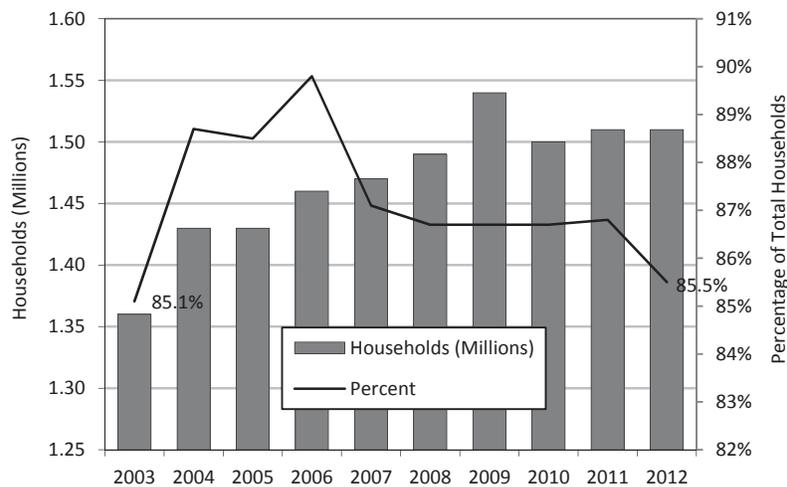
**P**UBLIC POLICY DEBATES ABOUT THE CURRENT AND future status of Kentucky’s coal industry exemplify the inextricable connections between the state’s economy, national environmental considerations, and global energy markets. Our economic development policies and practices can, and do, affect the quality of the air, water, land, and other environmental assets of the state. At the same time, a body of literature has emerged demonstrating how community amenities, such as a clean and beautiful environment, can be used as a tool for attracting and retaining entrepreneurs and innovators—who can also be job creators.

Ironically, at a time when the broad-based threats to the environment resulting from global warming appear to be gaining traction as an important public-policy issue around the globe, the typical Kentuckian is breathing cleaner air, drinking cleaner water, and being more responsible with solid waste than ever before. Our state still has areas that are currently designated nonattainment or marginal areas for all criteria pollutants by the U.S. Environmental Protection Agency (EPA)—Boone, Bullitt, Campbell, Jefferson, and Kenton Counties, which includes 27.5 percent of the state’s total population. And cancer-causing toxic releases here compare poorly to competitor states as well as the U.S. overall, while out-of-state solid waste disposal is a growing portion of the total amount of garbage dumped in our landfills. Arguably, however, many of the environmental quality trends are moving in the right direction. The data presented here show progress and promise, but also considerable room for improvement in Kentucky’s environmental quality.

## SOLID WASTE

Beginning in 2002 state law required waste haulers and recycling haulers to register and report to each county in which they provide service, thereby providing data on the number of households that participate in municipal solid waste collection (MSW). The 2012 statewide household participation rate for MSW collection was 85.5 percent. The Kentucky Division of Waste Management (DWM) estimates that another 5-10 percent of households either legally self-haul their waste to transfer stations or are otherwise not counted in these numbers because they use dumpsters in multiunit housing complexes. Consequently, the real percentage of households participating in municipal solid waste collections is likely 90 to 95 percent according to the DWM. The remaining 5 to 10 percent of households are thought to illegally dump their waste.

**Kentucky Households Participating in Municipal Solid Waste (MSW) Collection, 2003-2012**

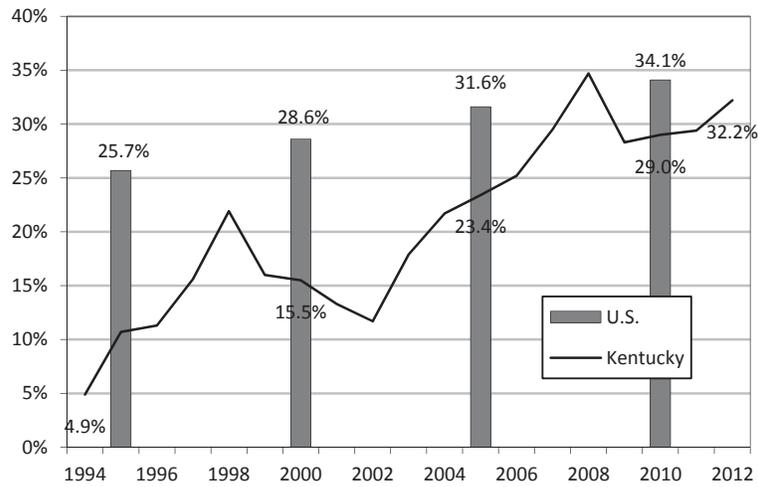


Source: Kentucky Division of Waste Management Annual Reports, various years

## RECYCLING

According to the Kentucky Division of Waste Management, Kentuckians recycled 32.2 percent of common household recyclables in 2012 (e.g., aluminum, cardboard, steel, plastic, newspaper, glass, and paper). They also recycled 36.8 percent of all municipal solid waste in 2012, which includes sludge, concrete, compost, and asphalt in addition to the common household recyclables. As one can see in the figure, the percentage of generated waste that is recycled has climbed steadily over the last two decades.

**Recycling Rates, Kentucky and the U.S., 1994-2012**  
(As a Percentage of Waste Generated in Kentucky)

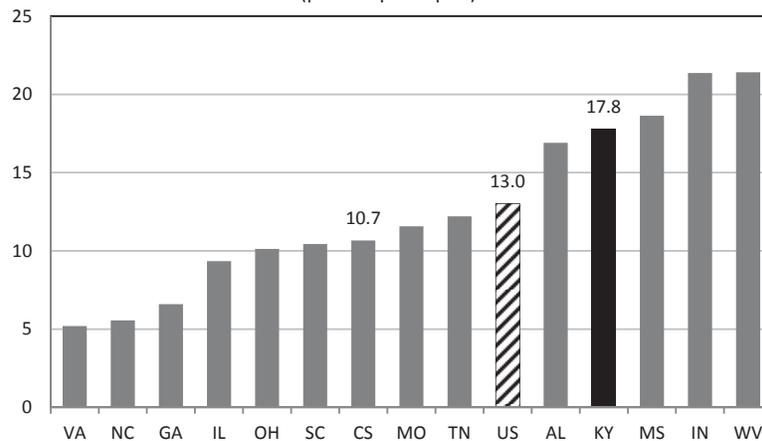


Source: Kentucky Division of Waste Management, Annual Report, Fiscal Year 2013

## TOXIC RELEASES

Toxic pollutants can cause cancer or other serious health effects, such as reproductive or birth defects, as well as adverse ecological and environmental consequences. The Environmental Protection Agency provides data to help communities identify chemical disposal facilities and other toxic release patterns that warrant public vigilance. Combined with hazard and exposure information, these data can be valuable in risk identification. Given that toxic releases are often byproducts of the manufacturing process, it is not surprising that Kentucky, which is home to an above-average manufacturing base, reported 17.8 pounds of toxic releases per capita in 2012, an estimate that exceeds the national average and most peer states. Kentucky, however, lags Mississippi (18.6 pounds), Indiana (21.4), and West Virginia (21.4), among the competitor states.

**Toxic Chemicals Disposed of or Otherwise Released, 2012**  
**Kentucky, Competitor States, and the U.S.**  
 (pounds per capita)

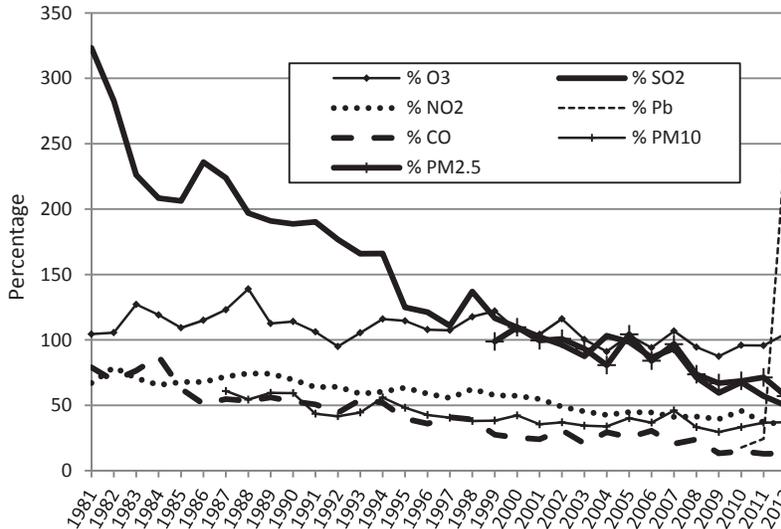


Source: U.S. Environmental Protection Agency, TRI Explorer  
 Note: CS is the weighted average of the competitor states.

## AIR QUALITY

Public health is inextricably linked to the quality of the air we breathe. Since adoption of the Clean Air Act in 1970, dramatic reductions in emissions have been achieved. To that end, the state operates and maintains 109 air monitoring units located at 34 stations distributed across Kentucky to measure ambient air quality and determine whether pollutant concentrations remain within EPA established limits; most of these monitoring units are located near high population areas or known sources of air pollution. Data from this monitoring determine attainment of National Ambient Air Quality Standards (NAAQS) as established by the U.S. Environmental Protection Agency. The figure below shows air quality trends from 1981-2012. While individual pollutants oscillate from year to year, overall the trend shows a decline in pollution levels. The pollutants are shown in terms of percentage of the NAAQS because the different pollutants are measured in different scales—which makes direct comparison difficult. The pollutants shown in the figure are Ozone (O<sub>3</sub>), Sulfur Dioxide (SO<sub>2</sub>), Nitrogen Dioxides (NO<sub>2</sub>), Carbon Monoxide (CO), Particulate Matter (PM<sub>10</sub>), Fine Particulate Matter (PM<sub>2.5</sub>), and Lead (Pb). Lead levels spiked in 2012 because of a single source that has since been resolved.

**Kentucky Air Quality Trends, 1981 to 2012**  
(percentage of current NAAQS)



Source: Kentucky Energy and Environment Cabinet, Division for Air Quality



## OVERVIEW

**K**ENTUCKY'S POOR HEALTH STATUS HAS ECONOMIC EFFECTS and consequences. These health challenges, which are well documented, provide health advocates and public health officials with a compelling *raison d'être*. Our chronic disease at-risk rates are high (64%), a high percentage of adults smoke (29%), nearly one-third are obese (31%), and we typically don't get enough exercise. And generally speaking, Kentucky's health behaviors and health outcomes are worse than both the competitor states as a group as well as the U.S. overall.

And sadly, it's not just the adults—Kentucky children and teens have one of the highest obesity rates in the nation and are more likely to smoke, portending a future we can ill afford. The implications are evidenced by Kentucky's 45th ranking in *America's Health Rankings 2013*, which delineates our high rates of chronic disease, disability, and health care costs.

According to recent news reports about Kentucky's online health exchanges which were launched as part of the Affordable Care Act, an increasing number of Kentuckians are obtaining insurance—either from Medicaid or a private insurer. Yet, even with health insurance, if healthy behaviors are not more widely adopted, Kentucky will continue to suffer from the ill-effects of poor health outcomes, which include premature death, lower workforce participation rates, higher public assistance costs, and less-than-optimal worker productivity.

## RISK BEHAVIORS AND CHRONIC DISEASE

According to the Centers for Disease Control and Prevention (CDC), more than 75 percent of health care costs are due to chronic conditions such as heart disease, cancer, stroke, diabetes, and arthritis. Many patients have multiple chronic conditions and their care costs up to seven times as much as those with one chronic condition. Much of the chronic disease is caused by four *preventable* health risk behaviors—lack of exercise, poor nutrition, smoking, and heavy alcohol consumption. When compared to the U.S. as well as states that are widely considered to be Kentucky’s competitors for economic development prospects, Kentuckians are more likely to smoke, be obese, and not engage in regular physical activity—but are slightly less likely to be heavy drinkers.

### Four Risk Behaviors that Contribute to Chronic Disease, U.S., Competitor States, and Kentucky, 2011-2012

Adults, 18 and Older	US (%)	CS (%)	KY (%)
Current Smoker	19*	22*	29
Obese	28*	30	31
Lack of Physical Activity	24*	26*	30
Heavy Alcohol Consumption	6*	6	5

*Source: Authors' analysis of data from Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System Survey Data, Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011-2012*

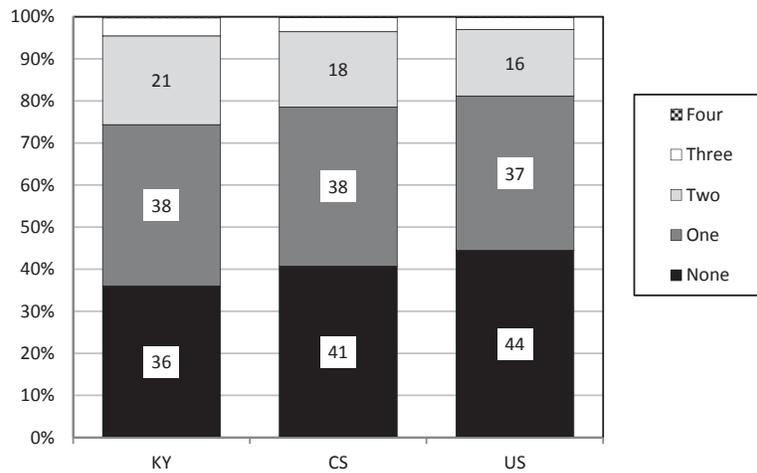
*Note: The competitor states are AL, GA, IL, IN, MO, MS, NC, OH, SC, TN, VA, & WV.*

*\*These percentages are statistically different from the Kentucky percentages (alpha=.05).*

## NUMBER AT RISK FOR CHRONIC DISEASE

Overall, one-quarter of Kentucky adults exhibit multiple chronic disease causing behaviors. While 36 percent have none of the risk factors of smoking, obesity, inactivity, or heavy drinking, and only 38 percent have one, 21 percent have two, 4 percent have three, and 0.20 percent exhibit all four. Much of chronic disease is caused by these four risk factors and 75 percent of health care costs are due to chronic conditions such as heart disease, cancer, stroke, diabetes, and arthritis. Compared to the competitor states and the U.S., adults in Kentucky are more likely to have at least one chronic disease risk factor.

**Number of Chronic Disease Causing Behaviors, 2011-12,  
Kentucky, Competitor States, and the U.S.**  
(percent of total adults)

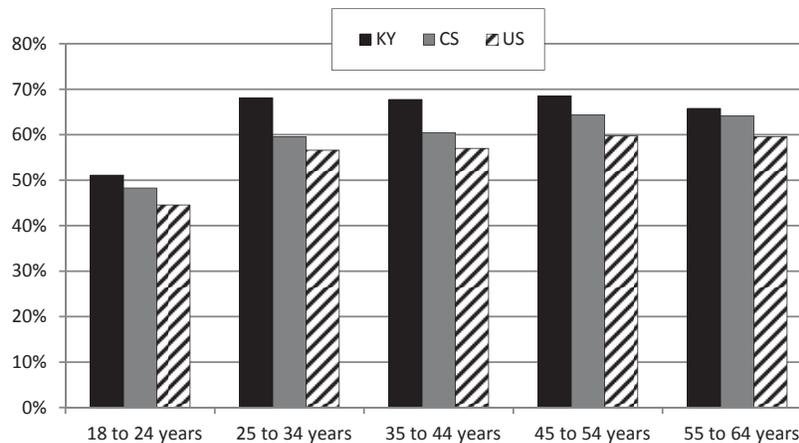


Source: Author's analysis of Behavioral Risk Factor Surveillance System data

## CHRONIC DISEASE RISK BY AGE GROUP

Over 64 percent of Kentucky adults demonstrate at least one of the four behaviors that put them at risk of developing a chronic disease—smoking, obesity, physical inactivity, or heavy alcohol consumption—compared to 59 percent in the competitive states and 56 percent in the United States. These rates have been consistent and stable for at least the last decade—an indication of how difficult it is to change chronic disease causing activities, not only in Kentucky but across the United States. And in Kentucky, the uninsured—currently about 15 to 16 percent of the population—are more likely to be at risk of developing at chronic disease (76%) than the insured (60%). The chronic disease risk does not change much across the age groups for those 25 and older. In Kentucky, nearly 70 percent of adults in the prime working age group—25 to 54 years old—are at risk of developing a chronic disease.

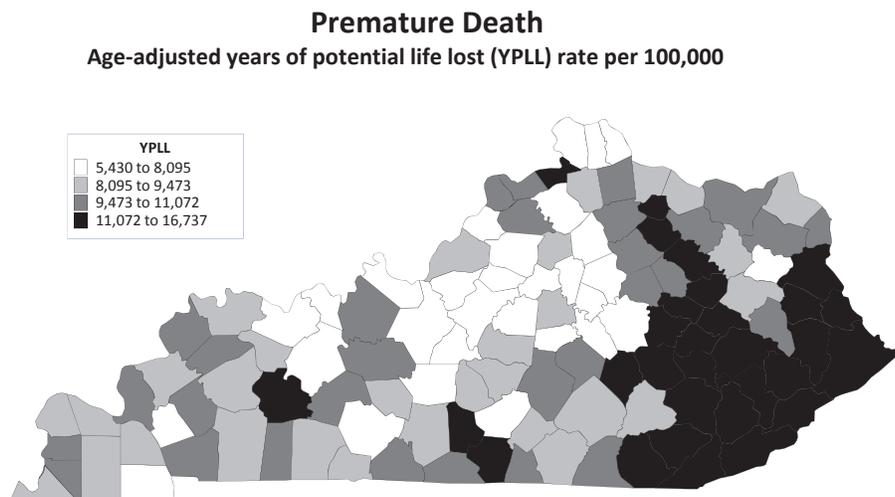
**Chronic Disease Risk by Various Age Groups,  
Kentucky, Competitor States, and the U.S.**  
(percent of individuals at risk for chronic disease, 2011-2012)



Source: Author's analysis of Behavioral Risk Factor Surveillance System data

## PREMATURE DEATH

These county-level estimates of premature death are indicative of the population's overall health status. Premature deaths occur before a person reaches an expected age, which in this case is 75 years old. The belief is that many of these deaths are preventable. The numbers represent the potential years of life lost due to premature death—adjusted to facilitate comparisons across all U.S. counties. The data categories in the map below reflect quartiles, or four groups of about 30 counties each. According to the County Health Rankings report, the years of potential life lost measure (YPLL) “is age-adjusted to the 2000 U.S. population to allow comparison between counties and is reported as a rate per 100,000 people.” The results of these calculations are shown in the map below, with the highest YPLL values in counties of Eastern Kentucky.

