2004

# Kentucky Annual Economic Report 2004

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# Kentucky Annual Economic Report

# 2004


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

UNIVERSITY OF KENTUCKY

Gatton
COLLEGE OF BUSINESS AND ECONOMICS

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**Department of Economics**

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

CBER's research includes a variety of interests. Recent projects have been conducted on manpower, labor, and human resources; transportation economics; health economics; regulatory reform; public finance; and economic growth and development. In addition to the *Kentucky Annual Economic Report*, CBER publishes a quarterly newsletter, *Kentucky Business and Economic Outlook*, which contains forecasts for the Kentucky economy as well as other business and economic issues. CBER also publishes the *Carol Martin Gatton College of Business and Economics Working Papers*, which report the results of current research by college faculty, and *Growth and Change*, a scholarly, refereed journal of urban and regional policy with international distribution.

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# In Memory of Dr. Mark C. Berger

In the 2004 Kentucky Annual Economic Report, we will present highlights from a years worth of Center research on the economy of Kentucky and its localities, and public policy issues that affect the state. The year too has been a full one in terms of developing new research ideas beyond those discussed in this Annual Report. These efforts have included Center for Business and Economic Research (CBER) studies on occupational outlooks for the Louisville metropolitan area, development opportunities in the Kentucky tourism industry, downtown development efforts in Kentucky, as well as a number of research projects of national scope. But, in many ways, we at CBER have been at a standstill this year. In April, Mark Berger, our Director for nearly a decade, and a distinguished scholar that is well known to many readers, died unexpectedly. Through the year, we at CBER have completed our work, reported our results, and developed new research opportunities regarding the Kentucky economy. But, too often this was done against a backdrop of sadness and without the enthusiasm which Mark cultivated in each of us.

Mark was a leading researcher in the field of labor economics and health economics, and made substantial contributions to the topics of wage growth among the baby-boom generation, the effects of substance abuse and smoking on health and labor outcomes, the returns to worker training, and the role of amenities in regional development. Over two decades of research and publication built a national reputation in these fields.

Throughout this period, Mark also gave generously of his time by using his great expertise to help develop a better understanding of the Kentucky economy, and public policy issues in this state. We would like to take this opportunity to describe the most prominent of these contributions.

Mark Berger made an invaluable contribution in describing the central role of education in determining growth and improvement in the Kentucky economy. Mark led the research efforts embodied in the CBER publication *Long-Term Trends in the Kentucky Economy* that illustrated that

improvements in educational attainment were the driving force behind rapid improvements in the Kentucky economy during the 1990s, and that these education improvements were encouraged by a high return to education for the Kentucky workforce. Mark also championed the notion that returns to education and educational attainment were key to future improvement in the state economy. Mark demonstrated that differences in educational attainment account for a substantial share of the per capita income gap between Kentucky and the nation, and that meeting the state's goal of closing that income gap would require substantial improvement in educational attainment *(Kentucky Annual Economic Report 1997*). Furthering our understanding of this important issue, Mark also measured that nearly half of Kentucky's per capita income gap is accounted for by (lower) cost-of-living and (higher) quality of life in our state *(Kentucky Annual Economic Report 2000*).

Mark also played a central role in debates over health care reform in Kentucky, developing economic studies of a variety of plans to increase private coverage, or to expand or reform public health care programs such as Medicaid.

Besides his involvement in Kentucky's two principal policy debates of the last decade, Mark studied a variety of other economic policy issues. To give a few recent examples, Mark examined the issue of "Smart Growth" in the 2001 CBER study *Smart Growth and the Costs of Sprawl in Kentucky*. He examined the potential for deregulation of the electric power generation industry in the 1997 CBER study *Competition and Customer Choice in Electric Power*, and the level of taxation in Kentucky and for Kentucky businesses in 2001 CBER study *Statutory and Economic Incidence of Taxes in Kentucky and Surrounding States*.

Beyond his own research, Mark used his insights about the economy as he served in a leadership role for a number of economic analyses and research efforts in the state. Most recently, Mark served on the Commonwealth of Kentucky Consensus Forecasting Group where he participated in efforts to project revenues for budget planning purposes. He also served as the President of the Kentucky Economic Association in 1999-2000 and was on its Board for many years.

Finally, writing in this Annual Report, it is appropriate to point out the contributions that Mark made to the Center for Business and Economic Research. The Center has been in existence for several decades, but Mark's leadership allowed for a substantial expansion in the capacity and range of CBER as a research organization. Mark enhanced the research capacity of the Center by adding economists to the organization at both the faculty and staff level. Mark also increased the role of Department of Economics faculty and students in CBER research projects.

Mark's abilities and this enhanced research capacity allowed CBER to become increasingly involved in public policy research in Kentucky. CBER also expanded the quality and frequency of its involvement in economic forecasting for Kentucky and its local economies. CBER expanded efforts to disseminate research results through an annual policy conference, an expanded Kentucky Annual Economic Report, and the establishment of an annual survey of business conditions and e-commerce activity.

The Kentucky Annual Economic Report is CBER's most concentrated effort each year to present the findings of its research efforts regarding the Kentucky economy. Given Mark Berger's great contributions both to CBER and the understanding of the Kentucky economy, this volume is dedicated to his memory.

# Authors

## Dr. Michael W. Clark

Dr. Michael W. Clark is the Chief Economist for the Legislative Research Commission. His research has focused on various public policy issues, including market responses to Kentucky's health insurance reforms and an evaluation of state and local tax burdens on low-income families. Before joining the LRC, he was a financial analyst for Kentucky Utilities. He received his Ph.D. in economics from the University of Kentucky in 1996.

## John J. Perry

John J. Perry is an economist with the Legislative Research Commission (LRC) and a doctoral student in the Department of Economics at the University of Kentucky. Mr. Perry was previously an actuarial consultant with Milliman USA and is a graduate of Centre College. His primary research interests concern health economics, employee benefits and public economics.

## Jonathan M. Roenker

Jonathan M. Roenker is an Economic Analyst at the Center for Business and Economic Research at the University of Kentucky. Mr. Roenker received a M.S. in economics from the University of North Carolina at Chapel Hill in 2000 and a B.S. in economics from the University of Kentucky in 1998. He has considerable experience in conducting economic impact studies and has worked on several studies of Kentucky business and economic issues during his time at CBER. Mr. Roenker also possesses considerable experience in econometric methods and modeling.

## Anna L. Stewart

Anna Laura Stewart is a graduate research assistant at the Center for Business and Economic Research and is a doctoral student in the Department of Economics at the University of Kentucky. Ms. Stewart received a M.A. in diplomacy and international commerce from the University of Kentucky in 1994 and a B.B.A. in economics from Morehead State University in 1992. From 1998 through 2000, Ms. Stewart was a Research Fellow at the Indiana Economic Development Council focusing primarily on labor and workforce development. Prior to that, Ms. Stewart was a Research Assistant for MetaMetrics, Inc., a private international economic development firm located in Washington D.C., specializing in Democracy and Governance and Rule of Law projects.

## Dr. Eric C. Thompson

Dr. Eric C. Thompson is Associate Director of CBER and a Research Associate Professor in the Department of Economics and CBER at the University of Kentucky. Dr. Thompson received his Ph.D. in agricultural economics from the University of Wisconsin in 1992. Previously, he was a Research Assistant Professor at the Center for Economic Research at West Virginia University and in the Community Economic Development Division of the West Virginia University Extension Service before coming to Kentucky in 1995. Dr. Thompson's expertise lies in the fields of economic forecasting and regional economics. He has conducted many studies on local and state economic development and currently maintains and updates the University of Kentucky State Econometric Model.

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# Forecast for the Economy, 2004 - 2006

*Eric C. Thompson*

*The Kentucky economy is forecast to follow the national economy into a period of strong post-recession growth in 2004, and solid growth in 2005 and 2006. With strong growth, Kentucky employment is expected to reach pre-recession levels by mid-2005. However, recession period job losses in manufacturing are expected to be permanent. Unemployment rates will fall slowly over the next three years.*

## Introduction

Even in prosperous times, businesses and workers are impacted by the outlook for the economy. Profit margins for firms and the potential for promotion and advancement for workers can rise substantially with a strong growth outlook. The interest in the outlook only rises in difficult economic times as the outlook affects more fundamental economic questions such as restructuring and job opportunities for displaced workers and the potential for business survival. The Kentucky economy has been in such a difficult time for most of the last three years, creating heightened interest in the current outlook, and raising a key question: With news about the economy improving in recent months, will these positive trends continue? Or, perhaps more to the point, how confident can we be that these trends will continue?

This article begins with a discussion of the national economy. The Kentucky economy has diversified substantially over the last few decades, and increasingly mirrors the national economy. The state's economy, therefore, is likely to reflect developments in the national economy and the outlook for the national economy becomes a first step in understanding the Kentucky economic outlook.

The outlook for the Kentucky economy is examined next. This outlook is developed using the University of Kentucky State Econometric Model, a model of the state economy that has been in use since the mid-1990s. A forecast is produced for 2004, as well as for 2005 and 2006, of the key aggregate economic variables of the Kentucky economy including total employment, manufacturing employment, income growth, and population growth.

A final section evaluates the recent forecasting performance of the University of Kentucky State Econometric Model. The predictive power of the model for estimating key aggregate variables such as employment growth and income growth is examined for the last seven University of Kentucky forecasts.

