2013

Kentucky Annual Economic Report 2013

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2013

GATTON COLLEGE OF BUSINESS AND ECONOMICS

UNIVERSITY OF KENTUCKY

CBER

Kentucky Annual Economic Report 2013

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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.

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From the Director . . .

Dr. Chris Bollinger

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 2013 to a comprehensive presentation of economic, education, health, environmental, energy, community, public finance, and demographic factors affecting Kentucky's future economic prosperity.

Along with our three partners in this endeavor—the Innovation Network for Entrepreneurial Thinking, which is organized and staffed by the College of Communication and Information, The Martin School of Public Policy & Administration, and the Center for Poverty Research, 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 initiative (cis.uky.edu/ci/entrepreneurship).

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UKCPR UNIVERSITY OF KENTUCKY CENTER FOR POVERTY RESEARCH

Acknowledgments

The inspiration and framework for this report rests, of course, on the foundation constructed by prior CBER staff and the previous forty *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. *Alex Wolfe* and *Christopher Groves* helped us execute this input by providing valuable research assistance, and *Anna Stewart* was a dutiful proofreader.

Michal Price, a demographer at the University of Louisville's Urban Studies Institute for over 25 years, wrote or provided the data for the population section of this report. 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.

Table of Contents

The U.S. and Kentucky Economies in 2013: Slow but Steady

Chris Bollinger & Kenneth R. Troske

The 2007 through 2009 economic recession was the deepest experienced by the U.S. economy since World War II. It was accompanied by a significant financial crisis which has hindered recovery. As Carmen Reinhart and Ken Rogoff point out, recoveries from recession accompanied by financial crises tend to be slower, with a less clear trend. Households and businesses suffered a significant loss in wealth, which leads them to take a more conservative outlook. As we argued last year, it is clear that recovery from this recession, while not atypical of recessions combined with a financial crisis, will take longer than other types of recessions.

A key factor in the current recovery is the level of uncertainty facing many firms and households. For example, the European Union (EU) is facing significant challenges because of high levels of debt in member countries. How the EU resolves this issue will have significant impact on our economy: imports, exports and the strength of the dollar are intimately linked to this large economy. The Chinese economy has evolved dramatically in the last decade. Chinese government policies will have significant impacts on important international markets like oil and natural gas, as well as on consumer goods and currency markets. Our own government appears to be remarkably polarized, and while the recent election has removed some of the uncertainty regarding some policies, significant uncertainty still exists.

Kentucky fared somewhat better through the recent recession than many parts of the U.S. As is typical, manufacturing was hit hard throughout the U.S. and Kentucky and Central Kentucky in particular were clearly impacted by this. As we reported last year, Kentucky seems to be recovering faster than the U.S. as a whole, and this year appears no different. Employment is rising, generally across all sectors and the unemployment rate in Kentucky, once markedly higher than the nation, has fallen more rapidly and is poised to fall below the national rate. The Central Kentucky region has unemployment below the national rate.

Many analysts in the region and the U.S. are guardedly optimistic about the future of the economy. We share this guarded optimism. As the uncertainty mentioned above begins to resolve itself, we will see business and household decision makers begin to venture forward with new initiatives and projects. The

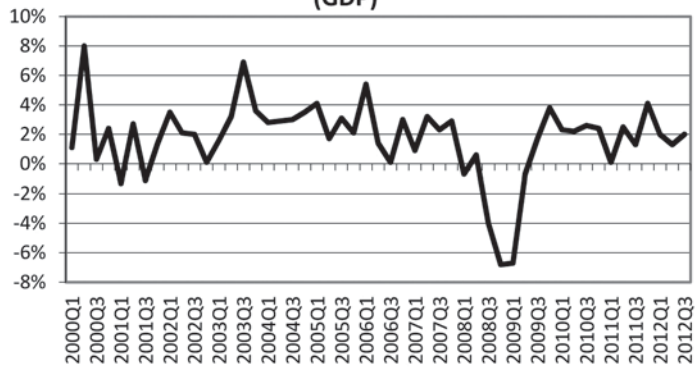
housing market appears to be beginning a recovery and this will help improve both construction and other related industries.

In the rest of this article we will review the performance of the economy over the last several years, focusing on the Kentucky economy and the economic growth of Central Kentucky. As part of this review we will pay particular attention to employment. Our goal is to provide readers with a realistic sense of when we can expect things to return to normal.

Gross Domestic Product

According to the National Bureau of Economic Research, the most recent recession began in December of 2007 and the trough was reached in June 2009. Figure 1 shows this period of economic decline quite clearly with a deep trough in the rate of growth. By the third quarter of 2009 the economy had started growing again, although at growth rates lower than during the previous recovery from 2003-2007. Third quarter annualized GDP growth was initially reported at 2 percent, and the most recent revision places GDP growth at 2.7 percent. The economy struggled some during the second quarter, where the annualized rate fell to 1.3 percent, but it appears that overall growth in 2012 will be close to a 2.0 percent annual growth rate. While this is vast improvement over the recession period, it represents a slow recovery. The debt crisis in Europe continues to create concern and hampers growth. The uncertainty about fiscal policy in the U.S. due to the close election and the so-called "fiscal cliff" all combine to make investors reluctant to commit to large long-term projects and hire additional workers. Without the commitment to these projects and additional hiring, the economy will continue to experience lackluster growth.

FIGURE 1
Percentage Change in U.S. Gross Domestic Product (GDP)



Source: U.S. Department of Commerce, Bureau of Economic Analysis, NIPA Table 1.1.1

In Figure 2, we examine annual GDP growth for Kentucky and its three major metropolitan statistical areas (Lexington, Louisville and Cincinnati MSA's). Kentucky and its metropolitan areas grew at a much slower pace than the national economy during the last boom. Kentucky's decline of 4.2 percent in 2008 was deeper than even the combined U.S. declines of 0.3 percent and 3.1 percent in 2008 and 2009 respectively. In 2009 though, Kentucky experienced 4.2 percent growth, far outstripping the rest of the country. In the last two years, however, the Kentucky economy's growth has been slower than the U.S. as a whole, growing 0.6 percent in 2010 and 0.5 percent in 2011 (as represented in Figure 1).

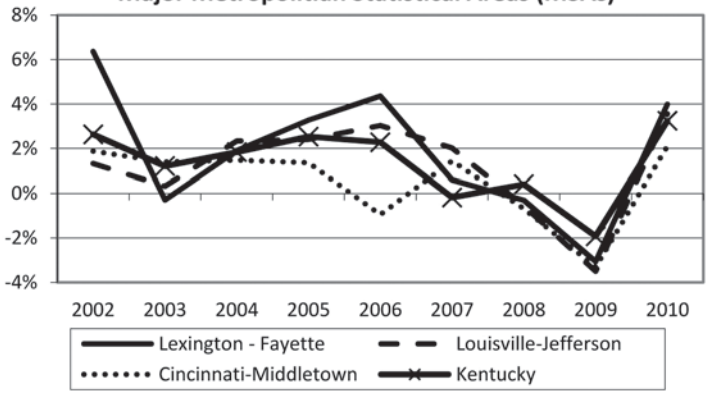
Unfortunately, metropolitan area growth data are not yet available for 2011. We note that Lexington experienced strong economic growth at 4 percent in 2010, while Louisville did nearly as well with a growth rate of 3.6 percent. Both of these rates were higher than even the U.S. growth of 2.4 percent. The Cincinnati MSA grew just slightly slower than the country in 2010 at a rate of 2.1 percent. Most of this growth is simply offsetting the sharp declines experienced during the recession period.

Given that both the U.S. and Kentucky grew at a slightly slower rate in 2011, we anticipate that the growth in the MSA's in 2011 was slower than in 2010. Indeed, for Lexington and Louisville specifically, we expect that the growth was more modest, approximately 2 percent, though still stronger than the U.S. and the state as a whole.

Unemployment

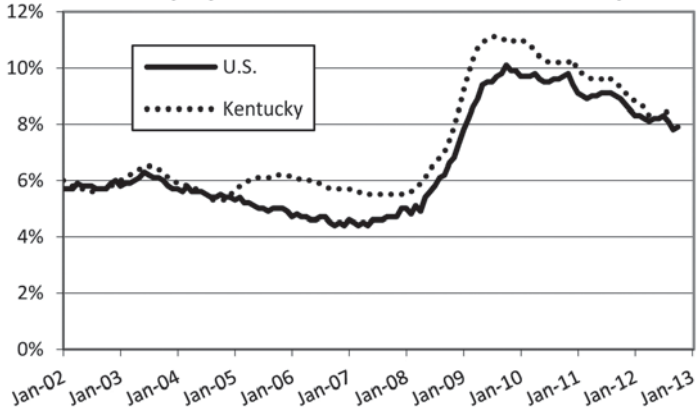
Unemployment rates made some important and significant declines during 2012, with the national average falling below 8 percent for the first time since 2008. Figure 3 presents the U.S. unemployment rate along with Kentucky's unemployment

FIGURE 2
Percentage Change in GDP in Kentucky and Its Major Metropolitan Statistical Areas (MSAs)



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

FIGURE 3
Unemployment Rate for the U.S. and Kentucky

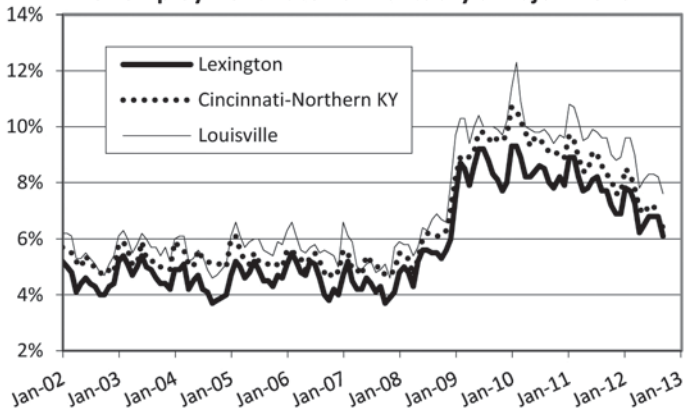


Source: U.S. Department of Labor, Bureau of Labor Statistics

rate for 2002-2009. Kentucky, as is typical, had unemployment rates more than 1 percent higher than the national rates during the recession. Indeed, the Kentucky rate peaked during 2009 at 10.7 percent as compared to the national peak of 10 percent. During 2011 and 2012, the Kentucky unemployment rate fell faster than the U.S. rate so that by May 2012 the Kentucky unemployment rate was equal to the national rate. While the national rate then dipped more in the early fall, the rate for Kentucky has risen slightly to 8.4 percent in October, compared to the low for the year of 8.2 percent in May and June.

In October 2012 (the last month data on unemployment by MSA are available) the unemployment rate in the three Major MSA's in Kentucky was lower than

FIGURE 4
Unemployment Rate For Kentucky's Major MSAs



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

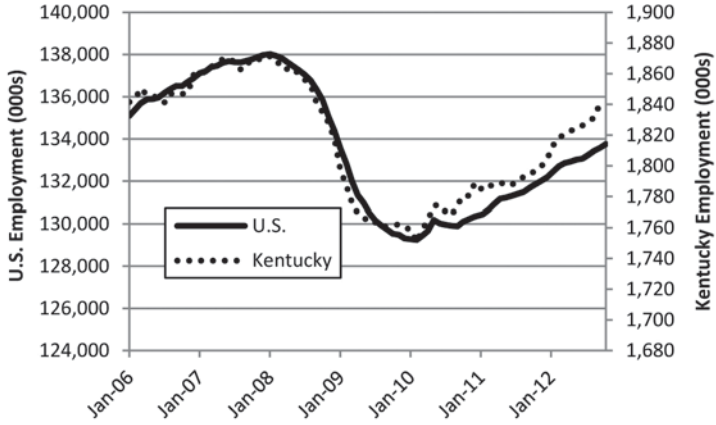
either the state or the national rate. In Figure 4 we see that the downward trend in unemployment begun during 2011 and continued, and even strengthened, in 2012 for these three areas. The unemployment rate in the Louisville MSA, largely due to its higher share of manufacturing employment, is higher than the Cincinnati and Lexington rates, but the unemployment rate in Louisville has fallen consistently. The unemployment rate in all three areas are below 8 percent (as of October 2012), with Lexington and Cincinnati both at an encouraging 6.3 percent. Louisville is at 7.5 percent, but this represents a dramatic drop from the 9.6 percent rate in January of 2012.

Employment

Because the unemployment rate is the number of employed individuals divided by the number of individuals in the labor market, changes in the unemployment rate are driven by both increases in employment as well as declines in the number of people in the labor market. In fact, during the early part of the recovery, declines in the unemployment rate were largely due to declines in labor force participation. During 2012, the labor force participation rate held relatively steady in the nation, although at a lower rate than during the peaks. Therefore, it is important to look at changes in employment, in addition to changes in the unemployment rate, to get a clear picture of the health of the labor market.

Figure 5 shows trends in employment for the U.S. and Kentucky. During 2012, employment in the nation grew to a total of 133.7 million workers. The low point, in February of 2010, saw U.S. employment at only 129.2 million workers. Of the 4.5 million jobs added since February 2010, 1.9 million were added between October 2011 and October 2012, the fastest rate of growth since the trough. This does bode well for a recovering economy, as it puts more money in the hands of consumers.

FIGURE 5
U.S. and Kentucky Employment



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

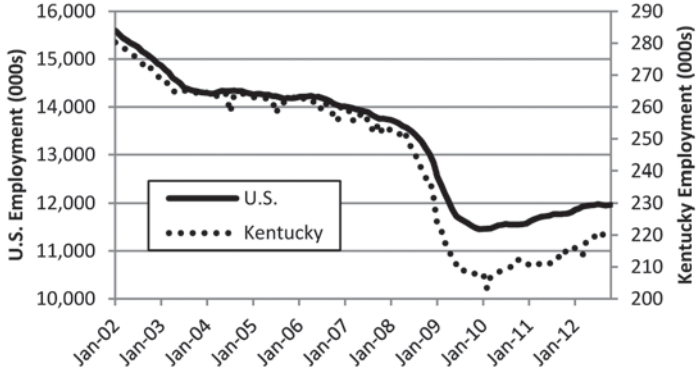
However, it has not yet had a significant impact on the labor force participation rate, largely because of typical entry into the labor force.

Kentucky has experienced faster growth in employment than the country as a whole, as represented by the growing gap in the two trends in Figure 5. In October of 2012, Kentucky employment had risen to 1.83 million workers, 98 percent of the peak (as compared to the U.S. which is still below 97 percent of the peak). Of the over 80,000 jobs added in Kentucky since the trough, 40,000 of them were added in the twelve months ending with October of 2012. Like the U.S., the rate of job growth has been higher during the last year.

The employment patterns in Kentucky's three major MSA's (Lexington, Louisville and Northern Kentucky) are similar to the unemployment statistics in that the employment growth in Lexington was the strongest early on, but the employment growth in Louisville has caught up in the last year. Northern Kentucky/Cincinnatti, is more comparable to the national growth, still working to return to the peak.

Comparing the trends in employment with the trends in GDP discussed above reveals one of the more significant changes that has occurred during the recession—the large increase in labor productivity. Between 2007 and 2011 overall labor productivity in the U.S. has risen by approximately six percent, compared to an increase for Kentucky as a whole and in Kentucky's major MSAs of approximately four percent. This growth in productivity means that businesses are now able to produce the same amount of output with much less labor, so businesses are under less pressure to hire workers in order to meet the growing demand for their products or services. This productivity increase also puts pressure on workers looking for employment to increase their skills so that they are able to compete in the more productive workplace.

FIGURE 6
Manufacturing Employment in the U.S. and Kentucky



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

The employment growth rate in both the nation and Kentucky has increased during the past year. Last year we predicted it would be five years before we return to pre-recession levels. However, as job growth has begun to speed up, this gap is closing faster. While the return to normal will arrive sooner than four years from now, the rate of growth for the nation is still too slow to predict a return in three years. For Kentucky, and in particular for the Lexington and Louisville MSA's which are now growing quite robustly, we may see a return to pre-recession employment, or even better, in slightly over a year. Northern Kentucky/Cincinnati and Kentucky as a whole may still take another two years, as their growth has not been as robust. However we caution that this assumes the faster growth of this last year continues. A number of factors may prevent this faster growth from continuing. We further note that a return to pre-recession employment level does not fully return the labor market to pre-recession employment rates, as population has grown.

Manufacturing Sector

Manufacturing employment in both the U.S. and Kentucky began rebounding in early 2010. Moderate growth has continued, with Kentucky experiencing stronger employment growth through 2011 and 2012 than the U.S. as a whole. This pattern of strong growth in manufacturing employment during a recovery is common, offsetting the deep cuts to manufacturing employment during the recession. As can be seen in Figure 6, from January 2007 (shortly before the recession) through February of 2010 (the trough in Kentucky), 22 percent or nearly 55,000 Kentucky workers were dropped from manufacturing payrolls. This closely follows the rapid decline in manufacturing employment in the U.S. during the same period when over 2.5 million manufacturing jobs were shed. As of October of 2012, some 15,000 manufacturing jobs have returned to Kentucky, representing 7.6 percent growth over that period. However, overall, manufacturing in Kentucky as well as the U.S. has taken a significant hit. Both U.S. and Kentucky manufacturing employment are still 14 percent below the level in January 2007. During 2011, we saw Kentucky manufacturing employment grow at a rate of nearly 3 percent, and while growth has continued, the growth in 2011 was slightly less than 2 percent. At the current rate of growth we would return to the 2007 benchmark in slightly more than 9 years. The current employment levels in both the U.S. and Kentucky, have nearly returned to a long run trend line. This trend line in manufacturing employment has been a long term decline in employment. Each recession has seen manufacturing shed jobs and never recover. For example, in Figure 6, we can see the effects of the 2001-2003 recession. While the decline stabilized during the 2003-2007 period, the manufacturing jobs lost during the 2001 recession have never returned.

Louisville saw the deepest losses in manufacturing employment while Cincinnati lost the least. The Cincinnati region has recovered far more of its manufacturing employment than either Louisville or Lexington. While Lexington's manufacturing employment losses were comparable in magnitude to the Cincinnati region, the

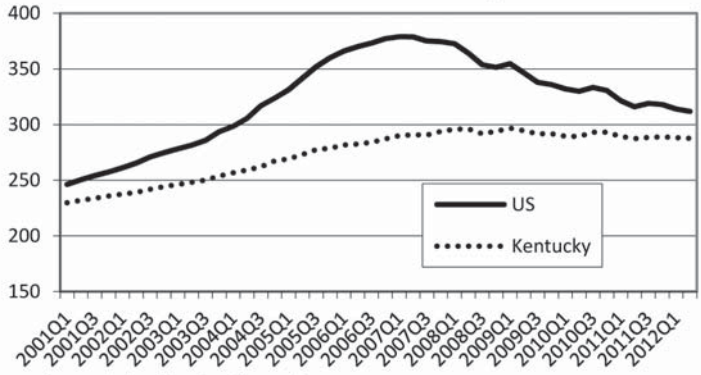
recovery has been slow. Manufacturing employment in Lexington has remained at about the same level through the last two years. There may be a slight upturn in the last few months of 2012, but it is difficult to determine whether these changes are simply normal fluctuations around a new long run, or represent the beginning of growth. Louisville's growth, while more robust than Lexington's, is still slower than Cincinnati/Northern Kentucky.

We expect that the employment growth in manufacturing will slow and likely stabilize over the next year. While we may recover some manufacturing jobs, we are unlikely to return even to the 2007 levels, much less the levels of employment seen in 2000 or earlier. While there has been some belief that on-shoring will begin to occur, and certainly the weakening U.S. dollar will facilitate this, improvements in technology allow higher production with fewer employees. We expect this trend to continue and slow growth in manufacturing over the next year.

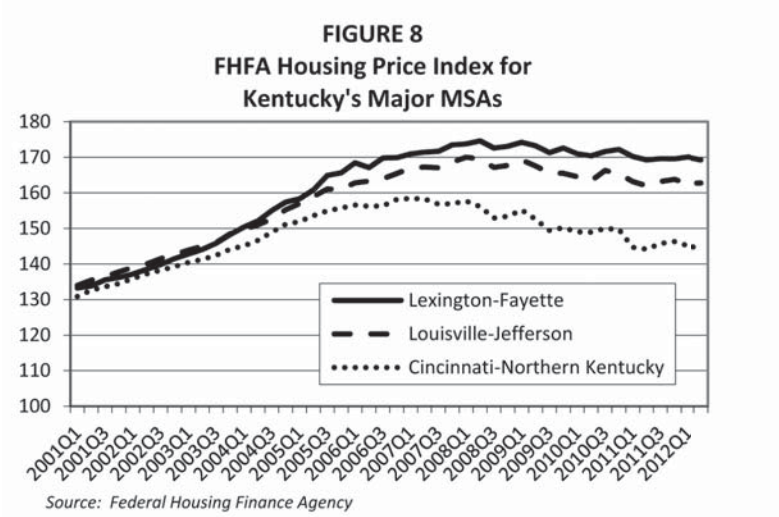
Housing Market

The housing market has played a crucial role in recent economic growth. As is often the case, many analysts have argued that the economy will not begin to fully recover until the housing market begins a serious recovery. We are beginning to see important positive signs in the housing recovery. Figure 7, shows the national and Kentucky FHFA housing price index. The recent drop in housing prices, most obviously for the U.S., began around the end of 2007. Prices began to stabilize during late 2011 and in the third quarter the U.S. housing price index is slightly higher at 315.57, the first increase in the index since 2007. As we can see in the figure, Kentucky experienced a smaller decline in housing prices than the U.S. as a whole, never really experiencing a significant decline in prices, but with no growth during this period. Unlike the U.S. there has been modest upward movement in

FIGURE 7
Quarterly FHFA Housing Price Index for the U.S. and Kentucky



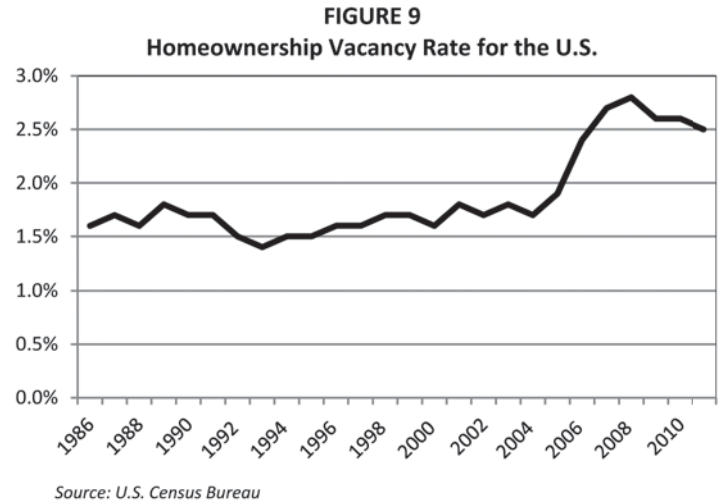
Source: Federal Housing Finance Agency



prices since the middle of 2011, although the movements are small. Hence prices are beginning to react as though housing demand has begun to recover.

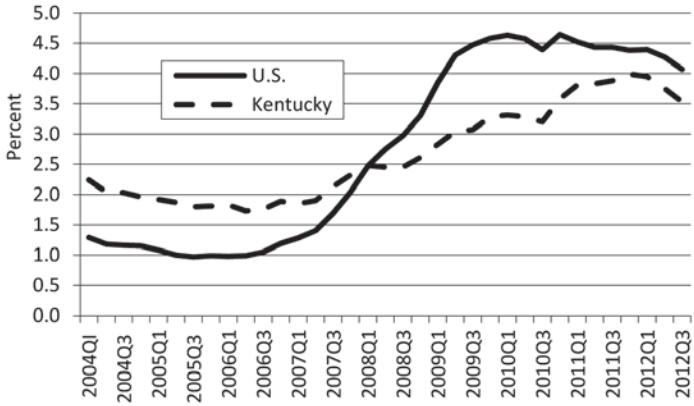
Figure 8 presents the housing price index for the three metropolitan areas. Lexington saw only the slightest decline in the housing price index, while the Cincinnati area saw a decline not as significant as the U.S. average, but more marked than Louisville. In all three cases the price index has stabilized and, like both the U.S. and Kentucky, may have begun to rise in the last few quarters.