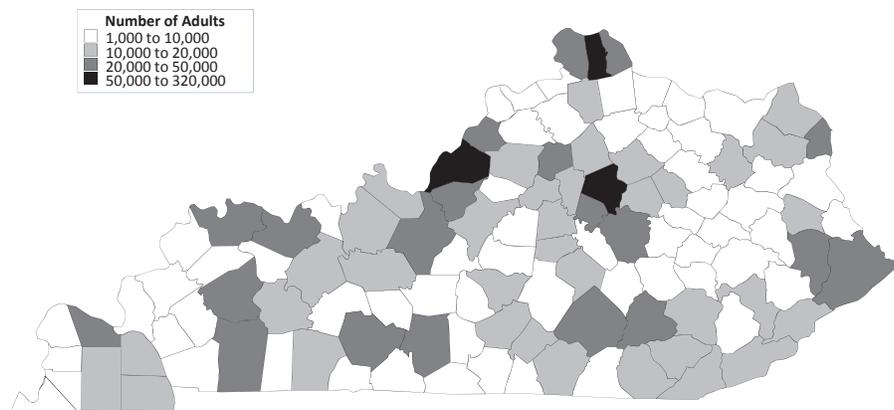


Source: Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, County Health Rankings 2013, [www.countyhealthrankings.org](http://www.countyhealthrankings.org)

## CHRONIC DISEASE BY COUNTY: NUMBER

As we indicated in the discussion of chronic disease on page 79, one-quarter of Kentucky adults exhibit multiple chronic disease causing behaviors. These behaviors or resulting outcomes include smoking, obesity, inactivity, and heavy drinking. We estimate that 38 percent of Kentucky adults exhibit one of these, 21 percent have two, 4 percent have three, and 0.20 percent exhibit all four. The map below and the one on the next page illustrate different facets of this problem. Because most of the state's population live in the urban triangle region, the vast majority of the people at risk for chronic disease are concentrated in this region—even though they represent a comparatively lower percentage of the population in these counties. When developing approaches and allocating resources to address chronic disease across Kentucky, it is important to consider the sheer number at risk as well as the percentage. The categories reflect quartiles, or roughly four equal groups of counties.

### Kentucky Adults At Risk for Chronic Disease, 2009-2010

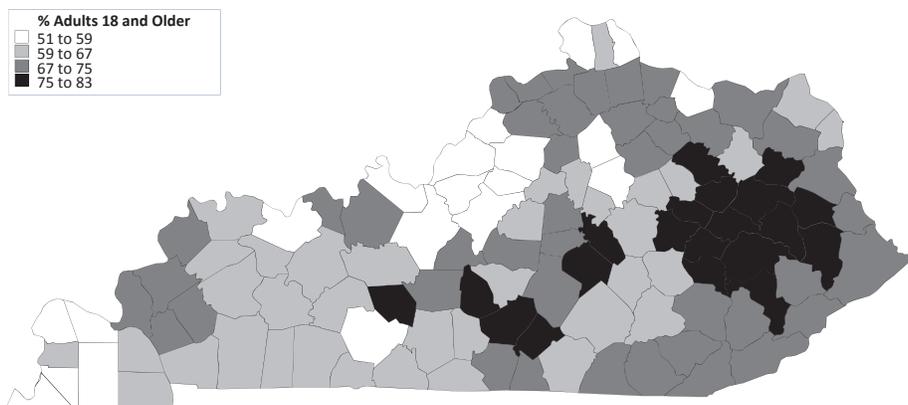


Source: Author's analysis of CDC Behavioral Risk Factor Surveillance System Data, various years

## CHRONIC DISEASE BY COUNTY: PERCENTAGE

A very different picture of chronic disease is shown on this map. While the map on the previous page shows that the absolute number of those at risk for chronic disease is relatively small in Eastern Kentucky, it is relatively large when viewed as a percentage of the county population. Likewise, the number at risk in the urban triangle is quite large, but it is comparatively small as a percentage of the population. Similar to the map on the previous page, the four categories represent quartiles.

### Kentucky Adults At Risk for Chronic Disease, 2009-2010

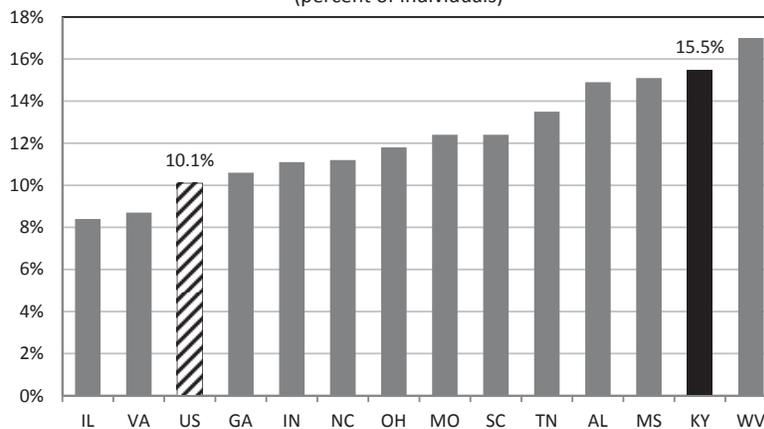


Source: Author's analysis of CDC Behavioral Risk Factor Surveillance System Data, various years

## DISABILITY

The Census Bureau asks six questions to determine the types and prevalence of disabilities. They include the following: Hearing Disability—Is this person deaf or does he/she have serious difficulty hearing?; Visual Disability—Is this person blind or does he/she have serious difficulty seeing even when wearing glasses?; Cognitive Disability—Because of a physical, mental, or emotional condition, does this person have serious difficulty concentrating, remembering, or making decisions?; Ambulatory Disability—Does this person have serious difficulty walking or climbing stairs?; Self-Care Disability—Does this person have difficulty dressing or bathing?; and, Independent Living Disability—Because of a physical, mental, or emotional condition, does this person have difficulty doing errands alone such as visiting a doctor’s office or shopping? Kentucky has the nation’s second highest 2012 rate of disability (15.5%) among working-age adults 18 to 64 years old. The U.S. average is 10.1 percent and the competitor states average is 11.3 percent. In 2012, the prevalence of the six disability types among persons between 18 and 64 in Kentucky was: Visual—2.6 percent; Hearing—3.1 percent; Ambulatory—8.6 percent; Cognitive—6.8 percent; Self-Care—2.8 percent; and Independent Living Disability—5.8 percent.

**Disabled Individuals 18 to 64 Years, 2012**  
**Kentucky, Competitor States and the U.S.**  
 (percent of individuals)



Source: 2012 American Community Survey 1-Year Estimates

## YOUTH ALCOHOL AND DRUG ABUSE

A range of behavioral risks can compromise the health and well-being of young people. Here we illustrate trends in two such behaviors. While down sharply in recent years, a disturbing share of Kentucky high school students—25 percent of males and 21 percent of females—still report episodic heavy drinking (five or more drinks of alcohol in a row within a couple of hours on at least one day during the 30 days before the survey). The national rates are somewhat lower, but there is not a statistically significant difference between Kentucky and the U.S. The percentage of Kentucky youth who reported using marijuana one or more times in the past month is lower than the U.S. percentages of 20.1 percent for females and 25.9 percent for males—but also are not statistically significantly different from the Kentucky rates. Importantly, measures of youth smoking, which we do not illustrate here, suggest Kentucky youth are turning away from the addiction most smokers acquired as teens. Overall, 12 percent of the state’s youth, compared with 6 percent nationally, reported smoking cigarettes on 20 or more days in the past 30 days in 2011, compared to 28 percent in 1997.

**Percent of Kentucky High School Students\*  
Who Abused Alcohol\*\* or Used Marijuana in  
Past 30 Days, Selected Years**

Year	Alcohol Abuse**		Marijuana Use***	
	Male	Female	Male	Female
1993	41	27	19	11
1997	43	30	34	23
1999	40	34	26	22
2001	40	31	30	22
2003	33	32	22	20
2005	27	23	18	13
2007	29	26	17	15
2009	27	21	20	13
2011	25	21	21	17

\* Grades 9-12

\*\* Had five or more drinks of alcohol in a row on one or more days

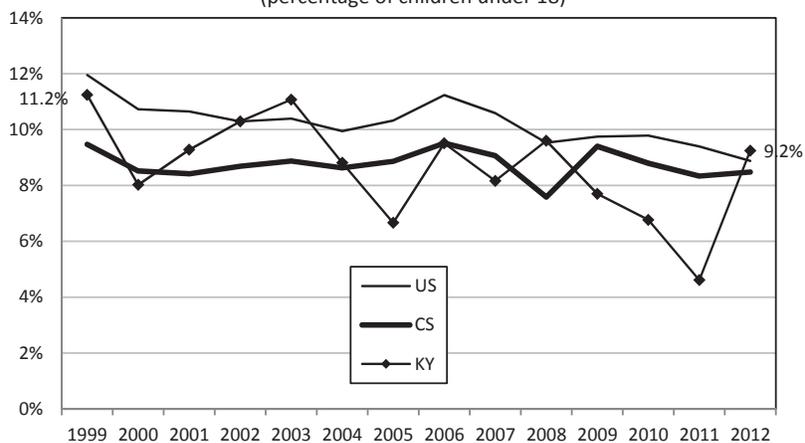
\*\*\* Used marijuana one or more times

Source: Centers for Disease Control and Prevention

## HEALTH INSURANCE COVERAGE: CHILDREN

An estimated 92,800 Kentucky children under 18 years old were not covered by health insurance in 2012, or about 9.2 percent of children. The percentage of uninsured children, which was 11.2 percent in 1999, declined steadily until 2011 as children were added to the Kentucky Children's Health Insurance Program (KCHIP) or Medicaid. The Kentucky Children's Health Insurance Program is free or low-cost health insurance for children. KCHIP is for children younger than 19 who do not have health insurance and whose family income is less than 200 percent of the federal poverty level. For example, a family of four can earn up to \$47,100 a year and qualify for KCHIP. The percentages we cite are from the U.S. Census Bureau and represent children *under* 18, and therefore do not include those who are 18 years old. The percentage of uninsured children (under 18) in the competitor states and U.S. are 8.5 and 8.9 percent (2012), respectively. Obviously, the implementation of the Affordable Care Act could change these numbers significantly.

**Children without Health Insurance Coverage,  
Kentucky, Competitor States, and the U.S., 1999-2012**  
(percentage of children under 18)

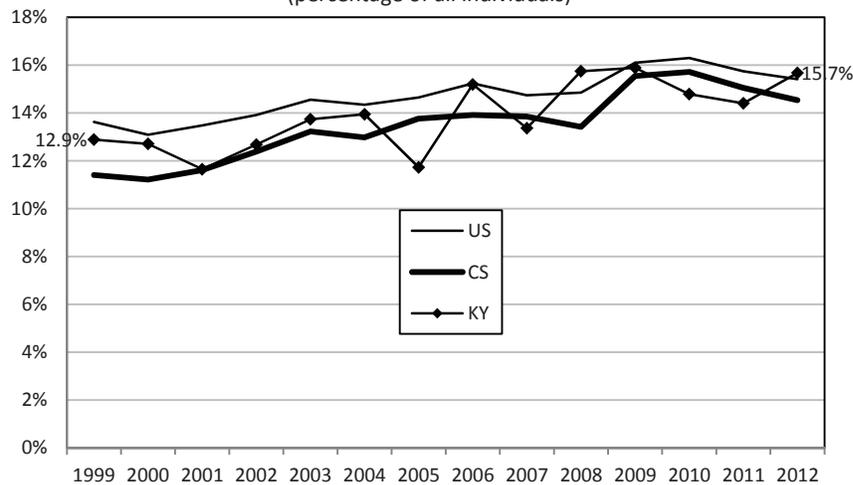


Source: U.S. Census, Health Insurance Historical Tables - HIB Series

## HEALTH INSURANCE COVERAGE: EVERYONE

Though 48 million Americans were without health insurance in 2012, both the number and the percentage of uninsured people declined from the prior year. In Kentucky, 682,000, or 15.7 percent of the total state population, did not have health insurance in 2012. Medicaid has historically played a key role in providing health coverage for disproportionately poor Kentuckians, insuring an estimated 17.5 percent of the population here in 2012, compared to about 15.2 percent in the competitor states and 16.4 in the U.S. The implementation of the Affordable Care Act has just begun but early indications suggest many Kentuckians are joining Medicaid.

**Individuals without Health Insurance Coverage,  
Kentucky, Competitor States, and the U.S., 1999-2012**  
(percentage of all individuals)



Source: U.S. Census, Health Insurance Historical Tables - HIB Series

## ORAL HEALTH

Nationally, Kentucky had the fifth highest estimated percentage of edentate persons, those who have lost all their natural teeth due to tooth decay or gum disease, among working-age adults (age 18 to 64) in 2012, and the sixth highest percentage of older adults (age 65 and older). Also, Kentucky had the fifth highest percentage of edentate adults aged 18 and older. Kentucky ranks seventh for adults who have lost at least one permanent tooth due to tooth decay or gum disease and sixth for adults who have lost 6 or more teeth. Across the board Kentucky's oral health indicators are worse than the U.S. and competitive state averages, including the percentage of Kentucky adults who have visited a dentist or dental clinic within the past 12 months.

### Oral Health Indicators, U.S., Competitor States, and Kentucky, 2012 (percent of individuals)

Adults, 18 and Older	US (%)	CS (%)	KY (%)
Missing at least one permanent tooth	45*	48*	52
Missing 6 or more teeth	16*	19*	23
Missing all teeth	5*	7*	9
Visited dentist in last 12 months	65*	64*	60
Working Age, 18 to 64			
Missing at least one permanent tooth	39*	42*	45
Missing 6 or more teeth	10*	13*	16
Missing all teeth	3*	4*	5
Visited dentist in last 12 months	65*	65*	62

Source: Author's analysis of data from Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System Survey Data, Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2012

Note: The competitor states are AL, GA, IL, IN, MO, MS, NC, OH, SC, TN, VA, & WV.

\*These percentages are statistically different from the Kentucky percentages ( $\alpha=.05$ ).

## OVERVIEW

**K**ENTUCKY RECEIVED A “C” ON THE 2013 REPORT CARD FOR *America’s Infrastructure*, which is produced every four years by the American Society of Civil Engineers (ASCE); the U.S. got a “D+.” The engineers evaluate 16 separate categories (i.e., aviation, bridges, dams, drinking water, energy, hazardous waste, inland waterways, levees, ports, public parks and recreation, rail, roads, schools, solid waste, transit, and waste water) according to capacity, condition, funding, future need, operation and maintenance, public safety and resilience.

They highlight that Kentucky has 277 high hazard dams but only 5 percent have an Emergency Action Plan, that \$5 billion is needed to maintain and upgrade the drinking water systems and \$2.1 billion is needed for wastewater systems, that Kentucky has 1,244 structurally deficient bridges, and 34 percent of our major roads are poor or mediocre in quality. And a separate assessment of Kentucky’s public school facilities conducted in 2011 by the joint team of Parsons Commercial Technology Group and MGT of America, found \$3.7 billion in “current deficiencies that include condition needs, deferred maintenance needs, educational suitability needs and technology readiness needs.”

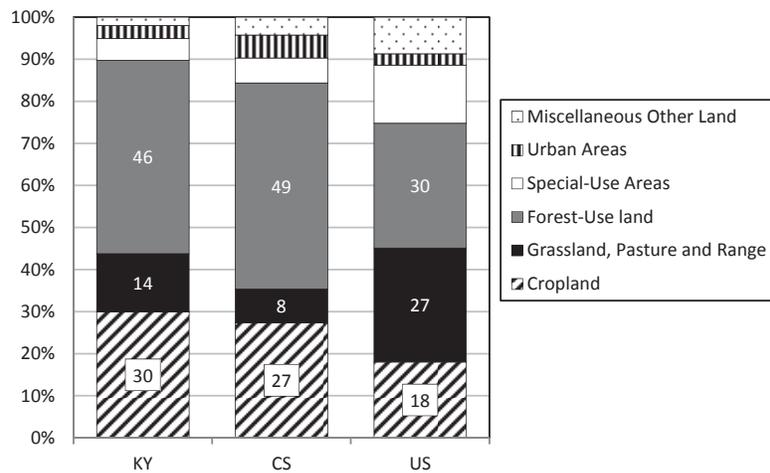
We include data in this section on how Kentucky’s land is used (e.g., urbanized or forest), the state of community water systems, the nature of solid waste disposal, road conditions and characteristics, bridge conditions, and the capacity of the newest member of the infrastructure family—high-speed Internet or broadband.

Maintaining—let alone expanding—Kentucky’s existing infrastructure, whether school buildings or roads, requires a tremendous amount of money. And in today’s budgetary environment, finding the necessary funds is challenging. While the ASCE gave Kentucky a higher grade than the U.S., a “C” as opposed to a “D+,” generating the resources to maintain and expand the state’s basic infrastructure will not only continue to be a challenge, it will also be an important factor in keeping the state economically competitive for all forms of industry.

## LAND USE

Land use in a state or region clearly has implications for its basic infrastructure needs. The U.S. Department of Agriculture, Economic Research Service has been a source of major land use estimates in the United States for over 50 years. Produced at roughly 5-year intervals since 1945, with the most recent data from 2007, the Major Land Uses (MLU) series is the longest running, most comprehensive accounting of all major uses of public and private land in the United States. The chart below shows that the vast majority of land in the U.S. falls into one of three categories: cropland, forest, or grassland/pasture/range. In Kentucky, these three categories account for about 90 percent of the total land; this is a higher percentage than the competitor states and the U.S. Forest-use land accounts for the largest category in Kentucky, 46 percent. When thinking about Kentucky’s physical environment, factors that affect trees and forests—whether as a by-product of economic activity, urban development, or invasive species—have the potential to profoundly influence the aesthetic qualities of Kentucky’s natural beauty.

**Major Uses of Land, 2007,  
Kentucky, Competitor States, and the U.S.**  
(percent of total land area)

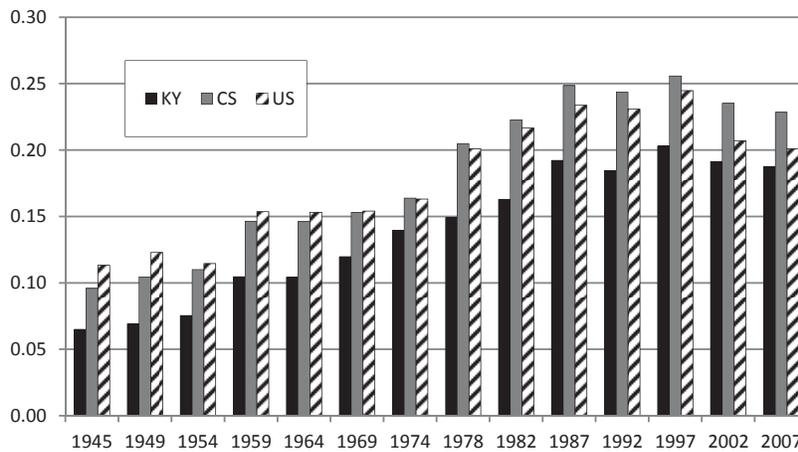


Source: U.S. Department of Agriculture, Economic Research Service

## URBANIZATION

Kentucky is viewed by many as a “rural” state. And, given that nearly 42 percent of the population lives in an area defined by the U.S. Census Bureau as “rural” (2010 Census), this perception of Kentucky is not without merit. By comparison, approximately 28 and 19 percent of the population in the competitor states and the U.S., respectively, live in rural areas. However, the difference between Kentucky and the competitor states, and the U.S., is not as stark when comparing urban acres per capita. Kentucky still lags the competitor states and the U.S. on this measure of urbanization, but the gap smaller. In 2007, the most recent year for which data are available, Kentucky had 0.19 urban acres per capita, compared to 0.23 in the competitor states and 0.20 in the U.S. The manner in which communities develop and grow can, and does, have important public finance implications—particularly with regard to infrastructure needs.