## The National Economy

Forecasts for the national economy in the current period are strongly influenced by the business cycle, and in particular, recovery from the recent recession of 2001. Recovery from that recession has unfolded slowly but has been gaining momentum. The economy finally may be reaching the type of rapid growth typically expected after a recession. The next year as a result may be characterized by rapid growth as it contains the strong growth quarters of the recovery period of the business cycle.

High growth periods such as 2004 are expected after a recession since economic decline during a recession pulls the economy below its capacity as dictated by its long-term path of growth. This long-term growth rate is between 2% and 3% and is determined by the rate of labor force growth (i.e., population growth) and productivity growth, which is tied to capital formation and innovation. After a recession, moderate growth in the economy is insufficient to pull the economy back to its trend growth rate. A period of rapid growth must occur to bring the economy back to its capacity for production and employment.

A period of strong recovery did not emerge quickly after the recent recession. The recession lasted from January 2001 through November 2001 according to the National Bureau of Economic Research (NBER). Growth was halting in the period that

**Figure 1: Gross Domestic Product Growth, Quarterly, Last 3 Years**


*Source: http://www.economicindicators.gov*

followed, as is seen in Figure 1. Gross domestic product (GDP) growth was moderate during late 2002 and the first half of 2003.

The pace of recovery accelerated in late 2003. The rapid increase in investment and overall GDP growth suggests that the economy is finally beginning to experience the spurt of rapid growth that typically follows a recession. Most forecasts for the economy project strong growth continuing through 2004. This rapid growth is expected to be fueled by a rebound in private business investment in capital goods and property. This most volatile component of the economy is finally beginning to reach the rapid growth expected after recession. Continued low interest rates also are expected to fuel further growth in consumer spending on final goods and services. The combination of strong growth in private business investment and consumer spending is what will drive above-average economic growth during 2004.

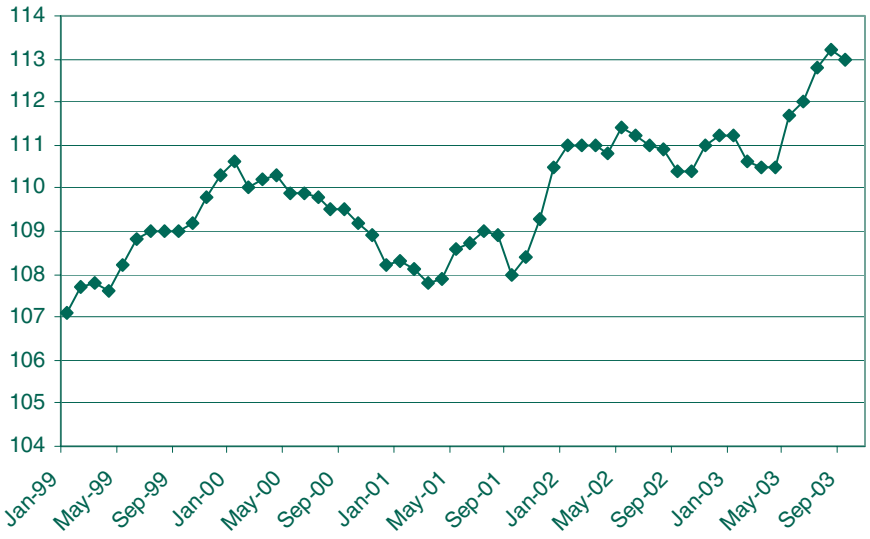
## Indicators of Future Growth

Several indicators portend the expectation of rapid growth in the next year. The index of leading economic indicators has risen steadily during 2003. This index is designed to predict the change in economic activity 6 to 9 months into the future. Steady improvement from April 2003 to September 2003 as depicted in Figure 2 suggests sustained improvement in the national economy in 2004, or at least the first half of the year. The stock market is another key leading indicator of economic activity. Investors are thought to be among the most accurate at forecasting economic recovery. Their beliefs are reflected in stock market valuations. As Figure 3 illustrates, the stock market, as measured by the Standard & Poors' 500 index, has risen steadily over the last 6 months.

## How much recovery makes a Recovery?

These indicators, and others suggesting strong growth next year, are reliable, but they also are not perfect. Further, both the leading indicators index and the stock market are effective at predicting changes in economic growth 6 to 9 months into the future. Thus, even if accurate, these indicators do not predict whether growth will be sustained over a long period. Such a scenario has played out in the U.S.

**Figure 2: Index of Leading Economic Indicators**




*Source: The Conference Board*

economy recently. There were improvements in the index of leading indicators and the stock market at the end of 2001 and the first quarter of 2002, as Figures 2 and 3 indicate. There also was an improvement in overall economic growth as measured by GDP around the same time, as indicated in Figure 1. But, this improvement was not sustained as overall growth in the economy slowed considerably in late 2002 and the first quarter of 2003. As Figure 4 illustrates, employment also fell steadily throughout this period, except for slight increases in the fourth quarters of 2002 and 2003. This pattern of "false" recovery could occur in 2004.

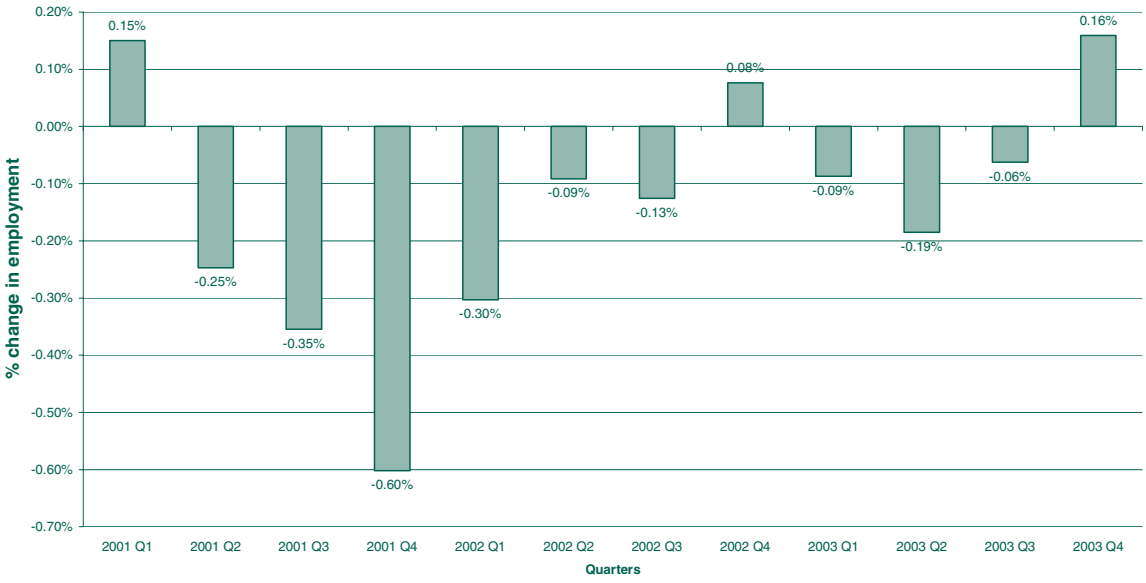
## Employment

There are factors that suggest some caution towards the economy in 2004. Job losses are the chief concern among these. The magnitude and duration of employment loss over the last few years has been a key feature of the recent recession and the two years that followed. As depicted in Figure 4, the economy has lost over 1.5 percent of its employment since January 2001, when the recession period began, and sustained job losses even after the recession ended in late 2001. These developments raise a key question for the forecast for 2004 and beyond. Even if the economy grows rapidly in 2004, will there be an

**Figure 3: 5 Year S & P 500 Index**


Source: http://finance.yahoo.com

**Figure 4: Total Employment Growth, Quaterly, Last 3 Years**




Source: http://data.bls.gov/cgi-bin/srgate

extension of the job gains seen in the last few months to create a sustained period of job gain?

The answer to this question depends on at least three key factors. The first is very much related to the business cycle, and the strength of the recovery. Will the burst of growth and recovery anticipated for 2004, if it occurs as expected, be sufficiently strong to create employment regardless of any restructuring in the economy that might discourage job growth? A very rapid recovery may lead to rapid job growth even if the labor market, or portions of it, is changing in ways that will discourage net employment growth in the next few years.

The second and third factors are related to that restructuring. The second factor relates to manufacturing employment. Potential structural changes in the organization of manufacturing employment may be leading to substantial job losses in the industry. In particular, manufacturing job losses accounted for more than two-thirds of total job losses in the U.S. economy over the last three years. These losses may reflect structural factors such as a permanent, significant increase in productivity in the industry that will allow manufacturing output to expand with fewer employees. This productivity growth may be driven in part by increased innovation and the increased use of skilled workers in the manufacturing industry, but also may reflect the related phenomenon that lower skill and less productive parts of the manufacturing industry are moving overseas. Both developments have and will continue to raise the standard of living in the United States, but may limit manufacturing job growth in the United States even during the recovery period. Job growth is possible without significant growth in the manufacturing industry but rapid job growth may be difficult.

The third factor relates to the increased outsourcing of service industry employment to overseas locations. This development includes call centers and technical support occupations but also includes skilled work activities in the software, engineering, and financial services industries. These developments could mean that there will be anemic growth during the recovery in these higher skilled services industries along with developments in manufacturing.