Figure 9 presents the U.S. and Kentucky home ownership vacancy rates from 1986 through 2012. Vacancy rates began to rise in 2001. Kentucky saw a large spike in 2006, clearly leading the U.S. peak in 2007. Both rates have begun to decline,



with Kentucky leading the U.S. decline. The Kentucky vacancy rate has returned to approximately the level in 2004, while the U.S. rate has not reached that pre-recession benchmark yet. However, both represent returning housing demand. Another key indicator of the strength in the housing market are foreclosure rates. Figure 10 presents the foreclosure rates since 2004 for both the U.S. and Kentucky as a whole. For both areas foreclosure rates have begun to decline. Foreclosure rates, prices and vacancy rates are closely linked. Low priced foreclosure homes make it difficult for prices to begin to rise, and often lead to a longer time on market. However, the turns, especially in vacancy rates and foreclosure rates, are signs that the housing market has begun to recover. If, as is typically thought, the housing market must recover for the economy to fully recover, these first steps indicate that process has started in earnest.

FIGURE 10
Foreclosures as a Percentage of All Mortgages



Source: Mortgage Bankers Association

Outlook for 2013

In Table 1 we present our forecast for the coming year. In the first column we present our forecast from last year. The second column contains the most recent data showing the actual performance of the economy in 2012. Comparing columns 1 and 2 shows how accurate we were last year. Finally, column 3 shows our predictions for 2013.

As the numbers in this table indicate, we continue to be guardedly optimistic and expect the U.S. economy to continue its slow but steady growth in 2013. We predict an overall growth rate for GDP in the U.S. of around 2.5 percent. We do not expect the economy to slip into a new recession. Following the trends in employment we have seen, we expect the unemployment rate to fall somewhat to 7.3 percent by the end of the year, giving us a prediction for the year of about

7.5 percent unemployment. We expect employment growth in the coming year to be higher than in 2012, but still relatively weak, and we believe the level of employment will remain below the level seen prior to the start of the recession. We expect that inflation will remain under control in the coming year.

We believe that the Kentucky economy will continue to outpace the U.S. economy in the coming year, averaging 3.0 percent growth, and we expect to see the unemployment rate continue to fall to approximately 7.5 percent, matching the U.S. rate. These expectations are predicated on our belief that we will see reasonable growth in overall employment, although we think manufacturing employment growth will be slower. We also believe that Central Kentucky will continue to experience somewhat faster growth and lower unemployment than the rest of the state.

In summary, we believe that our recovery from the recent recession and financial crisis remain typical, with growth in the range of 2.0-3.0 percent per year and while unemployment will continue to fall, we will still be above "full employment" rates - around 5 percent - typically seen at the end of a recovery. However, we see no reason to expect that low growth and high unemployment will persist in the long run. These trends are part of a slow, but steady recovery. As economic uncertainty resolves itself, the recovery will continue. We believe by 2014 or 2015 the U.S. economy will return to rates of growth and unemployment that we have seen during previous business cycle peaks. We remain confident that the economy will continue to improve.

TABLE 1
Forecast for 2013

	2012 Forecast	2012 Actual or Best Available	2013 Forecast
Real GDP Growth--U.S.	2.5%	1.6%	2.5%
Unemployment Rate--U.S.	8.0%	8.1%	7.5%
Inflation--U.S.	1.5%	1.4%	1.5%
Employment Growth--U.S.	2.0%	1.3%	2.0%
Growth in Manf. Employment--U.S.	2.0%	1.2%	1.5%
Real GDP Growth--Kentucky	3.0%	---	3.0%
Unemployment Rate--Kentucky	8.5%	8.4%	7.5%
Employment Growth--Kentucky	2.5%	1.6%	2.0%
Growth in Manf. Employment--Kentucky	3.0%	1.8%	1.5%

OVERVIEW

OUR ECONOMIC FORECAST FOR KENTUCKY IN 2013, PRESENTED in the preceding chapter, provides an analysis and presentation of data on the state's gross domestic product, employment, and housing. In the sections that follow we provide even more data about Kentucky's economy—including information on many factors that are not necessarily economic—but still exercise an important impact on it.

The sections that follow are: Economic, Innovation, Economic Security, Education, Health, Energy, Environment, Community, Public Finance, and Population. Each of these thematic sections—which covers 83 trends, factors, or forces affecting or taking place in Kentucky's economy—is summarized with an overview describing the wider context and relevance of the thematic area.

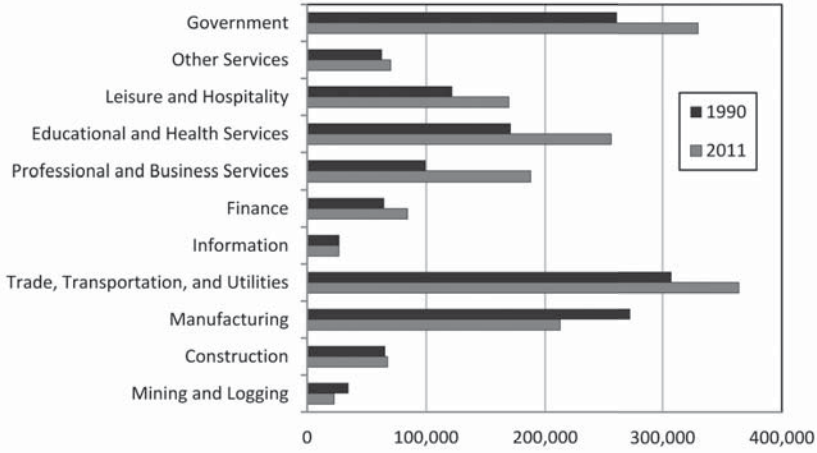
Many of the variables presented in the *2013 Kentucky Annual Economic Report* include data for Kentucky over many years which allows one to assess if the state is improving. Also, we have included data on the U.S. and the competitor states—which are Alabama, Georgia, Illinois, Indiana, Mississippi, Missouri, 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 no single factor determines the state's economic prospects—it is an amalgamation of many disparate factors which shape and determine our economic trajectory.

Employment by Sector

Kentucky's economy has changed since 1990. There were, for example, over 300,000 more people employed in 2011 compared to 1990—an increase of 20.4 percent. Over the same time period Kentucky's population increased by 18.5 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 60,000 less workers in 2011 (a 22 percent decline) and mining and logging, which lost 12,000 jobs (a 35 percent decline). Conversely, the largest increases in employed occurred in professional and business services (88,000 more jobs for an increase of 89 percent), education and health services (84,000 more jobs—49 percent increase), government (70,000 more jobs—27 percent increase), trade, transportation, and utilities (57,000 more jobs—18 percent increase), leisure and hospitality (48,000 more jobs—39 percent increase), and finance (20,000 more jobs—30 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 2011

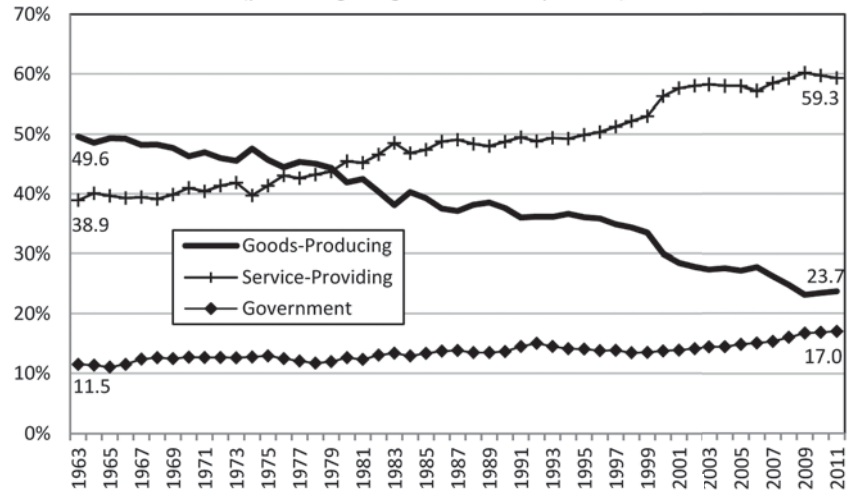


Source: U.S. Department of Labor, Bureau of Labor Statistics

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 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 17 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, 1963-2011
(percentage of gross domestic product)

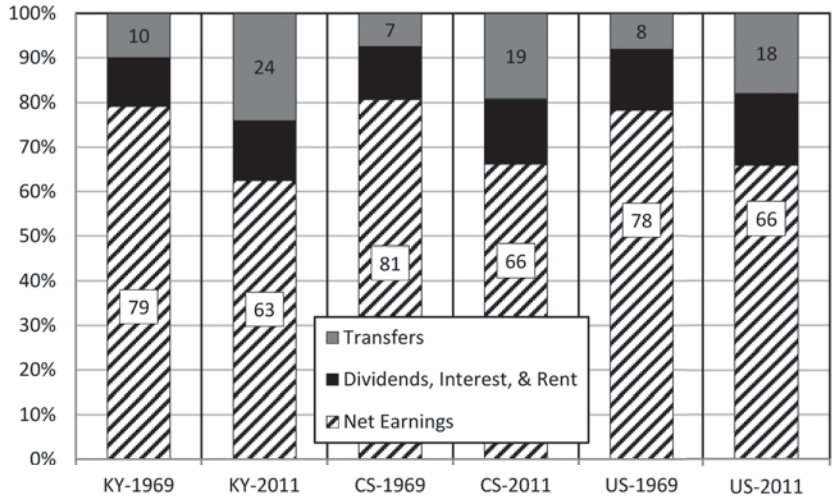


Source: Bureau of Economic Analysis

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 2011, however, net earnings had declined to 63 percent of total personal income while transfer payments increased to 24 percent. By comparison, in 2011 transfer payments constituted 19 percent and 18 percent of personal income in the competitor states and the U.S., respectively.

Sources of Personal Income, 1969 and 2011, Kentucky, Competitor States, and the U.S.
(percent of total personal income)

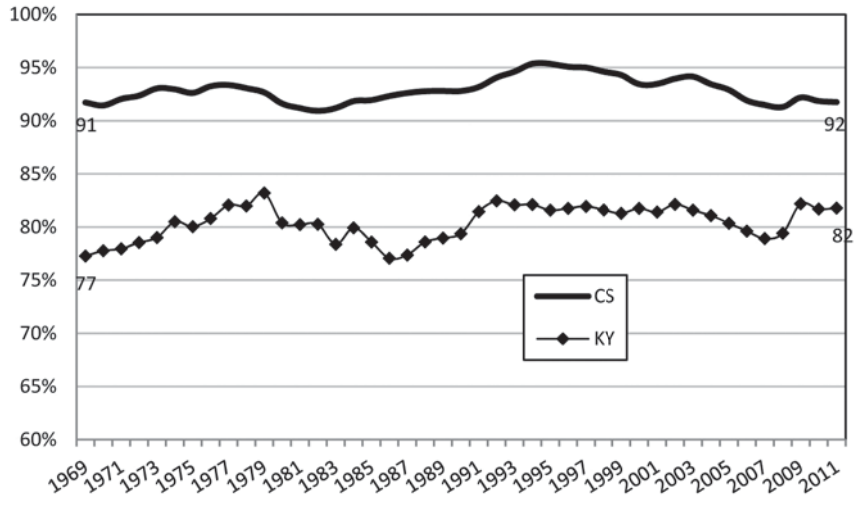


Source: U.S. Department of Commerce, Bureau of Economic Analysis

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 analyzed. In 2011 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 of the country and has sparked serious inquiry into what it will take for the Commonwealth to achieve parity with the national average. One such study conducted in 2005 by SRI International for the Kentucky Science and Technology Corporation found that it would take 154 years for Kentucky to reach the national average at its current rate of growth. The study analyzes a high-growth scenario in which Kentucky achieves 100.4 percent of the national average by 2022. The analysis suggests that to achieve such a level of per capita income, "'disruptive' and transformational changes in economic growth strategies and outcomes will be required."

Per Capita Personal Income as a Percentage of the U.S. Average, Kentucky and Competitor States, 1969 to 2011



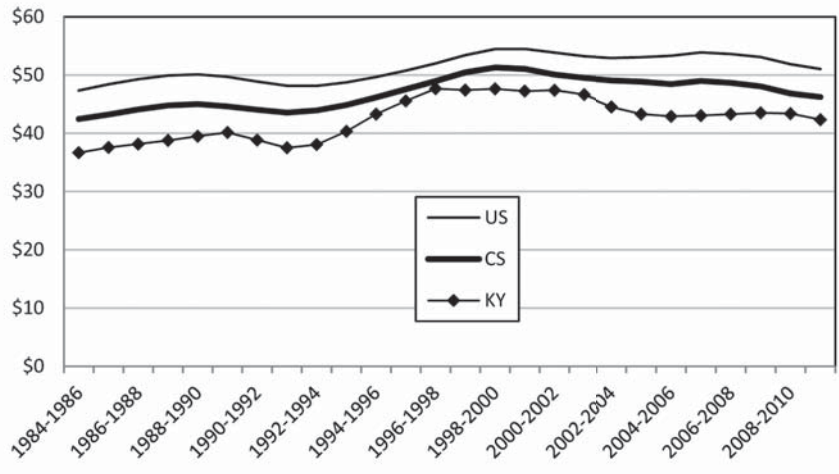
Source: U.S. Department of Commerce, Bureau of Economic Analysis

Household Income

Similar to the trajectory of per capita personal income, median household income in Kentucky is currently about 83 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 $5,674 in real terms from the mid-1980s to the 2009-2011 period, compared to $3,776 for the competitor states and $3,680 for the U.S.—representing increases of 15.5, 8.9, and 7.8 percent for Kentucky, the competitor states, and the U.S., respectively. However, Kentucky's 3-year average of $42,331 (2011 constant dollars) during the 2009-2011 period is at its lowest point—in 2011 constant dollars—since 1993-1995 when it was $40,318. In 2011 nearly one third of Kentucky households—31.8 percent—reported less than $25,000 in income, compared to 25.1 percent nationally.

Median Household Income, Kentucky, Competitor States, and the U.S., 1984-2011

(2011 dollars, thousands, 3-year average)



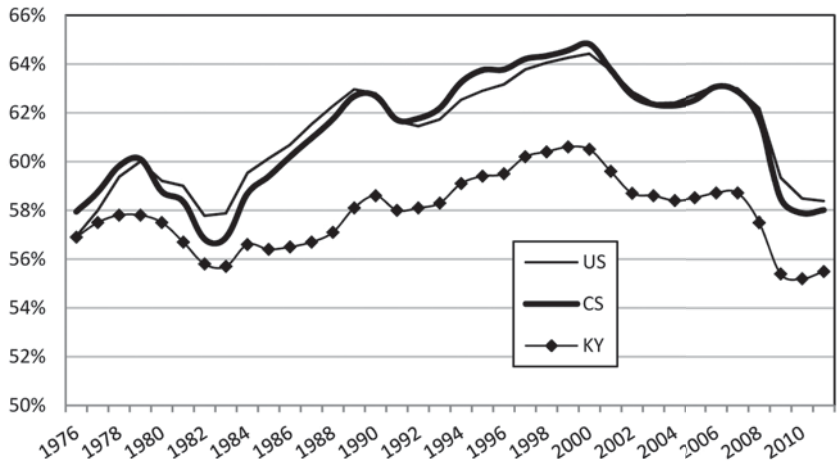
Source: U.S. Census, Annual Social and Economic Supplement

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 2011, 69.3 and 49.5 percent, respectively. Kentucky's 2011 value was 55.5 percent—somewhat lower than both the competitor states (58) and the U.S. (58.4) 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 2011

(percentage of civilian noninstitutional population over 16 employed)

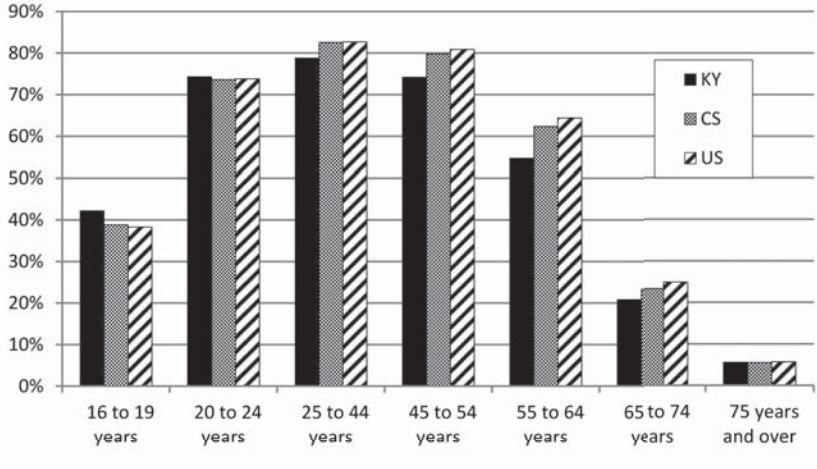


Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics

Labor Force Participation by Age Group

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 2011, the participation rates ranged from 71.9 percent in North Dakota to 53.8 percent in West Virginia. Over the last 5 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 16 to 24 looks very similar to both the competitor states and the U.S. However, the labor force participation rate for Kentuckians 25 to 64—the prime working years—is 72 percent compared to 77 percent for the competitor states.

Labor Force Participation by Various Age Groups, Kentucky, Competitor States, and the U.S.
(percent of individuals in the labor force, 2009-2011)

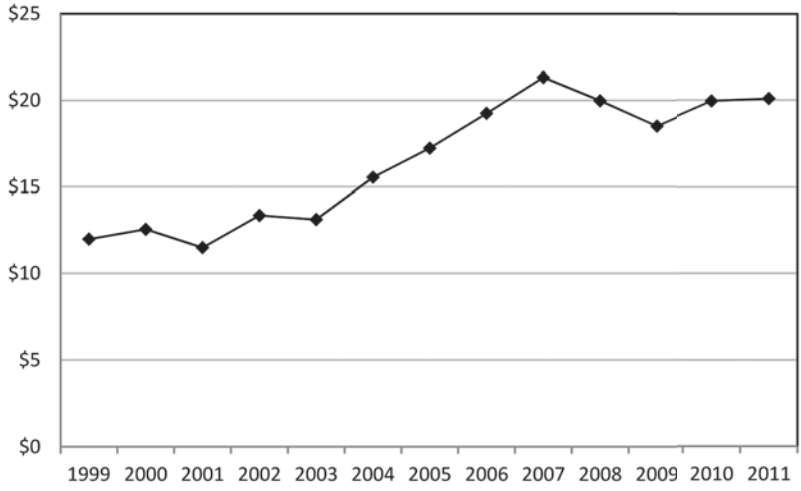


Source: 2009-2011 American Community Survey 3-Year Estimates

Exports of Goods

The value of Kentucky's exports of goods has nearly doubled in the last decade. Indeed, from 1999 to 2011 the compound annual growth rate of Kentucky's exports—in constant 2011 dollars—is 7 percent; this is slightly higher than the U.S. compound annual growth rate of 6.5 percent but lower than the 7.4 percent experienced by the competitor states. The value of Kentucky's exports of goods in 2011 was $20 billion, which is equivalent to 12.2 percent of Kentucky's gross domestic product; it was 8.8 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 32 percent of the total value of exported goods. The United Kingdom was second (7.4), followed by Mexico (7.2), Japan (5.3), and Brazil (5). Kentucky exported to 195 different countries in 2011, but the top 5 countries accounted for over 57 percent of the total value of exported goods. Over one-third (35 percent) of the value of exported goods was transportation equipment, followed by chemicals (20), machinery-except electrical (10), computer and electronic products (8), and primary metal manufacturing (4). Combined, the top 5 categories accounted for over three-fourths of Kentucky's exports in 2011.

Kentucky Exports of Goods, 1999-2011
(constant 2011 billions)



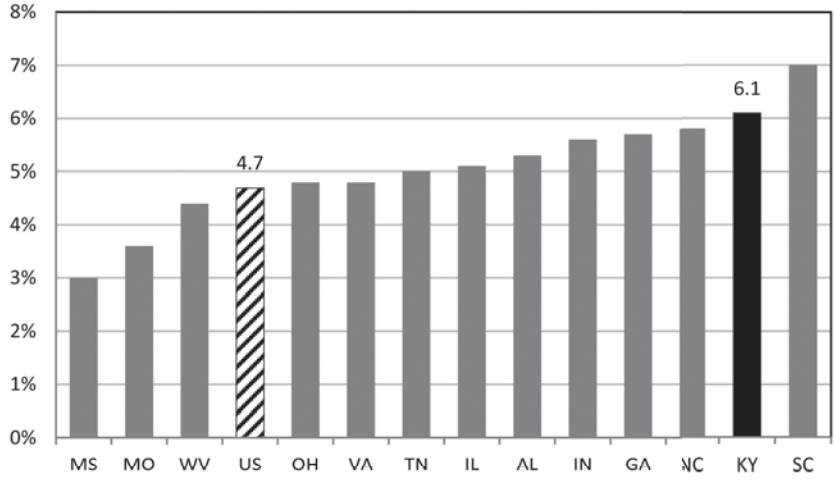
Source: Office of Trade and Industry Information (OTII), Manufacturing and Services, International Trade Administration, U.S. Department of Commerce.

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 89,500 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 2010. This is much higher than the U.S. average of 4.7 percent and leads all competitor states except for South Carolina.

Employment of Majority-Owned U.S. Affiliates, 2010, Kentucky, Competitor States, & the U.S.

(percentage of total employment)



Source: Bureau of Economic Analysis, Survey of Current Business, U.S. Affiliates of Foreign Companies: Operations in 2010

OVERVIEW

IF INNOVATION IS THE *SINE QUA NON* OF WAGE AND JOB GROWTH, then the creation of entrepreneurs, commercialization of discoveries, and nurturing of startups are the necessary vehicles for its realization. New firms—startups—make a significant contribution to both gross and net job creation, and, indeed, some have found that without startups there would be no net job growth in the U.S. economy. A subset of new firms—the high-growth young firms or the so-called "gazelles"—comprise less than 1 percent of all companies but generate about 10 percent of new jobs in any given year.

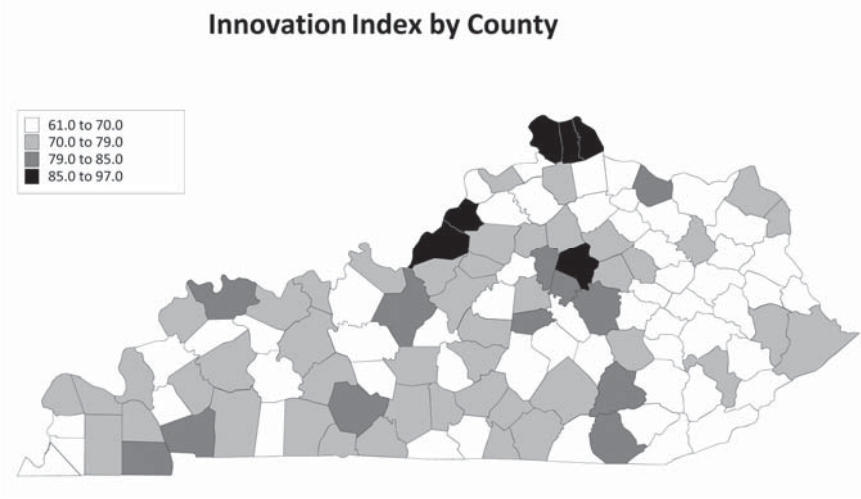
Innovation, as measured by the number of patents issued, is widely regarded as a measure of a state's entrepreneurial energy. Research finds that innovation, along with education, has a significant impact on a state's per capita income. A study by the Federal Reserve Bank of Cleveland shows that states 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, 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 40 years.

Unfortunately, regardless of how we slice it, Kentucky does not measure up on most assessments of innovation and entrepreneurship. For nearly a half century, Kentucky, which ranked 39th in 2010, has lagged behind the U.S. average as well as the surrounding states in the number of patents for invention. On the 2010 Milken Institute's State Technology and Science Index, which purportedly measures a state's capacity to harness and nurture its innovation assets, Kentucky ranks 47th. Similarly, on a U.S. Department of Commerce Economic Development Administration funded initiative to measure the innovation capacity of counties, regions and states, Kentucky ranks 49th.

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. Developing Kentucky's entrepreneurial capacity and innovative energy will be key for the state's future prosperity.