**Urban Acres Per Capita, Selected Years,  
Kentucky, Competitor States, and the U.S.**

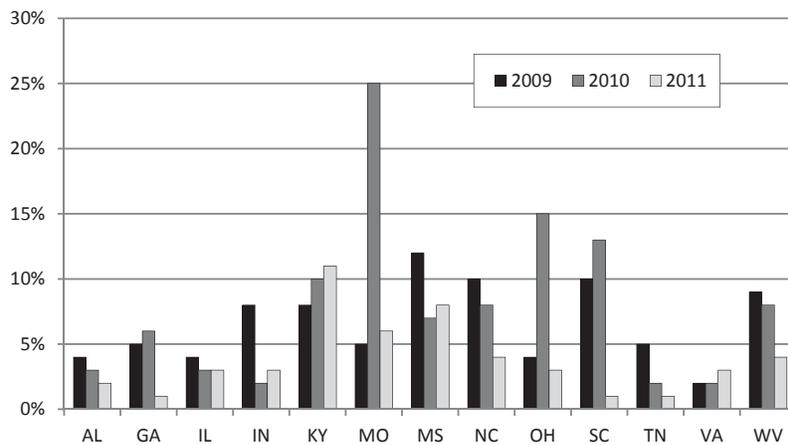


Source: U.S. Department of Agriculture, Economic Research Service

## WATER QUALITY

The United States enjoys one of the safest and most reliable supplies of drinking water in the world. The Safe Drinking Water Act of 1974 sought to preserve the nation’s water supply while maintaining high standards for quality. Most Americans get their water from a community water system (CWS), 51,356 of which served approximately 299 million people nationally in 2011, according to the Environmental Protection Agency. However, just 8 percent of those systems (4,221) served 82 percent of the population. In Kentucky and beyond its border, about 462 public drinking water systems serve an estimated 4.5 million people. Of these CWSs, approximately 12 percent or 55 systems reported health-based violations in 2011. Nationally in 2011 about 3 percent of the systems supplying water to 6 percent of the population reported health-based violations. Importantly, the percent of Kentuckians served by systems without a health-based violation has grown from approximately 63 percent in the early 1990s to 89 percent in 2011. Since 1998, data show that nearly all Kentuckians can receive water from a system that has not reported a potential health violation.

**Community Water Systems (CWS) with Reported Health-Based Violations, Kentucky and Competitor States**  
(percent of the state population served by a CWS with a violation)



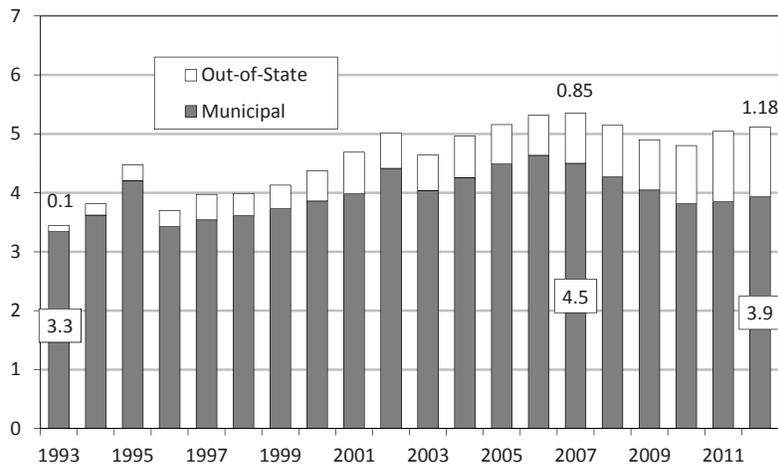
Source: U.S. Environmental Protection Agency, *Drinking Water and Ground Water Statistics*, various years

## SOLID WASTE DISPOSAL

In 1992 the Kentucky General Assembly set the ambitious goal of reducing the amount of municipal solid waste (MSW) deposited in Kentucky landfills in each subsequent year—but waste continues to mount. While the total amount of solid waste deposited in Kentucky landfills has been trending down since its peak of 5.35 million tons in 2007, the amount deposited since then has been trending upward and last year was almost 50 percent higher than in 1993. The majority of that total was MSW, which has increased 18 percent. A growing portion of the total, however, is solid waste from out-of-state sources, which reached a record high of 1.19 million tons in 2011, a significant increase since the early to mid-1990s. As a result of this growing trend, out-of-state solid waste constitutes about 23 percent of the total amount of waste deposited in Kentucky’s landfills—compared to less than 5 percent in the early to mid-1990s.

**Solid Waste Disposed in Kentucky Landfills,  
1993-2012**

(millions of tons)

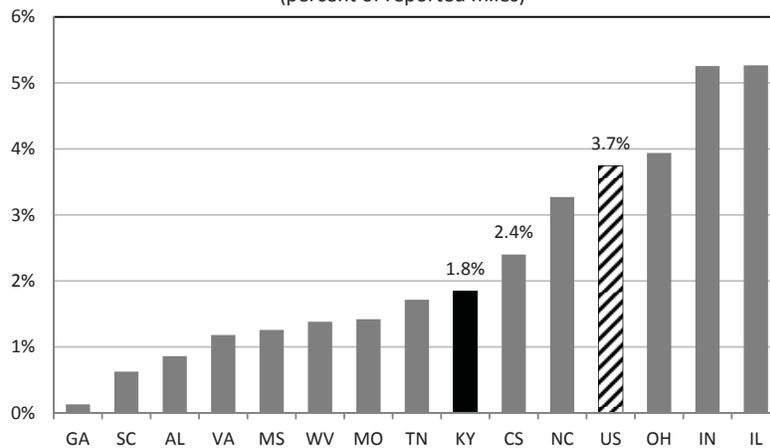


Source: KY Division of Waste Management

## ROAD CONDITION

Ideas, innovation, and intellectual capital form the foundation of the evolving knowledge economy, but Kentucky, like most states, is still centered on making and growing things, extracting and transporting raw materials, and moving people and products to markets and workplaces. Thus, the traditional transportation infrastructure—the road system—is still an essential piece of the economic development puzzle. Around 24 percent of Kentucky’s economy is in goods-producing industries that are highly dependent on transportation, compared to about 18.5 percent nationally. And even as the nation’s economy evolves over the next few decades, the movement of freight along the country’s highways, a quintessential “old economy” activity, will continue to grow. An extensive and efficient transportation system, both now and in the future, can facilitate lower industry production costs and consumer prices, widen access to commodities for businesses and consumers, and broaden the pool of workers for business while creating more job opportunities. Whether a road is in poor condition depends on pavement roughness, with only a small percentage (1.8%) of Kentucky’s roads in poor condition.

**Roads in Poor Condition, 2011**  
**Kentucky, Competitor States and the U.S.**  
 (percent of reported miles)

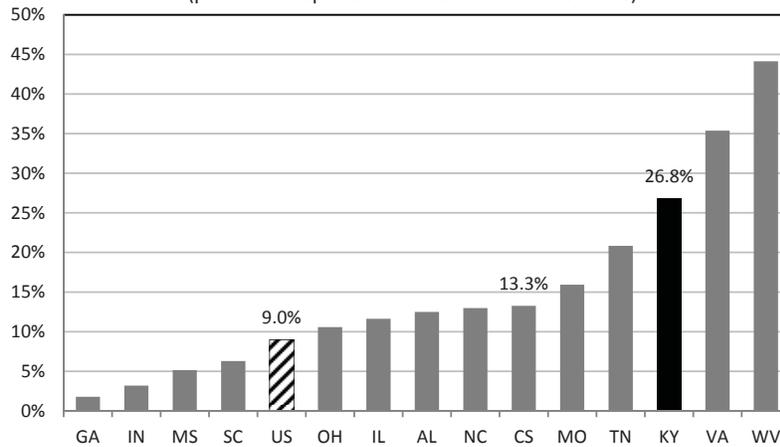


Source: Author’s calculations based on Table HM-64, Highway Statistics 2011, Federal Highway Administration. CS is the weighted average of the competitor states.

## NARROW ROADS

This is a measure of lane width for “other principal arterial” roads, not interstates, other freeways, or expressways. A narrow lane is one that is less than 12 feet wide. Obviously, the more narrow the lane, the more difficult it is to move products and material with large trucks. Consequently, economic development decisions can be affected by the state and condition of the transportation infrastructure. Over one-quarter (26.8%) of Kentucky’s other principal arterial roads are narrow, compared to about one-tenth (9%) nationally.

**Narrow Rural Roads, 2011**  
**Kentucky, Competitor States and the U.S.**  
 (percent of reported miles less than 12 feet wide)

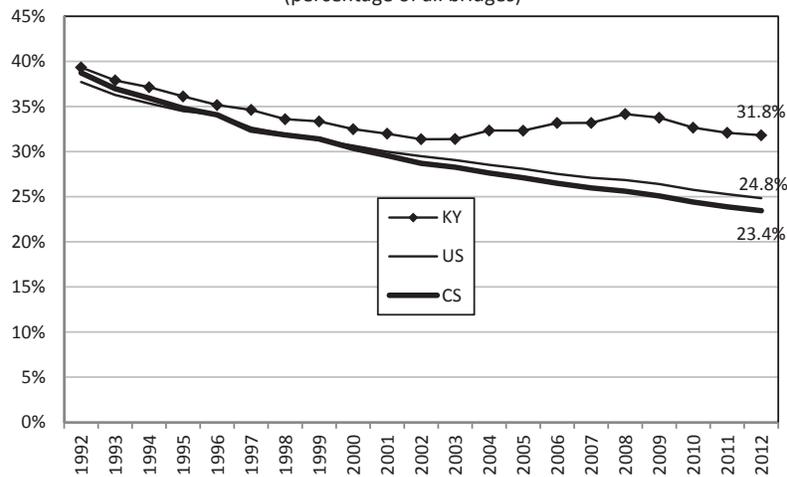


Source: Author's calculations based on Table HM-53, Highway Statistics 2011, Federal Highway Administration. CS is the weighted average of the competitor states.

## BRIDGES

There are just over 14,000 bridges in Kentucky, and nearly one-third of them (31.8%) are considered either structurally deficient or functionally obsolete—a higher percentage than the competitor states (23.4%) and the U.S. (24.8%). Of Kentucky’s 4,463 problem bridges, 1,244 are structurally deficient and 3,219 are functionally obsolete. Among all states in 2012, Kentucky had the twelfth highest percentage.

**Bridges that are Structurally Deficient or Functionally Obsolete, Kentucky, Competitor States, and the U.S.**  
(percentage of all bridges)



Source: U.S. Department of Transportation, Federal Highway Administration

## COMMUTING

In 2012 an estimated 76 percent of Americans 16 years and older drove to work alone, which was near an all-time high. By comparison, carpooling is below 10 percent and public transportation accounts for about 5 percent. The rest use some other form of transportation, like biking, or work from home. Reflecting both economic centers of gravity as well as the state of the infrastructure network, the map below illustrates Kentucky's county-level average travel times to work. Kentucky's statewide average of 22.6 minutes is less than the U.S. average of 25.4 minutes (based on 5-year pooled 2007-2011 data). The counties in the map are divided into one of three categories: below the Kentucky average; above the Kentucky average but below the U.S. average; and above the U.S. average. Most of the counties above the U.S. average are in Eastern Kentucky or situated around Hardin County in the central part of the state. Fulton County, the state's westernmost county, has the lowest average travel time at 16 minutes while Pendleton County, located south of Cincinnati, is the highest at 37 minutes.

**Mean Travel Time to Work (minutes), Workers Age 16+,  
2007-2011**



Source: American Community Survey, 2007-2011

## BROADBAND

Research shows that because the Internet permeates so many aspects of our lives, access to and use of it appear to be increasingly important for anyone becoming politically informed, socially integrated, and economically successful in the Information Age. Studies suggest that “Internet use increases employment and income, enhances consumer welfare, and promotes civic engagement,” (NTIA, 2013), and that enhancing the nation’s broadband infrastructure can improve innovation, entrepreneurship, and productivity (Brookings, 2013). The importance of high-speed Internet access promises to become even more important in the future as online education becomes more firmly rooted. The percentage of Kentucky households with access to a basic level of broadband—defined as download (DL) speed>3.0 mbps and upload speed>0.768 mbps—is about 95 percent. Unfortunately a basic level of broadband speed is no longer sufficient for many important applications. Distance learning, for example, requires a minimum 25 mbps DL for an “ok” experience and 50 mbps for a “good” experience. While 82 percent of U.S. households have access to at least 25 mbps DL, only about 61 percent of Kentucky households have access to this speed.

**Broadband Access and Speed Indicators,  
U.S., Competitor States, and Kentucky, 2012**  
(percent of households)

Area	Broadband Access	DL>3.0 Mbps, UL>0.768 Mbps	DL>10 Mbps	DL>25 Mbps	DL>50 Mbps
US	99.5	98.4	95.8	82.1	78.8
AL	99.6	98.2	94.5	69.9	65.4
GA	99.9	98.7	97.5	85.4	84.4
IL	99.9	99.5	98.3	92.8	83.7
IN	99.9	98.7	97.4	85.3	81.4
<b>KY</b>	<b>98.7</b>	<b>95.3</b>	<b>85.7</b>	<b>60.8</b>	<b>58.3</b>
MS	99.8	96.2	86.5	67.0	57.1
MO	99.5	97.4	92.8	68.2	65.6
NC	99.3	97.4	95.9	86.0	81.2
OH	99.7	99.2	97.5	90.1	90.0
SC	99.8	97.9	95.8	78.9	78.3
TN	99.5	97.7	96.0	82.6	82.2
VA	99.2	97.1	93.5	81.4	79.5
WV	93.2	89.1	74.3	54.2	52.6

Source: National Telecommunications and Information Administration (NTIA) National Broadband Map (NBM), <http://www.broadbandmap.gov/>, current as of December 31, 2012.  
Note: Broadband Access is from either wireline or wireless.

## OVERVIEW

**I**NCREASED ECONOMIC GROWTH—A BIGGER PIE—IS THE KEY TO solving many of America’s most vexing public policy issues. From 1947 to 2012 the U.S. economy grew at nearly 3.25 percent annually, which helped create and sustain the American middle class. Unfortunately, many are less sanguine about the future. The Conference Board, for example, is forecasting growth rates of 1.6 and 2.3 percent for this year and next. Beyond 2014 many economists are forecasting long-term economic growth rates that are well below the historical average.

It is hard to overstate the widespread benefits of robust economic growth. Harvard economist Benjamin Friedman argues that economic growth provides a necessary lubricant that helps loosen the gears of partisan deadlock and facilitates a more cooperative political atmosphere—a necessary condition for solving many of the nation’s most vexing public policy issues. Moreover, many economists agree that increased economic growth is essential for addressing the national debt—perhaps the most ominous public policy issue on the horizon. And while productivity gains and increased growth do not guarantee a stronger middle class—as changes in the income distribution over the last 30 years demonstrate—Berkeley economist Enrico Moretti states that “our material well-being hinges on the continuous creation of new ideas, new technologies, and new products.”

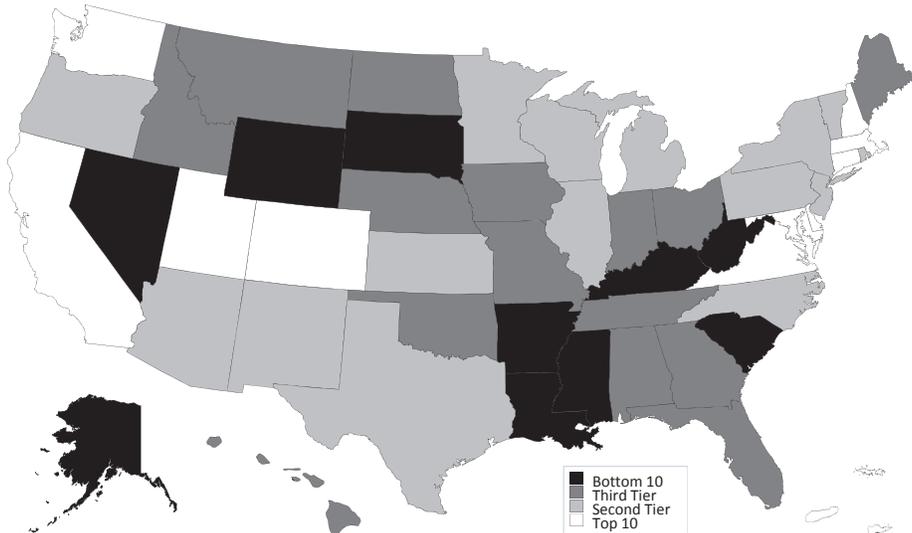
If innovation is a necessary condition for wage and job growth, then the creation of entrepreneurs, commercialization of discoveries, and nurturing of startups are the necessary vehicles for its realization. There are, of course, a number of factors that give rise to innovation—good ideas, adequate finances, and energetic human capital, for example, are all essential factors. Unfortunately, Kentucky does not rank highly on most assessments of innovation and entrepreneurship. For a half century, Kentucky, which ranked 41st in 2012, has lagged behind most states in the number of patents for invention. On the 2013 Milken Institute’s *State Technology and Science Index*, which purportedly measures a state’s capacity to harness and nurture its innovation assets, Kentucky ranks 45th.

Changes in our economy and our society are redefining how we create economic opportunity and build successful enterprises, and compelling critical examinations of how we pursue economic development in Kentucky. Given the importance of young high-growth firms for wage and job growth, it is vital for states, regions, communities, and universities to effectively leverage their assets toward the development of entrepreneurs, creation of startups, and sustaining high-growth enterprises.

## STATE TECHNOLOGY & SCIENCE INDEX

Combining several indicators that reflect a state’s research and development inputs, risk capital and entrepreneurial infrastructure, human capital investments, technology and science workforce, and technology concentration and dynamism, the Milken Institute has ranked the states according to their science and technology prowess in a 2013 report, *State Technology and Science Index: Enduring Lessons for the Intangible Economy*. Kentucky is ranked 45th, which is a few spots higher than its previous ranking of 47th in 2010. The top state is Massachusetts, followed by Maryland, California, Colorado, Washington, Virginia, Utah, Delaware, Connecticut, and New Hampshire.