## Summary and National Forecast

Favorable developments in the business cycle should yield strong growth in the national economy during 2004. Regular patterns in the business cycle as well as current measures for key economic indicators suggest this. Concerns about the potential for rapid growth in 2004 principally are related to whether employment growth will be strong next year.

This is the general outlook in most forecasts for the national economy generated using econometric models, including the forecast from Global Insight, Inc. Global Insight is the source for the national forecast data on employment, industrial production, and income used as inputs to drive the University of Kentucky State Econometric Model (UKSEM). In its October 2003 *U.S. Economic Outlook*, Global Insight forecasts a rapid 1.8 percent annual growth in employment, and 5.4 percent annual income growth over the next 3 years. The forecast assumes strong growth in both consumer and business investment. Key assumptions include modest increases in short-term interest rates by the Federal Reserve beginning in late summer of 2004, and inflation of less than 2 percent over the period. The federal budget deficit is expected to remain above $300 billion per year.

## The Kentucky Economy

The forecast for the Kentucky economy follows that for the national economy. Strong economic growth is forecast for the year 2004. The rate of growth is forecast to moderate in 2005 and 2006. The combination of three solid to strong years of growth is forecast to slowly drive down the unemployment rate, and employment should return to pre-recession levels by 2005.

## The Last Few Years

Kentucky, however, also has followed the national economy over the last few years, and has experienced substantial job losses. In other words, Kentucky has been a full participant in the recent recession in the national economy. As seen in Figure 5, between July 2000 and July 2003, the national economy lost 1.6% of its employment.

During the same period, the Kentucky economy lost 2.7% of its employment. This experience contrasts sharply with the recession of the early 1990s when Kentucky, buoyed by a rapidly expanding auto manufacturing industry, suffered a relatively small decline in employment during the national recession.

## The Forecast: Total Employment and Manufacturing Employment

Growth in employment is often a key indicator of economic progress, and in some ways appropriately so, since most Kentuckian's principal source of income is from wages and salaries earned in the labor market. More comprehensive measures of economic growth exist, such as Gross State Product (GSP), but given the focus on job loss during the recent recession, this article will focus on prospects for employment growth.

Figure 5 shows the growth rate of total employment in Kentucky over the last few years and forecast through 2006. All comparisons are on a fourth quarter to fourth quarter basis, so growth for 2001 reflects employment change from the fourth quarter of 2000 through the fourth quarter of 2001. Kentucky lost employment at a faster rate than the

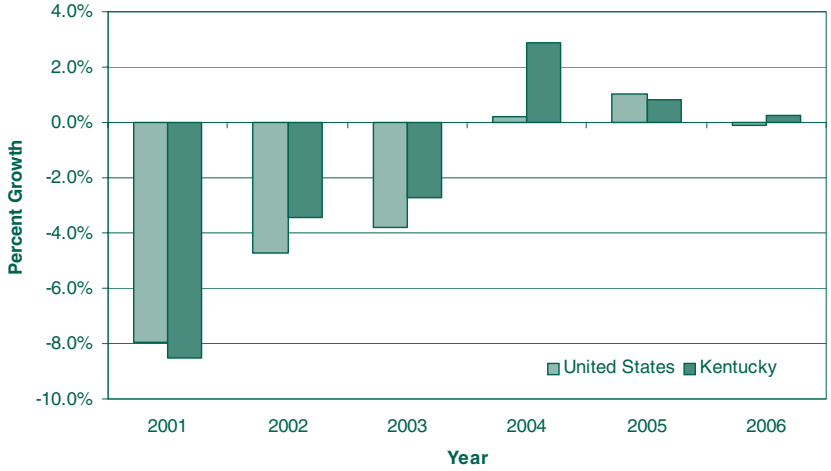
**Figure 5: Growth in NonFarm Employment**
**United States and Kentucky**
**Recent History and Forecast**


*Source: University of Kentucky State Econometric Model*

Both state and national employment have been severely affected by declines in the manufacturing industry. As seen in Figure 6, the U.S. manufacturing industry lost 15.5% of its employment between July 2000 and July 2003. This is as steep a drop as occurred during the deep recession of the early 1980s. The Kentucky economy lost 13.3% of its manufacturing industry employment during the same three year period.

Job loss in Kentucky during the last three years, as nationally, is largely driven by losses in the manufacturing industry. The sharper job losses in Kentucky, however, cannot be accounted for by declines in manufacturing. Nationally, other industries have been more effective in countering losses in manufacturing.

**Figure 6: Growth in Manufacturing Employment**
**United States and Kentucky**
**Recent History and Forecast**




*Source: University of Kentucky State Econometric Model*

nation from 2001 to 2003, but is expected to grow faster than the nation during the expansion period from 2004 through 2006. Kentucky employment growth is forecast to reach 2.1 percent in 2004, and 1.9 percent in both 2004 and 2005. This strong growth rate will help Kentucky non-farm employment to return to above its pre-recession level by late 2005.

Figure 6 illustrates that the manufacturing industry is expected to contribute to Kentucky's more rapid employment growth rate relative to the nation. The manufacturing industry in Kentucky is forecast to outperform the national manufacturing industry in two of the next three years, and particularly in 2004, when manufacturing employment is anticipated to rise by 2 percent in Kentucky between the fourth quarter of 2003 and the fourth quarter of 2004. However, note that, unlike with total non-farm employment, manufacturing employment is not likely to recover to its pre-recession levels during the recovery period. Only a fraction of what was lost will be regained, and by the end of the forecast period, growth in manufacturing employment will be near zero.

## Unemployment

A return to job growth should help drive unemployment rates lower nationally and in Kentucky. But, as Figure 7 illustrates, unemployment rates will decline quite slowly. The U.S. unemployment rate will fall from its peak of 6.1 percent in 2003 to 5.7 percent in 2006. The Kentucky unemployment rate will fall from its peak of 5.9 percent in 2003 to 5.2 percent.

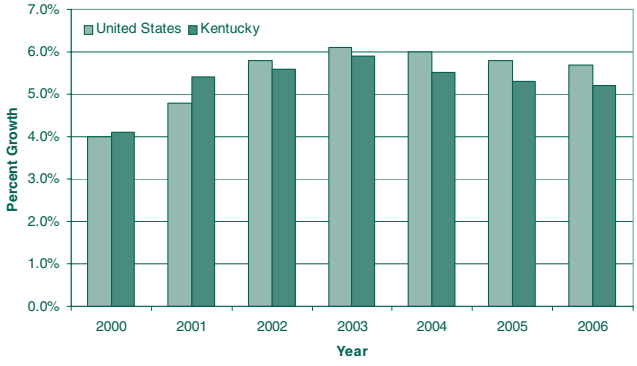
Slow improvement will occur for several reasons. First of all, growth in population implies that the economy must always create new jobs in order to absorb new workers, so that positive job growth is needed simply to maintain the current unemployment rate. Second, many workers may have given up on finding employment over the last few years, or utilized a period with a weak economy to receive schooling or meet needs at home. These workers are not counted in the unemployment figures, but will be as they begin to re-enter the labor market. Additional job growth is also required for these workers before the unemployment rate can decline.

## Population

Population growth is another key measure of an economy. Forecasts for Kentucky call for lower population growth in the state than nationally, as is seen in Figure 8. Population is forecast to grow by roughly 0.6 percent per year in Kentucky versus 1.0 percent nationally, as has been the case since the year 2001. The rate of population growth is falling slowly both in Kentucky and the nation, likely in response to the aging of the population across the country.

This slower rate is not due to a weaker economy in Kentucky, as was illustrated in the earlier tables. Instead, slower population growth in Kentucky is in part the result of a slower natural rate of population growth in Kentucky, particularly in the Eastern Appalachian and the Western part of the state. These areas have an older than average population, in large part due to out-migration in previous decades. An older population means a higher mortality rate and a lower birth rate, implying that population will grow more slowly even without considering current migration patterns. Kentucky also received a below average share of international migrants to the United States. This is facilitated both by its location far from the typical ports of entry on the southern border and the east and west coasts of the nation, and its smaller existing immigrant population, which attracts fewer family members. All of these factors lead to an expectation of slower population growth in Kentucky even if a relatively strong economy would be expected

**Figure 7: Unemployment Rates**
**United States and Kentucky**
**Recent History and Forecast**

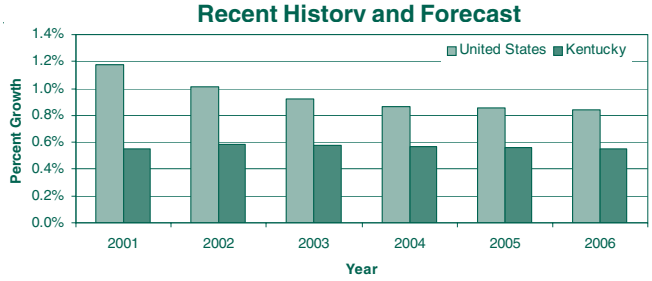



*Source: University of Kentucky State Econometric Model*

to help the state capture its share of internal migration between states.