County-Level Innovation Index

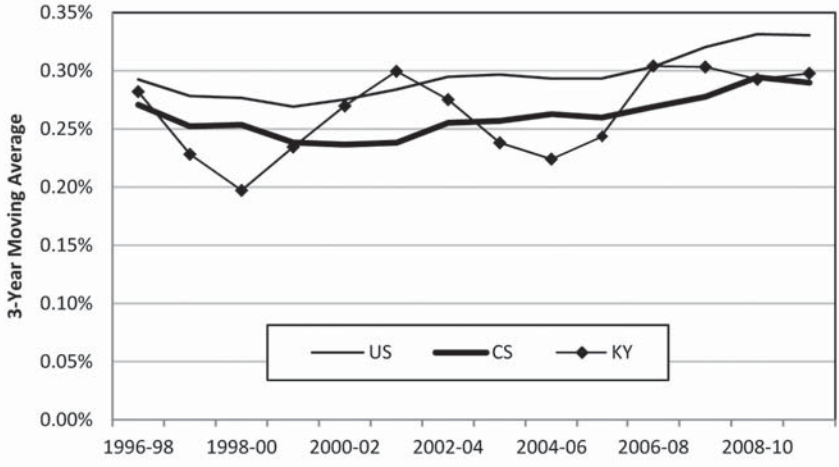
An initiative to develop a county-level "innovation index," funded by the U.S. Department of Commerce Economic Development Administration and produced by Purdue and Indiana University, ranks Kentucky 49th among the states. The county-level results are illustrated on the map below, with the highest innovation 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.



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 2011, an average of 0.32 percent of the American adults (20 to 64 years old), or 320 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 2009-2011 average for the U.S., Kentucky, and Competitor States are 0.33%, 0.30%, and 0.29%, 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., 1996-2011
(percent of adults 20-64 creating a new business each month)

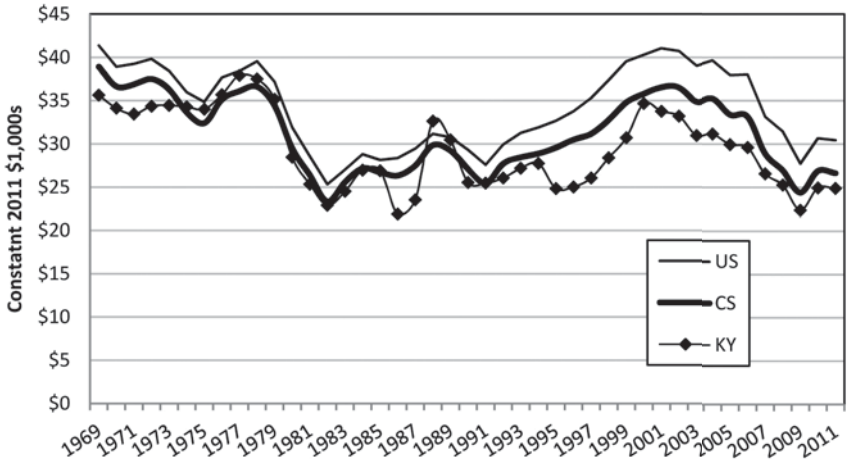


Source: Author's analysis of CPS data provided by Robert W. Fairlie, Kauffman Index of Entrepreneurial Activity

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 2011 Kentucky lagged the U.S. and competitor states by $5,570 and $1,760, respectively.

Average Self-Employment Income, Kentucky, Competitor States, and the U.S., 1969-2011
(nonfarm proprietor income/nonfarm proprietor employment)

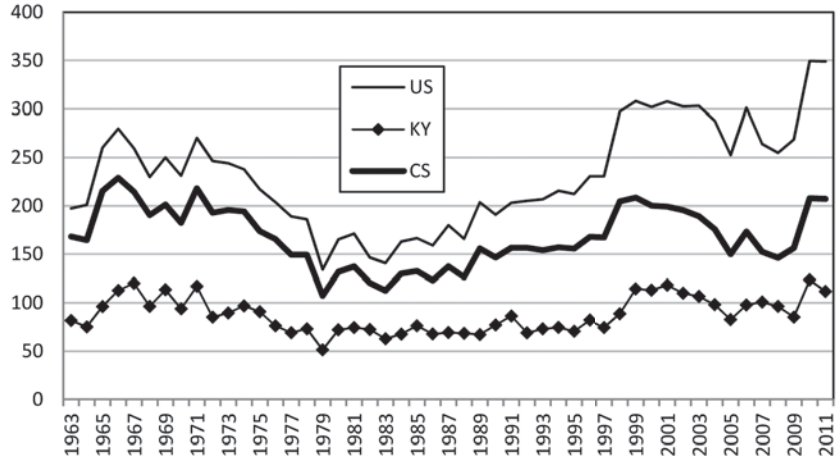


Source: U.S. Department of Commerce, Bureau of Economic Analysis

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., 1963-2011
(per 1 million population)

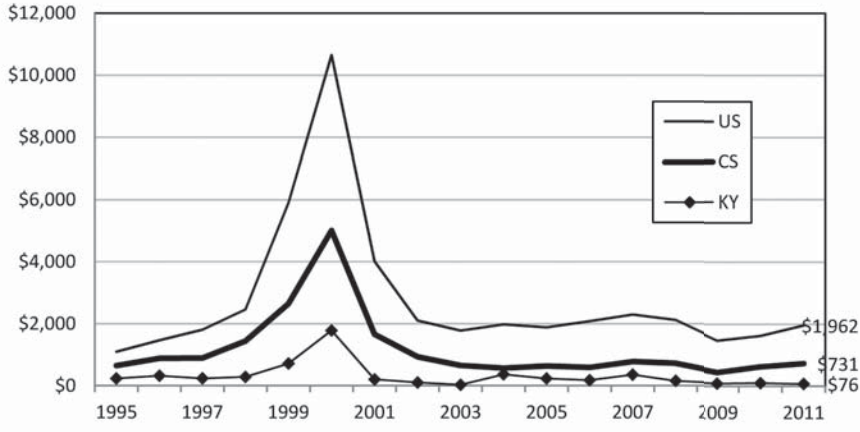


Source: US Patent and Trademark Office and U.S. Census Bureau

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 concentrated in a few states, with only two states—California (50%) and Massachusetts (11%)—accounting for 61 percent of the total venture capital disbursed in the United States in 2010. Nevertheless, the level of venture capital in a state's economy is frequently used as an indicator of innovation capacity and entrepreneurial energy. In 2011, venture capital investments in Kentucky were $76 per $1 million of state gross domestic product—which was about one-tenth the level of the competitor states ($731) and substantially lower than the U.S. average ($1,962).

Venture Capital Investments,
Kentucky, Competitor States, and the U.S., 1995-2011
(Current dollars, per $1 million/state GDP)

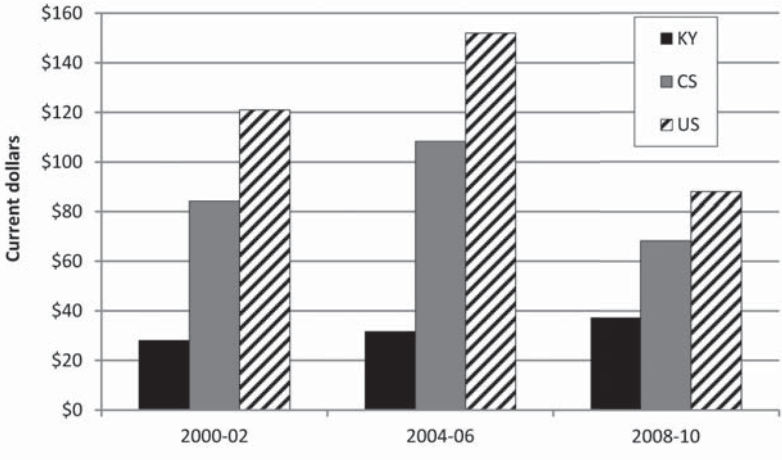


Source: PricewaterhouseCoopers and Bureau of Economic Analysis

Small Business Innovation Research

Small Business Innovation Research (SBIR) 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 $37 per $1 million in state gross domestic product during 2008-10. By comparison, the U.S. average was $88 and the competitor states was $68. At $448, Massachusetts had the highest value among the states during the 2008-2010 period. Among the competitor states, Virginia ($183), Alabama ($157), Ohio ($93) and North Carolina ($74) received significantly more SBIR funding than Kentucky.

Average Annual Small Business Innovation Research Funding, Kentucky, Competitor States, and the U.S.
(SBIR fuding $/$1 million GDP)

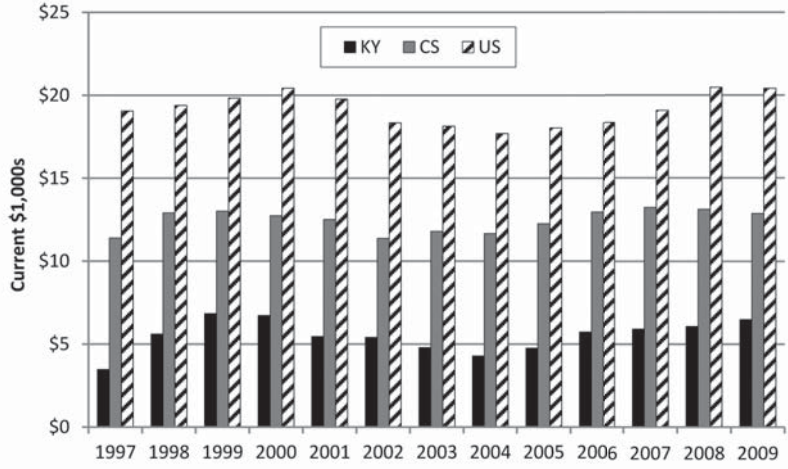


Source: National Science Board, Science and Engineering Indicators, 2012

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 almost 76 percent 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 nearly $6,500 per million dollars in gross domestic product in 2009 on research and development. Indiana led all competitor states, at nearly $21,000. The competitor state average in 2009 was nearly $13,000 and the U.S. average was just over $20,000.

Funds for Industrial R&D Performance, Kentucky, Competitor States, and the U.S., 1997-2009
(thousands per million in gross domestic product)

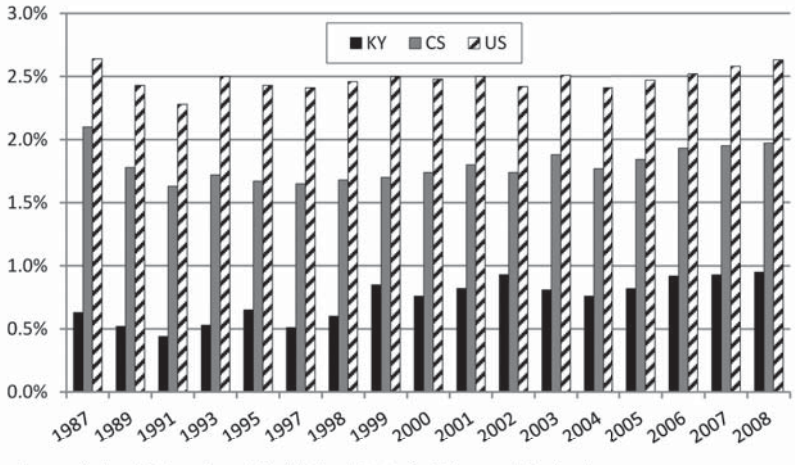


Source: National Science Foundation, Business and Industrial R&D, various years

Total Research & Development

While industrial research and development performance accounts for three-quarters 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, Alabama and Virginia have the highest values among the competitor states at 2.87 and 2.85 percent, respectively. The competitor state average in 2008 was around 2 percent, compared to Kentucky's value of about 1 percent; the U.S. average was just over 2.6 percent. New Mexico had the highest value of all the states—7.65 percent. Kentucky finds itself in the bottom quartile of states on this measure, with Mississippi the only other competitor state in the 4th quartile.

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

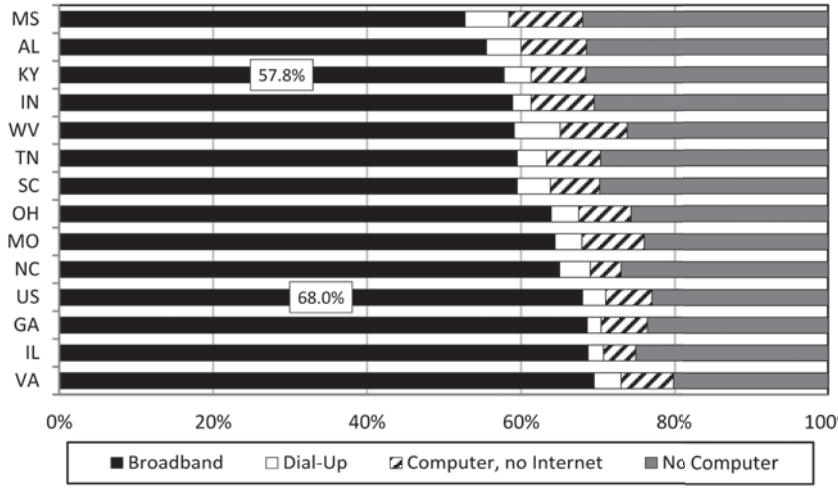


Source: National Science Foundation/National Center for Science and Engineering Statistics. National Patterns of R&D Resources, various years

Computer & Internet Use

A key driver that has accelerated globalization of the economy has been the emergence of nearly instantaneous data transfers enabled by broadband 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, 68 percent of the households have a broadband connection, which is over 10 percentage points higher than Kentucky's 57.8 percent. A 2006 report sponsored by the Economic Development Administration, *Measuring the Economic Impact of Broadband Deployment*, concluded that "broadband access does enhance economic growth and performance, and that the assumed economic impacts of broadband are real and measurable." The researchers found that "between 1998 and 2002, communities in which mass-market broadband was available by December 1999 experienced more rapid growth in employment, the number of businesses overall, and businesses in IT-intensive sectors, relative to comparable communities without broadband at that time." Their analysis, however, "did not find a statistically significant impact of broadband on the average level of wages." Having broadband available—and using it—is a factor contributing to economic success.

Computer and Internet Use, 2010
Kentucky, Competitor States, and the U.S.
(by household broadband adoption rate)



Source: U.S. Department of Commerce, National Telecommunications and Information Administration and Economics and Statistics Administration, Exploring the Diginal Nation, November 2011

OVERVIEW

WHIPPED BY INCESSANT WINDS OF SOCIAL AND ECONOMIC change, many workers and their families feel their aspirational grip on the American Dream slowly loosening as they dangle precariously above an abyss of deep uncertainty. 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 (27.4 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.

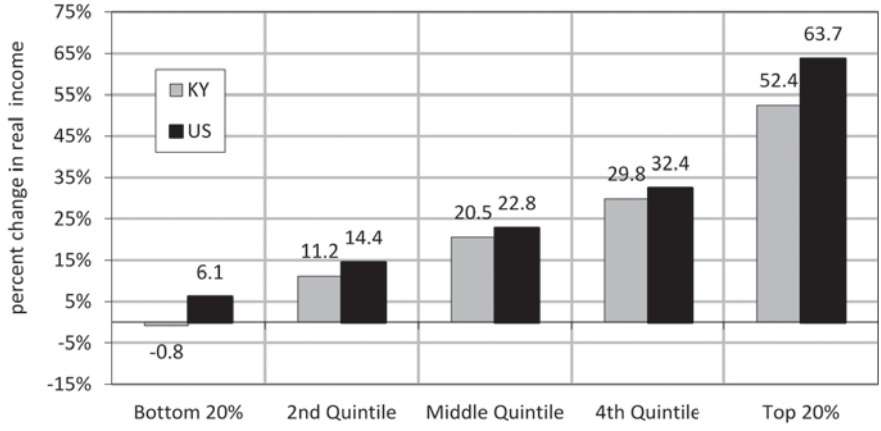
Here we present data on the income distribution, bankruptcies, poverty rates, and food insecurity. We also present data on participation in various government programs that form an economic safety net for those experiencing hardship, such as the Food Stamp Program, Temporary Assistance for Needy Families, 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 is a necessary 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)

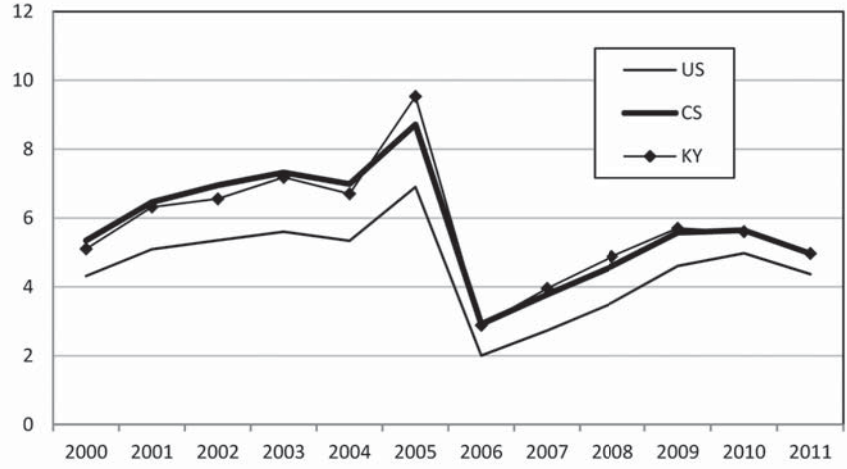


Source: Economic Policy Institute/Center on Budget and Policy Priorities analysis of data from the U.S. Census Bureau's Current Population Survey

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 2011 were about 5 bankruptcies per 1,000 population. The U.S. average has been somewhat lower over the 2000-2011 period, but stood at about 4.4 in 2011.

Personal Bankruptcies,
Kentucky, Competitor States, and the U.S., 2000-2010
(bankruptcies per 1,000 population)

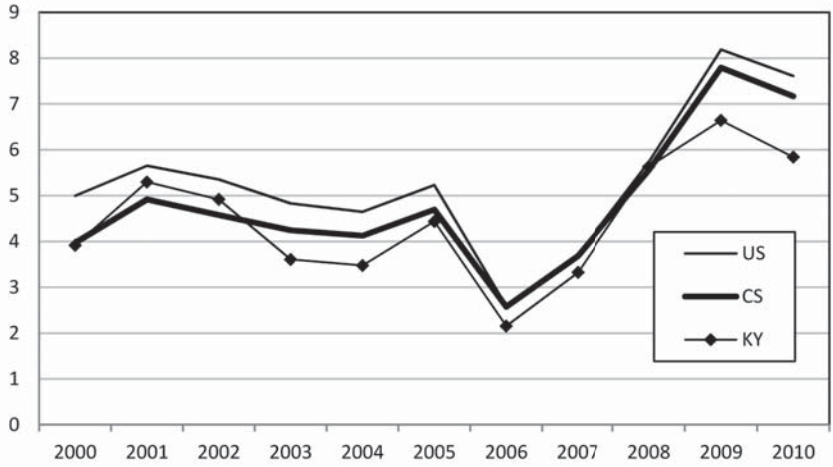


Source: Administrative Office of the U.S. Courts & County Business Patterns data provided by the Indiana Business Research Center, Indiana University, Kelley School of Business

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 47,806 in 2011. Business filings across the U.S. in the first three quarters of 2012 are about 16 percent lower than the number filed in the first three quarters of 2011. When expressed as a percentage of business establishments, Kentucky was lower than the competitor states and the U.S. during the last few years but has historically has had similar rates.

Business Bankruptcies,
Kentucky, Competitor States, and the U.S., 2000-2010
(bankruptcies per 1,000 business establishments)

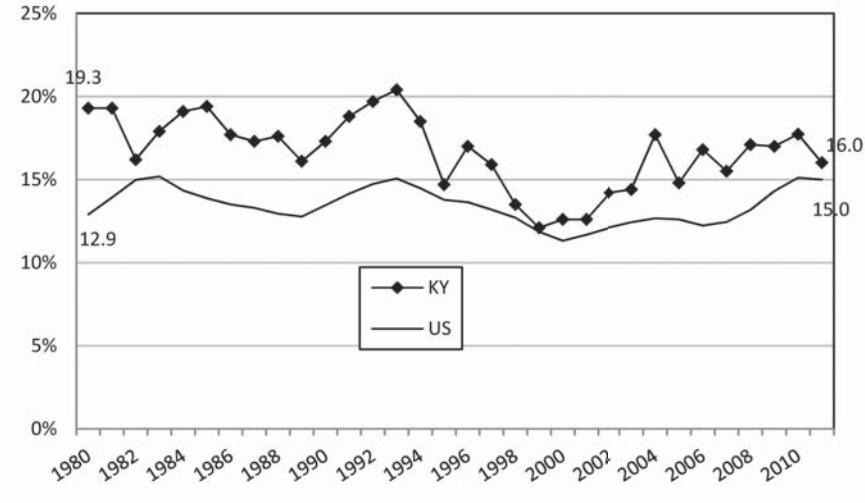


Source: Administrative Office of the U.S. Courts & County Business Patterns data provided by the Indiana Business Research Center, Indiana University, Kelley School of Business

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 16 percent.

Poverty Rate in Kentucky and the U.S., 1980-2011
(percentage of individuals)



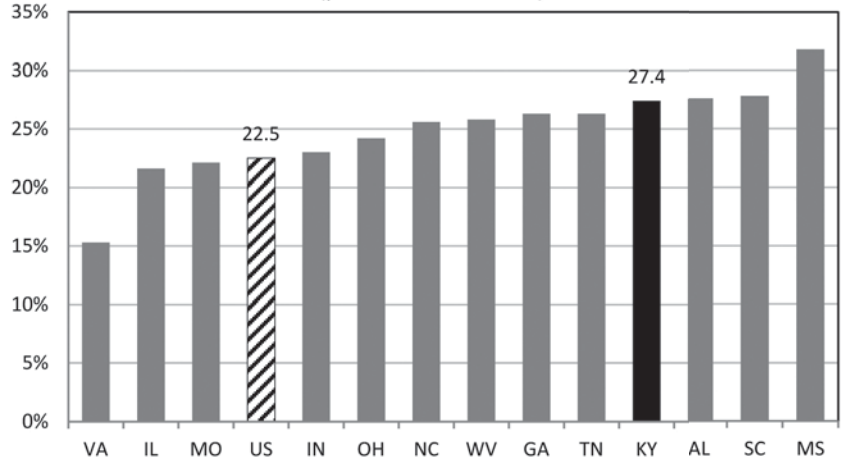
Source: U.S. Census Bureau, Current Population Survey, March supplement, various years

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 2011 was 27.4 percent, a significant increase over the last decade—it was 20 percent in 2000. While Kentucky ranks the fourth highest among the competitor states, there is not a statistically significant difference between Kentucky and several other states, such as South Carolina, Alabama, Tennessee, Georgia, West Virginia, and North Carolina (using a 90 percent margin of error). Kentucky's child poverty rate is significantly higher than the U.S. rate of 22.5 percent. At 31.8 percent, Mississippi has the highest child poverty rate in the nation.

Poverty Rate, 2011, Children Under 18, Kentucky, Competitor States and the U.S.

(percent of individuals)

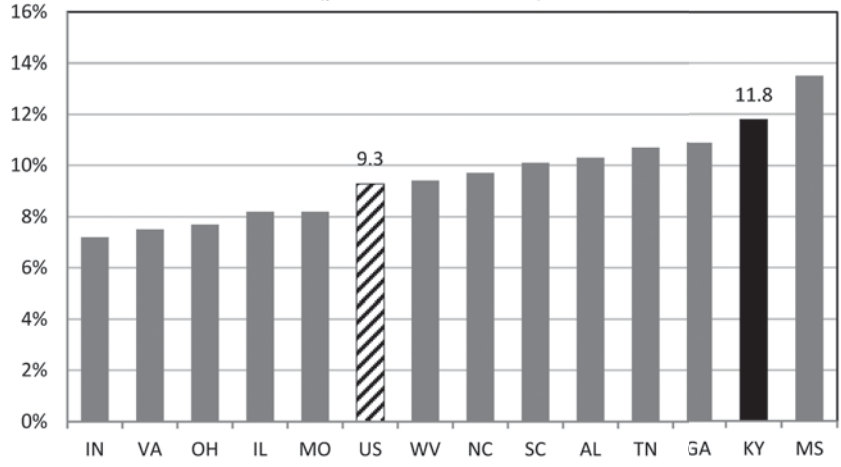


Source: 2011 American Community Survey 1-Year Estimates

Elderly Poverty

As the U.S. economy was trying to gather enough steam to pull itself out of the Great Recession in 2011, the first wave of baby boomers were hitting the traditional retirement age of 65. While financial planners advise individuals to save, save, and save for retirement, the stark reality is that the nest eggs of many are woefully inadequate. The Employee Benefit Research Institute's 2012 Retirement Confidence Survey finds, among other insights, that many individuals have virtually no savings and investments, that half of current retirees left the workforce unexpectedly—because of a health problem or downsizing—that Social Security is a much more important source of retirement income than expected, and that anticipated pension incomes do not materialize for a sizeable number of individuals. Finally, more than half of current workers (56 percent) have not tried to determine their income needs for a comfortable retirement. The ever-changing economic landscape and lack of financial preparation places many seniors in a precarious position for their retirement years. At 11.8 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 9.3 percent.