State Technology and Science Index 2012

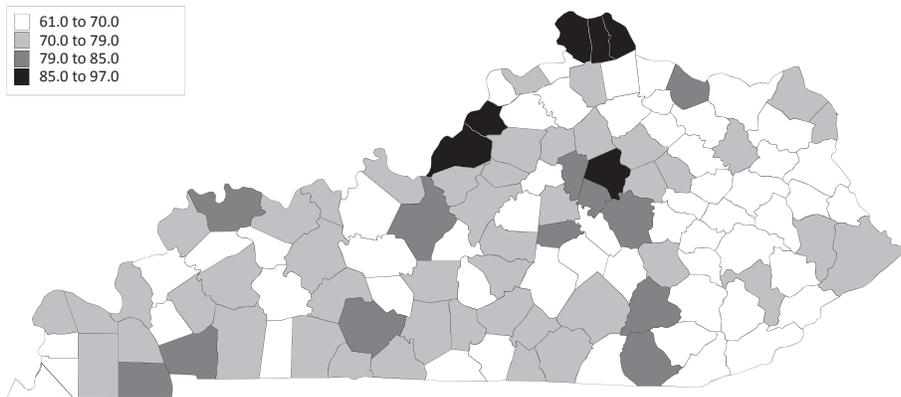


Source: Milken Institute 2012 State Technology and Science Index, April 2013

## COUNTY-LEVEL INNOVATION INDEX

An initiative to develop a county-level “innovation index,” funded by the U.S. Department of Commerce Economic Development Administration and produced by Purdue and Indiana University, ranks Kentucky 49th among the states. The county-level results are illustrated on the map below, with the highest innovation index values anchoring the three angles of the urban triangle—the Louisville area, Northern Kentucky, and Fayette County. The index is based on four broad categories and includes 22 different variables. The four broad categories include Human Capital, Economic Dynamics, Productivity and Employment, and Economic Well-Being. Some of the variables include educational attainment, high-technology employment, broadband adoption, venture capital investments, patent creation, worker productivity, proprietor income, the poverty rate, and per capita income. The highest ranked Kentucky county is Fayette at 92.3. San Mateo County, California—which is Silicon Valley—has the highest value in the United States at 129.3, while Cameron Parrish, Louisiana, has the lowest index value at 53.3. The index is scaled so that 100 is the U.S. average.

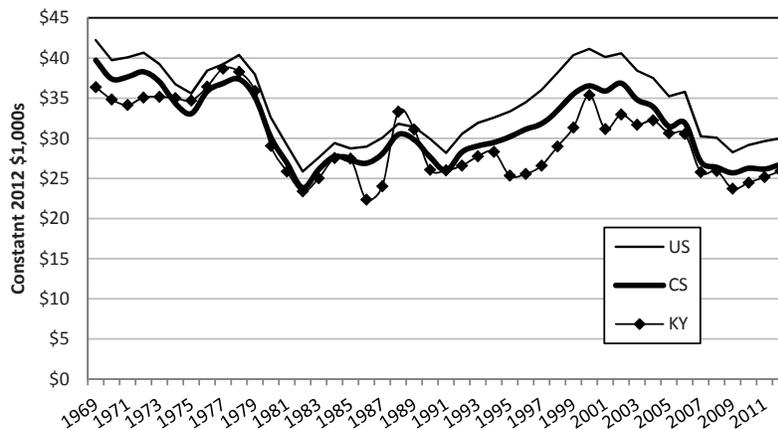
Innovation Index by County



## ENTREPRENEURIAL DEPTH

Entrepreneurship is a particularly promising vehicle for economic development, as reflected in the January 2012 update of the Kentucky Cabinet for Economic Development *Strategic Economic Development Plan*. Entrepreneurs help create new jobs, and generate wealth and new growth. They are innovative users of assets and resources and appear to be a critical mechanism for bringing new ideas and innovations to the marketplace. The depth of entrepreneurship can be gauged by examining the value created by entrepreneurs in a region as measured by the ratio of self-employment income to the number of self-employed workers in an economy. Unlike breadth which measures the number of entrepreneurs in a region, depth examines the value. High-value entrepreneurs clearly earn more, add more value, and enhance regional growth and prosperity more than other entrepreneurs. Kentucky has generally lagged the United States and competitor states in entrepreneurial depth. Since the early 1990s Kentucky's average self-employment income has been below the U.S. and competitor states; in 2012 Kentucky lagged the U.S. and competitor states by \$4,100 and \$820 respectively.

**Average Self-Employment Income,  
Kentucky, Competitor States, and the U.S., 1969-2012**  
(nonfarm proprietor income/nonfarm proprietor employment)

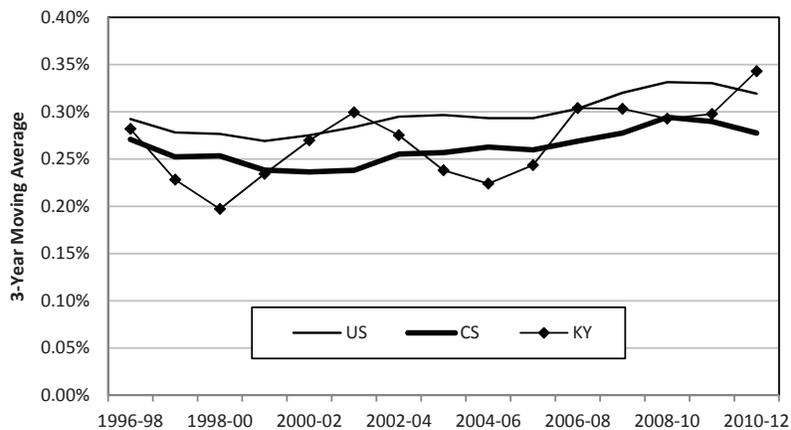


Source: U.S. Department of Commerce, Bureau of Economic Analysis

## ENTREPRENEURIAL BREADTH

Entrepreneurship is integral to the American Dream. Imagination, intelligence, and tenacity can transform a good idea into a thriving business or a global enterprise. The Kauffman Foundation produces an annual Index of Entrepreneurial Activity which is based on monthly data from the Current Population Survey (CPS). According to Kauffman, “capturing new business owners in their first month of significant business activity, this measure provides the earliest documentation of new business development across the country.” In 2012, an average of 0.3 percent of the American adults (20 to 64 years old), or 300 out of 100,000 adults, created a new business each month. While Kauffman presents data for individual years, we use 3-year moving averages because of the volatility of state-level percentages—as evidenced by the Kentucky data in the figure. The 2010-2012 average for the U.S., Kentucky, and Competitor States are 0.32%, 0.34%, and 0.28%, respectively. As illustrated below, the overall trend is slightly upward for each state or collection of states.

**Individuals Creating New Businesses,  
Kentucky, Competitor States, and the U.S., 1996-2012**  
(percent of adults 20-64 creating a new business each month)

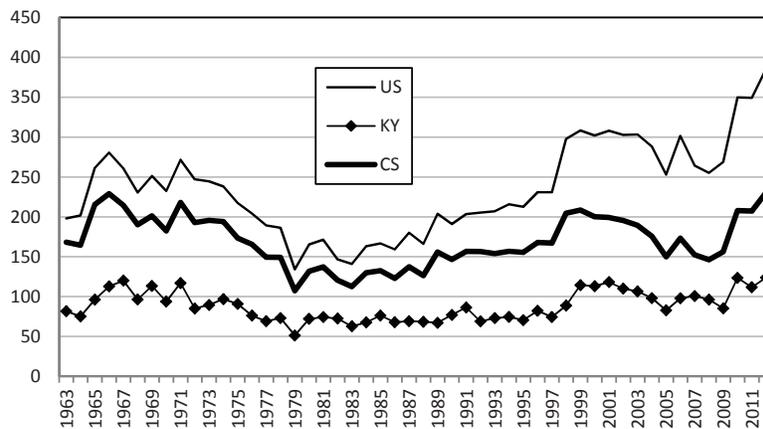


Source: Author's analysis of CPS data provided by Robert W. Fairlie, Kauffman Index of Entrepreneurial Activity

## PATENTS

Innovation, as measured by the number of patents issued, is widely regarded as a measure of a state’s entrepreneurial energy. Research finds that innovation, along with education, has a significant impact on a state’s per capita income. A study by the Federal Reserve Bank of Cleveland shows that states which spawn innovation, as measured by patents, can reap economic rewards that endure for generations. The authors conclude, “A state’s knowledge stocks (as measured by patents and education levels) are the main factors explaining a state’s relative per capita income.” In other words, Kentucky’s much lower-than-average patent stock—which has trailed the U.S. as well as the competitor states for the last 50 years—along with lagging educational attainment rates, are why the state’s per capita income has been languishing at just over 80 percent of the U.S. average for the last several decades.

**Number of Patents,  
Kentucky, Competitor States, and the U.S., 1963-2012**  
(per 1 million population)

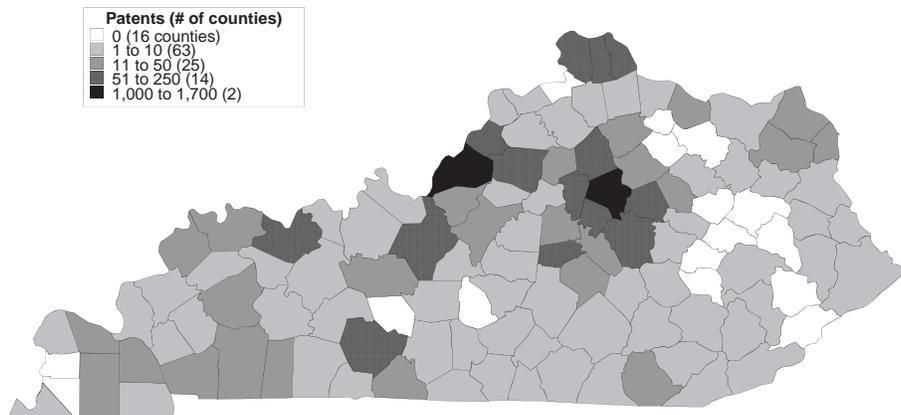


Source: US Patent and Trademark Office and U.S. Census Bureau

## PATENTS BY COUNTY

From 2000 to 2011 Kentucky businesses and individuals acquired 5,236 utility patents, which are patents for invention. Of this total, 2,771 or 53 percent were from two counties: Fayette and Jefferson. The next 14 counties account for 1,635 or 31 percent. The county-level map illustrates the concentrated nature of patent generation in Kentucky.

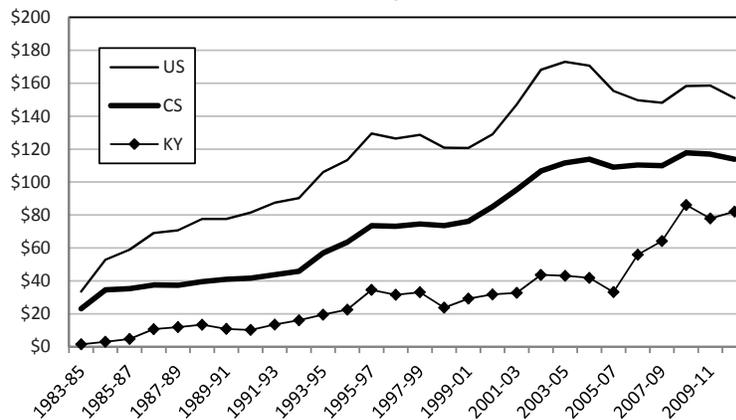
Utility Patents by County, 2000-2011



## SMALL BUSINESS INNOVATION RESEARCH

Small Business Innovation Research (SBIR) and Technology Transfer (STTR) funding is available to companies with 500 or fewer employees; it is designed to stimulate high-technology innovation and facilitate the commercialization of scientific and technological discoveries. According to the National Science Foundation, “a high value indicates that small business firms in a state are doing cutting-edge development work that attracts federal support.” When compared to competitor states and the U.S. average, Kentucky consistently lags behind—evidenced by the \$82 per \$1 million in state gross domestic product during 2010-12. By comparison, the U.S. average was \$151 and the competitor states was \$114.

**Small Business Innovation Research (SBIR)  
& Technology Transfer (STTR) Funding, 1983-2012,  
Kentucky, Competitor States, and the U.S.**  
(SBIR/STTR funding \$/\$1 million GDP)

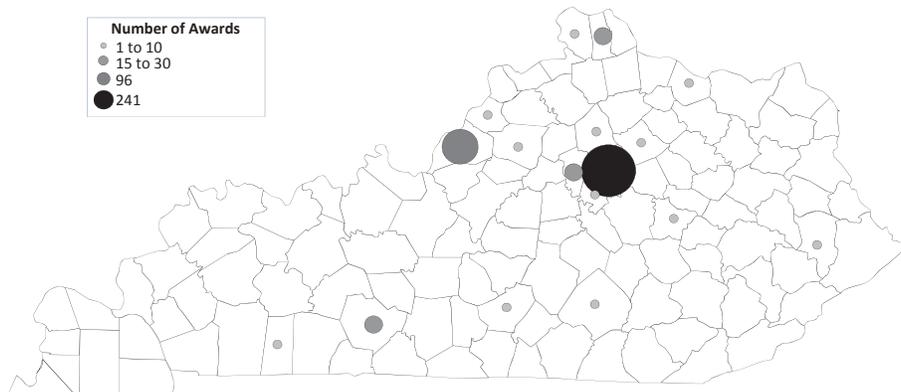


Source: Author's analysis of SBIR/STTR data

## SBIR/STTR AWARDS BY COUNTY

Of all the dollars invested through the SBIR and STTR programs from 1983 to 2012, the majority went to ventures in two counties. There were approximately 440 awards during this time and 240 were in Fayette County, which represents 43 percent of the total funding. Jefferson County was the second highest recipient with 96 awards and around 35 percent of the total funding. Woodford, Kenton, and Warren Counties received 71 awards and 15 percent of the total funds. These five counties account for virtually all of Kentucky's SBIR/STTR awards during this period, which is indicative of the geographic concentration of Kentucky's innovation ecosystem.

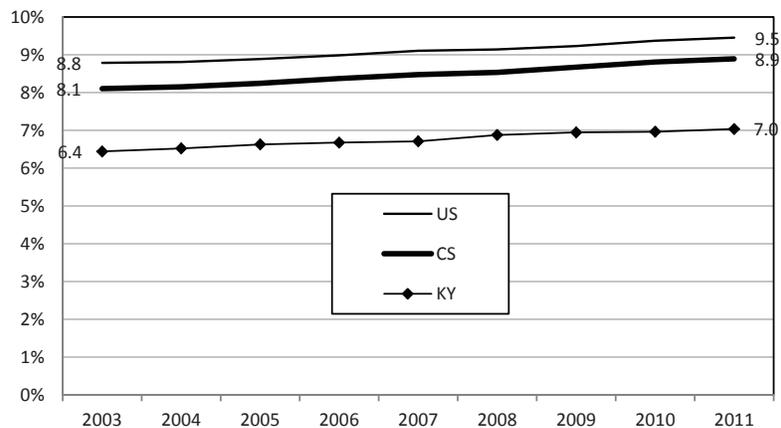
Kentucky SBIR/STTR Awards, by County, 1983-2012



## HIGH-TECHNOLOGY ESTABLISHMENTS

According to the National Science Foundation (NSF), high-technology industries have at least twice the number of scientific, engineering, and technical occupations compared to the average for all industries. These workers have extensive education and training in the sciences, mathematics, and engineering. We use 50 different industries (at the 4-digit NAICS level) to identify high-technology establishments. Using the 46 sectors identified by NSF and four additional identified by the Milken Institute, we calculate the number of high-technology establishments as a percentage of total establishments. Dating back to 2003 Kentucky has consistently trailed the competitor states and the U.S. In 2012, 7 percent of Kentucky establishments could be considered “high-tech,” while the competitor states could boast 8.9 percent and the U.S. 9.5 percent.

**High-Technology Establishments,  
Kentucky, Competitor States, and the U.S., 2003-2011**  
(as a percent of total establishments)

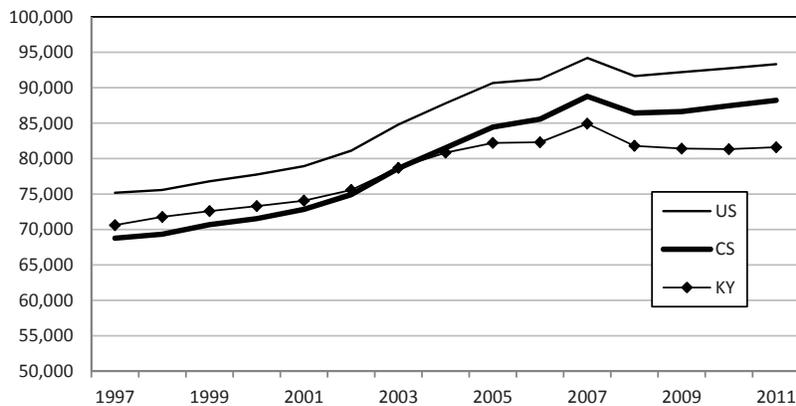


Source: Author's analysis of County Business Patterns, U.S. Census Bureau, various years

## NONEMPLOYER ESTABLISHMENTS

This is a measure of self-employment. According to the Census Bureau, “A nonemployer business is one that has no paid employees, has annual business receipts of \$1,000 or more (\$1 or more in the Construction industry), and is subject to federal income taxes.” Some examples of these businesses are beauty salons, child-care providers, landscaping services, barber shops, real estate agents, tax preparers, and electricians—just to name a few. These types of small enterprises have been growing steadily since the late 1990s, but the growth stalled somewhat during the Great Recession. Kentucky’s rate has been lower than the competitor states and the U.S., and since the Great Recession has been essentially flat.