As population grows steadily, what is the performance of income per person? Nominal per capita income is forecast to grow by 4.7 percent in Kentucky over the next three years. Real (after adjusting for inflation) per capita income is forecast to grow by 2.8% per year. These high growth rates in income per person, which are on a par with national growth rates, are possible because rising productivity allows real wages to grow quickly. As implied by growth in population and nominal per capita income, total nominal income growth is forecast to average just over 5 percent per year from 2004 through 2006.

**Figure 8: Growth in Population**
**United States and Kentucky**
**Recent Historv and Forecast**




*Source: University of Kentucky State Econometric Model*

## Note on Forecast Accuracy

The forecast figures presented above are estimates among a range of possible outcomes. Future growths in income, employment or population are likely to differ at least modestly from forecasts. As long as major assumptions about the economy are correct (i.e., the economic recovery will take hold), forecast growth should be close to actual growth. Large differences would emerge if major assumptions are incorrect.

In any case, it is useful to know the typical size of forecast error when interpreting forecasts such as those in Figure 5-8 above. Forecast errors can be used to build a range around forecast estimates. For example, if the average difference between forecast employment growth and actual employment growth has been 0.4 percent, then a forecast of 2.1 percent job growth for 2004 might be interpreted as a forecast of growth between 1.7 percent and 2.5 percent.

Table 1 shows summary information on forecast accuracy since the UKSEM was introduced in 1996. Results are presented for the two principal economic indicators of non-farm employment and total personal income. Results show the average differences between the forecast percent growth and the actual percent growth. The UKSEM generates forecasts for three years into the future. Table 1 presents forecast accuracy results separately for the first year and for all 3 years together.

Results are first presented for the entire period, beginning in 1996, and second for the period through 2000, before the recent recession began. Like most forecasting models, the UKSEM failed to forecast the recent recession, and significant forecast errors occurred during 2001 and 2002. Results excluding these years are presented to give an idea of the size of the forecast error during years when there is no error in major forecast assumptions, such as an unanticipated recession.

Forecast errors including the recession period averaged nearly 1.0% for non-farm employment. This suggests that employment could be a full percent higher or lower than forecast. Taking the forecast job growth of 2.1 percent in 2004, results in Table 1 suggest a range from 1.2 percent to 3.0 percent. For real income, forecast growth is on average 1.5 percent higher or lower than actual growth, so a forecast of 5.3 percent annual growth would fall in a range of 3.8 percent to 6.8 percent.

**Table 1**
**Forecast Accuracy**

| Period/Variable | Forecast Error 1st Year | Forecast Error 3 Year Average |
|---|---|---|
| **Full Period 1996 - 2002** | | |
| Non-farm Employment | 0.9 | 1.0 |
| Total Personal Income | 1.3 | 1.5 |
| **Pre-Recession Period 1996-2000** | | |
| Non-farm Employment | 0.4 | 0.8 |
| Total Personal Income | 1.5 | 1.8 |

*Source: UKSEM, U.S. Department of Labor, U.S. Department of Commerce*

For employment growth, these findings for the 1996-2002 forecasts reflect more modest errors in the pre-recession period from 1996-2000, and larger errors during the recession years of 2001 and 2002. For example, modest job growth was forecast for 2001 and 2002, but job losses occurred instead, so forecasts were off by 2 or 3 percent. In the pre-recession period, employment forecasts were on average off by just 0.4 percent. Forecast errors for total personal income, however, were roughly as large in the pre-recession period as for the entire period.

Overall, forecast errors were modest for employment during the pre-recession period, but were larger for income growth throughout. But, in both cases, errors were not so large as to cast doubt on the basic conclusions from the forecast, that is, whether or not there should be growth, and if so, whether growth will be rapid or moderate.

## Conclusion

The Kentucky economy is forecast to follow the national economy into a period of strong post-recession growth in 2004, and solid growth in 2005 and 2006. This forecast is supported by leading indicators of the economy. The primary risk is that the labor market will remain weak in 2004 and sap strength from the national and state economic recovery.

In the 2004 through 2006 forecast period, income and employment growth are expected to be strong, with Kentucky employment reaching pre-recession levels by 2005. Manufacturing jobs, however, are not expected to grow rapidly. Recession period job losses are forecast to be permanent for manufacturing. Job growth also is expected to drive down the unemployment rate only modestly, with the unemployment rate still above 5 percent in 2006.

# Who's your new Kentucky neighbor and where did your old one go?

*John J. Perry & Michael W. Clark*

*Kentucky changes daily in a variety of ways. One manner in which Kentucky changes is through its population changing residencies. Each year, a number of Kentucky citizens move out of the state while other people move into the state. In addition, many people stay in Kentucky but move to a different geographic region within Kentucky. While being able to move is generally considered a positive circumstance, allowing people to relocate to where they perceive their best opportunity, this movement could have important implications on both the localities people are moving to and moving from. Knowing 'who' is moving could be useful in understanding relative strengths and weaknesses as perceived by individuals and families. Using recently released migration data from the 2000 Census, the movement of people into and out of Kentucky, as well as movement within Kentucky's boundaries, from 1995 to 2000 is investigated. This article provides an overview of some general demographic characteristics of the movers.*

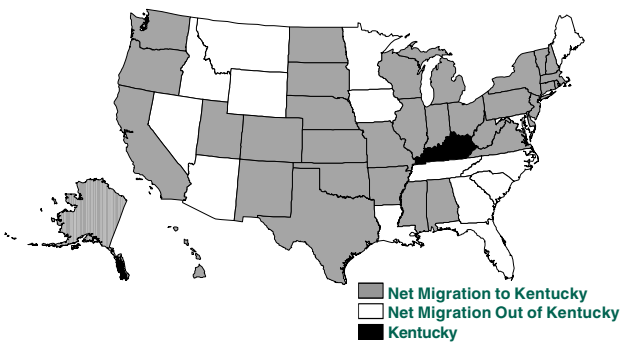
## Introduction

Every day, thousands of families move from one residence to another for a variety of reasons. In general, economists believe being able to move is good for the economy. Mobility allows people, as well as resources, to flow to their best perceived opportunity. That people are mobile is a fact, but this is a fact with consequences for both where individuals move to and where they move from.

Every ten years, the United States Census Bureau conducts a census of the United States. The main objective of the Census is to take stock of the country's population. However, one of the more interesting questions that the Census asks concerns migration. By using the Census, one can determine the current make-up of the country as well as see migration, and the characteristics of the individuals migrating. Just as important as what the state of the world is today, is how it has changed.

It is the "flow" of people that the current article explores. We examine Kentucky migration, both intrastate and interstate. To do so, we use the 2000 Census 5% Public Use Microdata Sample which provides a rich collection of demographic variables about the population.[1] While this article is not an exhaustive analysis of migration in Kentucky, it provides a general overview of selected domestic migration facts from 1995 to 2000.

**Figure 1**
**Net Migration to and from Kentucky**




## Interstate Migration

Kentucky is constantly 'trading' citizens with other states. In total, about 331,000 individuals from other U.S. states moved to Kentucky from 1995 to 2000. At the same time, about 296,000 Kentuckians left. On the whole, Kentucky gained about 35,000 more people from migration than it lost during the period. Over 600,000 people changed state residencies either from or too Kentucky during the 5-year period. This is equal to about 15% of Kentucky's total population.

What states trade the largest number of people with Kentucky? Figure 1 details all states based on whether Kentucky had a positive or negative net migration with that state. As might be expected,

Kentucky's border-states account for the bulk of total movement of individuals. Ohio, Indiana, and Tennessee are responsible for about one third of the total flow of people in and out of Kentucky. Table 1 shows the top 5 states in total migration traffic with Kentucky. In addition, it lists the top 5 states that netted the largest gain in individuals from Kentucky as well as the top 5 states that had the largest net loss of people to Kentucky.

## Who is moving?

While informative to know where individuals are going and coming in relation to Kentucky, what is more important is 'who' is moving. In this section we explore the topic of who is moving by examining different demographic characteristics of those who did move.

## Table 1: Top States in Migration Measures with Kentucky

| | State | Total Traffic In and Out of Kentucky | | State | Net Gain to Kentucky | | State | Net Loss to Kentucky |
|---|---|---|---|---|---|---|---|---|
| 1 | OH | 84,215 | 1 | OH | 15,881 | 1 | TN | 8,388 |
| 2 | IN | 68,828 | 2 | IL | 8,163 | 2 | NC | 4,574 |
| 3 | TN | 58,670 | 3 | CA | 7,580 | 3 | LA | 3,353 |
| 4 | FL | 50,904 | 4 | MI | 4,504 | 4 | FL | 2,544 |
| 5 | TX | 31,260 | 5 | PA | 3,873 | 5 | GA | 2,079 |

**Author's calculations using the 2000 Census PUMS 5% sample*

Interestingly, the list of states in Table 1 is quite diverse. While the states with which Kentucky both lost and gained the most citizens from are border-states, a number of regions in the U.S. are represented. One trend that surfaces is that the states which Kentucky gained the most citizens on net from are, in general, to the north of Kentucky. There seems to be strong movement from the north to the south. This southward movement continues on through Kentucky. Almost all the states that netted the most citizens from Kentucky are to the south.

## Basic Demographics

On average, those who moved into Kentucky between 1995 and 2000 are slightly younger than those leaving the state. The average age of incoming residents is 31.8 years, while the average age of those who left is 32.4 years. Table 2 provides a breakdown of the people moving into and out of Kentucky by age group.