Poverty Rate, 2011, Adults 65 and Over
Kentucky, Competitor States and the U.S.
(percent of individuals)

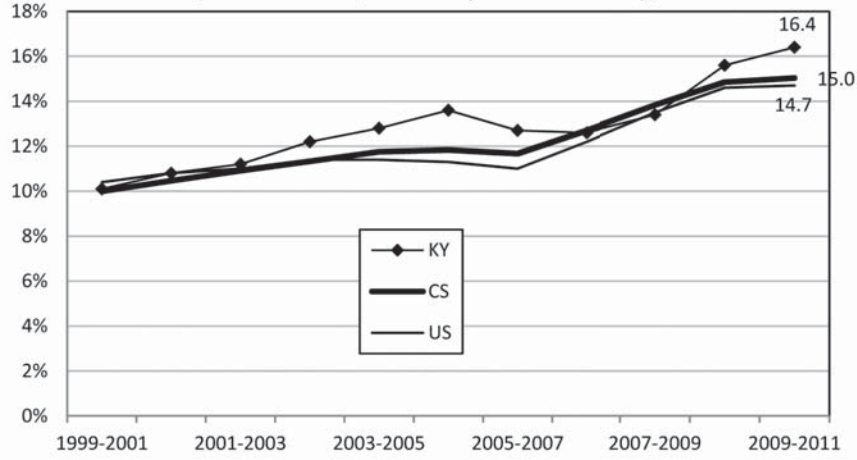


Source: 2011 American Community Survey 1-Year Estimates

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 16.4 percent in the most recent period. The competitor states and the U.S. averages were lower than Kentucky's, at 15.0 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.

Prevalence of Food Insecurity, Kentucky, Competitor States and the U.S.
(household-level, low or very low food security)

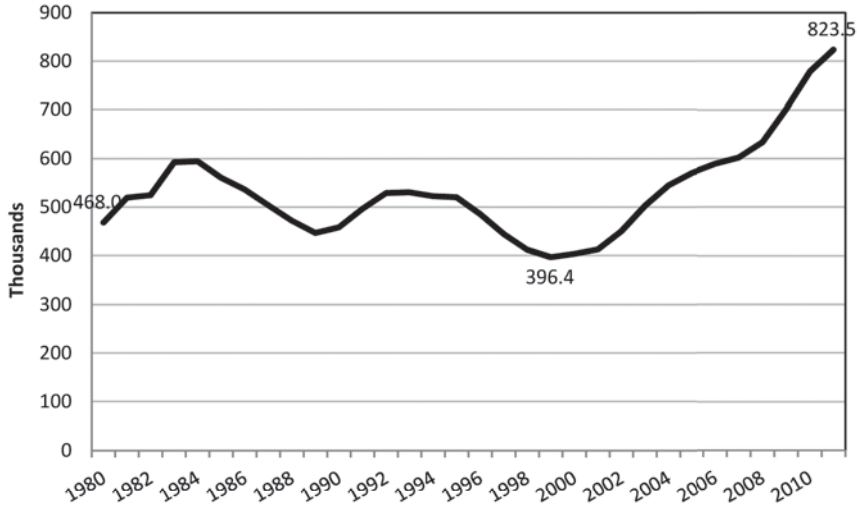


Source: United States Department of Agriculture, Household Food Security in the United States, various years.

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 823,500 in 2011, was over double the 1999 total. This number represents 18.8 percent of Kentucky's population. By comparison, about 16 percent of the population in the competitor states received SNAP benefits in 2011. At the household level, Kentucky exceeded the competitor states as well as the U.S., with 17.4, 14.3, and 13 percent receiving SNAP benefits in 2011, respectively. SNAP benefits are dependent on, among other factors, family size and income levels—with the average SNAP recipient in the U.S. receiving about $133.85 a month in fiscal year 2011.

Food Stamp Program, Average Monthly Participation, Persons, Kentucky, 1980-2011

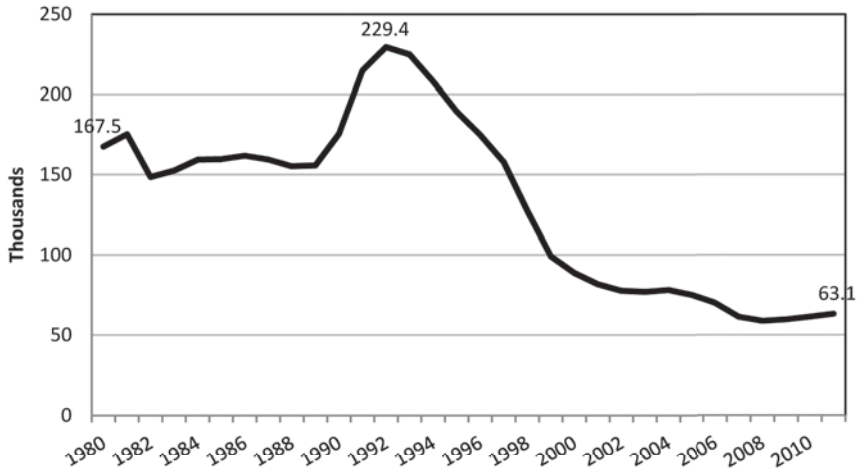


Source: U.S. Department of Agriculture Food and Nutrition Service

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 63,100 in 2011; roughly 80 percent of the recipients in 2011 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 2011, about 1.4 percent, than the competitor state average of 1.1 percent. At 2.4 percent, Tennessee has the highest percentage among the competitor states and Georgia has the lowest at 0.4 percent. The CBPP 2012 report indicates that the typical benefits for a family of three (based on the median state in 2011) is $428 per month.

Total Number of Recipients of Aid to Families with Dependent Children/Temporary Assistance to Needy Families (AFDC/TANF), Kentucky, 1980-2011

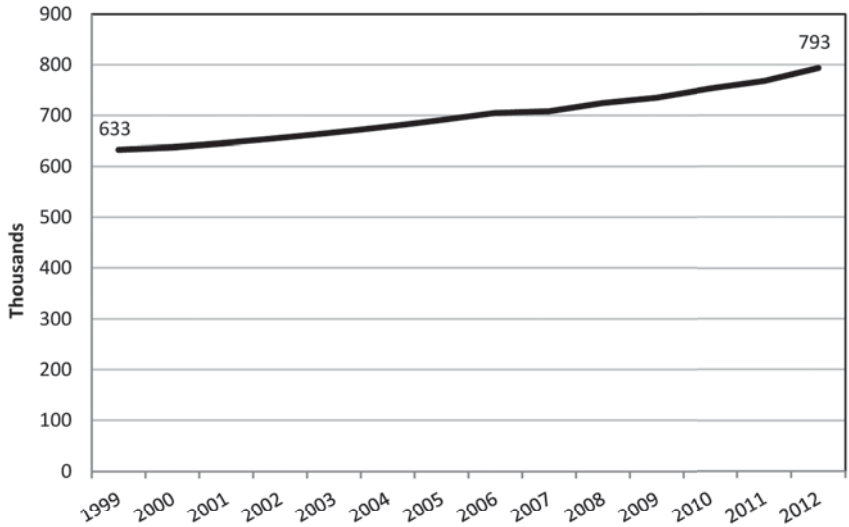


Source: The Administration for Children and Families, U.S. Department of Health and Human Services

Medicaid Beneficiaries

Medicaid is a state-federal partnership to provide health care coverage for people with lower incomes, older people, people 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 $5.6 billion program (FY2010). There are many types of services provided for Kentucky's 793,000 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 Year 2010*, 21.9 percent of Kentucky state government expenditures were for Medicaid, which was second only to higher education (22.4 percent) and slightly higher than elementary and secondary education (19.4 percent). The percentage of the population on Medicaid in Kentucky, the competitor states, and the U.S. is 18.2, 16.2 and 15.9 percent, respectively.

Medicaid Beneficiaries, Kentucky, 1999-2012



Source: Kaiser Family Foundation

OVERVIEW

IN TODAY'S FAST-PACED AND EVER-CHANGING WORLD, KENTUCKY must constantly adjust to the evolving landscape of global competition. There is no single factor guaranteeing successful navigation through these challenges, but economic opportunities resulting in broad-based prosperity are not attainable without a highly educated population.

Kentucky's educational investments over the last two decades are showing returns. Based on multiple educational attainment and achievement factors combined into a single index, the Center for Business and Economic Research produced an education index 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. More recently, the annual education report card published by *Education Week—Quality Counts 2012*—which focuses on pre-K through secondary education issues, shows Kentucky improving its national rank from 34 in 2010 to 14 in 2012; this represents an improvement of 20 positions, which is tied with Illinois for the most improvement during this period.

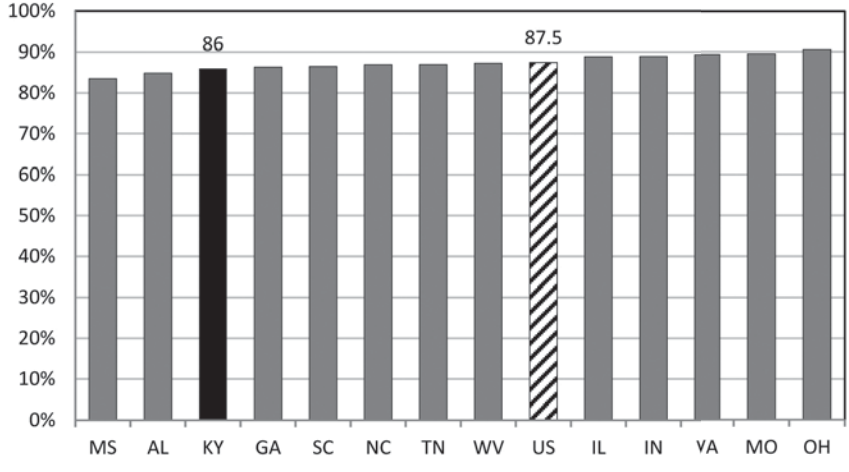
Despite the state's educational progress, there are substantial gaps between Kentucky and the competitor states and the U.S. in many areas—indicating there is still much work ahead. Moreover, while Kentucky has made substantial progress in the achievement levels of primary and secondary students, the state still ranks below other states on measures likely to become more important in a high-tech global economy—such as the number of graduates with science and engineering degrees. And Kentucky's education leaders and policymakers have highlighted areas that are not strictly attainment or achievement indicators—such as postsecondary retention and the six-year graduation rate—that need to improve if we are to create a more efficient and effective system of P-20 education. Nonetheless, compared to our past and relative to the nation, the data generally show educational progress.

To achieve greater progress, Kentucky will need to narrow, if not close, educational achievement gaps. Economic disadvantage has a significant negative drag on academic performance, and the sheer number of economically disadvantaged students in Kentucky adversely affects overall performance. 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.

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 82 percent by 2009-2011. At the same time, the nation improved but at a faster pace, rising to almost 86 percent. Looking just at those individuals 25 to 64—the traditional working age group—Kentucky's 86 percent trails the U.S. average of nearly 88 percent, which is also the average of the competitor states. 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 estimated 14 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., 2009-2011
(percent of individuals 25 to 64 years old)



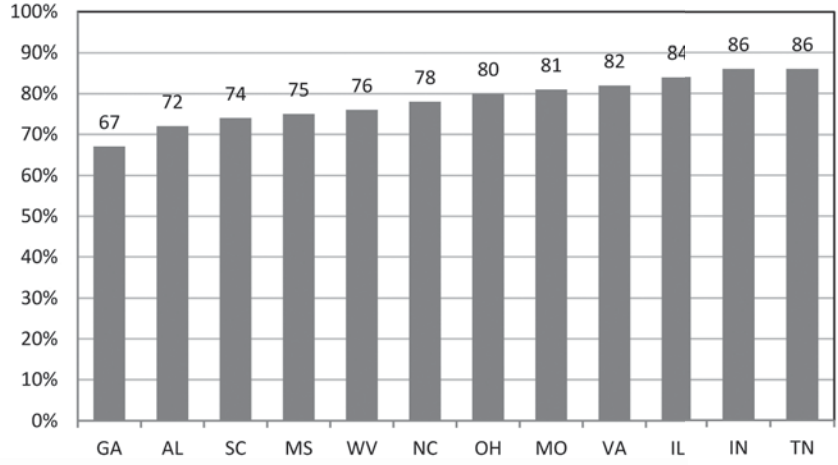
Source: 2009-2011 American Community Survey 3-Year Estimates

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. Consequently, there are many programs and initiatives designed to reduce the dropout rate. Unfortunately, developing widely accepted measures of "high school completion" have been problematic. The National Center for Education Statistics (NCES) has traditionally provided the most commonly used dropout and school completion statistics, which include: event dropout rate, status dropout rate, status completion rate, and averaged freshman graduation rate. Because of limitations with these measures, educators, policymakers, researchers, and citizens have been clamoring for a better measure that is valid, reliable, and comparable across states. In November 2012 the U.S. Department of Education released data "detailing state four-year high school graduation rates in 2010-11—the first year for which states used a common, rigorous measure." The data for the competitor states are illustrated in the figure below. Unfortunately Kentucky is still implementing the new data system and cannot yet provide comparable data (Idaho and Oklahoma did not report new data either). The Kentucky Department of Education has indicated that it intends to have the new data system fully implemented by next year.

Graduation Rate, 2010-2011 School Year, Competitor States Only

(four-year regulatory adjusted cohort graduation rate)

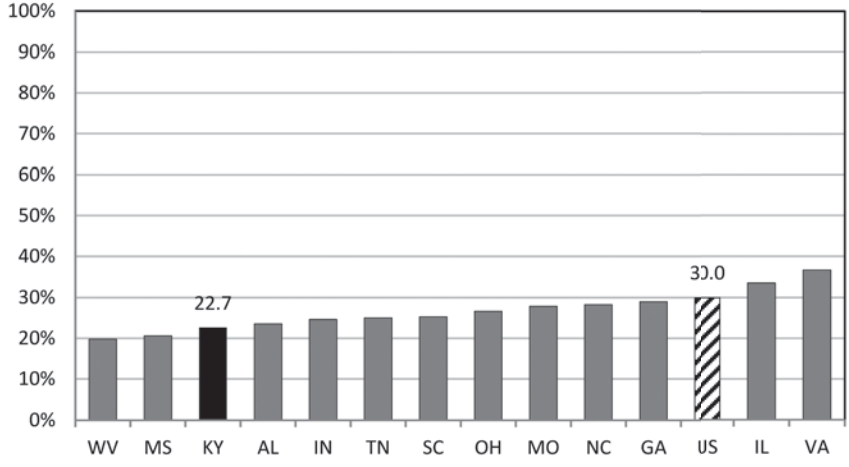


Source: U.S. Department of Education

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 in overcoming undereducation, as the proportion of adults 25 and older with a four-year degree or higher climbed from 13.6 percent to 20.9 percent in 2009-2011. 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—22.7 percent for Kentucky compared to 28.3 and 30 percent for the competitor states and U.S. respectively.

Bachelor's Degree or Higher,
Kentucky, Competitor States and the U.S., 2009-2011
(percent of individuals 25 to 64 years old)



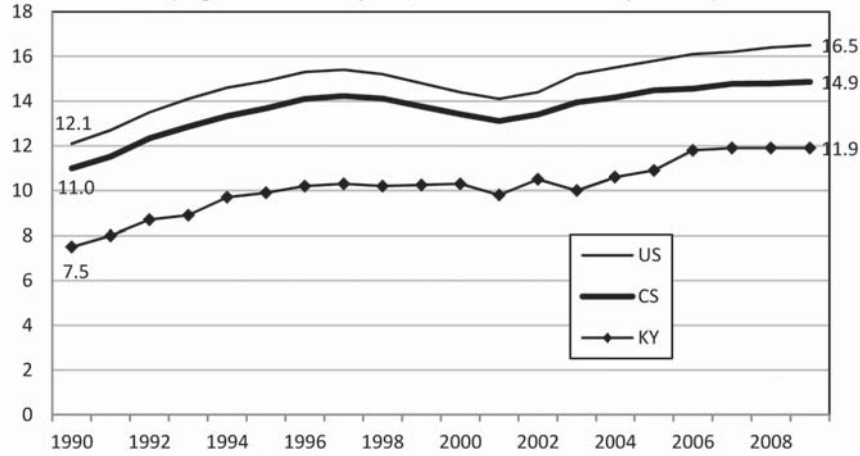
Source: 2009-2011 American Community Survey 3-Year Estimates

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. While remaining substantially below the competitor states and the U.S., the number of science and engineering degrees conferred on individuals 18 to 24 years old in Kentucky has increased significantly since 1990—from 7.5 per 1,000 individuals in this age group to 11.9. Despite this increase, however, Kentucky, along with the competitor states of Georgia, Mississippi, and Tennessee, resides in the bottom quartile of states nationally. Missouri (16.7), Virginia (18.6) and, interestingly, West Virginia (17.3), on the other hand, find themselves in the second quartile. Vermont leads the nation on this measure of technological prowess, with a value of 34.1.

Bachelor's Degrees in Science and Engineering, Kentucky, Competitor States, and the U.S., 1990-2009

(degrees conferred per 1,000 individuals 18-24 years old)

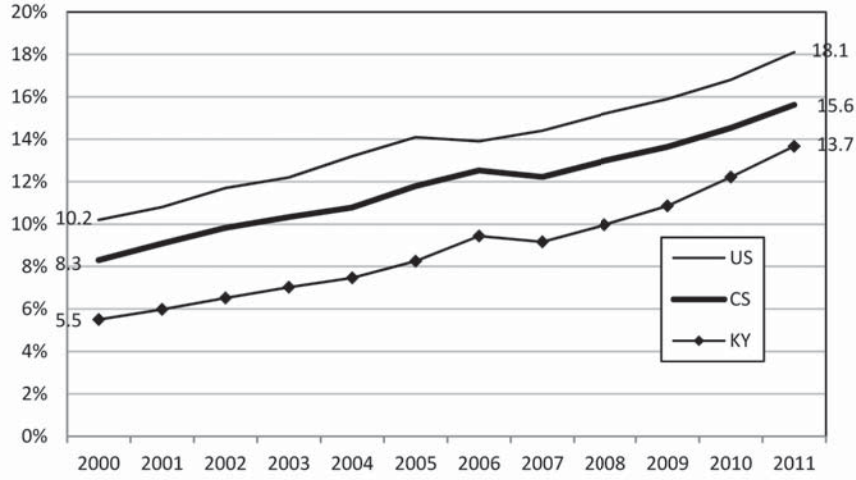


Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census and Population Estimates Program (various years).
Note: The estimate for 1999 is an interpolation between 1998 and 2000.

Advanced Placement Exam Mastery

To pass an AP Examination as a high school student demonstrates 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 nearly 38 percent of college freshman and sophomores require remediation nationally, 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 33 different AP Exams each spring on subjects ranging from Calculus to Art History. In 2011 there were 903,630 graduates leaving high school who took an AP Exam, with 540,619 of these graduates scoring a 3 or higher on an AP Exam at any point in high school—which represents 18.1 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 13.7 percent in 2011. This places Kentucky in the 3rd quartile, or 29th among the states. Despite the state's progress, Kentucky lags the competitors states (15.6%) and the U.S. (18.1%). Maryland had the highest percentage of students in the class of 2011 scoring a 3 or higher on an AP Exam during high school—27.9 percent.

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



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

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 testing results for 4th and 8th graders from 1998 to 2011. The percentages of Kentucky 4th and 8th graders scoring proficient or higher on the NAEP math exams have steadily increased since 2000. The reading percentages for both grade levels have increased, but not at the same rate as math scores. Meanwhile, 8th grade science was flat between 2009 and 2011. In 2011 the percentages of Kentucky 4th and 8th graders scoring at or above proficient for reading (35 and 36 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 (39 and 31) 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 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
Math 4	-	17↓	-	22↓	26↓	31↓	37	39
Math 8	-	20↓	-	24↓	23↓	27↓	27↓	31↓
Reading 4	29	-	30	31	31	33	36↑	35
Reading 8	30	-	32	34	31	28	33	36↑
Science 4	-	-	-	-	-	-	45↑	-
Science 8	-	-	-	-	-	-	34↑	34↑

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

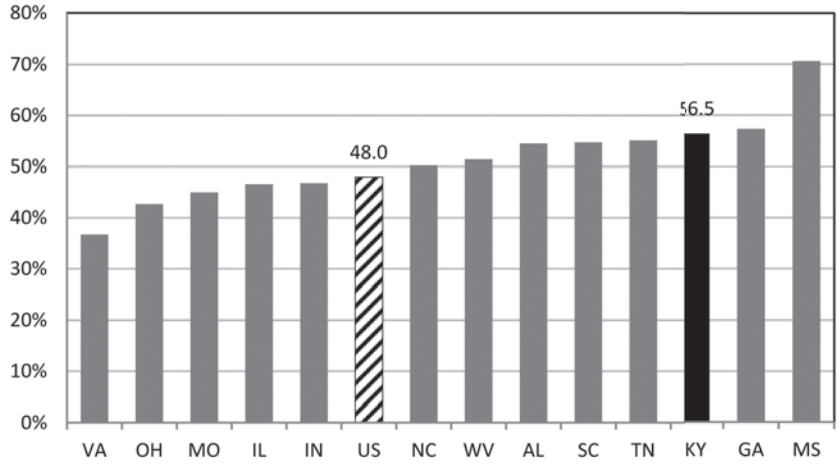
Note: A dash (-) in the cell indicates that this test was not taken by Kentucky students. An arrow pointed down (↓) next to a number indicates that the percentage is statistically significantly lower than the National public percentage. Conversely, an arrow pointed up (↑) next to a number indicates that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

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)



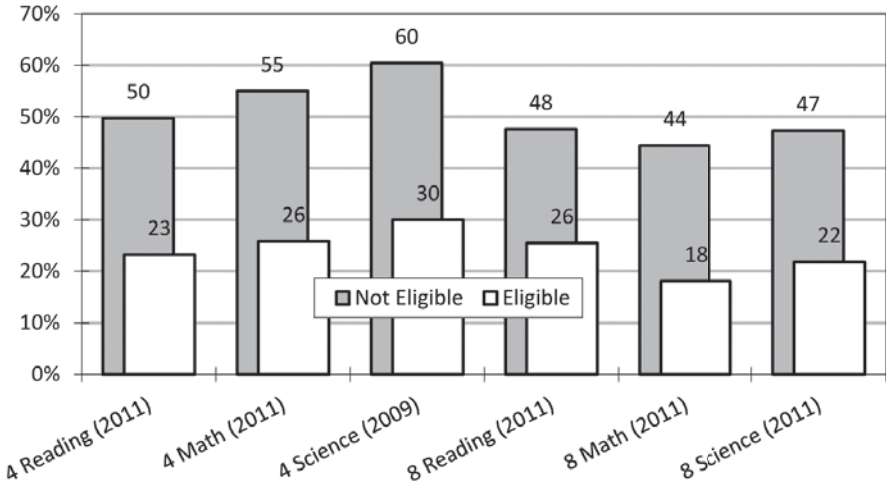
Source: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey," 2010–11, Version 1a.

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 and 2011

(percent of students scoring at or above proficient)



Source: National Center for Education Statistics

OVERVIEW

KENTUCKY'S HEALTH CHALLENGES ARE WELL DOCUMENTED—providing health advocates and public health officials with a compelling *raison d'être*. Our cancer rates are higher, less than one-fifth of Kentucky adults meet aerobic and muscle strengthening guidelines (17%), we lead the nation in smoking (29%), and rank in the top quintile for obesity (30%). And sadly, it's not just the adults—1 in 5 (21%) Kentucky children and teens are obese, the third highest rate in the nation, portending a future we can ill afford. The implications are evidenced by Kentucky's 44th ranking in *America's Health Rankings 2012*, which delineates our high rates of chronic disease, disability, and health care costs.

Containing health care costs are a top priority for firms as well as public entities. According to research on employer health benefits by the Kaiser Family Foundation and the Health Research & Educational Trust, an estimated 61 percent of U.S. firms offer health benefits to their workers, with average annual premiums for employer-sponsored health insurance costing $5,615 for single coverage and $15,745 for family coverage. At two-and-a-half times the OECD average, the U.S. spends more on health care than any other industrialized county, leading some to conclude that expanding health care costs are hurting U.S. global competitiveness.