**Nonemployer Establishments,  
Kentucky, Competitor States, and the U.S., 1997-2011**  
(per 1 million noninstitutionalized civilian population)

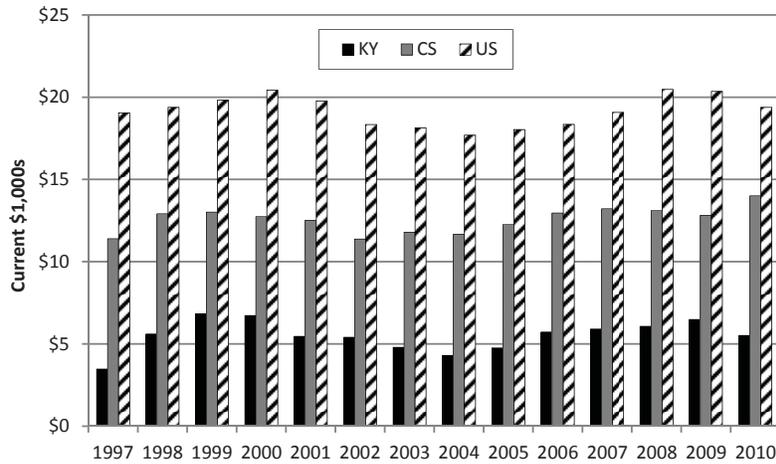


Source: Author's analysis of data from the U.S. Census Bureau

## INDUSTRIAL RESEARCH & DEVELOPMENT

A January 2012 report by Regional Technology Strategies, Inc., *Innovation Capacity: Calibrating Kentucky*, which was prepared for the Kentucky Science and Technology Corporation, states that “while a raft of diverse indicators and metrics are often employed to build a profile of a state’s innovation support capacity, the single most important measure is generally held to be industry R&D.” The report notes that in 2008 Kentucky was ranked 40th among the states on this measure when expressed as a percentage of total worker earnings. Nationally, funds spent by industry constituted over half of all funding for research and development. It is believed that these funds are directly related to productivity gains and innovation capacity. In Kentucky, industry spent \$5,500 per million dollars in state gross domestic product in 2010 on research and development. Indiana led all competitor states at \$19,300. The competitor state average in 2010 was \$14,000 and the U.S. average was \$19,400. In terms of the highest amount expended in absolute dollars among the competitor states, Illinois registered \$12.2 billion—compared to Kentucky’s \$889 million.

**Funds for Industrial R&D Performance,  
Kentucky, Competitor States, and the U.S., 1997-2010**  
(thousands per million in gross domestic product)

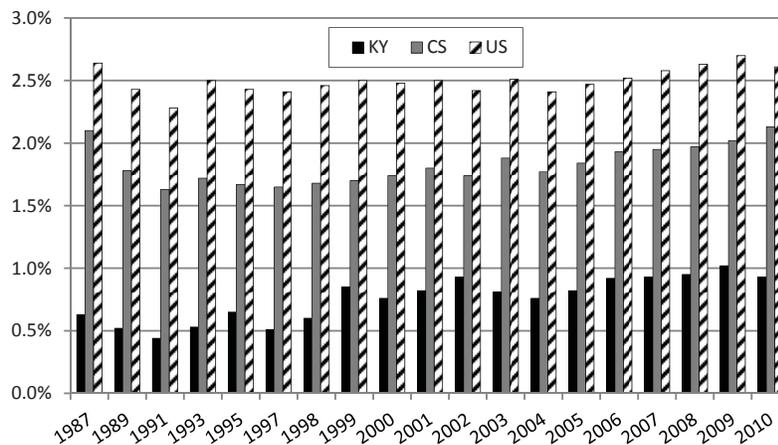


Source: National Science Foundation, *Business and Industrial R&D*, various years

## TOTAL RESEARCH & DEVELOPMENT

While industrial research and development performance accounts for close to 70 percent of the national total, colleges and universities, nonprofits, federal and state government agencies account for the rest. According to the National Science Foundation (NSF), “a high value indicates that a state has a high intensity of R&D activity, which may support future growth in knowledge-based industries.” NSF also points out that “states with high rankings on this indicator also tended to rank high on S&E (science and engineering) doctorate holders as a share of the workforce.” When expressed as a percentage of state gross domestic product, Missouri and Illinois have the highest values among the competitor states at 3.8 and 2.45 percent, respectively. The competitor state average in 2010 was around 2.1 percent, compared to Kentucky’s value of just under 1 percent; the U.S. average was just over 2.6 percent. New Mexico had the highest value of all the states—8.1 percent. Kentucky finds itself in the bottom quartile of states on this measure.

**Total Research and Development Expenditures,  
Kentucky, Competitor States, & the U.S., Selected Years**  
(as a percentage of state gross domestic product)

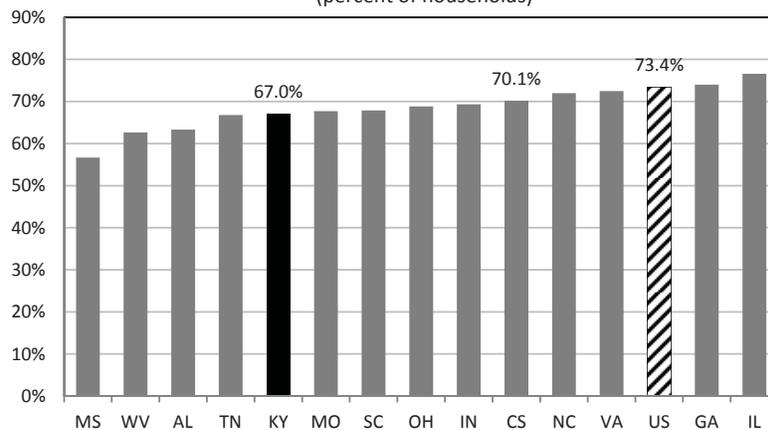


Source: National Science Foundation/National Center for Science and Engineering Statistics. National Patterns of R&D Resources, various years

## HIGH-SPEED INTERNET

A key driver that has accelerated globalization of the economy has been the emergence of nearly instantaneous data transfers enabled by broadband or high-speed Internet. Whether it is corporations doing business with one another, workers telecommuting, or consumers shopping for the latest bestselling book, high-speed Internet increasingly underpins 21st Century commerce. In the United States, an estimated 73.4 percent of the households have a broadband connection, compared to 70.1 percent for the competitor states and 67 percent for Kentucky. Numerous studies have identified measurable economic benefits associated with widespread access to high-speed Internet.

**Broadband Internet Access from Home, 2012,  
Kentucky, Competitor States and the U.S.**  
(percent of households)

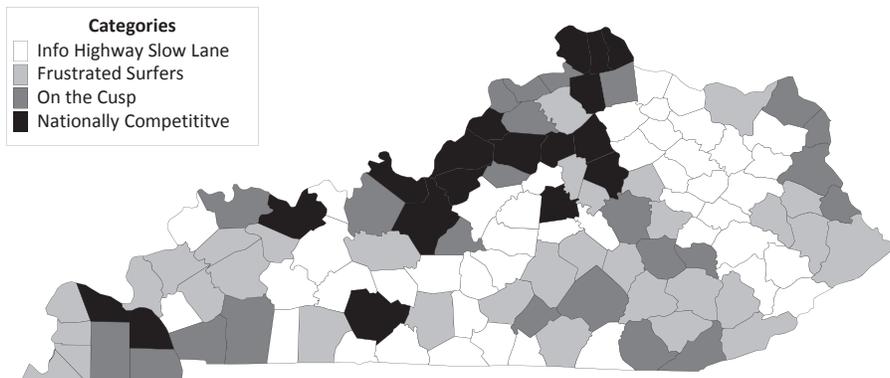


Source: Author's analysis of Current Population Survey data, Oct 2012 Computer and Internet Supplement  
 Note: This includes mobile devices as well as desktop/laptop computers and includes any high-speed access to the Internet (e.g., DSL, cable, mobile, wireless, etc.). "CS" is the weighted average of the competitor states.

## BROADBAND ACCESS & USE BY COUNTY

There are 18 “Nationally Competitive” counties in Kentucky with respect to high-speed Internet availability and utilization. These counties have download speeds and high-speed Internet utilization rates that are equal to or greater than the U.S. average (i.e., at least 80 percent of the households have access to 25 mbps download and at least 70 percent have high-speed Internet access in their homes). The next group of (24) counties is “On the Cusp,” with at least 50 percent of the households having access to 25 mbps. Comprising the “Frustrated Surfers” category are 33 counties where less than 50 percent of the households have access to at least 25 mbps. Finally, the largest category, “Information Highway Slow Lane,” is comprised of the 45 counties without 25 mbps download capability. Over 85 percent of the 102 counties that are not “Nationally Competitive” have household broadband rates below 70 percent.

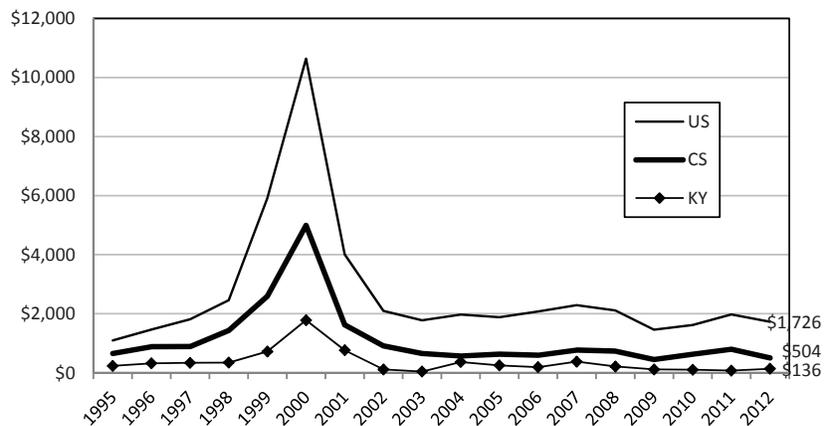
Estimated High-Speed Internet Infrastructure & Utilization, 2012



## VENTURE CAPITAL

According to the Kauffman Foundation, most young companies are started from the savings of their founders and then sustained by positive cash flow. The next largest source of capital for young companies is credit cards, followed by borrowed money from family and friends, banks, and then venture capital. Research also shows that less than 20 percent of the fastest growing companies in the United States took any venture money. Moreover, venture capital investments are typically concentrated in a just few states, such as California and Massachusetts. Nevertheless, the level of venture capital in a state's economy is frequently used as an indicator of innovation capacity and entrepreneurial energy. In 2012, venture capital investments in Kentucky were \$136 per \$1 million of state gross domestic product—which was substantially lower than the competitor states (\$504) and the U.S. average (\$1,726).

**Venture Capital Investments,  
Kentucky, Competitor States, and the U.S., 1995-2012**  
(Current dollars, per \$1 million/state GDP)



Source: PricewaterhouseCoopers and Bureau of Economic Analysis

## OVERVIEW

THE DISTINGUISHED DEMOGRAPHER WILLIAM FREY DIVIDES U.S. states into three regions based on patterns of population growth. The *New Sunbelt* represents states experiencing high rates of domestic in-migration as well as substantial gains from international migration. In these fast growing states, the influx of younger migrants boosts natural increase by raising birth rates and lowering death rates. The *Melting Pot* is comprised of states serving as major points of entry into the U.S. where international migration is the dominant component of population growth and domestic migration is typically low or negative. These states are becoming more racially and ethnically mixed at an accelerated pace. The majority of states, including Kentucky, are in the American *Heartland* where population growth is relatively slow. These states have low migration attraction and low natural increase. Their populations are more homogeneous and generally older.

Because Kentucky, compared to the U.S. as a whole, is more rural, less minority, and somewhat older, the Kentucky population has grown more slowly than the U.S. population. Yet, Kentucky's metropolitan areas, especially in Northern and Central Kentucky, have positive population momentum. These urban communities are attracting younger workers and families, many of whom are minorities. Birth rates have risen and death rates remain relatively low. With substantial migration gains and high natural increase, the state's central urban region looks very much like Frey's *New Sunbelt*.

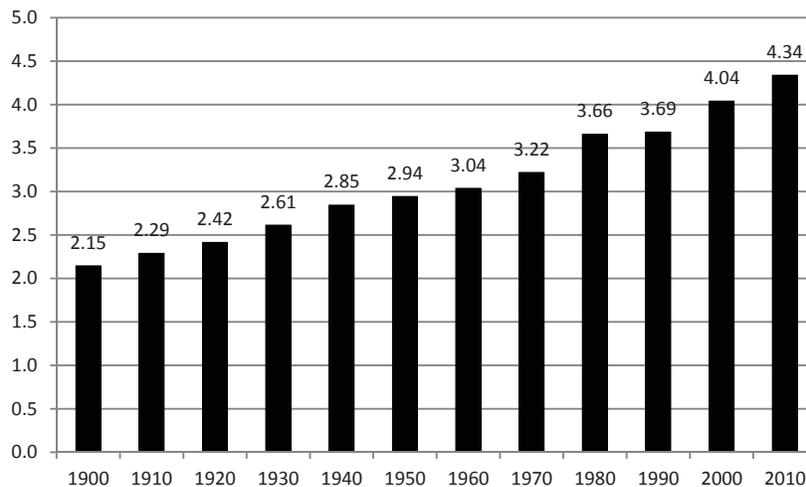
In rural Kentucky, however, the dilemma of the American *Heartland* is quite evident. Throughout much of the delta regions of Western Kentucky and the mountains of Eastern Kentucky, negative population momentum has been building for decades. Out-migration over generations has reduced the youth population and suppressed natural increase. What we see emerging in many rural communities is a top-heavy age structure which increases demand for medical and other services for the elderly, while reducing the supply of labor to provide these services. As a result, the viability of these communities is threatened.

Can the tide be turned? The answer is difficult. The development of rural Kentucky's abundance of natural resources has historically failed to stabilize population growth. But if demand for labor does indeed rise, whether for human services or resource development, the solution may come from outside the U.S. International migrants, especially Hispanics, Asians, and Africans, are filling the labor voids throughout rural America. Until most recently, most rural Kentucky communities have been isolated from the latest waves of immigration. That may change.

## POPULATION TOTALS

Kentucky's population in the 2010 Census was 4,339,367, representing a 7.4 percent increase from the 2000 Census population of 4,041,769 and ranking it the 26th most populous state. As state demographer Michael Price at the University of Louisville has pointed out, while "the U.S. population grew at a faster pace (9.7 percent), the state population growth of nearly 300,000 persons is significant—the equivalent of adding a second Lexington." Kentucky's population was essentially flat from 1940 to 1970, growing by just over 13 percent while the U.S. population increased by over 55 percent. However, from 1970 to 2010, Kentucky's population increased by 35 percent, which is lower than the competitor states (41 percent) and the United States (52 percent), but represents a significant increase from the preceding decades.

**Population Totals, Kentucky, 1900-2010**  
(millions)

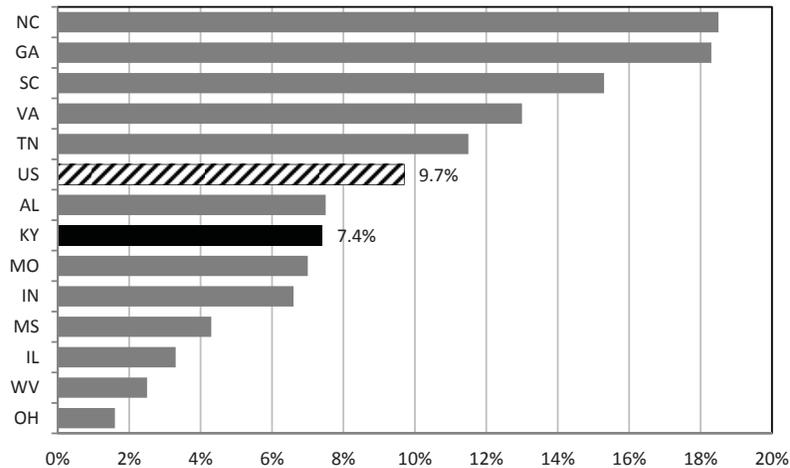


Source: U.S. Census Bureau

## POPULATION CHANGE

Kentucky sits in the middle of a ranking of competitor states with respect to the percentage change in population from 2000 to 2010. North Carolina and Georgia experienced the highest growth rates at around 18.5 percent. Ohio's population growth rate was the lowest among this group at 1.6 percent.

Percentage Change in Population 2000-2010,  
Kentucky, Competitor States, & the U.S.

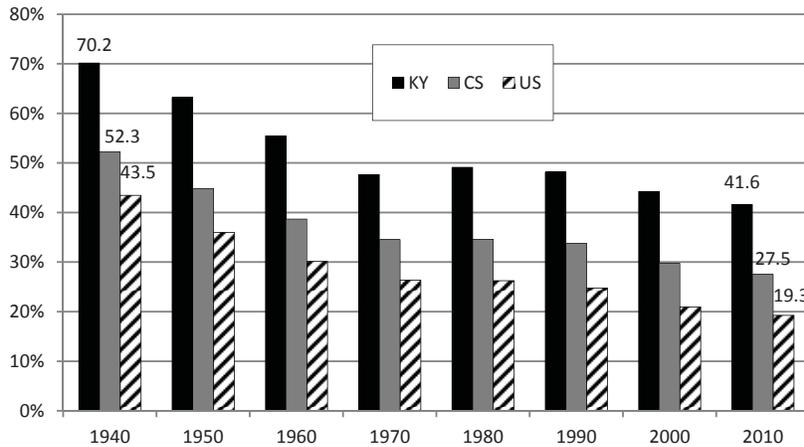


Source: U.S. Census Bureau

## RURAL POPULATION

While Kentucky has become increasingly urban over the years, a significant portion of Kentucky’s population live in rural areas—especially compared to its competitor states and the U.S. In the 2010 Census, nearly 42 percent of Kentucky’s population resided in rural areas (the balance of 58 percent live in urban areas), compared to about 28 percent in the competitor states and around 19 percent in the U.S. Rural communities can have many unique and appealing assets that provide a foundation for economic development activities. For example, natural amenities such as mountains, lakes, streams, forests, and wildlife can be used to leverage economic development and attract individuals hoping to find more idyllic surroundings. At the same time, there are many development challenges associated with building diverse economies and providing an adequate infrastructure in rural areas.

**Population Living in Rural Areas,  
Kentucky, Competitor States, and the U.S.**  
(percent of individuals)



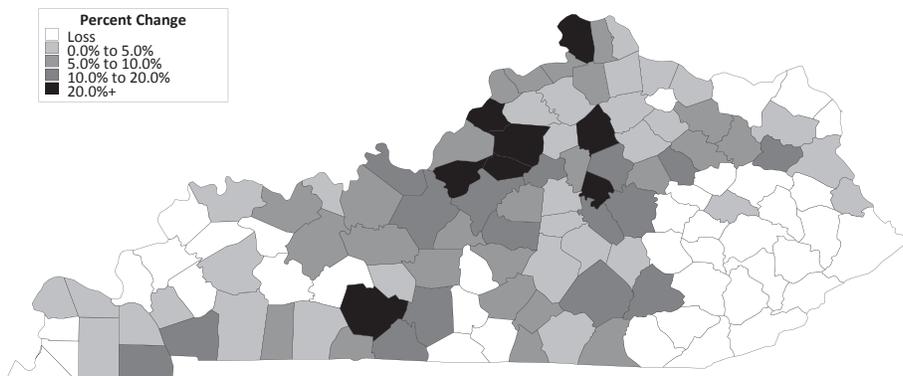
Source: U.S. Census Bureau

## COUNTY POPULATION CHANGES

The geographic distribution of state population change from 2000 to 2012 is shown on this map. Multiple Eastern Kentucky counties lost population, along with several in the western part of the state. Overall, 40 counties lost population and another 31 grew by less than five percent. The largest declines were in Harlan (-4,659), Pike (-4,558), Floyd (-3,492), and Clay (-3,000). The fastest declines were in Fulton (-18.8 percent), Breathitt (-15.3 percent), Harlan (-14 percent), and Clay (-12.2 percent). On the other hand, population growth in much of Northern and Central Kentucky has been strong. Five counties with the largest growth—Jefferson (57,224), Fayette (44,977), Boone (37,325), Warren (24,588), and Scott (15,996), accounted for over half of the state total population growth. The fastest growing counties were Scott (48.4%), Spencer (48%), Boone (43.4%), Oldham (33%), and Shelby (30.8%).