## Table 2
## Total Migration by Age Group Between 1995 and 2000 for Kentucky

| Age in Years | Moved into Kentucky | Moved out of Kentucky | Net Migration | % Change from 1995 to 2000 |
|---|---|---|---|---|
| 18 & younger | 75,561 | 63,119 | 12,442 | 1.62%* |
| 19 to 24 | 46,638 | 41,080 | 5,558 | 1.68%* |
| 25 to 34 | 80,483 | 77,164 | 3,319 | 0.61%* |
| 35 to 44 | 57,815 | 50,586 | 7,229 | 1.14%* |
| 45 to 54 | 34,430 | 30,506 | 3,924 | 0.71%* |
| 55 to 64 | 19,475 | 15,186 | 4,289 | 1.17%* |
| 65 & Over | 16,974 | 18,456 | -1,482 | -0.29%* |
| TOTAL | 331,376 | 296,097 | 35,279 | 0.95%* |

*statistically significant at the 10% level

For almost all age groups, Kentucky had more individuals move into the state. The younger cohorts are where Kentucky had the greatest gains in people. The one group that had net outmigration was individuals 65 and older. Kentucky lost, in total, about 1,400 of its most senior citizens during the five-year period between 1995 and 2000. Not surprisingly, Kentucky lost the most elderly citizens to Florida (approximately 1,450 more individuals 65 and over left Kentucky for Florida than moved from Florida to Kentucky).

Other demographics of interest include gender and race. Nothing is striking about the individuals moving in and out of Kentucky classified by gender. The proportion of men and women moving in and out of Kentucky are roughly equal. The same is not true for race. In total, Kentucky received on net more individuals identifying themselves as white than any other category, a little more than 34,000. However, the "other" race category had the largest percent gain in population from migration. For African Americans, net migration was not statistically significant.

## Varying Demographics

To this point, demographic characteristics that are essentially fixed have been considered. While informative, there are demographic characteristics just as important, if not more so, that can change over time for an individual.[1] One can think of numerous such examples, including marital status, number of children, poverty status and education. Understanding recent migration trends regarding these can provide a clearer picture of how Kentucky's population is changing in more policy relevant terms. In this section, we examine marital status, presence of children, income and education levels characteristics of interstate movers. Each of these helps present a clearer picture of Kentucky's change over the past 5 years.

### Marital Status and Presence of Children

On the whole, there are more married adults entering Kentucky than leaving. However, the makeup of both the entering population and the exiting population by marital status were similar. About 64% of adults that entered Kentucky were married while about 62% of those who left were married.

An additional layer of family information is whether moving families have children. The majority of both adults who left the state as well as those who entered the state have no kids. This is not unexpected since younger people, and thus those less likely to have children, are the most mobile. Of the 88,709 adults who entered the state with children, approximately 82% are married. About 81% of the 75,691 adult individuals with children who left the state are married. The proportion of adults with no kids that move is split evenly along marital status: about 50% are married and 50% are single for both those who entered and left the state.

A segment of the population that receives a great deal of attention from policy makers and researchers, as well as the popular media, are single women with children. Of particular note are those single females with children that have low incomes. Table 3 shows the number of single females between 25 and 50 with children moving into and out of Kentucky between 1995 and 2000. Notable is that the number of single females with children who have an income below 100% of the federal poverty level who moved into Kentucky is significantly larger than the number who moved out of the state.[2] Kentucky, thus, is a net importer of poor single mothers. The net migration in the other income categories is not statistically significant.

**Table 3: Migration of Single Females with Children by Income Level**

| | Moved into Kentucky | Moved out of Kentucky | Net Migration |
|---|---|---|---|
| 0 - 99% of Poverty | 4,265 | 2,770 | 1,495* |
| 100 - 199% of Poverty | 3,023 | 3,399 | -376 |
| 200 - 299% of Poverty | 1,266 | 1,441 | -175 |
| Greater than 300% | 1,299 | 1,156 | 143 |
| TOTAL | 9,853 | 8,766 | 1,087* |

*statistically significant at the 10% level

## Table 4: Migration of Single Females without Children by Income Level

| | Moved into Kentucky | Moved out of Kentucky | Net Migration |
|---|---|---|---|
| 0 - 99% of Poverty | 3,341 | 2,912 | 429 |
| 100 - 199% of Poverty | 2,767 | 2,702 | 65 |
| 200 - 299% of Poverty | 3,096 | 2,760 | 336 |
| Greater than 300% | 6,691 | 8,315 | -1,624* |
| TOTAL | 15,895 | 16,689 | -794 |

*statistically significant at the 10% level

A natural comparison group to non-married females with kids is non-married females *without* children. Table 4 duplicates Table 3 for this group. On the whole, Kentucky lost more single females without children than it attracted. The income group that drove this result was females with no children and incomes of more than 300% of the poverty level. In this category, Kentucky lost slightly more than 1,600 women between 1995 and 2000. Thus, while Kentucky attracted more poor single mothers than left the state, Kentucky lost more higher income single childless females than it gained.

### Education

Education is another very important demographic that receives a great deal of attention. One very real and pressing concern for Kentucky is the issue of "brain drain," the loss of highly educated individuals to other states. Even if Kentucky manages to superbly educate every one of its citizens, if they then leave the state, the investment in their education is in some part lost. Examining migration with respect to educational attainment can help answer the question of whether brain drain was prevalent in Kentucky from 1995 to 2000.

Table 5 shows the overall migration numbers for adults by educational attainment. Overall, Kentucky lost more educated adults aged 25 and over, than it gained. In particular, for adults with a bachelor's degree or higher, Kentucky on net lost about 4,400 individuals, evidence of "brain drain." Kentucky's most highly educated individuals are leaving the state faster than replacements came from outside the state. This is not the case for individuals with lower levels of education. Kentucky picked up an additional 14,981 individuals with a high school degree and an additional 7,028 adult individuals with less than a high school education.

## Table 5: Migration by Educational Attainment for Adults Aged 25 and Older

| Educational Attainment | Moved into Kentucky | Moved out of Kentucky | Net Migration |
|---|---|---|---|
| Less than a HS Diploma | 33,169 | 26,141 | 7,028* |
| HS Diploma | 104,847 | 89,866 | 14,981* |
| Associates Degree | 13,364 | 13,627 | -263 |
| Bachlors Degree | 36,759 | 38,649 | -1,890* |
| Graduate Degree | 21,038 | 23,615 | -2,577* |
| TOTAL | 209,177 | 191,898 | 17,279* |

*statistically significant at the 10% level

## Table 6: Migration by Age Group for Individuals with a Bachelors Degree and Higher

| Age group | Moved into Kentucky | Moved out of Kentucky | Net Migration |
|---|---|---|---|
| 25 - 34 | 24,697 | 29,721 | -5,024* |
| 35 - 44 | 15,824 | 15,904 | -80 |
| 45 - 54 | 9,838 | 9,937 | -99 |
| 55 - 64 | 4,542 | 3,871 | 671* |
| 65 and Greater | 2,896 | 2,831 | 65 |
| TOTAL | 57,797 | 62,264 | -4,467* |

*statistically significant at the 10% level

While there is evidence of brain drain for the adult population on the whole, what age groups drive this result? Table 6 provides the raw numbers for different age groups who had at least a bachelors degree.

## Table 7: Migration, Including Foreign Immigration, by Age Group for Individuals with a Bachelors Degree and Higher

| Age group | Moved into Kentucky | Moved out of Kentucky | Net Migration |
|---|---|---|---|
| 25 - 34 | 29,110 | 29,721 | -611 |
| 35 - 44 | 18,326 | 15,904 | 2,422* |
| 45 - 54 | 10,845 | 9,937 | 908 |
| 55 - 64 | 4,949 | 3,871 | 1,078* |
| 65 and Greater | 3,171 | 2,831 | 340 |
| TOTAL | 66,401 | 62,264 | 4,137* |

*statistically significant at the 10% level

As can be seen, brain drain is concentrated at the younger age groups, especially in the 25 to 34 age group. This indicates Kentucky lost out to other states in this age group of educated adults. According to the data, Kentucky only managed to attract the older educated segment of adults.