As health care costs continue to increase, so does interest in strategies to improve health and contain costs. Firms are increasingly turning to wellness programs to facilitate healthy lifestyles among their employees. Common characteristics of wellness programs include weight loss programs, gym membership discounts or on-site exercise facilities, smoking cessation programs, personal health coaching, classes in nutrition or healthy living, web-based resources for healthy living, or a wellness newsletter. In Kentucky, where nearly one-quarter of adults exhibit multiple chronic disease causing behaviors, health and wellness programs among organizations increased from 34% in 2007 to 63% in 2010. According to one survey, among firms offering health benefits and wellness programs, 65 percent believe these programs are effective in improving the health of their employees and 53 percent believe wellness programs are effective in reducing their firm's health care costs.

Whether incentivized by wellness programs, higher insurance premiums for those who engage in certain behaviors—like smoking—or simply improving health knowledge and health literacy, firms, organizations, governments, and communities are exploring multiple strategies to improve the health of our citizens.

Education and Health Outcomes

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 2011 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, 2010-2011
(percent of adult population)

Education Level	Health Status is Fair or Poor	Obese	Diabetes*	Angina/Heart Disease
Less than H.S.	50	34	16	10
H.S. or G.E.D.	25	31	12	7
Some Post H.S.	17	31	9	6
College Graduate	10	25	7	3
All Education Levels	22	30	10	6

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, 2011.
**Diabetes data is for 2010*

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, 2009-2011

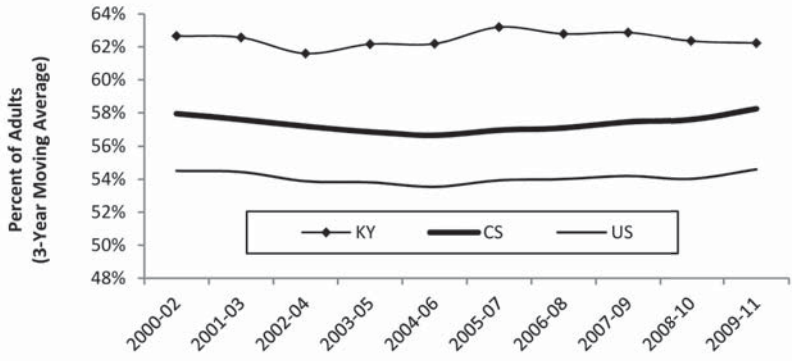
Adults, 18 and Older	US (%)	CS (%)	KY (%)
Current Smoker	18.5*	21.2*	26.5
Obese	27.6*	29.7*	31.5
Lack of Physical Activity	24.7*	27.1*	29.4
Heavy Alcohol Consumption	5.5*	5.0	4.8

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, 2009-2011
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).*

Chronic Disease Risk

Over 62 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 58 percent in the competitive states and 55 percent in the United States. And in Kentucky, the uninsured—currently about 14 percent of the population—are more likely to be at risk of developing at chronic disease (76%) than the insured (60%). As the figure below illustrates, 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.

At Risk for Chronic Disease,*
U.S., Kentucky, and Competitor States (CS), 2000-2011

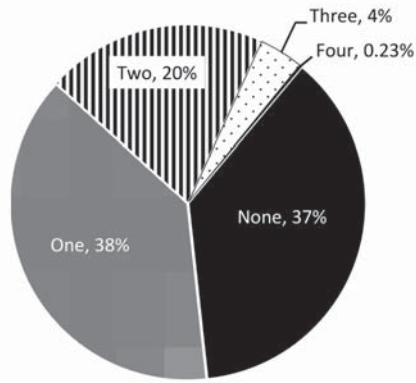


**Demonstrates at least one of the at-risk behaviors for developing chronic disease: smoking, obesity, physical inactivity, or heavy alcohol consumption.*
Source: Author's analysis of Behavioral Risk Factor Surveillance System data, various yrs.

Number of Risk Behaviors

Overall, nearly one-quarter of Kentucky adults exhibit multiple chronic disease causing behaviors. While 37 percent have none of the risk factors of smoking, obesity, inactivity, or heavy drinking, and only 38 percent have one, 20 percent have two, 4 percent have three, and 0.23 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.

Percent of Kentucky Adults by Number of Chronic Disease Risk Behaviors, 2009-2011

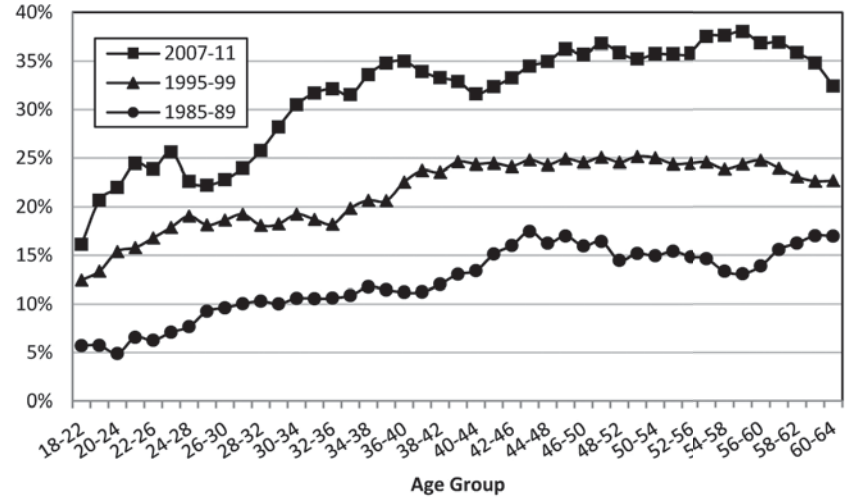


Source: Author's analysis of Behavioral Risk Factor Surveillance System data

Age-Specific Obesity

Obesity is a major risk factor for potentially deadly diseases, including diabetes, heart disease, stroke, and cancer. In turn, the incidence of these illnesses drives up health care costs, increases disability rates, and leads to premature death. Clearly then, the obesity rate has important workforce implications. The obesity rate has increased dramatically over the last several years, both nationally and in Kentucky. An estimated 30 percent of Kentucky adults are obese (2011), higher than the national rate of adult obesity (27.8) and among the most obese states. Moreover, around 36 percent of Kentucky adults are overweight, which also puts them at risk of chronic illness and premature death. Estimates of annual obesity-related medical expenditures have placed the cost of obesity at around $1.1 billion (in 2003 dollars) in Kentucky. The figure illustrates the obesity rates among Kentucky adults by age group for three time periods. It shows that an increasing number of Kentucky adults are becoming obese at younger ages. For example, during the mid-to-late 1980s, the state did not hit the 15 percent obesity threshold until the 41-45 age group. By the mid-to-late 1990s we crossed this line with the 20-24 age group and in the late 2000s it was the 18-22 age group. A high obesity rate at younger ages has important implications for the state's workforce.

Age-Specific Obesity Percentages, Kentucky, 18 to 64 Years Old
(5-Year Moving Averages)

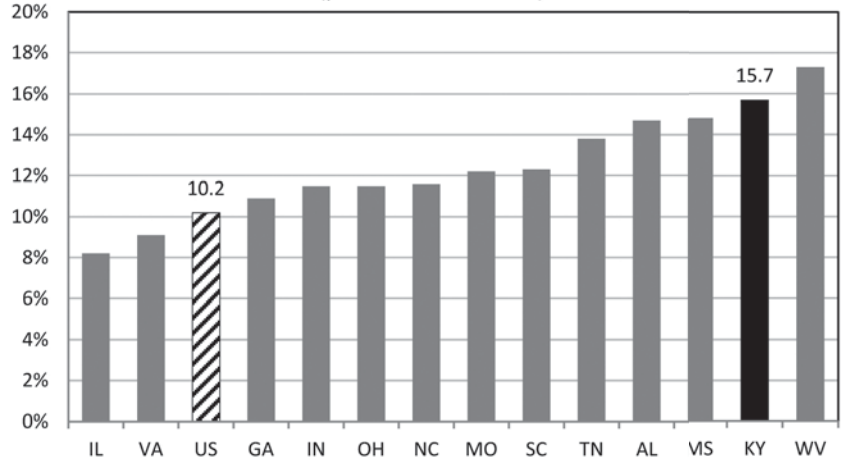


Source: Author's analysis of Behavioral Risk Factor Surveillance System data

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 2011 rate of disability (15.7%) among working-age adults 18 to 64 years old. The U.S. average is 10.2 percent and the competitor states average is 11.4 percent. In 2011, the prevalence of the six disability types among persons between 18 and 64 in Kentucky was: Visual—2.7 percent; Hearing—3.3 percent; Ambulatory—8.9 percent; Cognitive—6.6 percent; Self-Care—3.0 percent; and Independent Living Disability—5.7 percent.

Disabled Individuals 18 to 64 Years, 2011
Kentucky, Competitor States and the U.S.
(percent of individuals)

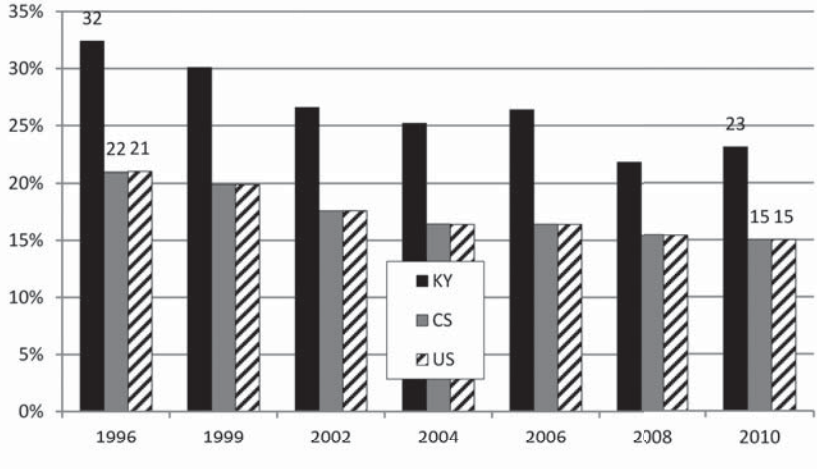


Source: 2011 American Community Survey 1-Year Estimates

Missing Teeth

The oral health of our citizens is important for several reasons. First, it is important as a quality-of-life issue; healthy teeth and gums can translate into a better appearance, higher self-esteem, and more self-confidence, which are essential to a better quality of life. Second, missing and decayed teeth or diseased gums can make it difficult to find employment and perform well on the job, adversely affecting the pocketbooks of individuals and families as well as the state's capacity to realize economic development and increase prosperity. Third, and perhaps most important, missing teeth, inflamed gums, and cavities often make it difficult to eat a balanced diet, and increasingly research links poor oral health to illness, chronic disease, and even early mortality. Though causality has yet to be definitively established, the connection is clear: poor oral health routinely coexists with heart disease, cancer, diabetes, and other illnesses. While real public health gains have been made in oral health here, evidenced by the decreasing percentage of adults missing 6 or more teeth from 32 percent in 1996 to 23 percent in 2010, Kentucky's overall status can best be termed as below average. By comparison, 15 percent of adults were missing 6 or more teeth in the competitor states and the U.S. (2010).

Adults, Age 18 and Older, Missing 6 or More Teeth, Kentucky, Competitor States, and the U.S.
(percent of individuals)



Source: Behavioral Risk Factor Surveillance System estimates derived by the author

Oral Health

Nationally, Kentucky had the third highest 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 2010, and the third highest percentage of older adults (age 65 and older). Also, Kentucky had the third highest percentage of edentate adults aged 18 and older. Kentucky ranks sixth for adults who have lost at least one permanent tooth due to tooth decay or gum disease and fifth 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, 2010
(percent of individuals and state rank)

Adults, 18 and Older	US (%)	CS (%)	KY (%)	KY (rank)†
Missing at least one permanent tooth	45*	45*	53	6
Missing 6 or more teeth	15*	15*	23	5
Missing all teeth	5*	5*	9	3
Visited dentist in last 12 months	70*	70*	63	45
Working Age, 18 to 64				
Missing at least one permanent tooth	39*	39*	47	6
Missing 6 or more teeth	10*	10*	16	5
Missing all teeth	3*	3*	5	3
Visited dentist in last 12 months	70*	70*	64	44

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, 2010

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).*

†Frequently there is not a statistically significant difference between the states ranked close to each other. For example, at 53.1% (shown above as 53%) Kentucky is ranked 6th for adults missing at least one permanent tooth, but Kentucky is not statistically different (alpha=.05) from the states ranked 4th through 10th.

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**

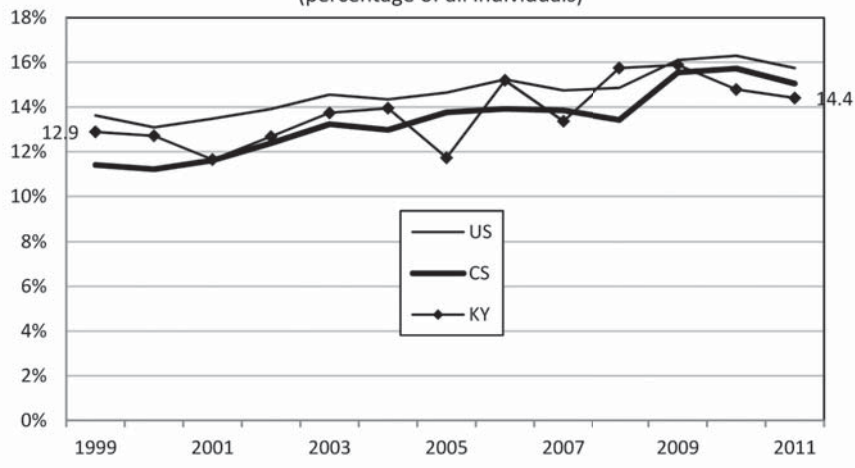
	Alcohol Abuse**		Marijuana Use***	
Year	Male	Female	Male	Female
1993	41	27	19	11
1997	43	30	34	23
1999	40	34	26	22
2001	40	31	30	22
2003	33	32	22	20
2005	27	23	18	13
2007	29	26	17	15
2009	27	21	20	13
2011	25	21	21	17

* 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

Though 48.6 million Americans were without health insurance in 2011, both the number and the percentage of uninsured people declined from the prior year. In Kentucky, 621,000, or 14.4 percent of the total state population, did not have health insurance in 2011. Medicaid has historically played a key role in providing health coverage for disproportionately poor Kentuckians, insuring an estimated 18.2 percent of the population here in 2012, compared to about 16.2 percent in the competitor states and 15.9 in the U.S.

Individuals without Health Insurance Coverage, Kentucky, Competitor States, and the U.S., 1999-2011
(percentage of all individuals)



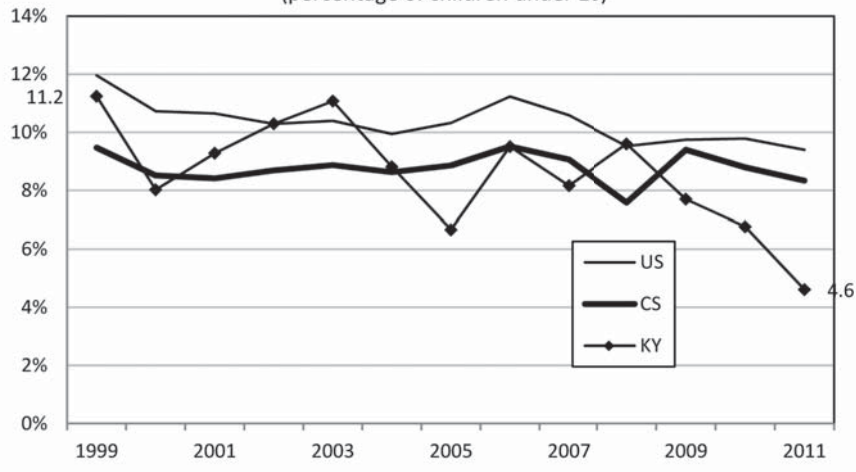
Source: U.S. Census, Health Insurance Historical Tables - HIB Series

Health Insurance Coverage for Children

An estimated 46,500 Kentucky children under 18 years old were not covered by health insurance in 2011, or about 4.6 percent of children. The percentage of uninsured children, which was 11.2 percent in 1999, has steadily declined as children have been 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 $46,100 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 8.3 and 9.4 percent (2011), respectively.

Children without Health Insurance Coverage, Kentucky, Competitor States, and the U.S., 1999-2011

(percentage of children under 18)



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

OVERVIEW

ACCORDING TO A NOVEMBER 2012 REPORT FROM THE PARIS-based International Energy Agency, entitled *World Energy Outlook* (www.worldenergyoutlook.org), "the extraordinary growth in oil and natural gas output in the United States will mean a sea-change in global energy flows." In the most likely future scenario, "the United States becomes a net exporter of natural gas by 2020 and is almost self-sufficient in energy, in net terms, by 2035." Technological improvements in oil and gas extraction as well as widespread fuel efficiencies are transforming the world energy market in fundamental ways.

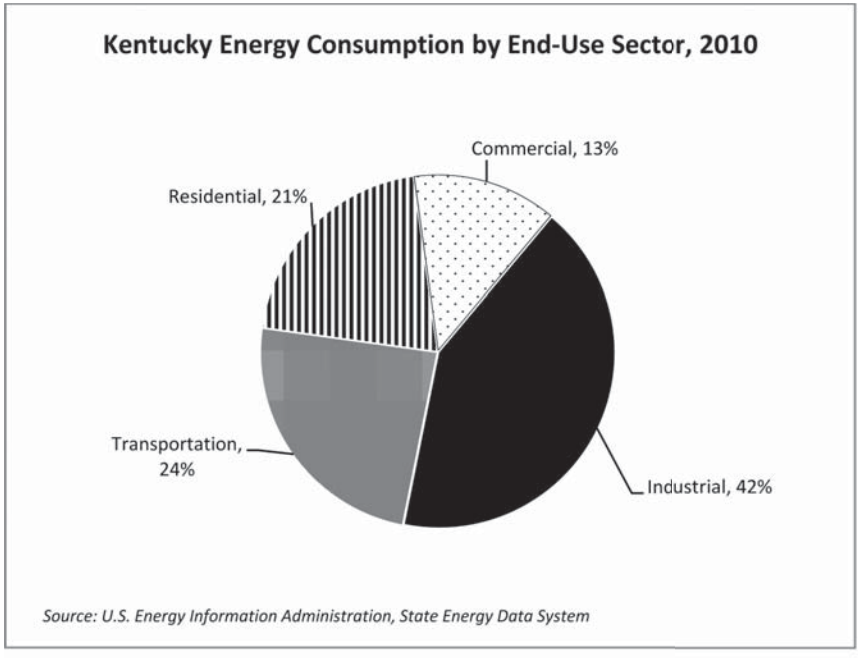
While the global demand for natural gas is expected to remain strong with a 50 percent increase by 2035, the outlook for coal is less certain. According to the most likely scenario presented in the *World Energy Outlook*, "global coal demand increases by 21% and is heavily focused in China and India," but "whether demand for coal carries on rising strongly or changes course radically will depend on the strength of policy decisions around lower-emissions energy sources and changes in the price of coal relative to natural gas."

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 *2011 Energy Profile*, produced by the Kentucky Department for Energy Development and Independence (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.

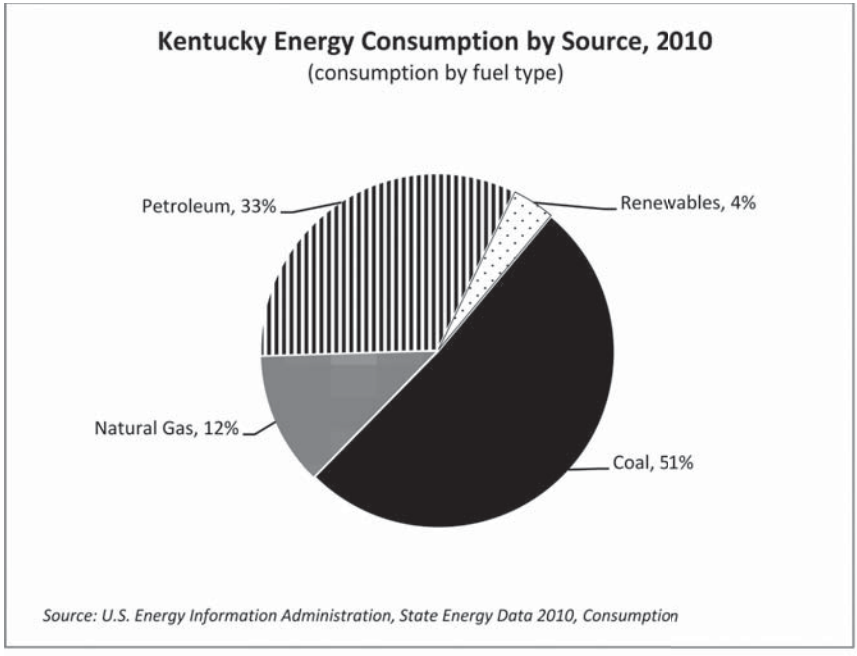
Energy Consumption by End-Use Sector

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 (2010). 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 31 percent, respectively. The transportation sector in Kentucky is the second largest consumer of energy, accounting for 24 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 21, 25, and 22 percent. And while the commercial sector in Kentucky accounts for only 13 percent, it represents about 19 percent of total energy consumption in both 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, 51 percent (2010). 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 32 and 21 percent, respectively. Petroleum products, such as gasoline and diesel, account for the second largest percentage in Kentucky, 33 percent. Natural gas is about 12 percent in Kentucky, but much higher in the U.S. (25 percent) as well as in the competitor states (19 percent). Renewable energy sources account for about 4 percent in Kentucky, 6 percent in the competitor states, and 8 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. (9 percent). As the prices for the various energy sources move up and down, it clearly has a different effect in Kentucky compared to the competitor states and the U.S. given the differences in how energy is consumed.

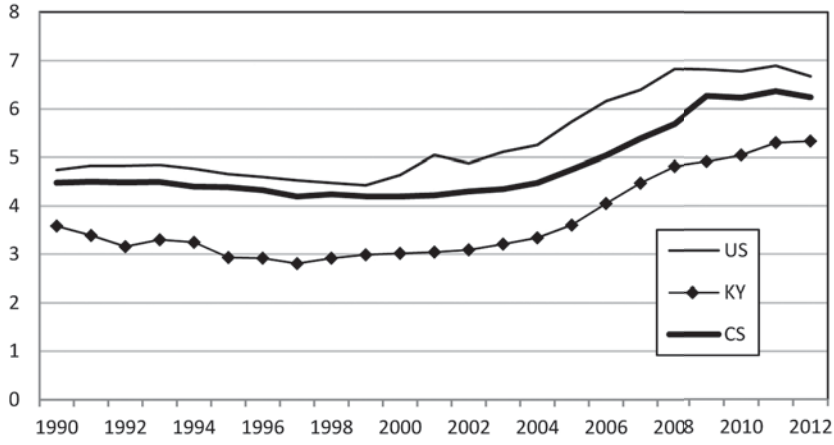


Electricity Cost for Industrial Customers

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 90 percent from its nadir of 2.80 cents in 1997 to 5.34 cents in 2012. 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 2012 the sixth lowest. Kentucky's rate in 2011—at 5.31 cents per kilowatt-hour—was well below the U.S. (6.67) and the competitor states (6.24).

Average Retail Price of Electricity, Industrial Customers, Kentucky, Competitor States, and the U.S., 1990-2012*

(Cents per Kilowatt-Hour)



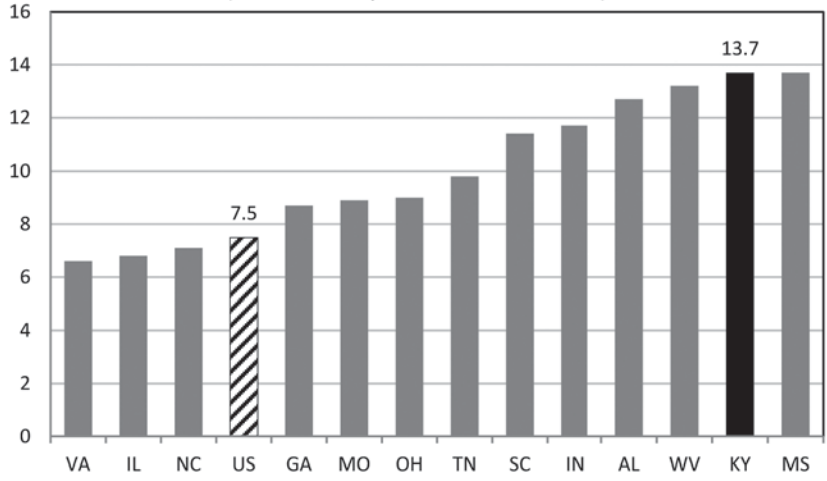
Source: U.S. Energy Information Administration
**2012 data represents January to June*

Energy Consumption per GDP

Kentucky has an energy intensive economy. To generate $1 in state gross domestic product, Kentucky consumes about 13,700 Btu (2010). By comparison, the U.S. average is around 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, 2010, Kentucky, Competitor States, and the U.S.