POPULATION

### Kentucky County Population Change: 2000-2012



Source: U.S. Census and Kentucky State Data Center

## MINORITY POPULATION

In 2012, minorities comprised 37 percent of U.S. population, 31 percent in the competitor states, and 14.1 percent of the Kentucky population. Kentucky's racial and ethnic composition breaks down like this: white not Hispanic (85.9%), black (7.9%), Hispanic or Latino (3.2%), and Asian (1.2%). From 2000 to 2012, the state minority population grew almost 10 times faster than the non-Hispanic white majority—42.8 percent compared to 4.2 percent. However, the majority population increased faster in Kentucky than in the competitor states (3.1%) or nationwide (1.6%). Kentucky's minority population is more concentrated in the state's metro areas; in 2010, four of every five persons of color in Kentucky lived in metro areas. In today's global economy, diversity is increasingly important and recognized as a community asset.

**Population by Race and Hispanic or Latino Origin,  
Kentucky, Competitor States, and the U.S., 2000 and 2012**

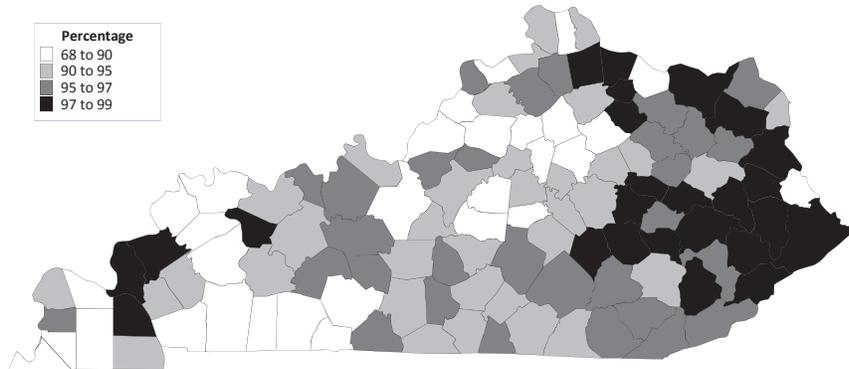
Kentucky	2000		2012		Change 2000-2012	
	Number	Percent	Number	Percent	Number	Percent
<b>Total Population</b>	4,041,769	100.0	4,380,415	100.0	338,646	8.4
White not Hispanic	3,608,013	89.3	3,761,002	85.9	152,989	4.2
Minorities	433,756	10.7	619,413	14.1	185,657	42.8
Black	293,639	7.3	345,472	7.9	51,833	17.7
Hispanic or Latino	59,939	1.5	142,028	3.2	82,089	137.0
Asian	29,368	0.7	54,122	1.2	24,754	84.3
Other	50,810	1.3	77,791	1.8	26,981	53.1
<b>Competitor States</b>						
<b>Total Population</b>	77,563,807	100.0	85,679,015	100.0	8,115,208	10.5
White not Hispanic	57,331,465	73.9	59,135,597	69.0	1,804,132	3.1
Minorities	20,232,342	26.1	26,543,418	31.0	6,311,076	31.2
Black	14,051,151	18.1	16,001,210	18.7	1,950,059	13.9
Hispanic or Latino	3,570,835	4.6	6,432,767	7.5	2,861,932	80.1
Asian	1,364,596	1.8	2,368,695	2.8	1,004,099	73.6
Other	1,245,760	1.6	1,740,746	2.0	494,986	39.7
<b>United States</b>						
<b>Total Population</b>	281,421,906	100.0	313,914,040	100.0	32,492,134	11.5
White not Hispanic	194,552,774	69.1	197,705,655	63.0	3,152,881	1.6
Minorities	86,869,132	30.9	116,208,385	37.0	29,339,253	33.8
Black	33,947,837	12.1	38,727,063	12.3	4,779,226	14.1
Hispanic or Latino	35,305,818	12.5	53,027,708	16.9	17,721,890	50.2
Asian	10,123,169	3.6	15,619,997	5.0	5,496,828	54.3
Other	7,492,308	2.7	8,833,617	2.8	1,341,309	17.9

Source: Census 2000 SF1 & SF2 and Annual County Resident Population Estimates by Age, Sex, Race, and Hispanic Origin: April 1, 2010 to July 1, 2012, Population Division, U.S. Census Bureau.

## WHITE, NON-HISPANIC POPULATION

In 2010, an estimated 63.7 percent of the U.S. population was “White non-Hispanic,” and Kentucky’s percentage was 86.3. Using this as a measure of diversity, Christian County—where Ft. Campbell is located—was the state’s most diverse at 68.6 percent. Fayette, Jefferson, and Fulton Counties were second, third, and fourth at 70.5, 73, and 73 percent respectively. The state’s least diverse counties are clustered mainly in the east, with several counties over 98 percent “White, non-Hispanic.” As we indicated on the previous page, diversity is increasingly viewed as a necessary community characteristic for creating a vibrant and robust local economy.

**White Alone, Not Hispanic or Latino, 2010**  
(percentage of the total population)



Source: 2010 Census

## POPULATION BY AGE GROUP

Kentucky's population is aging, evidenced by the median age increasing from 35.9 years to 38.1 years from 2000 to 2010. The U.S. median age, by comparison, was 37.2 years in 2010. The number of persons aged 65 and above increased by 108,833 or 21.6 percent from 2000 to 2012. However, it increased even more in the competitor states (24.4%) and the U.S. (23.3%). The elderly share of the total population rose only slightly, from 12.5 percent to 14 percent. The population under age 20 increased by 25,148 (2.3%), but the youth share fell slightly from 27.6 percent to 26 percent. The youth population increased more in the competitor states (3.1%) and the U.S. (2.8%)

**Population by Age Group,  
Kentucky, Competitor States, and the U.S., 2000 and 2012**

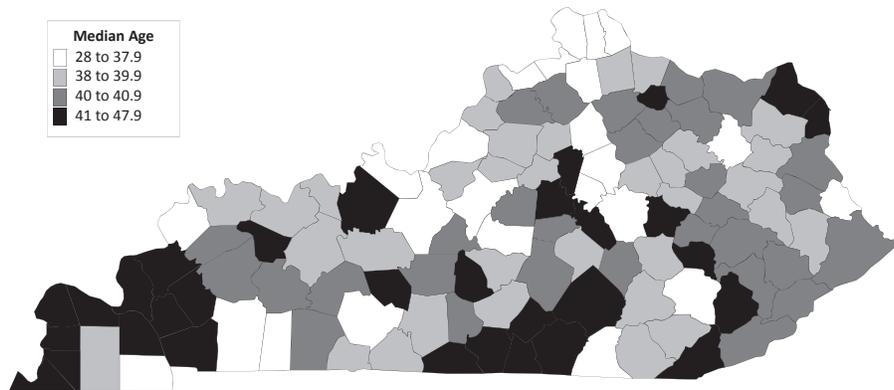
Kentucky	2000		2012		Change 2000-2012	
	Number	Percent	Number	Percent	Number	Percent
<b>Total</b>	4,041,769	100.0	4,380,415	100.0	338,646	8.4
Under 20	1,113,644	27.6	1,138,792	26.0	25,148	2.3
20-24	283,032	7.0	306,162	7.0	23,130	8.2
25-64	2,140,300	53.0	2,321,835	53.0	181,535	8.5
65 and above	504,793	12.5	613,626	14.0	108,833	21.6
<b>Competitor States</b>						
<b>Total</b>	77,563,807	100.0	85,679,015	100.0	8,115,208	10.5
Under 20	22,005,143	28.4	22,678,495	26.5	673,352	3.1
20-24	5,333,258	6.9	6,063,932	7.1	730,674	13.7
25-64	40,773,898	52.6	45,181,684	52.7	4,407,786	10.8
65 and above	9,451,508	12.2	11,754,904	13.7	2,303,396	24.4
<b>United States</b>						
<b>Total</b>	281,421,906	100.0	313,914,040	100.0	32,492,134	11.5
Under 20	80,473,265	28.6	82,719,360	26.4	2,246,095	2.8
20-24	18,964,001	6.7	22,463,182	7.2	3,499,181	18.5
25-64	146,992,887	52.2	165,591,021	52.8	18,598,134	12.7
65 and above	34,991,753	12.4	43,140,477	13.7	8,148,724	23.3

Source: Census 2000 SF1 and 2012 American Community Survey 1-Year Estimates.

## MEDIAN AGE

The county-level median age in Kentucky in 2010 ranged from a low of 28.9 in Christian County to a high of 47.9 in Lyon County. In general, counties with military installations or college campuses will have lower median ages. Rowan, Warren, Fayette, and Madison Counties all had median ages below 34. Livingston (44.9), Hickman (44.8), Marshall (44.3), and Trigg (44.2) Counties complete the top 5 “oldest” counties in Kentucky when measured by median age.

Median Age by County, 2010



Source: 2010 Census, SF1. *Area Health Resource File (AHRF) 2012-2013*. US Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Rockville, MD.



## OVERVIEW

**K**ENTUCKY'S TAX SYSTEM NEEDS TO CHANGE: A BROADER TAX base is needed so that revenue can keep pace with future economic growth and changes are needed to improve Kentucky's economic competitiveness. Without fundamental reforms Kentucky could face a \$1 billion shortfall by 2020, and could find itself at a competitive disadvantage to neighboring states for business growth, retention, and recruitment. These are the fundamental conclusions included in the 2012 *Final Report to the Governor's Blue Ribbon Commission on Tax Reform*, which was produced by an economic consultant team led by Professor William Hoyt, chairman of the Department of Economics, at the University of Kentucky.

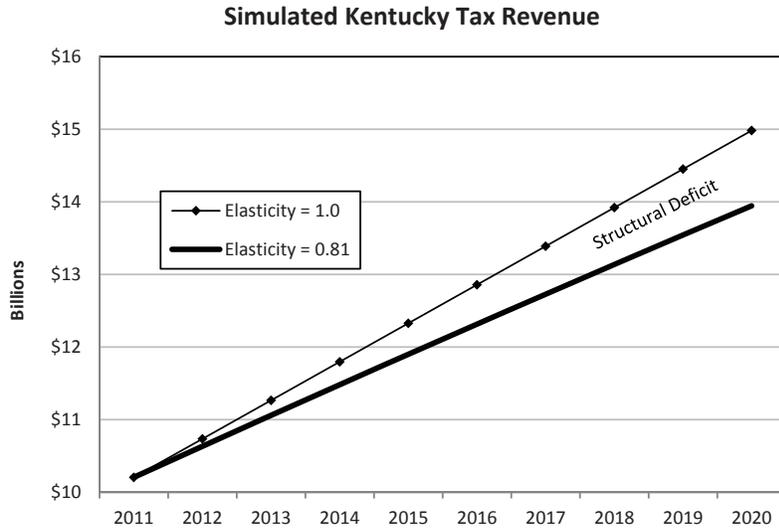
Our examination of revenue trends suggests important changes over the last several years that are likely to continue into the foreseeable future. Kentucky state tax collections as a percentage of personal income peaked in 1995, and have been declining since. Revenues have not kept pace with personal income and our analysis suggests this trend will continue without changes to the tax system.

If expenditures remain a relatively stable share of personal income in the future, revenues will not keep pace. Based on the relationship we estimate between personal income and tax revenue, if expenditures remain a stable share of income, Kentucky will have a structural deficit that could reach \$1 billion by 2020. Fundamental tax reform that improves the elasticity in the system—ensuring that tax revenues grow adequately with the economy—will go a long way toward solving Kentucky's structural deficit. Addressing this structural deficit promises to become more difficult in the future since the underlying economic, demographic, and political trends reducing elasticity are continuing and show no sign of abating. Moreover, there are a number of financial factors likely to intensify state-level budgetary pressures in the future, such as Kentucky's \$30 billion unfunded pension obligation and long-term fiscal problems at the federal level.

As we indicate in the final report to the tax commission, that tax revenues under the current tax code do not keep pace with personal income need not imply an increase in taxes is needed. An alternative strategy would be a reduction in expenditures. However, the data suggest that if spending, above or below current levels, is to be relatively stable as a share of income, Kentucky does not have the tax structure to support it. Here we present selected information about Kentucky's government finances from various sources, including our final report, which is available in its entirety at [cber.uky.edu](http://cber.uky.edu).

## STRUCTURAL DEFICIT

Kentucky's revenue system is not keeping pace with the changes in society and the economy. Consequently, revenue elasticity is projected to be about 0.81 without fundamental tax modernization, which reflects a structural deficit. Ideally, revenue elasticity would be 1.0, indicating that, on average, state revenue was changing at the same rate as the state's economy. Without fundamental tax reforms Kentucky could face a \$1 billion shortfall by 2020, and could find itself at a competitive disadvantage to neighboring states for business growth, retention, and recruitment.

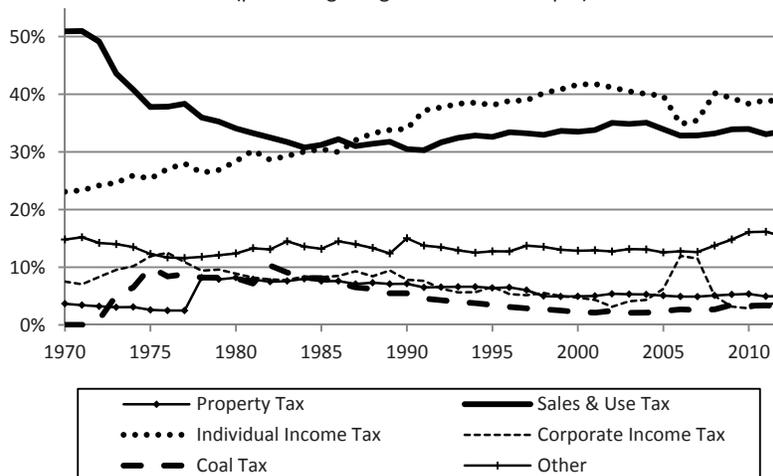


Source: Report to the Governor's Blue Ribbon Commission on Tax Reform by Economic Consultants, Sept. 2012

## GENERAL FUND RECEIPTS BY SOURCE

Two sources of revenue—the individual income tax and the sales and use tax—account for 72 percent of Kentucky general fund revenue (FY2012). This figure illustrates how Kentucky’s revenue system has fundamentally changed since 1970. Forty years ago the sales and use tax comprised 51 percent of Kentucky’s general fund receipts while income tax collections accounted for 23 percent. However, by the mid-1980s the income tax accounted for more general fund revenue than the sales and use tax. The changing distribution of tax receipts reflects more basic changes in the economy—the gradual shift away from making products and toward providing services. Most states, including Kentucky, tend to apply a *broad-base* sales tax to goods but not services. Consequently, the state’s tax base is gradually becoming narrower and losing elasticity—a measure of whether revenue is keeping pace with the economy.

**Kentucky's General Fund Receipts by Major Sources,  
FY70 to FY12**  
(percentage of general fund receipts)

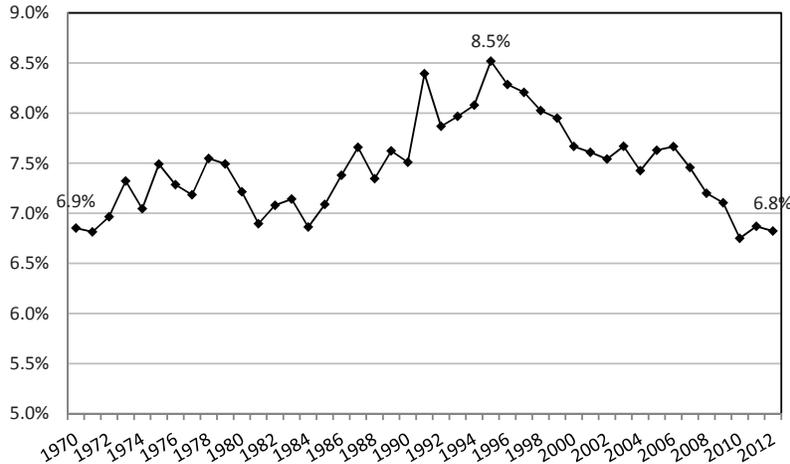


Source: Authors' calculations based on data from the Kentucky Finance and Administration Cabinet and the Kentucky Revenue Cabinet

## TAX COLLECTIONS AND PERSONAL INCOME

Kentucky's recurring budgetary problems are due, in part, to the long-term decline in revenue elasticity. There are several economic, demographic, and political factors contributing to the gradual reduction in elasticity. Regardless of how we assess the adequacy of the revenue structure, Kentucky's main revenue sources are growing slower than its economy. This point is illustrated by examining Kentucky's total tax collections as a percentage of personal income, which has declined steadily from its peak of 8.52 percent in 1995 to 6.8 percent in 2012. If these trends continue, we estimate that tax revenue as a percentage of the economy will decline to below 6.5 percent by 2020—a level not seen in Kentucky since 1968.

**Kentucky Total Tax Collections as a Percentage of Total Personal Income, 1970-2012**

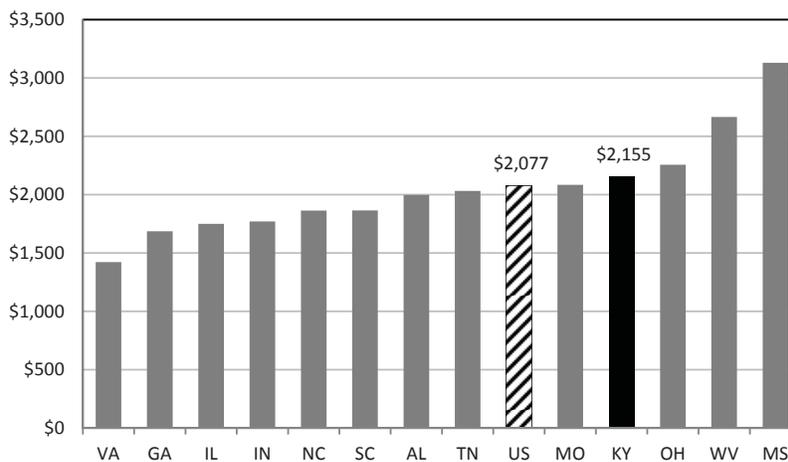


Source: Author's calculations based on data from the U.S. Department of Commerce, Bureau of Economic Analysis and U.S. Census Bureau, State Government Tax Collections, various years

## REVENUE FROM FEDERAL TRANSFERS

Kentucky receives a significant amount of its total revenue from federal intergovernmental transfers. In 2011 this amounted to 28.5 percent of Kentucky's total revenue. The competitor state average was about 20 percent and the U.S. average was about 19 percent. These transfers are mainly for health care (Medicaid), education, transportation, and public safety. On per capita basis, Kentucky received about \$2,155 in revenue from federal transfers, compared to \$1,928 and \$2,077 for the competitor states and U.S., respectively. Among the competitor states, Mississippi had the highest amount at \$3,130 and Virginia the lowest at \$1,422.