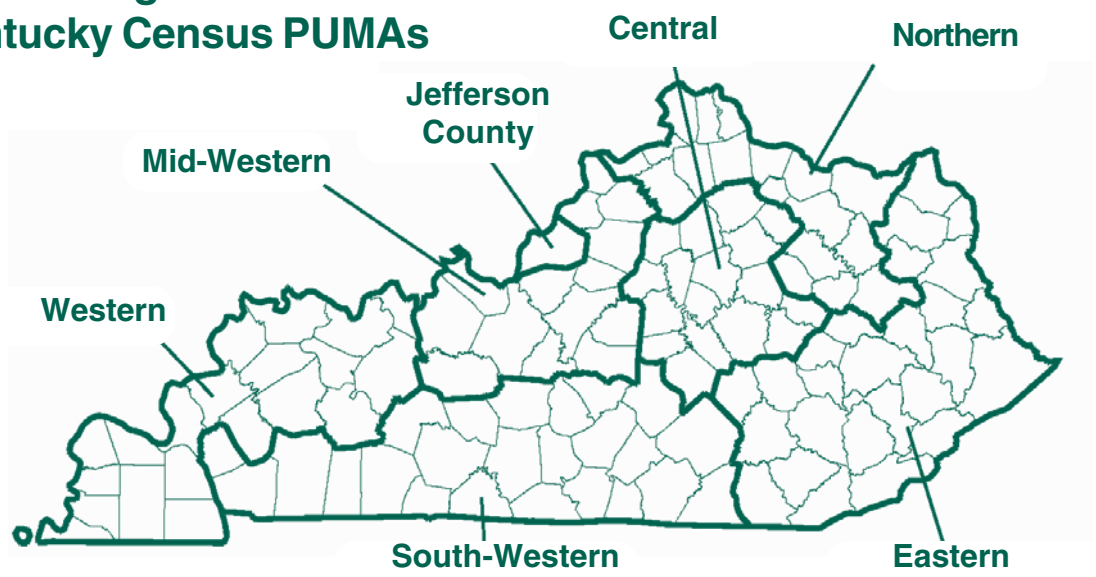
While there is evidence of domestic brain drain, the story does change when international migration is incorporated. To this point, only domestic migration (state to state) has been considered. However, we break with this to investigate brain drain in Kentucky because of the perception that a non-trivial proportion of legal immigrants are highly educated. Interestingly, when immigration from outside the United States is included, the story changes.[1] Table 7 outlines the migration into and out of Kentucky including international individuals.

As can be seen, there is no longer evidence of brain drain, on the whole. In fact, Kentucky picks up a total of more than 4,100 highly educated individuals than it lost to other states. With international migration included, the largest net gain of individuals occurs in the age group of 35 to 44. The only category that showed evidence of brain drain is that of the young, aged 25 to 34. However, without considering internatonal migration, this category showed a net loss of more than 5,000 individuals while with international migration into Kentucky considered, the loss is much less pronounced and statistically insignificant.

## Intrastate Migration

In addition to looking at interstate migration between Kentucky and other states, we also looked at movement within Kentucky. The Census Bureau grouped Kentucky counties into seven areas called Public Use Micro Areas, or PUMAs. PUMAs represent the smallest complete geographic area defined in the Census Microdata.[1] Figure 2 shows the grouping of counties into PUMAs. The remainder of this article primarily

## Figure 2
## Kentucky Census PUMAs



focuses on movement across these areas, excluding interstate and international migration. Unless otherwise stated, when we refer to net migration we mean people who move across PUMAs within Kentucky only.

Tables VIII through X show net within state migration for each of Kentucky's PUMAs. Migration is shown for various demographics groups. For this analysis, we only include people aged 25 and over. In addition to the net number of people moving, the tables also show the percentage change due to within state migration for each PUMA. The percentages were calculated based on the number of people indicating they lived in the PUMA in 1995.[2]

## Jefferson County

Estimates from the Kentucky State Data Center show that the population of Jefferson County has steadily grown throughout the 1990s and in recent years as well. While the population of the county is growing, it has lost more people to other areas of the state than it gained. Within state migration resulted in a loss of approximately 9,500 people. Most of the people who left Jefferson County (74 percent) moved to the mid-western PUMA, which surrounds the Kentucky side of Jefferson County. Forty-seven percent of the people who moved to Jefferson County came from the mid-western PUMA.

The decrease occurred across most of the demographic groups we examined. There was negative net migration among those aged 25 through 64. Although more people aged 65 and over left Jefferson County than entered, the difference was not statistically significant. The number of whites moving from Jefferson County to other areas of the state exceeded the number moving from other areas of the state to Jefferson County. While there was a slight

## Table 8: Kentucky Intrastate Migration (Aged 25 & Over)

| Demographics | Jefferson County Net Migration | Jefferson County Percent Change from 1995 | Mid-Western Net Migration | Mid-Western Percent Change from 1995 | Eastern Net Migration | Eastern Percent Change from 1995 |
|---|---|---|---|---|---|---|
| **Age** | | | | | | |
| 25 to 34 | -2442 | -2.5 * | 4660 | 9.3 * | -549 | -0.6 |
| 35 to 44 | -3372 | -2.8 * | 4243 | 6.4 * | -640 | -0.6 * |
| 45 to 54 | -2060 | -2.1 * | 2082 | 3.7 * | -1422 | -1.5 * |
| 55 to 64 | -1415 | -2.3 * | 958 | 2.8 * | -738 | -1.1 * |
| 65 & Over | -248 | -0.3 | -1083 | -2.4 * | -241 | -0.3 |
| **Educational Attainment** | | | | | | |
| Less than High School Grad | -1876 | -2.1 * | 1069 | 1.8 * | -494 | -0.3 |
| High School Grad | -6475 | -2.7 * | 5990 | 4.1 * | -2451 | -1.2 * |
| Associate Degree | -1098 | -4.2 * | 1239 | 9.2 * | -469 | -2.8 * |
| Bachelor's Degree | 644 | 0.9 * | 1413 | 7.0 * | -88 | -0.4 |
| Advanced Degree | -732 | -1.6 * | 1149 | 8.3 * | -88 | -0.4 |
| **Race** | | | | | | |
| White | -9546 | -2.5 * | 10825 | 4.6 * | -3136 | -0.7 * |
| Black | 372 | 0.5 | 104 | 0.8 | -719 | -14.9 * |
| Other | -363 | -2.8 * | -69 | -1.3 | 265 | 5.8 * |
| **Marital Status & Children** | | | | | | |
| Married, No Children | -4327 | -2.7 * | 4238 | 4.3 * | -2018 | -1.1 * |
| Single, No Children | 480 | 0.3 | 758 | 1.3 * | -931 | -0.8 * |
| Married with Children | -5265 | -4.6 * | 5337 | 6.9 * | -500 | -0.4 |
| Single with Children | -425 | -1.2 | 527 | 3.5 * | -141 | -0.6 |
| **Total Net Migration** | **-9537** | **-2.0 *** | **10860** | **4.3 *** | **-3590** | **-0.8 *** |

* Indicates that the percent inmigration is statistically different from percent outmigration at the 90 percent level.
Source: U.S. Census Bureau, 2000 Decenial Census, 5% Public Use Microdata.

positive net migration among blacks, the difference was not statistically significant.

Net migration was negative across all education levels with one exception. More people with a bachelor's degree moved to Jefferson County than moved away to other areas of the state. Those with a bachelor's degree were the only demographic group to experience positive and statistically significant growth.

On November 4, 2003, the Courier-Journal reported an analysis prepared by the U.S. Census Bureau that found a net gain among people who were young, single, and college educated in Jefferson County.[3] The article stated that the "city's so-called 'brain drain' seems to be ebbing." Our results show a net gain of 644 people with a bachelor's degree and a net loss of 732 people with an advanced degree. While our results appear to contradict those reported by the Courier-Journal, it must be noted that our analysis and the Census analysis consider two different groups of people.

These types of distinctions are useful for understanding exactly how different types of migration are affecting education levels in Jefferson County. Net migration among only those people moving within Kentucky resulted in more people with a bachelor's degree and fewer people with an advanced degree. If we expand our focus to include migration across states but continue to exclude those migrating from other countries, then we see Jefferson County lost more college educated people (both bachelor's and advanced degrees) than it gained. When we include foreign migration, however, we see that Jefferson County experienced a net increase in the number of people with a college education. These results indicate highly educated people who have lived in Jefferson County for several years are leaving, but the county is attracting enough highly educated people from foreign countries to offset the loss. Although migration across states and countries does affect the results for other PUMAs as well, the effect in Jefferson County was pronounced. Jefferson County received more (28 percent) of the people moving from another country to Kentucky than any other PUMA.

## Mid-Western Kentucky

While Jefferson County experienced a relatively large amount of outmigration compared to inmigration, the areas surrounding Jefferson County experienced the opposite situation. Approximately 27,000 people who lived in Kentucky in 1995 moved to the mid-western PUMA, while only 16,000 left this area for other parts of Kentucky.

Net growth occurred across nearly all of the demographic groups. The only statistically significant net negative migration occurred among those aged 65 and over. Among education groups, the largest percentage growth relative to 1995 population levels occurred among those with more than a high school education. Growth in terms of the number of people, however, was higher among those with a high school degree than other education levels. This group accounted for 55 percent of the total net migration to the area. Inmigration of whites was relatively large, but changes in the other racial groups were not statistically significant.

## Eastern Kentucky

Eastern Kentucky experienced the second largest net negative migration of the areas. While more than 11,000 people moved from other areas of the state to eastern Kentucky, nearly 15,000 left eastern Kentucky. Over half of those leaving eastern Kentucky moved to central Kentucky.

The percentage of people aged 25 to 34 moving from eastern Kentucky to other areas of Kentucky, however, was not statistically different from the percentage of people moving from other areas of Kentucky to eastern Kentucky. When including migration between eastern Kentucky and other states, the number young adults moving to eastern Kentucky actually exceeded the number leaving. Including people migrating from other countries further increases the net migration of young adults into eastern Kentucky. Eastern Kentucky did, however, lose ground domestically among the population aged 35 to 64.