(thousand Btu per chained 2005 dollar)



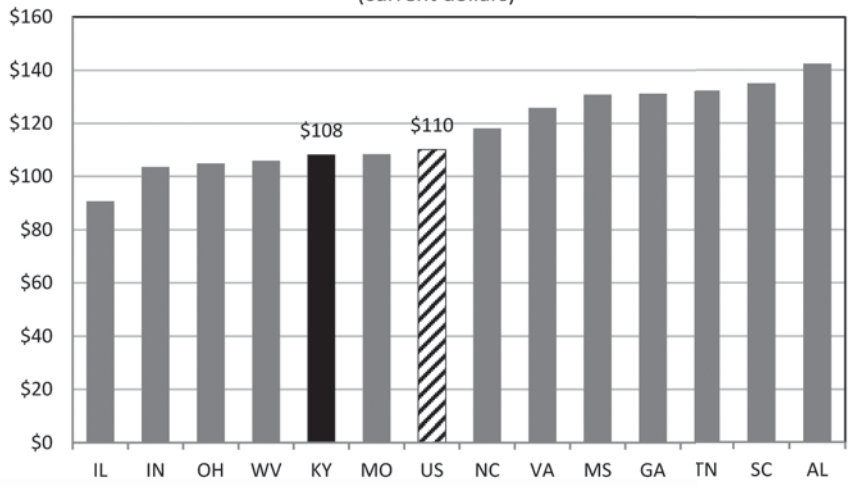
Source: U.S. Energy Information Administration

Residential Electricity Costs

According to the U.S. Census Bureau, Consumer Expenditure Survey, the typical "consumer unit" had $49,705 in average annual expenditures in 2011—with annual electricity expenses of $1,423. In the South Region of the U.S.—where Kentucky and eight of the competitor states are located—average annual expenditures were $45,699 and annual electricity expenses were $1,763. Electricity costs range in these two examples from 2.9 to 3.9 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 $91 in Illinois to a high of $142 in Alabama. Kentucky's average monthly bill of $108 is just below the U.S. average of $110. Like industrial customers of electricity, Kentucky's residential customers enjoy somewhat lower rates.

Residential Average Monthly Electricity Bill, 2011, Kentucky, Competitor States, and the U.S.

(current dollars)

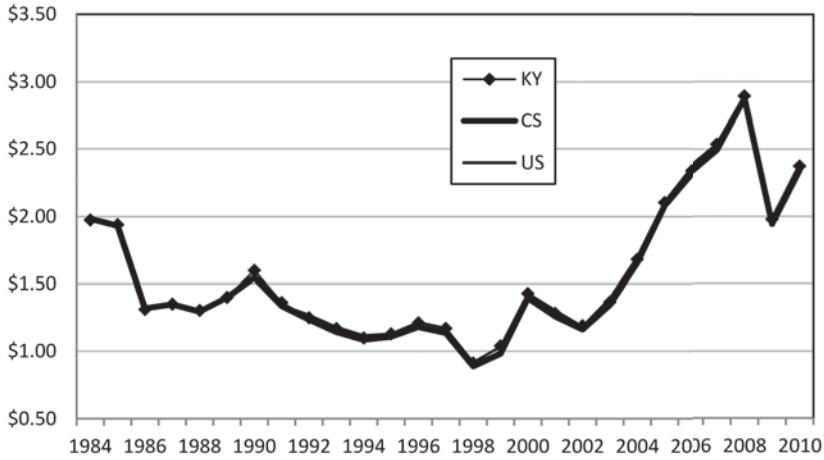


Source: U.S. Energy Information Administration

Gasoline Prices

The typical American "consumer unit," what most would consider the average household, spent $49,705 on various products and services in 2011 according to the Consumer Expenditure Survey; "gasoline and motor oil" accounted for $2,655 of the total—about 5.3 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. As the figure below shows, the three lines representing gasoline prices track virtually identical trajectories. Gasoline prices since the late 1990s have been on an upward trend, as the figure below illustrates in constant 2011 dollars.

Motor Gasoline Sales Through Retail Outlets Prices, Kentucky, Competitor States, and the U.S., 1984-2010
(constant 2011 dollars per gallon)



Source: Energy Information Adminstration, Motor Gasoline Sales Through Retail Outlets Prices

OVERVIEW

KENTUCKY'S ECONOMY AND ENVIRONMENT ARE INEXTRICABLY bound in a tight embrace. 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 in recent years, exemplified, for example, by Richard Florida with his work on the *Creative Class*, 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 areas for all criteria pollutants by the U.S. Environmental Protection Agency (EPA)—Boyd, Bullitt, Jefferson, and Lawrence Counties, which includes 20 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.

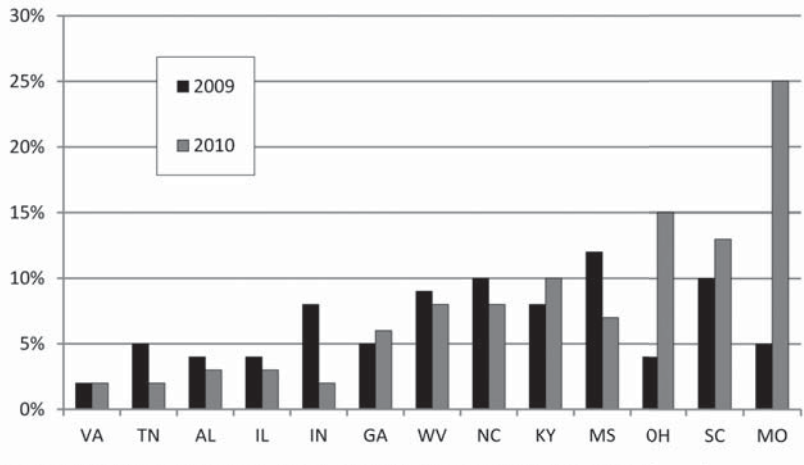
Despite the measurable environmental progress that has been made, there are indications that our state has more progress to make before it will find itself ranked high on lists of "green" states. In our *Kentucky Annual Economic Report 2012*, we present an index of state progress that includes several environmental variables for all states. Our environmental ranking of 39th was generally consistent with two other state-level environmental rankings for Kentucky. Forbes ranked Kentucky 45th in its 2007 list of *America's Greenest States*, and 24/7 Wall St., LLC, a Delaware corporation that delivers financial news and opinion content to various Web sites, ranked Kentucky 40th using 49 metrics from multiple sources in its *2010 Environmental State of the Union*. The data presented here show progress and promise, but also considerable room for improvement in Kentucky's environmental quality.

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), 50,148 of which served approximately 291 million people nationally in 2010, according to the Environmental Protection Agency. However, just 8 percent of those systems (4,197) served 82 percent of the population. In Kentucky and beyond its border, about 469 public drinking water systems serve an estimated 4.4 million people. Of these CWSs, approximately 10 percent or 49 systems reported health-based violations in 2010. Nationally in 2010 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 90 percent in 2010. 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)

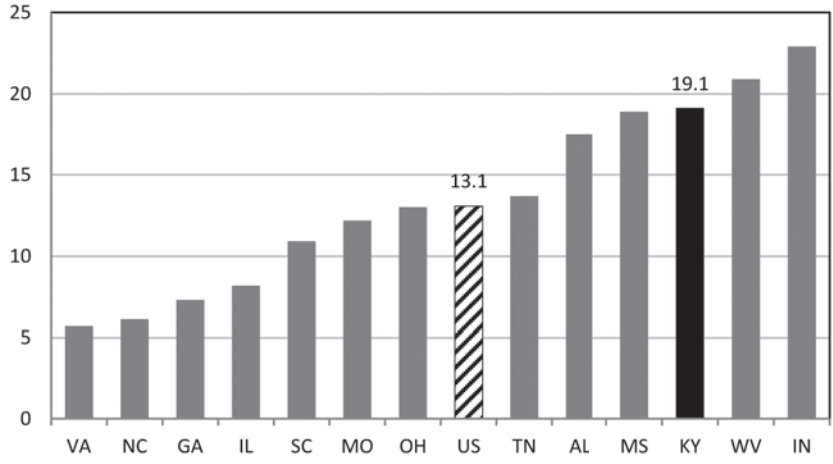


Source: U.S. Environmental Protection Agency, Drinking Water and Ground Water Statistics, various years

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 19.1 pounds of toxic releases per capita in 2011, an estimate that exceeds the national average and compares poorly to peer states. Kentucky, however, lags Indiana (23 pounds) and West Virginia (21), among the competitor states.

Toxic Chemicals Disposed of or Otherwise Released, 2011
Kentucky, Competitor States, and the U.S.
(pounds per capita)



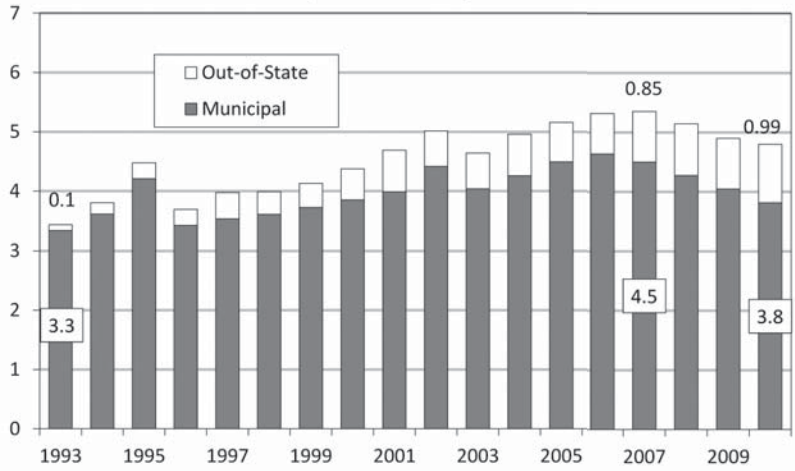
Source: U.S. Enivronmental Protection Agency, TRI Explorer

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 last year was 41 percent higher than in 1993. The majority of that total was MSW, which has increased 15 percent. A growing portion of the total, however, is solid waste from out-of-state sources, which reached a record high of 986,031 tons in 2010, a significant increase since the early to mid-1990s. As a result of this growing trend, out-of-state solid waste constitutes about 20 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, 1993-2010

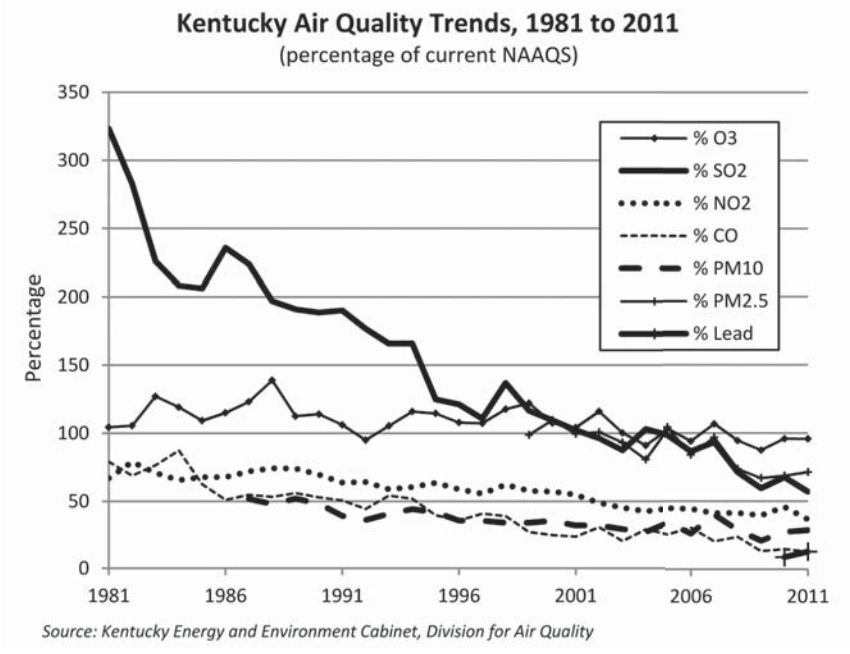
(millions of tons)



Source: KY Division of Waste Management

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 1981-2011. 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_3), Sulfur Dioxide (SO_2), Nitrogen Dioxides (NO_2), Carbon Monoxide (CO), Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), and Lead (Pb).

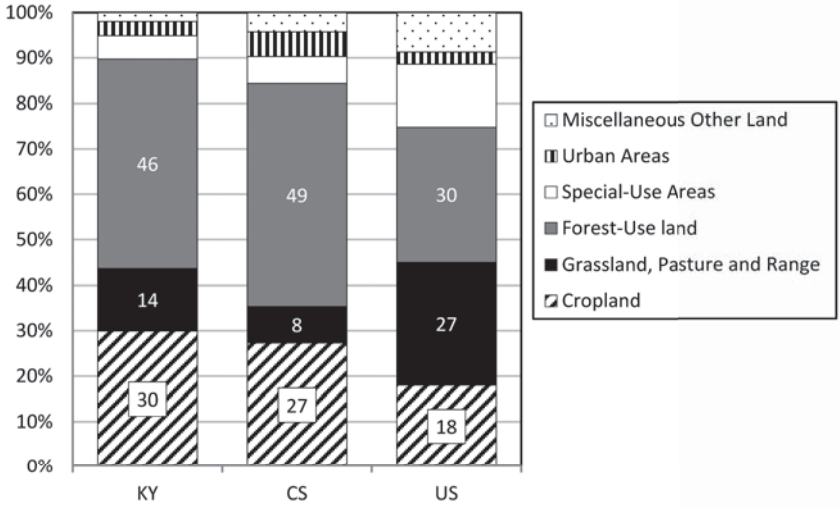


Source: Kentucky Energy and Environment Cabinet, Division for Air Quality

Land Use

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)

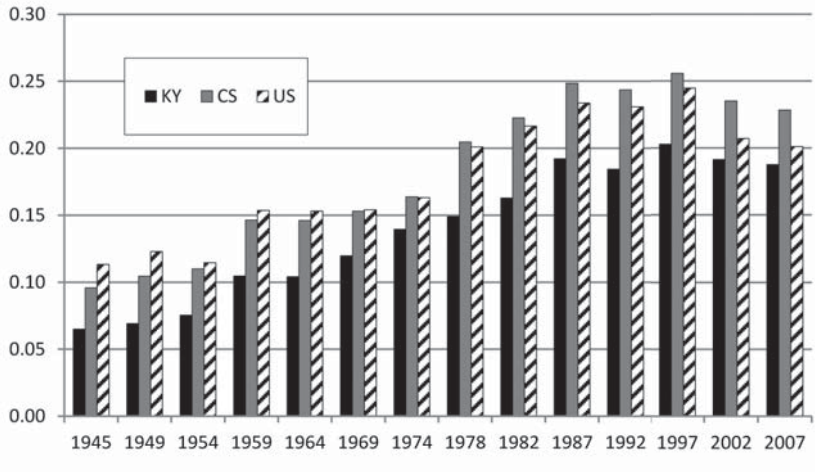


Source: U.S. Department of Agriculture, Economic Research Service

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.

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



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

OVERVIEW

WITH EVERY MENTION OF THE FISCAL CLIFF WE ARE REMINDed that this is a time of fiscal constraint. Consequently, 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. Some research even suggests that members of communities with strong civil societies enjoy better health and live longer. Addressing issues like illiteracy and improving the health of the workforce can improve a community's economic development prospects.

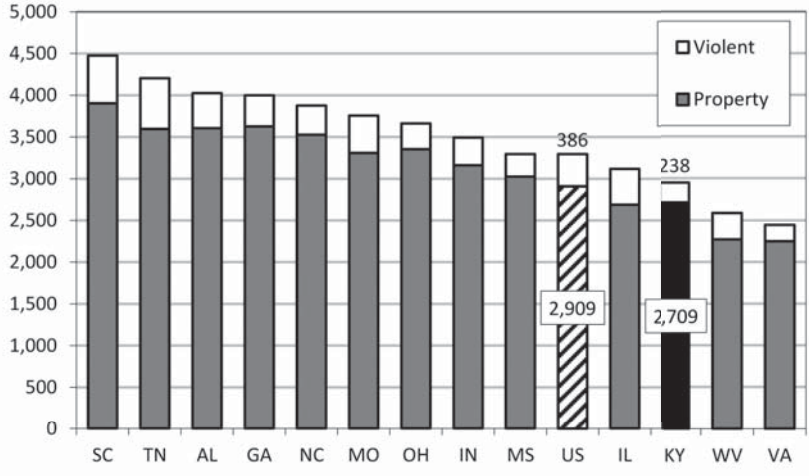
Putnam, a political scientist at Harvard, found that the wealth and civic health found in the regions of northern Italy were due in large part to civil society's strong and deeply rooted traditions. "These communities did not become civic simply because they were rich," he wrote in *The American Prospect*. "The historical record strongly suggests precisely the opposite: They have become rich because they were civic. The social capital embodied in norms and networks of civic engagement seems to be a precondition for economic development, as well as for effective government." In short, the strength of the ties that bind us may help us meet future challenges.

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.

Crime

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 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 2,709 (2011), a rate significantly lower than all competitor states except for Virginia and West Virginia. Reports of violent offences, including murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault, also were well below the national rate here in 2011 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., 2011
(rate per 100,000 persons)

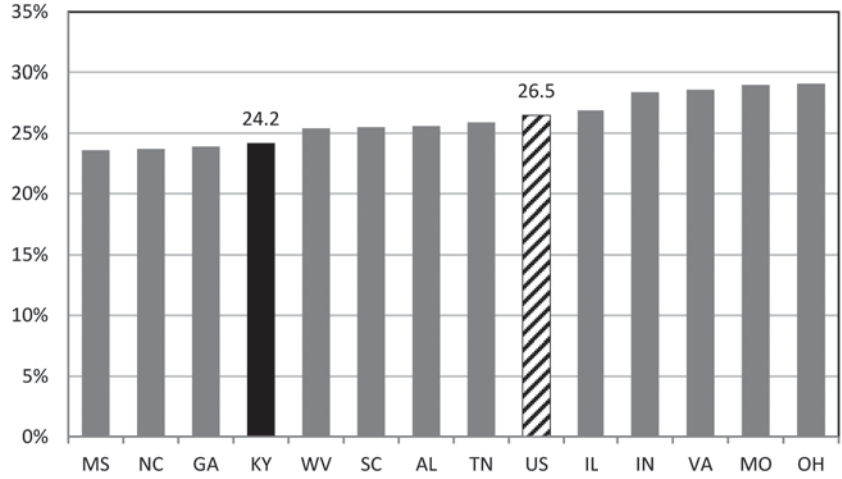


Source: US Federal Bureau of Investigation

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 failed to eradicate—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, 24.2 percent, volunteer at some point during the year (using pooled 2008-2010 data). This is about the same percentage of volunteers at the national level, 26.5 percent. As is evident by the figure below, there is actually little difference between the competitor states, which range from about 24 to 29 percent. The Corporation for National and Community Service reports that, in Kentucky, "24.2% of residents volunteer—ranking them 40th among the 50 states and Washington, DC." Utah has the nation's highest volunteer rate at 44.5 percent.

Volunteer Rate 2008-2010,
Kentucky, Competitor States, and the U.S.
(percentage of those 16 and older who volunteer during the year)

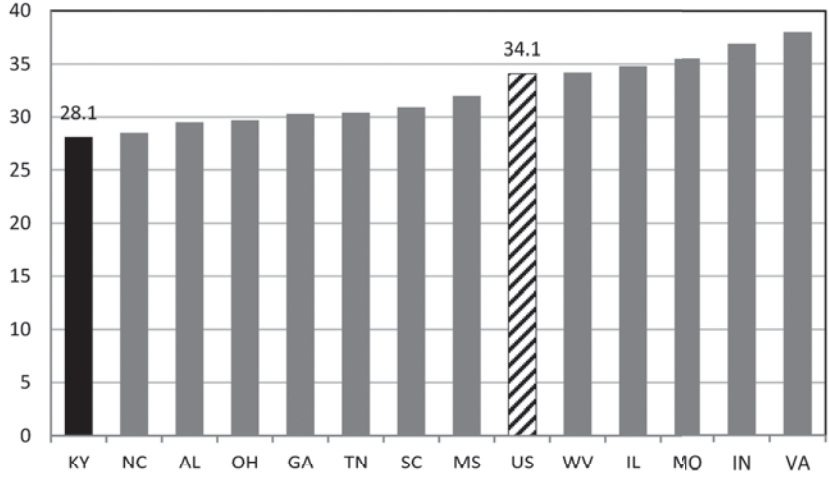


Source: VolunteeringInAmerica.gov (based on Current Population Survey data)

Volunteer Hours

The Corporation for National and Community Service reports that based on data from 2008 to 2010, Kentucky typically has about 807,700 volunteers each year who contribute nearly 94 million hours of service. This is equal to about 28 hours per resident, which ranks Kentucky 48th among the 50 states and Washington, DC. The total estimated value of volunteer service annually in Kentucky during this period was about $2.0 billion, which is based on the Independent Sector's annual estimate of the value of a volunteer hour, which was $21.36 in 2010. Among the competitor states, Virginia has the highest estimated number of volunteer hours per resident at 38 and Utah led the nation with 89. The U.S. average is 34.1 hours per resident.

Volunteer Hours 2008-2010,
Kentucky, Competitor States, and the U.S.
(average hours served in a year per resident 16 and older)

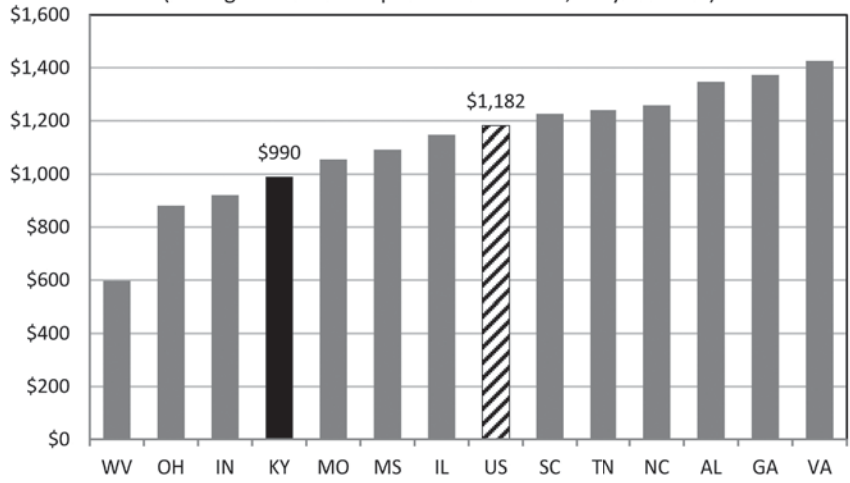


Source: VolunteeringInAmerica.gov (based on Current Population Survey data)

Charitable Contributions

Despite widespread economic uncertainty, America's giving spirit continued to rise in 2011 with giving by individuals increasing by an estimated 3.9 percent in 2011 (an increase of 0.8 percent adjusted for inflation) according to The Giving Institute. At $218 billion, charitable giving by individuals in 2011 was equal to about 73 percent of the estimated total contributions for all sources, $298 billion. Average charitable contributions per IRS tax return nationally equaled $1,182 for the 2010 tax year, compared to $990 in Kentucky. Among the competitor states, Virginia has the highest amount at about $1,400 and West Virginia the lowest at $600.

Charitable Contributions in 2010, Kentucky, Competitor States, and the U.S.
(average contribution per filed tax return, tax year 2010)



Source: Internal Revenue Service, Statistics of Income, Historical Table 2

OVERVIEW

KENTUCKY'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.

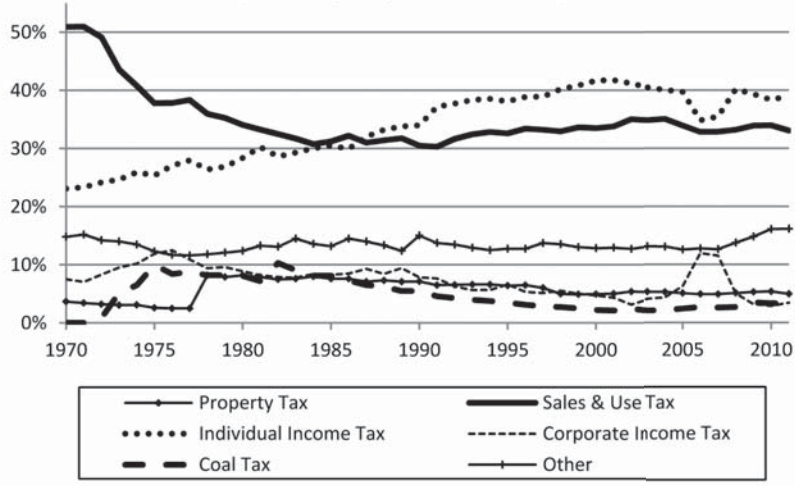
As we indicate in the final report to the tax commission, that tax revenues under the current tax code do not keep pace with personal income need not imply an increase in taxes is needed. An alternative strategy would be a reduction in expenditures. However, the data suggest that if spending, above or 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*.