**State and Local Revenue From Federal Transfers,  
Per Capita, 2011, Kentucky, Competitor States, & the U.S.**

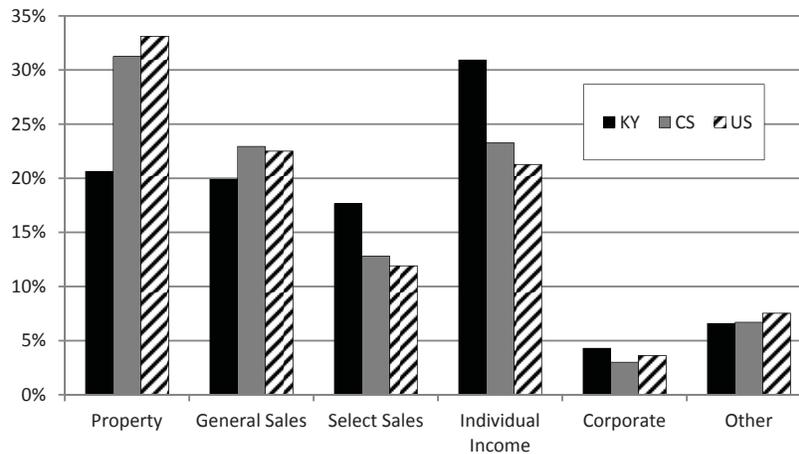


Source: U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances

## STATE AND LOCAL REVENUE BY SOURCE

This figure shows the percentage of revenue collected by each reported tax source for Kentucky and a weighted-average of its competitor states and the U.S. Kentucky is significantly less reliant on property taxes than its competitors (and the U.S.), who raise a much larger share of local tax revenue from the property tax, and particularly those states to the north of Kentucky. Kentucky has no general sales tax option for any local governments, something a number of its competitor states (and 35 states in the U.S.) allow. Unlike many of its competitors, Kentucky allows local individual income (occupation license) taxation (only 13 states permit local income taxation). Not surprisingly, then, Kentucky collects a smaller share of combined state and local tax revenues from sales taxation and more from income taxation.

**State and Local Revenue by Source, 2011**  
**Kentucky, Competitor States, and the U.S.**  
 (percent of total tax revenue)

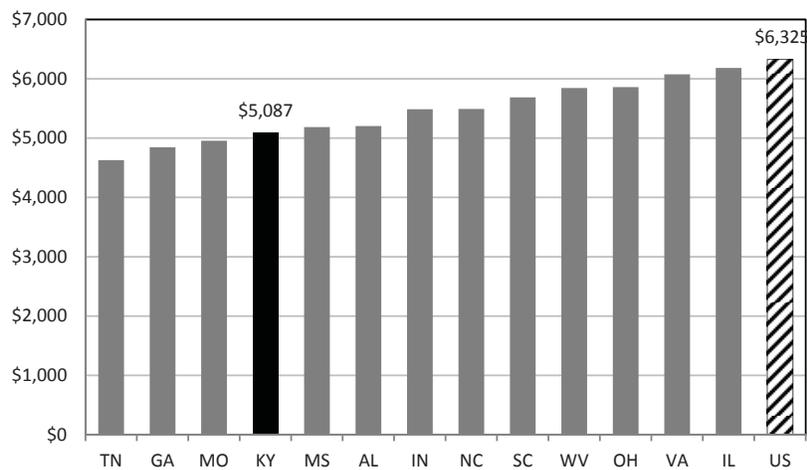


Source: U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances

## STATE AND LOCAL OWN SOURCE REVENUE

Since states differ in the relative distribution of tax burdens between state and local governments, any comparison of revenue burdens among states requires a consideration of combined state and local revenue burdens. Here we report state and local own revenue burdens for Kentucky and its competitor states in per capita terms for 2011. On a per capita basis, Kentucky's per capita own-source state and local revenue was \$5,087 in 2011, lower than the competitor state average of \$5,515 as well as the U.S. average of \$6,325.

State and Local Own Source Revenue, Per Capita, 2011,  
Kentucky, Competitor States, and the U.S.

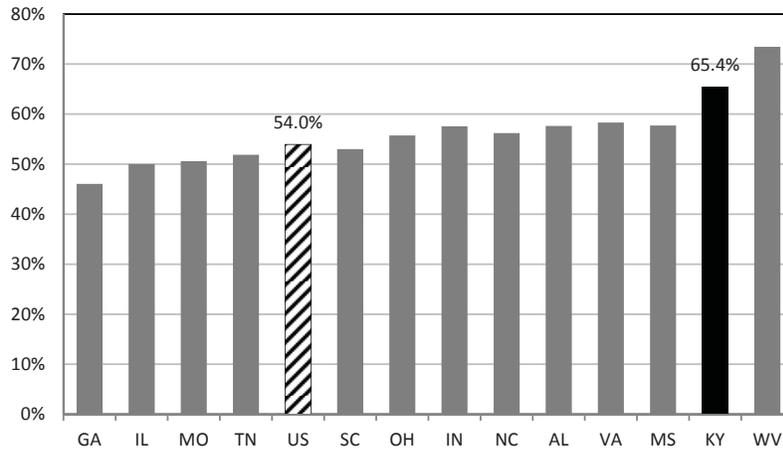


Source: U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances

## STATE PORTION OF TOTAL REVENUE

State government in Kentucky collects 65.4 percent of state and local own-source revenues (2011); only West Virginia, which collects 73.5 percent through the state, is more centralized. All of the other competitor states collect less than 60 percent through state sources. Conversely, Georgia collects over 50 percent from local revenue sources. The competitor state and U.S. averages are both about 54 percent, indicating substantially less centralization at the state level compared to Kentucky.

**State Portion of Total Revenue, 2011,  
Kentucky, Competitor States, and the U.S.**  
(percentage of state and local own source revenue)



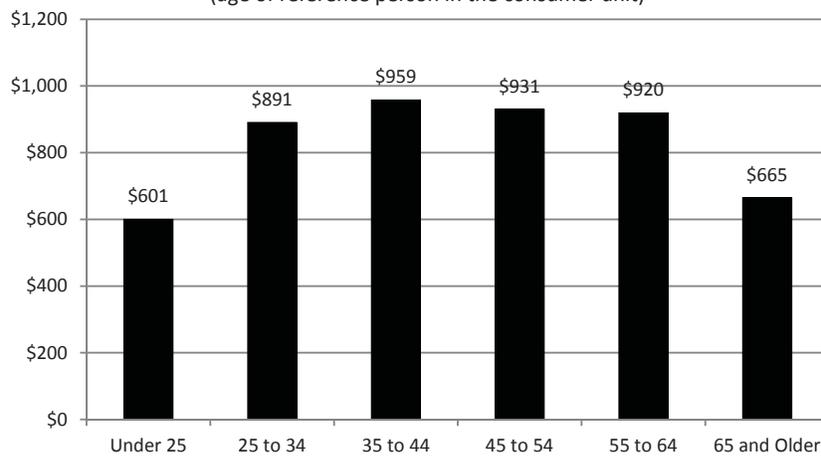
Source: U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances

## SALES TAX BY AGE GROUP

As we describe in the Population section of this report, Kentucky's population is aging. Individuals over 65 years of age tend to spend less money in general and tend to concentrate more of their expenditures in nontaxed areas such as health care services and food at home. As a result, sales and use tax collections, which comprise 33.6 percent of the state's total general fund receipts, will be affected as the population ages. Using data from the Consumer Expenditure Survey, we estimate the average annual sales generated by households of certain age groups. Households headed by someone 65 and older pay about \$665 in sales tax annually, with every other age group over 25 years old paying \$891 to \$959. This analysis illustrates how basic demographic factors are forcing policymakers to examine Kentucky's tax system and identify ways to put it on a more sustainable long-term path.

**Estimated Kentucky Annual Sales Tax Paid  
by Age Group, 2010-2011**

(age of reference person in the consumer unit)



Source: Author's analysis of Consumer Expenditure Survey data, South Region, 2010-2011 average.

## GROWTH RATES, TAXES AND INCOME

Revenue growth rates are affected by both changes in the revenue base and tax rates. Many states' revenue systems have failed to keep pace with overall economic growth during the past decade due to one or both of these factors. Using the ratio between the compound annual growth rates (CAGR) of revenue and personal income, we compare Kentucky to competitor states during three time periods—1980 to 1989, 1990 to 1999, and 2000 to 2008. A ratio of 1.0 indicates that the revenue is growing at the same rate as the economy. In Kentucky as well as in many of the competitor states the growth in total tax revenue has slowed relative to the economy in recent years. As shown in the table, the ratio between Kentucky's total tax CAGR and personal income CAGR declined to 0.81 during the most recent period (2000-2008). By comparison, this ratio was 1.1 and 1.02 in the earlier periods. The ratio also declined for the competitor state average—from 1.02 to 0.86. During the 2000-08 period, four of the competitor states—Georgia, Missouri, South Carolina, and Virginia—have ratios lower than Kentucky's, while the remaining 12 competitor states have ratios higher than Kentucky's.

**Compound Annual Growth Rates, Total Taxes and Personal Income, Various Periods, Kentucky and Competitor States**

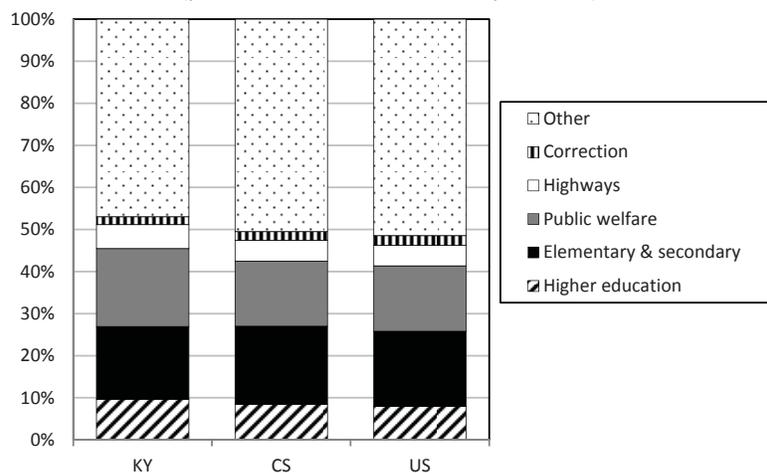
	1980-1989			1990-1999			2000-2008		
	Total Tax	Personal Income	RATIO	Total Tax	Personal Income	RATIO	Total Tax	Personal Income	RATIO
KY	7.4%	6.7%	1.10	5.7%	5.6%	1.02	3.4%	4.2%	0.81
CS	7.8%	7.6%	1.02	5.7%	5.8%	0.98	3.8%	4.5%	0.86
AL	7.8%	7.7%	1.02	5.2%	5.4%	0.96	4.4%	5.2%	0.85
GA	9.6%	9.8%	0.98	6.5%	7.3%	0.89	3.7%	4.8%	0.78
IL	5.0%	6.7%	0.75	5.0%	5.3%	0.95	3.5%	4.0%	0.87
IN	8.0%	6.7%	1.19	5.3%	5.5%	0.98	3.8%	3.7%	1.02
MO	8.1%	7.3%	1.11	6.3%	5.5%	1.15	3.1%	4.6%	0.67
MS	5.9%	6.9%	0.86	6.6%	6.2%	1.06	4.6%	5.1%	0.90
NC	9.7%	9.4%	1.03	6.3%	6.9%	0.91	4.9%	5.0%	0.98
OH	8.7%	6.5%	1.34	5.3%	4.8%	1.10	3.2%	3.2%	1.01
SC	8.3%	8.8%	0.95	5.1%	6.0%	0.85	2.7%	5.0%	0.55
TN	7.6%	8.1%	0.94	5.5%	6.5%	0.84	4.0%	4.7%	0.85
VA	9.9%	9.2%	1.08	6.4%	5.7%	1.13	4.4%	5.7%	0.78
WV	3.2%	4.9%	0.66	4.5%	4.4%	1.01	4.8%	4.6%	1.05

Note: CS is the competitor state weighted average.

## STATE AND LOCAL EXPENDITURES

Here we present data that illustrate Kentucky's state and local spending by selected functional categories: public welfare, public assistance, and Medicaid; elementary and secondary education; higher education; transportation; and corrections. These five categories account for 53 percent of state and local government expenditures (2011), compared to 49.5 percent by the competitor states and 48.5 percent for the U.S. As a percentage of total state and local expenditures, Kentucky spends more than average on higher education, public welfare, and highways, but less than average on elementary and secondary education and corrections. The Other category includes environment, housing, government administration, interest paid on debt, utilities, and insurance.

**Distribution of Selected State and Local Expenditures,  
2011, Kentucky, Competitor States, and the U.S.**  
(percent of total state and local expenditures)

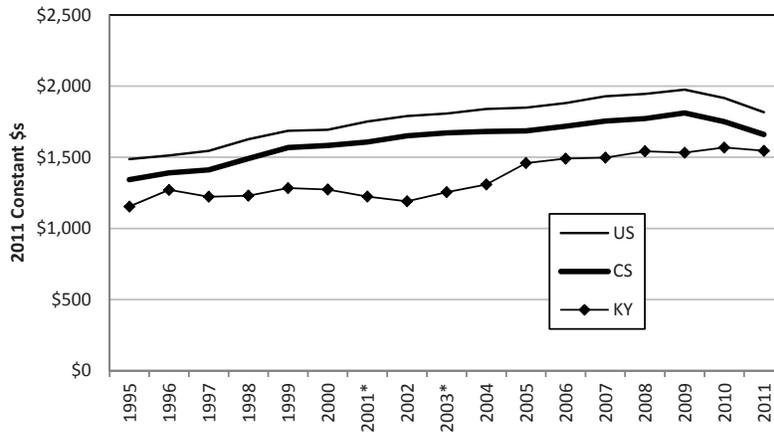


Source: U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances

## EDUCATION EXPENDITURES

State and local expenditures for elementary and secondary education are below average in Kentucky compared to the competitor states, but still increased during this time period in constant 2011 dollars. Despite demonstrating the highest growth rate in per capita state and local education spending from 2001 to 2009 among the competitor states, Kentucky ranks 39th in per capita elementary and secondary education spending (2011). Kentucky's per capita spending is \$1,546, compared to \$1,660 and \$1,816 for the competitor states and the U.S., respectively.

State and Local Elementary and Secondary Education Expenditures, Per Capita, 1995-2011, Kentucky, Competitor States, and the U.S.

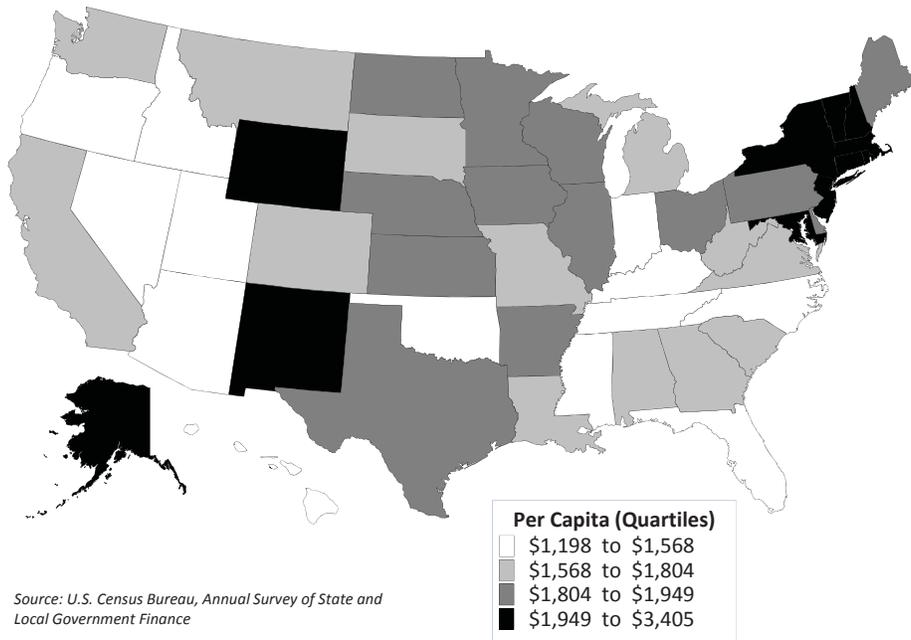


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance  
 Note: KY and CS data for 2001 and 2003 are interpolated.

## EDUCATION EXPENDITURES IN THE U.S.

Kentucky's per capita state and local expenditures for elementary and secondary education are in the bottom quartile of all states. Alaska is the highest at \$3,404 and Idaho is the lowest at \$1,198. Kentucky's per capita spending is \$1,546.

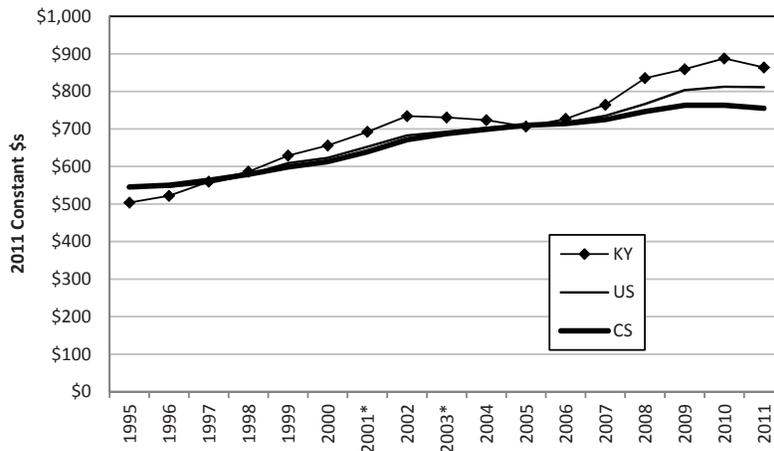
Elementary and Secondary Education Expenditures, 2011



## HIGHER EDUCATION EXPENDITURES

In the U.S., about 84 percent of all higher education expenditures are made at the state level with 16 percent made at the local level. However, in Kentucky, 100 percent of higher education spending takes place at the state level. On a per capita basis, Kentucky ranks 25th among all states with respect to state and local funding for higher education, and increased considerably in constant 2011 dollars from 1995 to 2011. Kentucky's per capita spending was \$864, while the competitor states (\$755) and U.S. (\$811) averages were lower. This spending represents net expenditures once charges (i.e., tuition) have been removed from the total.