Although net migration was negative across all education levels, the differences were only statistically significant among those with a high school education and those with an associate degree. Net migration was negative for both whites and blacks, with the net percentage migration being much higher for blacks. The net percentage change was less than one percent for whites. For blacks, the net change was nearly 15 percent. Approximately 400 blacks moved into eastern Kentucky from other areas

## Table 9: Kentucky Intrastate Migration (Aged 25 & Over)


| Demographics | Central: Net Migration | Central: Percent Change from 1995 | Northern: Net Migration | Northern: Percent Change from 1995 |
|---|---|---|---|---|
| **Age** | | | | |
| 25 to 34 | 29 | 0.0 | 288 | 0.4 |
| 35 to 44 | -282 | -0.3 | 399 | 0.5 |
| 45 to 54 | 1333 | 1.5 * | -325 | -0.5 |
| 55 to 64 | 437 | 0.8 * | 200 | 0.4 |
| 65 & Over | 524 | 0.7 * | -147 | -0.2 |
| **Educational Attainment** | | | | |
| Less than High School Grad | 573 | 0.6 | -820 | -1.1 * |
| High School Grad | 2177 | 1.0 * | 1157 | 0.7 * |
| Associate Degree | 736 | 3.3 * | -235 | -1.6 |
| Bachelor's Degree | -1180 | -1.8 * | -61 | -0.2 |
| Advanced Degree | -265 | -0.6 | 374 | 1.8 * |
| **Race** | | | | |
| White | 1449 | 0.4 * | 173 | 0.1 |
| Black | 406 | 1.3 | 300 | 4.4 * |
| Other | 186 | 2.0 | -58 | -1.4 |
| **Marital Status & Children** | | | | |
| Married, No Children | 1500 | 0.9 * | -714 | -0.6 * |
| Single, No Children | 397 | 0.3 | 450 | 0.5 |
| Married with Children | -66 | -0.1 | 521 | 0.6 |
| Single with Children | 210 | 0.8 | 158 | 0.8 |
| **Total Net Migration** | 2041 | 0.5 * | 415 | 0.1 |

* Indicates that the percent inmigration is statistically different from percent outmigration at the 90 percent level.
Source: U.S. Census Bureau, 2000 Decenial Census, 5% Public Use Microdata.

of the state. Over 1,100 blacks left eastern Kentucky for other parts of the state. Eastern Kentucky did see positive migration among other races. The net migration for both married and single parents was not statistically significant. For both married and single people without children, however, the net migration was negative.

### Central Kentucky

More people from other areas of the state moved to central Kentucky than left for other areas of the state. Eastern Kentucky was the most likely destination of people moving from central Kentucky, receiving 25 percent of those leaving central Kentucky. Eastern Kentucky was also the largest source of inmigration for central Kentucky, accounting for 52 percent of the people moving into the area.

Central Kentucky appears to have been more attractive to the older population than the younger population. Net migration for those under the age of 45 was not statistically significant. Net migration for those 45 and over, however, was positive and statistically significant. There was a great deal of variation in the migration across education levels. There was no significant net change for those with less than a high school education and those with an advanced degree. The number of people with a high school education or an Associate's degree increased as a result of within state migration. A particularly interesting group was those with a bachelor's degree. Net migration for this group was negative. Sixty percent of those with a bachelor's degree who left central Kentucky went to eastern Kentucky.

## Table 10: Kentucky Intrastate Migration (Aged 25 & Over)


| Demographics | Western Net Migration | Western Percent Change from 1995 | South-Western Net Migration | South-Western Percent Change from 1995 |
|---|---|---|---|---|
| **Age** | | | | |
| 25 to 34 | -492 | -0.8 | -1494 | -2.0 * |
| 35 to 44 | -504 | -0.7 * | 156 | 0.2 |
| 45 to 54 | -330 | -0.5 * | 722 | 1.0 * |
| 55 to 64 | -108 | -0.2 | 666 | 1.3 * |
| 65 & Over | 879 | 1.2 * | 316 | 0.4 |
| **Educational Attainment** | | | | |
| Less than High School Grad | 547 | 0.7 * | 1001 | 0.9 * |
| High School Grad | -577 | -0.3 | 179 | 0.1 |
| Associate Degree | -190 | -1.1 * | 17 | 0.1 |
| Bachelor's Degree | 65 | 0.2 | -793 | -3.0 * |
| Advanced Degree | -400 | -2.1 * | -38 | -0.2 |
| **Race** | | | | |
| White | -357 | -0.1 | 592 | 0.2 |
| Black | -281 | -1.8 | -182 | -0.8 |
| Other | 83 | 2.1 | -44 | -0.7 |
| **Marital Status & Children** | | | | |
| Married, No Children | 143 | 0.1 | 1178 | 0.8 * |
| Single, No Children | -210 | -0.2 | -944 | -1.0 * |
| Married with Children | -53 | -0.1 | 26 | 0.0 |
| Single with Children | -435 | -2.5 * | 106 | 0.5 |
| **Total Net Migration** | -555 | -0.2 | 366 | 0.1 |

* Indicates that the percent inmigration is statistically different from percent outmigration at the 90 percent level.
Source: U.S. Census Bureau, 2000 Decenial Census, 5% Public Use Microdata.

### Northern Kentucky

Although slightly positive, net migration into Northern Kentucky was not statistically significant, indicating that northern Kentucky lost about the same number of people that it gained through within state migration. This area primarily exchanged residents with eastern and central Kentucky, with the number of people moving between the regions being roughly similar.

The number of people moving to and from northern Kentucky was nearly equal within each of the age groups, with no group showing a statistically significant change. There were changes, however, across education levels. The area saw more people without a high school education leaving than entering. There was net growth, as a result of within state migration, among those with a high school education and those with an advanced degree. The other notable change was among the black population. Net within state migration resulted in an increase of about 4 percent in the black population.

### Western & South-Western Kentucky

Although there were some differences in net within state migration between western and south-western Kentucky, there were numerous similarities. Neither area saw a statistically significant change as a result of within state migration.

Both areas tended to attract more people with less than a high school education. The net increase in population without a high school education in

South-Western Kentucky was approximately 1,000 people. This figure was nearly the same as the net increase for Mid-Western Kentucky, which was the area with the largest within state migration increase in the state. Both areas lost more people with higher levels of education than they gained. Although there were changes across race, none of the differences were statistically significant. There was no growth for either area among blacks, whites, or those indicating two or more races.

## Conclusions

Kentucky experienced a significant amount of interstate and intrastate migration between 1995 and 2000. This migration materially affected Kentucky. A number of interesting and informative facts are learned from investigating 'who' did the migrating. In general, Kentucky received more new citizens than it lost. A number of the characteristics, such as gender, race and marital status makeup, were relatively constant between those coming in and leaving the state. Evidence was found that poorer single females with children are moving into the state while higher income single females with no children are leaving the state. In addition, brain drain is still a real phenomenon for the domestic population, however it fades when international migration is considered.

Similarly, intrastate migration was significant in Kentucky. Jefferson County lost people to its surrounding Kentucky counties. These counties, labeled as Mid-Western Kentucky, grew the most from intrastate migration with Central Kentucky coming next. Eastern Kentucky, however, had the largest loss of people through intrastate migration. Interestingly, Eastern Kentucky did attract more individuals aged 25 to 34 than it lost when both interstate and intrastate migration is considered.

In all, there was a significant amount of movement of people both within Kentucky and between Kentucky and the rest of the United States. This article has provided a general overview of both inter- and intrastate migration. Knowing the characteristics of the moving population may prove useful to policy makers and researchers. This knowledge provides a first step in the next question: understanding *why* people are moving.

## Endnotes

[1] To read more about the 2000 Census 5% Public Use Microdata Sample, please see http://www.census.gov/prod/cen2000/doc/pums.pdf

[2] The Census data employed only records information about the individual in 2000. The current analysis looks at individuals who moved sometime between 1995 and 2000. No information is known about most of the individual's characteristics, such as education completed or income level, in 1995. It is assumed that the characteristics that are true of the person in 2000 were also true for the individual in 1995. This, obviously, is not likely always the case. This is a constraint of the data and while it does introduce some error, it should not be too problematic.

[3] For reference, the official poverty line in 2000 was about $11,869 for 1 adult and 1 child.

[4] It should also be noted that while the data contains individuals who moved from outside of the United States to Kentucky, it does not contain individuals who moved from Kentucky to outside of the U.S. One concern is that when including international inmigration but not international outmigration, foreign individuals coming to study at Kentucky universities might substantially affect any results. We did take this into consideration and found that even when this segment of the international migration population is excluded, such as internationals enrolled in school and/or below age 30, the results still stand. Thus, while not being able to take into account individuals moving from Kentucky to out of the country does affect the results, the effect is likely very small.

[5] The PUMS data does include smaller geographic areas such as metropolitan areas, but these areas do not provide complete coverage of the state. Smaller geographic areas are also available in other Census products, such as the summary files and the Advanced Query System. These products do not, however, allow for detailed counts of migration by demographics to be made.

[6] Individuals who lived in Kentucky in 1995 and moved out of the country are not captured by the Census data and therefore not included in the percentage calculation or net migration.

[7] Poynter, Chris, "Brain-drain in Louisville reverses tide," The Courier-Journal, November 4, 2003.