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 (FY2011). 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 FY11

(percentage of general fund receipts)

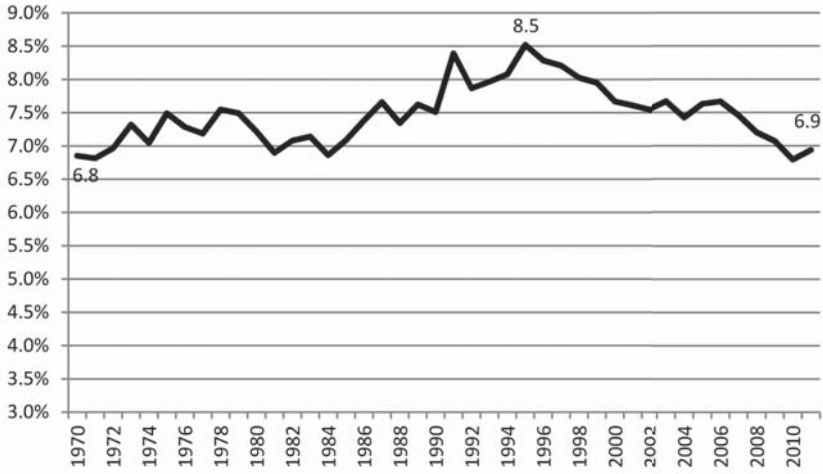


Source: Authors' calculations based on data from the Kentucky Finance and Administration Cabinet and the Kentucky Revenue Cabinet

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 6.94 percent in 2011. 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 Personal Income, 1970-2011

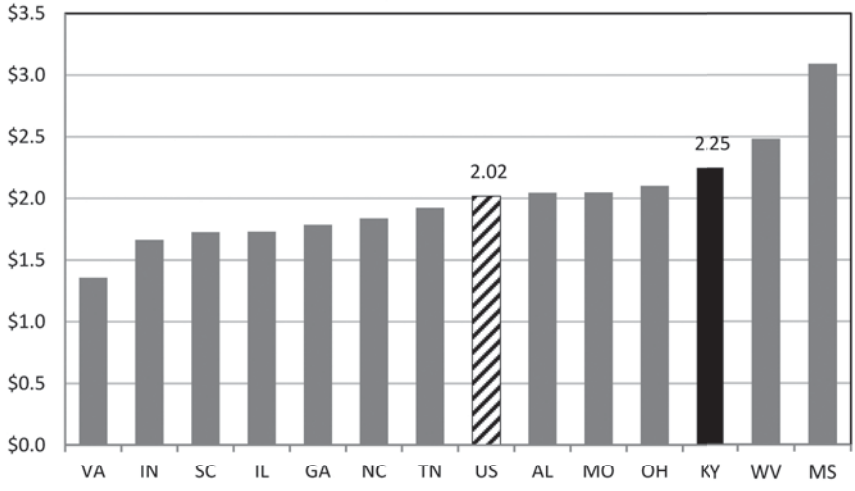


Source: Author's calculations based on data from the U.S. Department of Commerce, Bureau of Economic Analysis and U.S. Census Bureau, State Government Tax Collections, various years

Revenue from Federal Transfers

Kentucky receives a significant amount of its total revenue from federal intergovernmental transfers. In 2010 this amounted to just over 26 percent of Kentucky's total revenue. The competitor state average was about 21 percent and the U.S. average was about 20 percent. These transfers are mainly for health care (Medicaid), education, transportation, and public safety. On per capita basis, Kentucky received about $2,250 in revenue from federal transfers, compared to $1,878 and $2,020 for the competitor states and U.S., respectively. Among the competitor states, Mississippi had the highest amount at $3,090 and Virginia the lowest at $1,356.

State and Local Revenue From Federal Transfers, Per Capita, 2010, Kentucky, Competitor States, & the U.S.



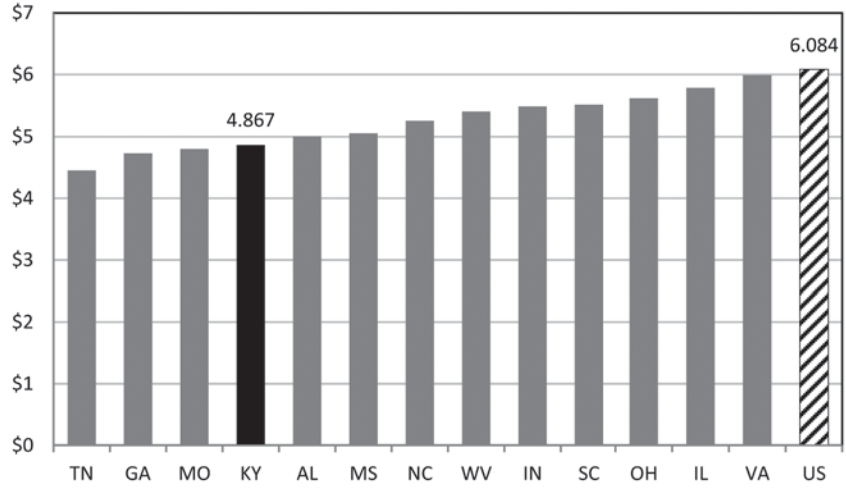
Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

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 2010. On a per capita basis, Kentucky's per capita own-source state and local revenue was $4,867 in 2010, lower than the competitor state average of $5,313 as well as the U.S. average of $6,084.

State and Local Own Source Revenue, Per Capita, 2010, Kentucky, Competitor States, and the U.S.

(thousands)

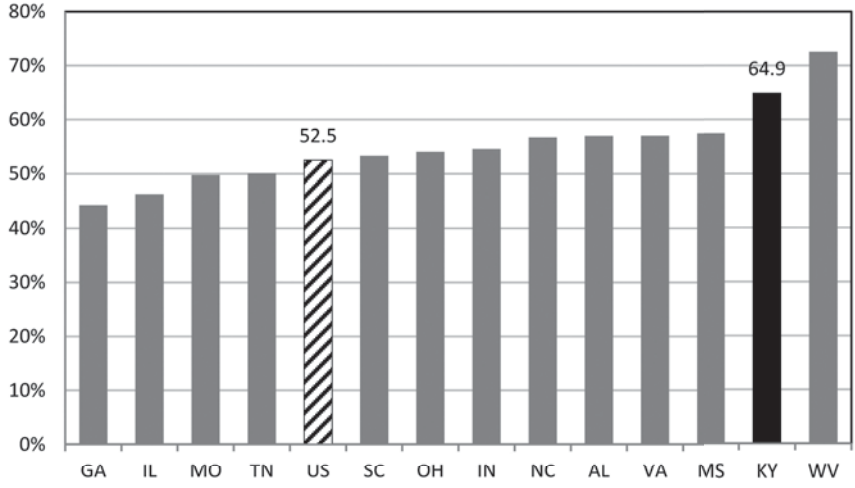


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

State Portion of Total Revenue

State government in Kentucky collects 64.9 percent of state and local own-source revenues (2010); only West Virginia, which collects 72.5 percent through the state, is more centralized. All the competitor states collect less than 60 percent through state sources with two—Georgia and Illinois—collecting over 50 percent from local revenue sources. The competitor state and U.S. averages are both 52.5 percent, indicating substantially less centralization at the state level compared to Kentucky.

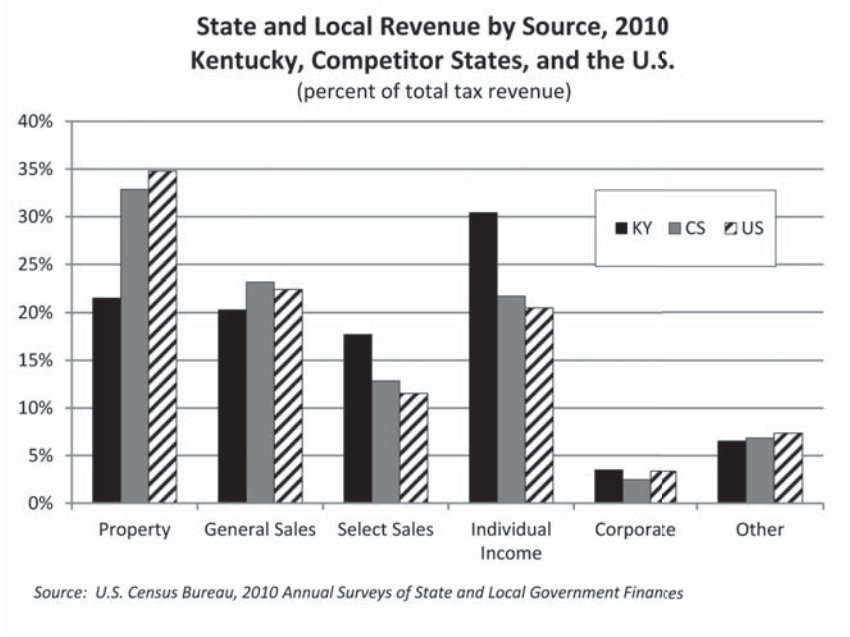
State Portion of Total Revenue, 2010, Kentucky, Competitor States, and the U.S.
(percentage of state and local own source revenue)



Source: U.S. Census Bureau, 2010 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.

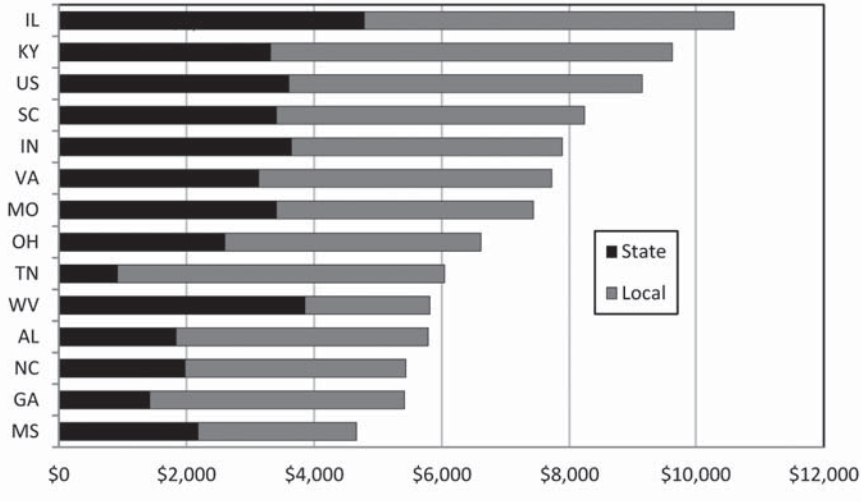


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

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 $2.8 trillion in outstanding debt in 2010, with 60.7 percent at the local government level and 39.3 percent at the state government level. The figure shows combined state and local debt per capita, with Kentucky second among the competitor states at $9,635, 34 percent of which is held by state government. The competitor state per capita debt is $7,121 (39 percent held by state governments) and the U.S. per capita debt for state and local governments is $9,163.

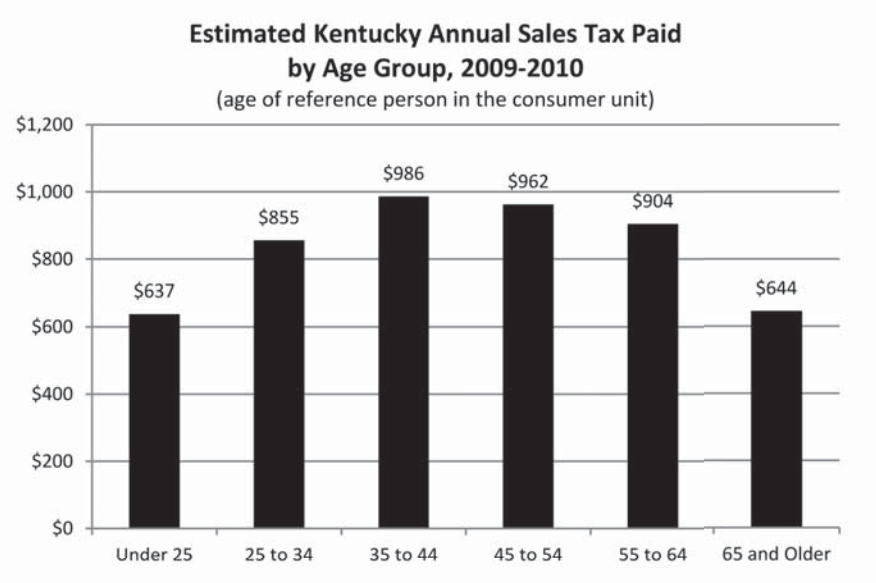
Debt Outstanding, Per Capita, 2010
Kentucky, Competitor States, and the U.S.
(state and local debt, by total)



Source: U.S. Census Bureau, 2010 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 around 33 percent of the state's total general fund receipts, will be affected as the population ages. Using data from the Consumer Expenditure Survey and input from Kentucky Department of Revenue sales tax experts, we estimate the average annual sales generated by households of certain age groups. Households headed by someone 65 and older pay about $644 in sales tax annually, with every other age group over 25 years old paying $855 to $986. 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.



Source: Author's analysis of Consumer Expenditure Survey data, South Region, 2009-2010 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

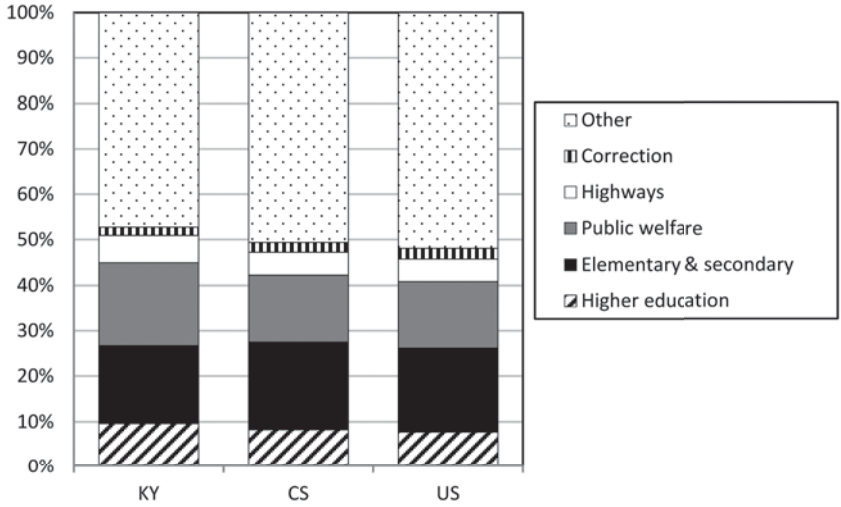
Note: CS is the competitor state weighted average.

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 (2010), compared to 49 percent by the competitor states and 48 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, 2010, Kentucky, Competitor States, and the U.S.

(percent of total state and local expenditures)

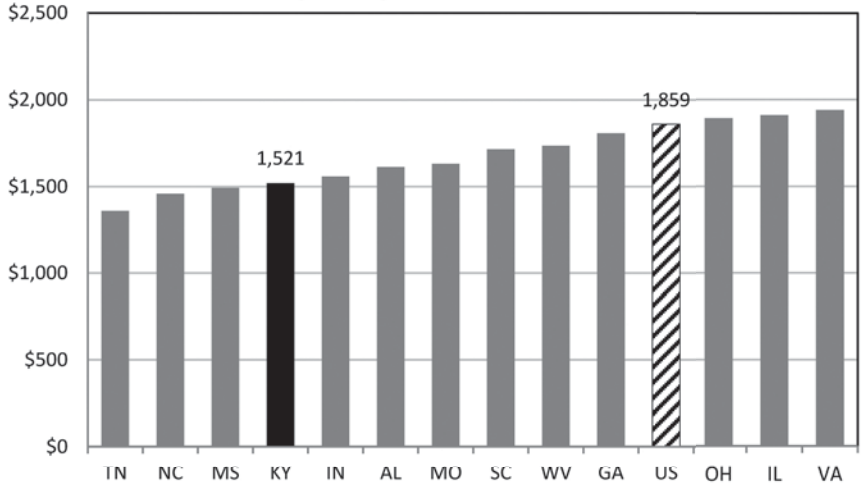


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

Education Expenditures

State and local expenditures for elementary and secondary education are below average in Kentucky compared to the competitor states. Despite demonstrating the highest growth rate in per capita state and local education spending from 2001 to 2009 among the competitor states, Kentucky ranks tenth in per capita elementary and secondary education spending (2010). Kentucky's per capita spending is $1,521, compared to $1,714 and $1,859 for the competitor states and the U.S., respectively.

State and Local Elementary and Secondary Education Expenditures, Per Capita, 2010, Kentucky, Competitor States, & the U.S.

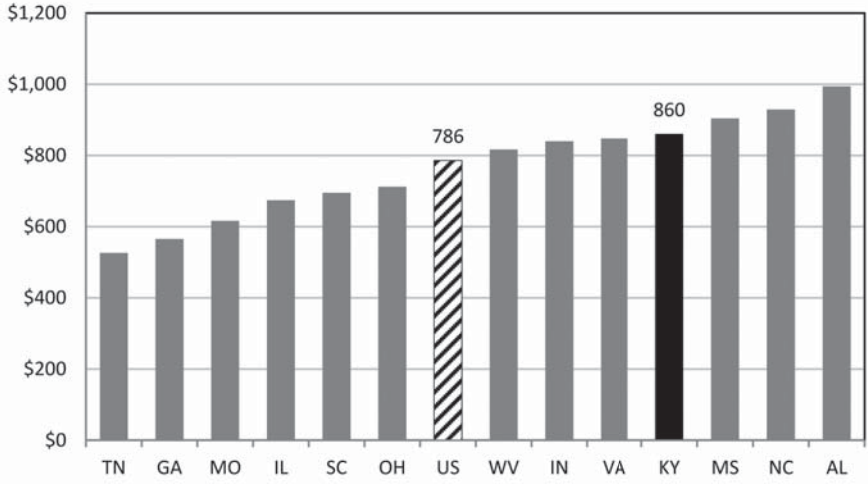


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

Higher Education Expenditures

In the U.S., nearly 89 percent of all higher education expenditures are made at the state level with 11 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 fourth among the competitor states with respect to state and local funding for higher education. Alabama ranks first and Tennessee ranks last. Kentucky's per capita spending was $860, while the competitor states ($740) and U.S. ($786) 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, 2010, Kentucky, Competitor States, & the U.S.

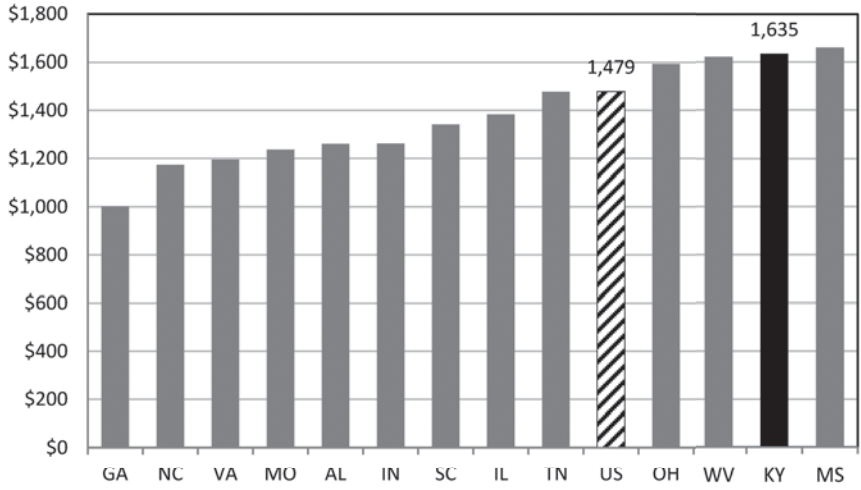


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

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. Kentucky ranks second (Mississippi is first) in combined state and local spending for public welfare, at least when measured on a per capita basis. Kentucky's per capita spending in this category, $1,635, exceeds both the competitor state average ($1,320) and the U.S. average ($1,479).

State and Local Public Welfare Expenditures, Per Capita, 2010, Kentucky, Competitor States, & the U.S.

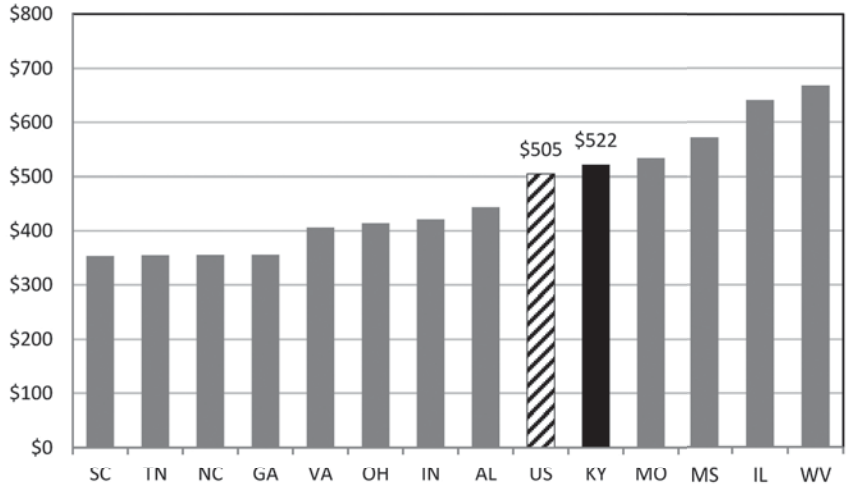


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

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 $522 is barely higher than the U.S. average of $505, but significantly higher than the competitor state average of $448. West Virginia is ranked first and South Carolina last.

State and Local Highways Expenditures, Per Capita, 2010, Kentucky, Competitor States, & the U.S.

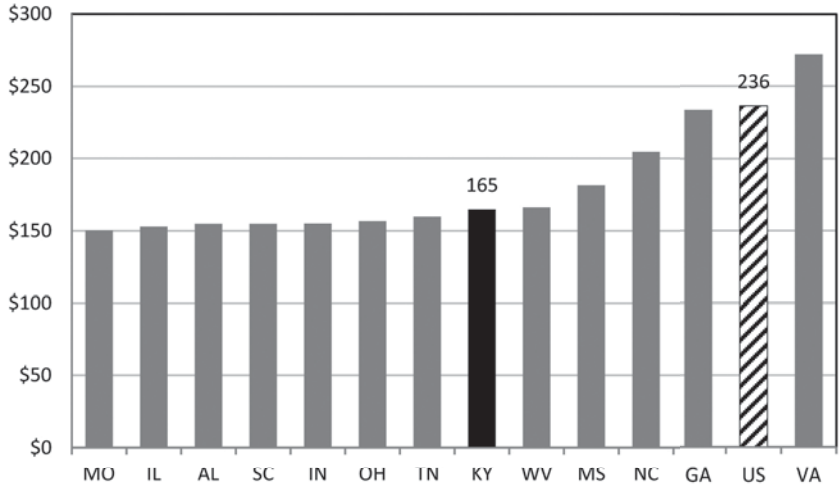


Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

Corrections Expenditures

Kentucky's state and local spending on corrections—jails and prisons—is about average compared to the competitor states, ranking sixth in per capita spending. In 2010 Kentucky's state and local per capita expenditures on corrections was $165, which was less than the competitor states average ($182) and the U.S. average ($236). From 2001 to 2009 Kentucky's state and local spending on corrections decreased on a per capita basis—as did about half of the competitor states.

State and Local Corrections Expenditures, Per Capita, 2010, Kentucky, Competitor States, & the U.S.



Source: U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances

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.