State and Local Higher Education Expenditures, Per Capita, Kentucky, Competitor States, & the U.S.

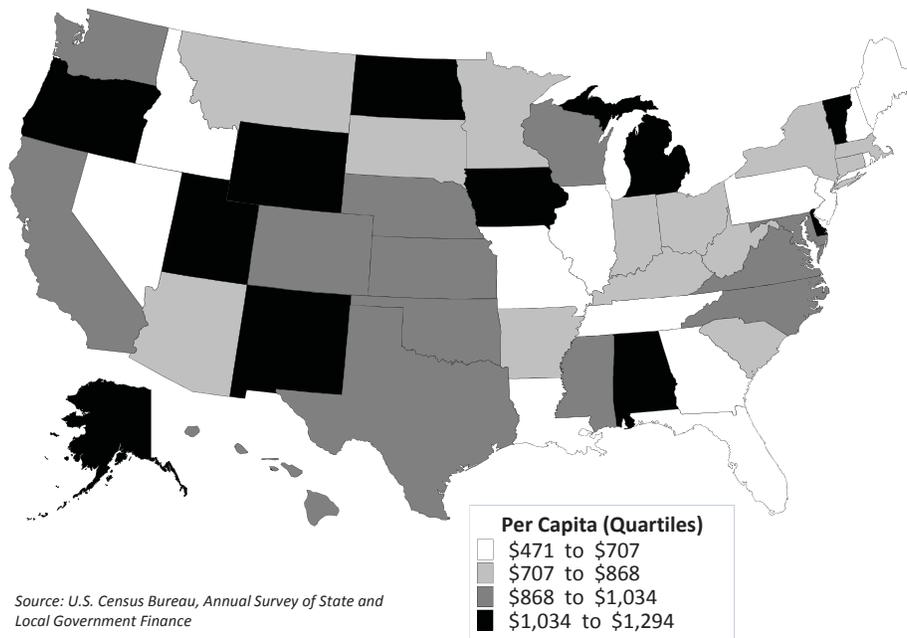


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance  
 Note: KY and CS data for 2001 and 2003 are interpolated.

## HIGHER EDUCATION EXPENDITURES IN THE U.S.

Kentucky's per capita state and local expenditures for higher education rank it in the second quartile of states. North Dakota is the highest at \$1,293 and Nevada is the lowest at \$471. Kentucky's per capita spending is \$864.

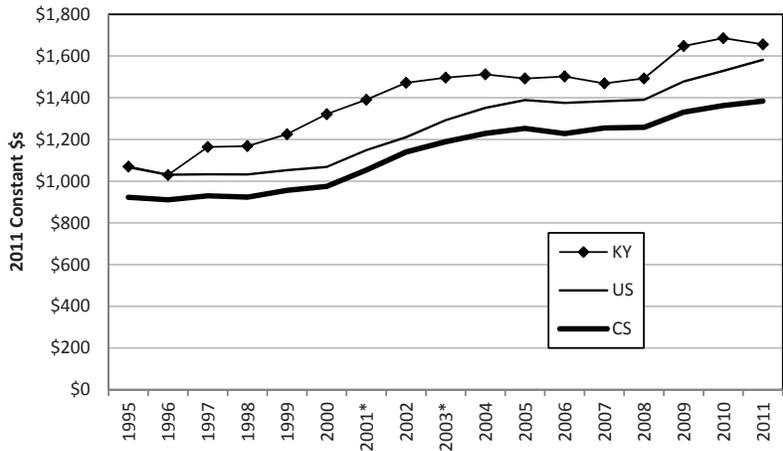
Higher Education Expenditures, 2011



## PUBLIC WELFARE & PUBLIC ASSISTANCE

The Census Bureau’s public welfare category covers expenditures associated with three Federal programs—Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), and Medicaid. The figure shows that Kentucky’s spending in the broad category of public welfare is above average compared to the competitor states and the U.S. Kentucky ranks 17th in combined state and local spending for public welfare, at least when measured on a per capita basis, but spending still increased in constant 2011 dollars during this time. Kentucky’s per capita spending in this category, \$1,656, exceeds both the competitor state average (\$1,384) and the U.S. average (\$1,582).

**State and Local Public Welfare Expenditures, Per Capita, 1995-2011, Kentucky, Competitor States, and the U.S.**



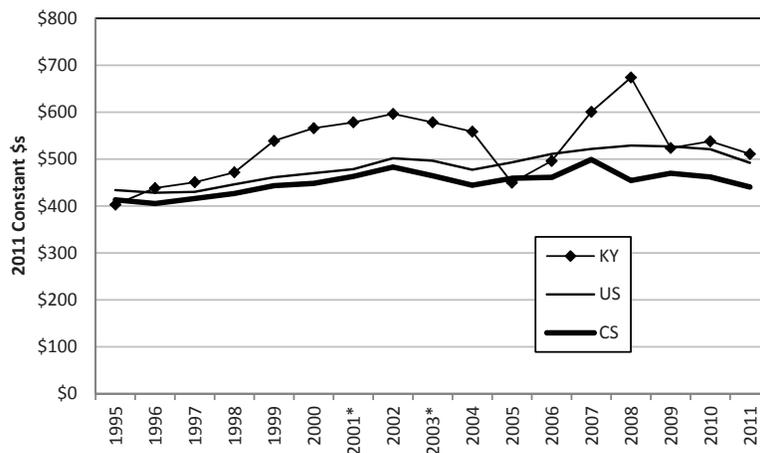
Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance  
 Note: KY and CS data for 2001 and 2003 are interpolated.



## HIGHWAYS EXPENDITURES

Compared to the competitor states, Kentucky's state and local transportation expenditures were slightly above average when measured on a per capita basis. Kentucky's \$511 is barely higher than the U.S. average of \$492, but significantly higher than the competitor state average of \$440. Kentucky is ranked 29th nationally.

State and Local Highway Expenditures, Per Capita, 1995-2011, Kentucky, Competitor States, and the U.S.

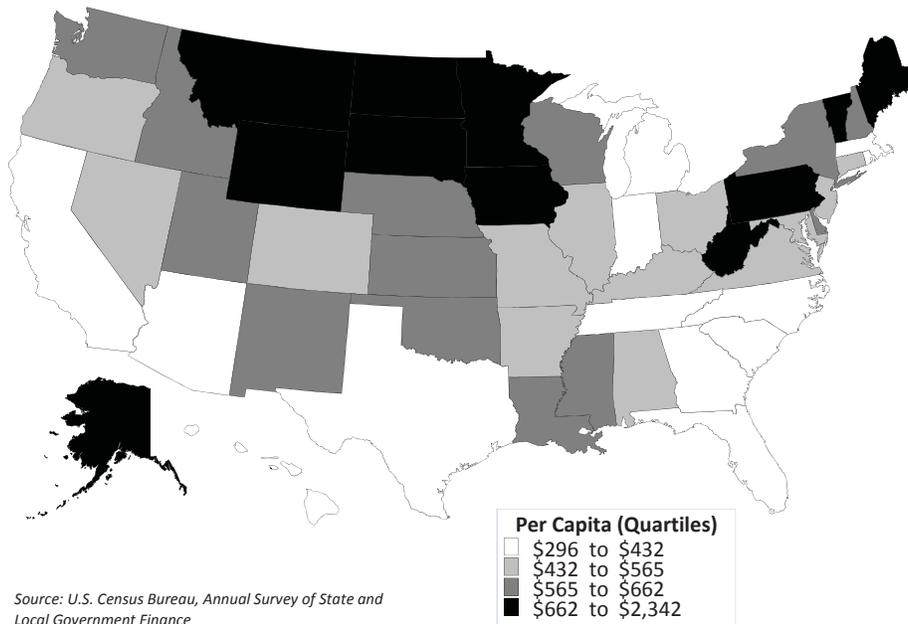


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance  
 Note: KY and CS data for 2001 and 2003 are interpolated.

## HIGHWAYS EXPENDITURES IN THE U.S.

Kentucky's per capita state and local expenditures for highways land it in the second quartile among the states. Alaska is the highest at \$2,342 and Georgia is the lowest at \$296. Kentucky's per capita spending is \$511.

Highway Expenditures, 2011

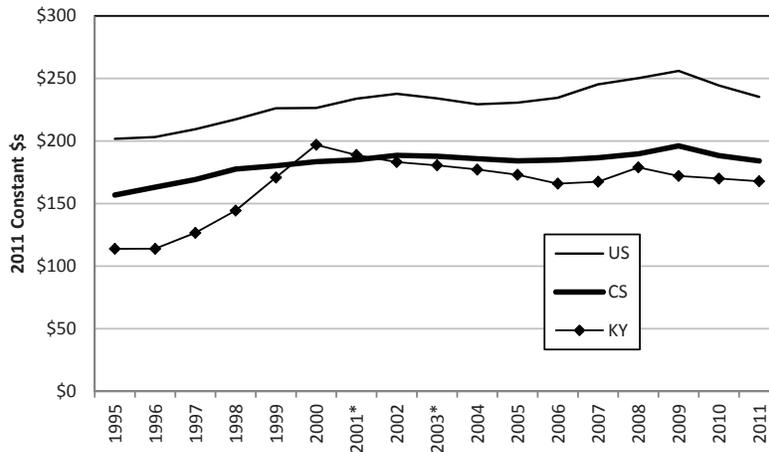


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance

## CORRECTIONS EXPENDITURES

Kentucky's state and local spending on corrections—jails and prisons—is about average compared to the competitor states, and ranks 38th nationally. In 2011 Kentucky's state and local per capita expenditures on corrections was \$166, which was less than the competitor states average (\$184) and the U.S. average (\$235). From 2000 to 2011 Kentucky's state and local spending on corrections decreased on a per capita basis—when measured in constant 2011 dollars.

State and Local Corrections Expenditures, Per Capita, 1995-2011, Kentucky, Competitor States, and the U.S.

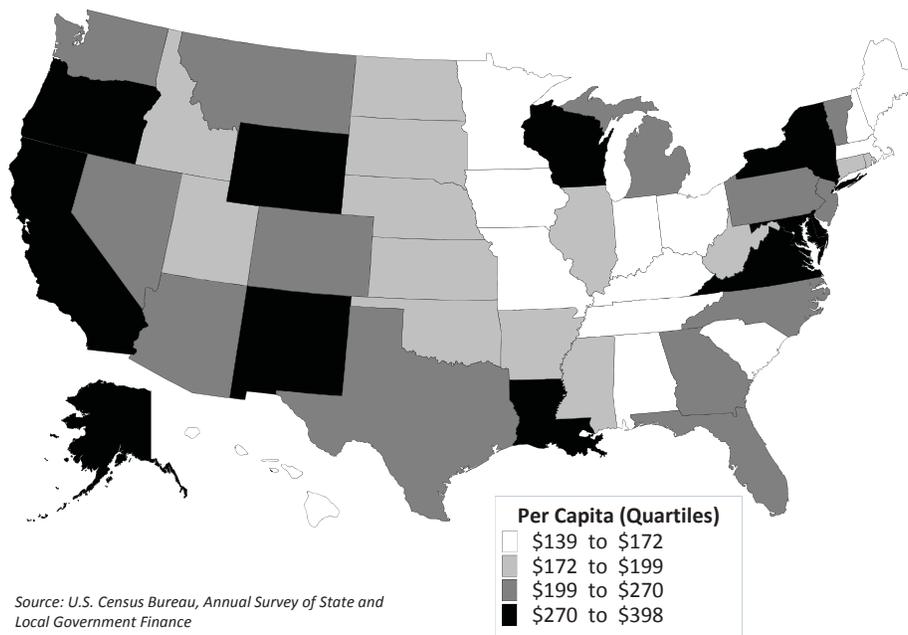


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance  
 Note: KY and CS data for 2001 and 2003 are interpolated.

## CORRECTIONS EXPENDITURES IN THE U.S.

Kentucky's per capita state and local expenditures for corrections rank it in the bottom quartile among the states. Alaska is the highest at \$398 and Hawaii is the lowest at \$139. Kentucky's per capita spending is \$166.

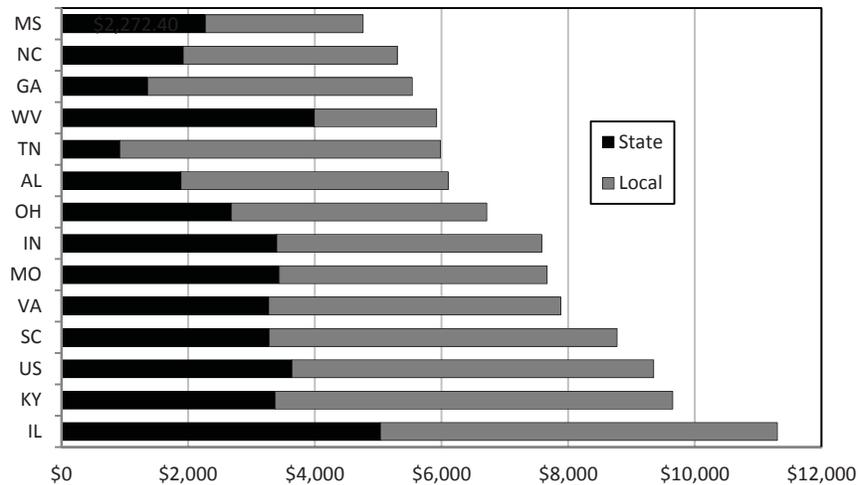
Corrections Expenditures, 2011



## DEBT

State and local government debt is defined as “all interest-bearing short-term credit obligations and all long-term obligations incurred in the name of the government and all its dependent agencies, whether used for public or private purposes.” Governments issue bonds and incur debt for big-ticket items like roads or large construction projects. In Kentucky, there has even been discussion about issuing bonds to get the state government employees retirement system on firmer financial ground. Nationally, state and local governments had \$2.9 trillion in outstanding debt in 2011, with 61 percent at the local government level and 39 percent at the state government level. The figure shows combined state and local debt per capita, with Kentucky second among the competitor states at \$9,651, 35 percent of which is held by state government. The competitor state per capita debt is \$7,295 (39 percent held by state governments) and the U.S. per capita debt for state and local governments is \$9,350.

**Debt Outstanding, Per Capita, 2011**  
**Kentucky, Competitor States, and the U.S.**  
 (state and local debt, by total)



Source: U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances

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**Corrections Expenditures (in the U.S.)**—U.S. Census Bureau, 2011 Annual Surveys of State and Local Government Finances <[www.census.gov/govs/estimate/](http://www.census.gov/govs/estimate/)>.

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**Total Research & Development**—National Science Foundation/National Center for Science and Engineering Statistics. National Patterns of R&D Resources, various years <[www.nsf.gov/statistics/natlpatterns/](http://www.nsf.gov/statistics/natlpatterns/)>.

**Total U.S. Non-Farm Employment**—U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics, seasonally adjusted <[www.bls.gov/ces/#data](http://www.bls.gov/ces/#data)>.

**Toxic Releases**—U.S. Environmental Protection Agency, Toxics Release Inventory, TRI Explorer <[iaspub.epa.gov/triexplorer/tri\\_release.chemical](http://iaspub.epa.gov/triexplorer/tri_release.chemical)>. These data are TRI On-site and Off-site Reported Disposed of or Otherwise Released (in pounds), for All industries, for All chemicals, 2012.

**Transfer Payments by County**—Bureau of Economic Analysis.

**Transition from Goods to Services**—U.S. Department of Commerce, Bureau of Economic Analysis <[www.bea.gov/itable/](http://www.bea.gov/itable/)>. Using the NAICS and SIC classifications, we categorize these industries as “goods producing”: agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing. The rest of the industries are considered “service providing.” Government includes federal, state and local.

**Trust**—Corporation for National and Community Service, <[www.volunteeringinamerica.gov/index.cfm](http://www.volunteeringinamerica.gov/index.cfm)>. These data are from the 2011 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older.

**U.S. Labor Force Participation Rate**—U.S. Department of Labor, Bureau of Labor Statistics, seasonally adjusted <[www.bls.gov/ces/#data](http://www.bls.gov/ces/#data)>.

**Unemployment Rate, Kentucky and Major MSAs**—U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics <[data.bls.gov](http://data.bls.gov)>.

**Urbanization**—U.S. Department of Agriculture, Economic Research Service, Major Land Uses (MLU) series <[www.ers.usda.gov/data-products/major-land-uses.aspx#25977](http://www.ers.usda.gov/data-products/major-land-uses.aspx#25977)>.

**Venture Capital**—PricewaterhouseCoopers, National Venture Capital Association, Money Tree Report, historical trend data, <[www.pwcmoneytree.com/MTPublic/ns/nav.jsp?page=historical](http://www.pwcmoneytree.com/MTPublic/ns/nav.jsp?page=historical)>.

**Volunteer Hours**—Corporation for National and Community Service, <[www.volunteeringinamerica.gov/index.cfm](http://www.volunteeringinamerica.gov/index.cfm)>. These data are from the 2011 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older.

**Volunteer Rate by Education**—These data are from the 2011 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 25 and older.

**Volunteer Rate**—Corporation for National and Community Service, <[www.volunteeringinamerica.gov/index.cfm](http://www.volunteeringinamerica.gov/index.cfm)>. These data are from the 2011 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older. Volunteers are considered individuals who performed unpaid volunteer activities through or for an organization at any point during the 12-month period, from September 1 of the prior year through the survey week in September of the survey year.

## VARIABLES

**Wages**—Bureau of Economic Analysis, CA34, Wage and Salary Summary, and the 2013 Urban-Rural Continuum Code, available at <[www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UqR\\_ZeLs2HY](http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UqR_ZeLs2HY)>.

**Water Quality**—United States, Environmental Protection Agency, *Fiscal Year 2011 Drinking Water and Ground Water Statistics* <[water.epa.gov/scitech/datatit/databases/drink/sdwisfed/howtoaccessdata.cf](http://water.epa.gov/scitech/datatit/databases/drink/sdwisfed/howtoaccessdata.cf)>.

**White, Non-Hispanic Population**—U.S. Census Bureau, 2010 Decennial Census.

**Women, Infants, and Children (WIC)**—U.S. Department of Agriculture, Food and Nutrition Service.

**Youth Alcohol and Drug Abuse**—Centers for Disease Control and Prevention, *Youth Risk Behavior Surveillance System (YRBSS)*, <[www.cdc.gov/healthyyouth/yrbs/index.htm](http://www.cdc.gov/healthyyouth/yrbs/index.htm)>.



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