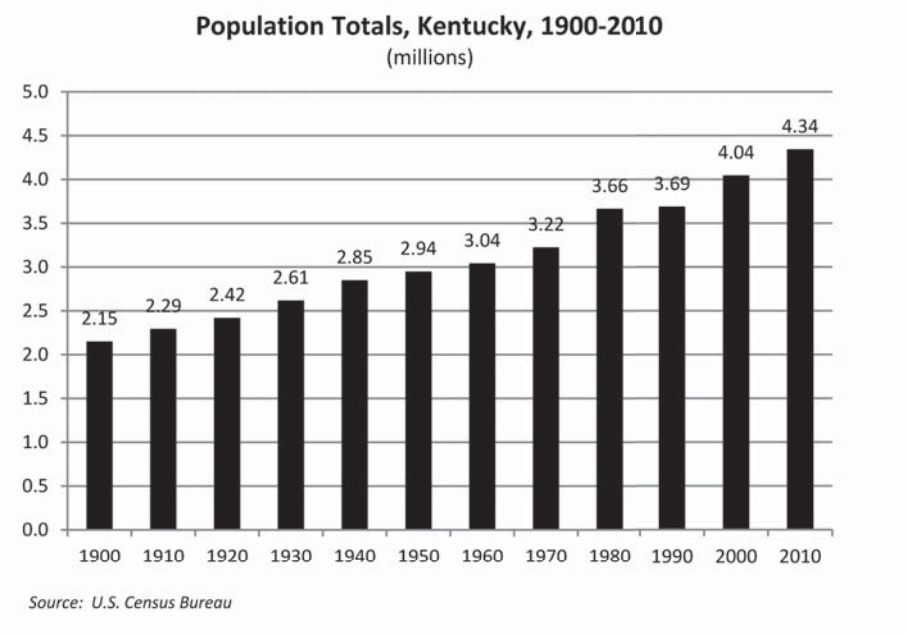
Because Kentucky, compared to the U.S. as a whole, is more rural, less minority, and somewhat older, the Kentucky population has grown more slowly than the U.S. population. Yet, Kentucky's metropolitan areas, especially in Northern and Central Kentucky, have positive population momentum. These urban 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 by 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

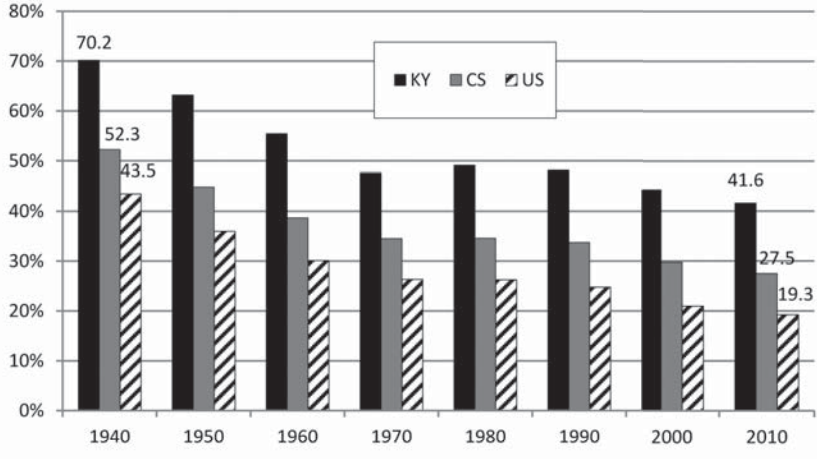
Kentucky's population in the 2010 Census was 4,339,367, representing a 7.4 percent increase from the 2000 Census population of 4,041,769 and ranking it the 26th most populous state. As state demographer Michael Price at the University of Louisville has pointed out, while "the U.S. population grew at 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.



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)



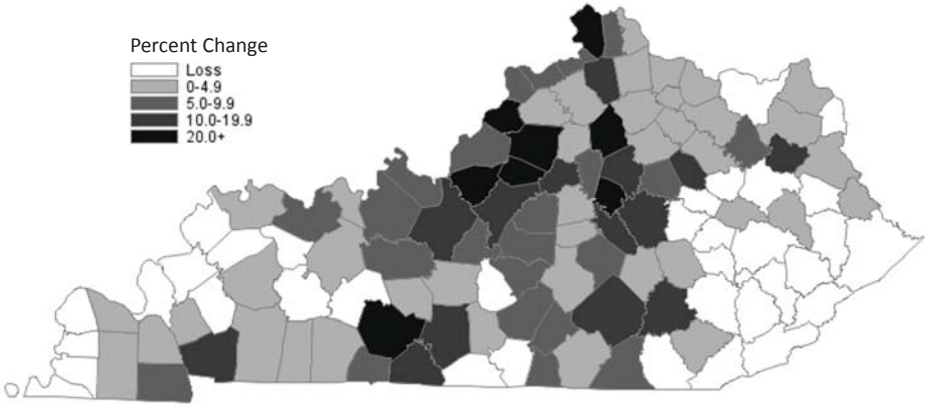
Source: U.S. Census Bureau

County Population Changes

The geographic distribution of state population growth from 2000 to 2010 is shown on this map. Population losses and slow growth were pervasive throughout the mountain communities of Eastern Kentucky and the river communities of Western Kentucky. Thirty-six counties experienced decreases in population size and another 40 grew by less than five percent. The largest declines were in Harlan (-3,924), Pike (-3,712), Floyd (-2,990), and Clay (-2,826). The fastest declines were in Breathitt (-13.8 percent), Fulton (-12.1 percent), Harlan (-11.8 percent), and Clay (-11.5 percent). However, in much of Northern and Central Kentucky, population growth has been rather robust. Five counties with the largest growth—Jefferson (47,492), Fayette (35,291), Boone (32,820), Warren (21,270), and Oldham (14,138), accounted for over half of the state total population growth. The fastest growing counties were Spencer (45.0 percent), Scott (42.7 percent), Boone (38.2 percent), and Oldham (30.6 percent).

Source: Michael Price, "Kentucky Population Growth: What Did the 2010 Census Tell Us?," Kentucky Annual Economic Report 2012.

Kentucky County Population Growth: 2000-2010



Minority Population

In 2010, minorities comprised 36.3 percent of U.S. population and 13.7 percent of the Kentucky population. Kentucky's racial and ethnic composition breaks down like this: white not Hispanic (86.3 percent), black (7.7 percent), Hispanic or Latino (3.1 percent), two or more races (1.5 per-cent), Asian (1.1 percent), and all other races including native populations (0.2 percent). From 2000 to 2010, the state minority population grew almost 10 times faster than the non-Hispanic white majority (36.9 percent vs. 3.8 percent). However, the majority population increased faster in Kentucky than nationwide (1.2 percent). Non-Hispanic whites grew by 6.1 percent in metro areas and 3.7 percent in micro areas, but declined (-0.6 percent) in rural areas. The state minority population is more concentrated in metro areas than the total population. In 2010, four of every five persons of color in Kentucky lived in metro areas.

Source: Michael Price, "Kentucky Population Growth: What Did the 2010 Census Tell Us?," Kentucky Annual Economic Report 2012.

Kentucky Population by Race and Hispanic or Latino Origin in Metro, Micro and Rural Areas: 2000 and 2010

	2000		2010		Change 2000-2010	
State	Number	Percent	Number	Percent	Number	Percent
Metro Areas						
Total Population	2,272,494	100.0	2,523,770	100.0	251,276	11.1
White not Hispanic	1,933,739	85.1	2,051,010	81.3	117,271	6.1
Minorities	338,755	14.9	472,760	18.7	134,005	39.6
Black	237,620	10.5	276,269	10.9	38,649	16.3
Hispanic or Latino	44,154	1.9	102,065	4.0	57,911	131.2
Micro Areas						
Total Population	763,170	100.0	805,509	100.0	42,339	5.5
White not Hispanic	709,712	93.0	736,066	91.4	26,354	3.7
Minorities	53,458	7.0	69,443	8.6	15,985	29.9
Black	31,885	4.2	32,268	4.0	383	1.2
Hispanic or Latino	6,925	0.9	14,651	1.8	7,726	111.6
Rural Areas						
Total Population	1,006,105	100.0	1,010,088	100.0	3,983	0.4
White not Hispanic	964,562	95.9	958,579	94.9	-5,983	-0.6
Minorities	41,543	4.1	51,509	5.1	9,966	24.0
Black	24,134	2.4	24,538	2.4	404	1.7
Hispanic or Latino	8,860	0.9	16,120	1.6	7,260	81.9

Source: 2000 and 2010 Census. Michael Price, "Kentucky Population Growth," Kentucky Annual Economic Report, 2012.

Population by Age Group

Over this last decade, the state median age rose from 35.9 years to 38.1 years. The U.S. median age was 37.2 years in 2010. The number of persons aged 65 and above increased by 73,434 or 14.5 percent last decade. The elderly share of the total population rose only slightly, from 12.5 percent to 13.3 percent. The population under age 20 increased by 32,560 (2.9 percent), but the youth share fell from 27.6 percent to 26.5 percent. Age composition varies quite a bit across the state as the result of the differential patterns of growth. Metro areas are generally younger, the result of more migration and higher birth rates. In metro areas, the 2010 median age was 36.7 years and 33.9 percent of the total population was under 25. The elderly share was 12.3 percent. In contrast, the median age was 39.2 years in micro areas and 40.1 years in rural areas. The youth population under age 25 made up 32.6 percent in micro areas and 31.5 percent in rural areas. The elderly comprised 14.8 percent of population outside of metro areas.

Source: Michael Price, "Kentucky Population Growth: What Did the 2010 Census Tell Us?," Kentucky Annual Economic Report 2012.

Kentucky Population by Age in Metro, Micro, and Rural Areas: 2000 and 2010

	2000		2010		Change 2000-2010	
State	Number	Percent	Number	Percent	Number	Percent
Metro Areas						
Total	2,272,494	100.0	2,523,770	100.0	251,276	11.1
Under 20	634,447	27.9	679,109	26.9	44,662	7.0
20-24	163,446	7.2	176,494	7.0	13,048	8.0
25-64	1,208,826	53.0	1,358,660	54.0	149,834	12.4
65 and above	265,775	11.7	309,507	12.3	43,732	16.5
Micro Areas						
Total	763,170	100.0	805,509	100.0	42,339	5.5
Under 20	203,943	26.7	207,954	25.8	4,011	2.0
20-24	54,781	7.2	54,768	6.8	-13	0.0
25-64	399,289	52.0	423,410	53.0	24,121	6.0
65 and above	105,157	13.8	119,377	14.8	14,220	13.5
Rural Areas						
Total	1,006,105	100.0	1,010,088	100.0	3,983	0.4
Under 20	275,254	27.4	259,141	25.7	-16,113	-5.9
20-24	64,805	6.4	58,706	5.8	-6,099	-9.4
25-64	532,185	53.0	542,898	54.0	10,713	2.0
65 and above	133,861	13.3	149,343	14.8	15,482	11.6

Source: 2000 and 2010 Census. Michael Price, "Kentucky Population Growth," Kentucky Annual Economic Report, 2012.

VARIABLES

Advanced Placement Exam Mastery—College Board, *AP Report to the Nation*, various years, <apreport.collegeboard.org/>.

Age-Specific Obesity—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 <www.cdc.gov/brfss/technical_infodata/index.htm>.

Air Quality—Kentucky Energy and Environment Cabinet, Department for Environmental Protection, Division for Air Quality, *Fiscal Year 2012 Annual Report* <air.ky.gov/SiteCollectionDocuments/Annual_Report_2012.pdf>. The data on air quality trends were obtained via email from the Division for Air Quality on November 14, 2012.

Business Bankruptcies—The Administrative Office of the U.S. Courts <www.uscourts.gov/Statistics/BankruptcyStatistics/quarterly-filings-3-month-chapter-district.aspx> is the original source of the bankruptcy data (obtained from the Indiana Business Research Center, Indiana University, Kelley School of Business). The establishment data from the County Business Patterns.

Charitable Contributions—Internal Revenue Service, Statistics of Income <www.irs.gov/uac/SOI-Tax-Stats---Historic-Table-2>.

Child Poverty—U.S. Census Bureau, Poverty Status in the past 12 months, 2011 American Community Survey 1-Year Estimates <www.census.gov/acs/www/>.

Chronic Disease Risk—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 <www.cdc.gov/brfss/technical_infodata/index.htm>.

College Attainment—U.S. Department of Commerce, American Community Survey, 2009-2011, 3-year estimates <www.census.gov/acs/www/>.

Computer and Internet Use—U.S. Department of Commerce, Economics and Statistics Administration and National Telecommunications and Information Administration, *Exploring the Digital Nation - Computer and Internet Use at Home* <www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home>. The Economic Development Administration report, *Measuring Broadband's Economic Impact*, Feb. 2006, is available at <cfp.mit.edu/publications/CFP_Papers/Measuring_bb_econ_impact-final.pdf>.

Corrections Expenditures—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

County Population Changes—Michael Price, "Kentucky Population Growth: What Did the 2010 Census Tell Us?," *Kentucky Annual Economic Report 2012* <cber.uky.edu/Downloads/CBERAnnRpt12.pdf>.

County-Level Innovation Index—*Innovations in America's Regions*, a project funded in part by the U.S. Commerce Department's Economic Development

Administration. Work was conducted by the Purdue Center for Regional Development, the Indiana Business Research Center at Indiana University's Kelley School of Business, and other research partners. Data are available online at <www.statsamerica.org/innovation/index.html>.

Crime Rate—Federal Bureau of Investigation, *Crime in the United States 2011*, Table 4, Crime in the United States, by Region <www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2011/crime-in-the-u.s.-2011/tables/table-4>.

Debt—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate>.

Disability—U.S. Department of Commerce, American Community Survey, 2011, 1-year estimates <www.census.gov/acs/www/>.

Education and Health Outcomes—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 <apps.nccd.cdc.gov/BRFSS/index.asp>.

Education Expenditures—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Educational Achievement Gap—National Center for Education Statistics, NAEP Data Explorer <nces.ed.gov/nationsreportcard/naepdata/dataset.aspx>.

Elderly Poverty—U.S. Census Bureau, Poverty Status in the past 12 months, 2011 American Community Survey 1-Year Estimates <www.census.gov/acs/www/>. The Employee Benefit Research Institute, *2012 Retirement Confidence Survey* results are available at <www.ebri.org/surveys/rcs/>.

Electricity Costs for Industrial Customers—U.S. Energy Information Administration <www.eia.gov/beta/state/data.cfm?sid=KY#Prices>.

Employment by Foreign Companies—Thomas Anderson, "U.S. Affiliates of Foreign Companies: Operations in 2010," Bureau of Economic Analysis <www.bea.gov/scb/pdf/2012/08%20August/0812_us_affiliate_operations.pdf>.

Employment by Sector—U.S. Department of Labor, Bureau of Labor Statistics <www.bls.gov/sae/>.

Employment-Population Ratio—U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

Energy Consumption by End-Use Sector—U.S. Energy Information Administration, State Energy Data System, Table C1: Energy Consumption Overview: Estimates by Energy Source and End-Use Sector, 2010 <www.eia.gov>.

Energy Consumption by Source—U.S. Energy Information Administration, *State Energy Data 2010: Consumption*, and Kentucky State Energy Profile and Energy Estimates <www.eia.gov>.

Energy Consumption per GDP—U.S. Energy Information Administration and

VARIABLES

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

Entrepreneurial Breadth—Fairlie, Robert W. "Kauffman Index of Entrepreneurial Activity," Kauffman Foundation <www.kauffman.org/research-and-policy/kiea-data-files.aspx>.

Entrepreneurial Depth—U.S. Department of Commerce, Bureau of Economic Analysis, SA04 State income and employment summary.

Exports of Goods—U.S. Department of Commerce, International Trade Administration, <tse.export.gov/TSE/TSEhome.aspx>.

Food Insecurity—*Household Food Security in the United States*, various years, United States Department of Agriculture, Economic Research Service. Available online at: <www.ers.usda.gov/publications/err-economic-research-report/err141.aspx>. Competitor states is a weighted average of AL, GA, IL, IN, MS, MO, NC, OH, SC, TN, VA, and WV.

Food Stamp Participation—U.S. Department of Agriculture, Food and Nutrition Service. The household percentages are 2011 American Community Survey 1-Year Estimates, and program information was from *Policy Basics: Introduction to SNAP*, Center on Budget and Policy Priorities, November 20, 2012 <www.cbpp.org/files/policybasics-foodstamps.pdf>.

Free or Reduced-Price Lunch Eligibility—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 <nces.ed.gov/pubs2012/pesschools10/tables/table_07.asp>.

Gasoline Prices—U.S. Energy Information Administration, *Motor Gasoline Sales Through Retail Outlets Prices* <www.eia.gov/dnav/pet/pet_pri_allmg_a_epm0_ptc_dpgal_a.htm>.

General Fund Receipts by Source—Kentucky Finance and Administration Cabinet and the Kentucky Revenue Cabinet, *Annual Reports*, various years.

Growth Rates, Taxes and Income—William Hoyt, William Fox, Michael Childress, and James Saunoris, *Final Report to the Governor's Blue Ribbon Commission on Tax Reform*, September 2012, University of Kentucky, Center for Business and Economic Research <cber.uky.edu>.

Health Insurance Coverage for Children—U.S. Census Bureau, Health Insurance Historical Tables, H1B Series, HIB-5. Health Insurance Coverage Status and Type of Coverage by State—Children Under 18: 1999 to 2011 <www.census.gov/hhes/www/hlthins/data/historical/files/hihistt5B.xls>.

Health Insurance Coverage—U.S. Census Bureau, Health Insurance Historical Tables, H1B Series, HIB-4. Health Insurance Coverage Status and Type of Coverage by State--All Persons: 1999 to 2011 <www.census.gov/hhes/www/hlthins/data/historical/files/hihistt4B.xls>.

VARIABLES

High School Attainment—U.S. Department of Commerce, American Community Survey, 2009-2011, 3-year estimates <www.census.gov/acs/www/>.

High School Graduation Rate—U.S. Department of Education, "States Report New High School Graduation Rates Using More Accurate, Common Measure," November 26, 2012, press release <www.ed.gov/news/press-releases/states-report-new-high-school-graduation-rates-using-more-accurate-common-measur>.

Higher Education Expenditures—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Highways Expenditures—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Household Income—U.S. Census Bureau, State Median Income, Annual Social and Economic Supplement, Table H-8B. Median Income of Households by State Using Three-Year Moving Averages: 1984 to 2011, <www.census.gov/hhes/www/income/data/historical/household/2011/H08B_2011.xls>. The competitor state average is not a weighted average; instead, it is a simple average of the median house hold incomes of the 12 competitor states. Household income includes income of the householder and all other people 15 years and older in the household, whether or not they are related to the householder. The median is the point that divides the household income distribution into halves, one half with income above the median and the other with income below the median. The median is based on the income distribution of all households, including those with no income. The distributional data is a one-year (2011) estimate from the American Community Survey.

Income Distribution—Elizabeth McNichol, Douglas Hall, David Cooper, and Vincent Palacios, *Pulling Apart: A State-By-State Analysis of Income Trends*, Economic Policy Institute & the Center on Budget and Policy Priorities, November 15, 2012.

Industrial Research & Development—National Science Foundation, Business and Industrial R&D, various years <www.nsf.gov/statistics/industry/>.

Labor Force Participation by Age Group—U.S. Department of Commerce, American Community Survey, 2009-2011, 3-year estimates.

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

Medicaid Beneficiaries—Kaiser Family Foundation, <www.statehealthfacts.org>.

Minority Population—Michael Price, "Kentucky Population Growth: What Did the 2010 Census Tell Us?," *Kentucky Annual Economic Report 2012*, University

VARIABLES

of Kentucky, Center for Business and Economic Research <cber.uky.edu>.

Missing Teeth—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 <www.cdc.gov/brfss/technical_infodata/index.htm>.

Number of Risk Behaviors—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, 2009-2011 <www.cdc.gov/brfss/technical_infodata/index.htm>.

Oral Health—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 <www.cdc.gov/brfss/technical_infodata/index.htm>.

Patents—U.S. Patent and Trademark Office, Utility Patents <www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm>. Population data are from the U.S. Census Bureau <www.census.gov>. The competitor states is a weighted average of AL, GA, IL, IN, MS, MO, NC, OH, SC, TN, VA, and WV.

Per Capita Personal Income—U.S. Department of Commerce, Bureau of Economic Analysis, SA1-3 Personal income summary.

Performance Test Scores—U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various assessments, <nces.ed.gov/nationsreportcard/naepdata/>.

Personal Bankruptcies—The Administrative Office of the U.S. Courts <www.uscourts.gov/Statistics/BankruptcyStatistics/quarterly-filings-3-month-chapter-district.aspx> is the original source of the bankruptcy data (obtained from the Indiana Business Research Center, Indiana University, Kelley School of Business). The population data are from the U.S. Census.

Population by Age Group— Michael Price, "Kentucky Population Growth: What Did the 2010 Census Tell Us?," *Kentucky Annual Economic Report 2012*, University of Kentucky, Center for Business and Economic Research <cber.uky.edu>.

Population Totals—U.S. Census Bureau, Urban and Rural Population: 1900 to 1990 <www.census.gov/population/www/censusdata/files/urpop0090.txt>. The 2000 and 2010 population totals were obtained from the Census totals available at <www.census.gov>. The competitor state average of 41 percent increase is a weighted average of the 12 competitor states.

Poverty Rate—U.S. Census Bureau, Current Population Survey, March Supplement, various years <www.census.gov/cps/data/cpstablecreator.html>.

Public Welfare & Public Assistance—U.S. Census Bureau, 2010 Annual Surveys

of State and Local Government Finances <www.census.gov/govs/estimate/>.

Residential Electricity Costs—U.S. Energy Information Administration, *Electricity* <www.eia.gov/electricity/sales_revenue_price/xls/table5_a.xls>.

Revenue from Federal Transfers—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Risk Behaviors and Chronic Disease—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 Dis-ease Control and Prevention, 2009-2011 <apps.nccd.cdc.gov/BRFSS/index.asp>.

Rural Population—U.S. Census Bureau, Urban and Rural Population: 1900 to 1990 <www.census.gov/population/www/censusdata/files/urpop0090.txt>. The 2000 and 2010 population totals were obtained from the Census totals available at <factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. The competitor state average is a weighted average of the 12 competitor states.

Sales Tax by Age Group—U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditure Survey, 2009-2010 <www.bls.gov/cex/>.

Science and Engineering Graduates—National Science Board, *Science and Engineering Indicators, 2012* <www.nsf.gov/statistics/seind12/pdf/seind12.pdf> and the National Center for Education Statistics, Integrated Postsecondary Education Data System (various years); Census Bureau, 2000 Decennial Census and Population Estimates Program (various years).

Small Business Innovation Research—National Science Board, *Science and Engineering Indicators, 2012* <www.nsf.gov/statistics/seind12/pdf/seind12.pdf>.

Solid Waste Disposal—Kentucky Energy and Environment Cabinet, *Statewide Solid Waste Management Report—2010 Update* <waste.ky.gov/RLA/Documents/2010%20Solid%20Waste%20Summary%20Report.pdf>.

Sources of Personal Income—U.S. Department of Commerce, Bureau of Economic Analysis, SA04 State income and employment summary.

State and Local Expenditures—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State and Local Own Source Revenue—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State and Local Revenue by Source—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State Portion of Total Revenue—U.S. Census Bureau, 2010 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Tax Collections and Personal Income—U.S. Department of Commerce, Bureau of Economic Analysis, and U.S. Census Bureau, State Government Tax Collections, various years <www.census.gov/govs/statetax/>.

VARIABLES

Temporary Assistance for Needy Families—Total number of recipients of Aid to Families with Dependent Children/Temporary Assistance to Needy Families (AFDC/TANF). Sources: University of Kentucky Center for Poverty Research (1980-2010 data). Source: The Office of the Administration for Children and Families, U.S. Department of Health and Human Services. The 2011 data reflect fiscal year (as compared to calendar year) data, <www.acf.hhs.gov/programs/ofa/resource/2011-recipient-tan>. The Center on Budget and Policy Priorities report, *Chart Book: TANF at 16*, is available at <www.cbpp.org/files/8-22-12tanf.pdf>.

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/>.

Toxic Releases—U.S. Environmental Protection Agency, Toxics Release Inventory, TRI Explorer <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, 2011.

Transition from Goods to Services—U.S. Department of Commerce, Bureau of Economic Analysis <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.

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>.

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

Volunteer Hours—Corporation for National and Community Service, <www.volunteeringinamerica.gov/index.cfm>. These data reflect pooled 2008-2010 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older.

Volunteer Rate—Corporation for National and Community Service, <www.volunteeringinamerica.gov/index.cfm>. These data reflect pooled 2008-2010 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.

Water Quality—United States, Environmental Protection Agency, *Fiscal Year*

2010 Drinking Water and Ground Water Statistics <water.epa.gov/scitech/datait/databases/drink/sdwisfed/upload/new_Fiscal-Year-2010-Drinking-Water-and-Ground-Water-Statistics.pdf>.

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

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