# Producer Services

*Eric C. Thompson*

*Producer Services can become a base for the Kentucky economy in future years since the industries sell their services throughout the nation, pay relatively high wages, and are growing rapidly. These industries, however, account for a significantly smaller share of employment in Kentucky than the nation. This result is predictable given that Kentucky has a larger non-metropolitan population than the nation, and smaller metropolitan areas, but growth of these industries represents a significant future opportunity for the state.*

## Introduction

Growth in the service sector over the last three decades has been associated with significant changes in the types of employment available in the economy. In particular, there has been an increasing dependence on employment growth outside of the manufacturing sector in a broadly defined group of services industries including professional services, and finance, but also retail and personal services. During the period, net job growth has been rapid outside of the manufacturing sector while changes in manufacturing employment have been modest.

These patterns have sparked enormous interest in the nature of service sector employment, and the related issue of whether service jobs can form an export base for a city or region. Often, a focus on just the retail or personal service portions of the service sector have fueled an image of a sector focused on serving local customers rather than the national economy, and an industry offering below average wages.[1]

A different picture of the service sector emerges after noting that significant portions of the sector are characterized by businesses offering higher wage employment, serving customers around the nation, and interacting with key sectors of the industrial economy. The emerging service sector in this perspective offers employment opportunities to workers with a variety of skills, and contributes to the economic base of states and cities.

This article will examine a group of service industries that provide higher wage employment opportunities, and provide services to customers over a wide region. These "producer services" also have a substantial number of customers in business and industry. Examples of producer services include accountants, consultants, financial industry workers, communications workers, and computer service providers. While this article will not resolve the debate about whether the service sector generates "enough" higher wage jobs, it does offer a thorough discussion of the growth in producer services employment. One focus will be to show the rate and magnitude of growth in producer services in the national and state economy. But, an equal focus will be to examine whether Kentucky has captured an average share of employment in these industries.

## Background

Producer service businesses primary sell services to business and government, rather than to households (Beyers and Lindahl, 1996a). Producer service businesses have expanded rapidly in recent decades as client firms and agencies increasingly have chosen to procure professional expertise and analyses from outside firms rather than with in-house staff. These decisions have occurred for a variety of reasons including a desire to focus on core business functions, an infrequent demand for services with rapidly changing expertise requirements, and an increased need for specialized knowledge for meeting regulatory requirements (Beyers and Lindahl, 1996b). Producer services firms operate in a variety of industries:

Information (NAICS Code 51)
Telecommunications, Internet Service Providers, Web Search Portals, Data Processing Services, Broadcasters, Motion Picture and Sound Recording Industries, Publishers.

Financial and Insurance (NAICS Code 52)
Banks and Financing, Securities, Commodity Contracts, Insurance Carriers and Related Activities, Funds and Trusts

Professional, Scientific, and Technical Services (NAICS Code 54)
Legal Services, Accounting, Architecture, Engineering, Design Services, Computer Systems Design, Management, Scientific, and Technical Consulting, Advertising

Producer services firms are not as highly oriented towards exporting their services outside of the local area as are manufacturing firms their products. But, the specialized nature or national reputation of many producer service firms allows these firms to serve clients located throughout the nation as well as local customers. Even in rural areas, 40 percent of producer services firms are oriented to exporting outside of the region (Beyers and Lindahl, 1996a), and producer services firms are commonplace even in small rural areas (Porterfield and Pulver, 1991).

While found in all regions, producer service firms do tend to concentrate in larger metropolitan areas where there is a substantial local demand for their services. Gale and McGranahan (2001), for example, find in aggregate that non-metropolitan areas captured a lower share of producer services job growth during the 1990s even relative to their area's share of total employment. Thus, as states throughout the nation have experienced rapid growth in producer services employment, producer services industries have tended to concentrate in states with large metropolitan areas.

## Emerging Service Economy

Recent patterns in both employment growth and wages illustrate the importance of producer services industries in the economy. Table 1 shows employment growth in the U.S. economy over the 1992 to 2002 period by sector. There has been a contraction in manufacturing employment and in natural resource and mining employment. Employment has grown in retail and wholesale trade sectors and in transportation. However, growth in these sectors is slightly below the average across all industries of 19.9% growth over the 1992 to 2002 period. The most rapid growth has been among service industries, particularly in higher paying producer services industries.

Data in Table 1 illustrates that employment in the professional and technical services industry has grown by nearly 50 percent from 1992 to 2002. The average annual wage paid in professional and technical services industries was 47 percent above the overall average, and slightly higher than the average wage for manufacturing industries.

The information industry, which includes emerging industries such as Web search portals, has grown by nearly 30 percent during the period. The average wage in the information industry was 87 percent higher than the overall average in 2002. The finance and insurance industry has grown by roughly 20 percent, at the overall average. This industry paid 52 percent above the overall average for all industries.

**TABLE 1: Growth and Wages of NAICS Industries**

| Industry | Employment 2002 (Thousands) | Percent Growth 1992-2002 | Average Annual Wages2002 |
|---|---|---|---|
| All Employees | 130,376 | 19.9% | $37,258 |
| Natural Resources & Mining | 581 | -15.7% | $42,154 |
| Construction | 6,732 | 46.1% | $39,845 |
| Manufacturing | 15,306 | -8.9% | $54,630 |
| Wholesale Trade | 5,641 | 10.4% | $51,842 |
| Retail Trade | 15,047 | 17.3% | $22,635 |
| Transportation & Utilities | 4,805 | 14.7% | $37,886 |
| Information | 3,420 | 29.5% | $69,569 |
| Financial Activities | 7,843 | 19.9% | $56,995 |
| Professional and Technical Services | 6,715 | 46.2% | $54,843 |
| Management of Companies & Administrative & Waste Services | 9,295 | 45.8% | $32,378 |
| Education and Health Services | 16,184 | 36.1% | $34,032 |
| Leisure and Hospitality | 11,969 | 26.8% | $19,135 |
| Other Services | 5,348 | 26.1% | $19,842 |
| Government | 21,489 | 14.4% | $42,939 |

Source: U.S. Department of Labor, U.S. Department of Commerce

Higher paying producer services industries have been an important part of the service sector expansion over the last decade. But, are these industries a viable export base for a city or region? Table 2 shows that there are areas of the country where these producer services are active exporters. The Table shows the percentage of employment in Information, Professional and Technical Services, and Finance and Insurance in the ten largest metropolitan areas

of the United States and for the nation overall.[2] Note that a share well above the national average is found in a number of cases, but not all. Cases where shares exceed the national average suggest that the producer services industry in these metropolitan areas are much larger than is required to meet the demands of the local market. Firms in these metropolitan areas must be very active in exporting services to businesses located in other metropolitan areas, and to non-metropolitan areas.

The overall picture from Tables 1 and 2 are that producer services industries have all of the features that make an industry an attractive underpinning for a regional economy: 1) the industries can form part of a local export base; 2) the industries are high paying; and 3) the industries are rapidly growing.

**TABLE 2: Share of Employment in Producer Services Industries**

| Metropolitan Area | Information | Professional and Technical Services | Finance and Insurance |
|---|---|---|---|
| National | 2.4% | 6.3% | 4.9% |
| Los Angeles | 4.4% | 8.2% | 4.7% |
| New York | 4.7% | 9.0% | 9.2% |
| Chicago | 2.5% | 8.4% | 6.9% |
| Philadelphia | 2.5% | 8.2% | 6.4% |
| Washington | - | 14.0% | 3.5% |
| Detroit | 1.8% | 8.7% | 4.4% |
| Houston | 2.0% | 8.2% | 4.6% |
| Atlanta | 4.4% | 7.9% | 5.1% |
| Dallas | 4.4% | 7.6% | 6.6% |
| Phoenix | 2.4% | 6.3% | 6.6% |

*Source: U.S. Department of Commerce and author's calculations*

## Producer Services in Kentucky

How much does Kentucky benefit from employment in these producer services industries? Data in Table 3 illustrate that Kentucky captures a relatively small share of employment in these industries. Table 3 compares the share of employment in each industry for the United States with the share in Kentucky. Kentucky is more focused in industrial production than in producer services. Kentucky has a significantly larger share of employment in mining and manufacturing than the nation but a significantly smaller share in the producer services industries of Information, Finance and Insurance, and Professional and Technical Services. In total Kentucky has 9.7 percent of its employment in these producer services industries compared to 13.8 percent nationally.

**TABLE 3: Share of Employment of NAICS Industries in Kentucky and U.S.**

| Industry | Share of 2002 Employment By Industry: United States | Kentucky |
|---|---|---|
| All Employees | 100.0% | 100.0% |
| Natural Resources &Mining | 0.4% | 1.1% |
| Construction | 5.2% | 4.7% |
| Manufacturing | 11.7% | 15.4% |
| Wholesale Trade | 4.3% | 4.0% |
| Retail Trade | 11.5% | 11.9% |
| Transportation & Utilities | 3.7% | 4.9% |
| Information | 2.6% | 1.8% |
| Financial Activities | 6.0% | 4.7% |
| Professional and Technical Services | 5.2% | 3.2% |
| Management of Companies and Administrative and Waste Services | 7.1% | 5.5% |
| Education and Health Services | 12.4% | 12.4% |
| Leisure and Hospitality | 9.2% | 8.6% |
| Other Services | 4.1% | 4.2% |
| Government | 16.5% | 17.5% |

*Source: U.S. Department of Labor, U.S. Department of Commerce*

What might explain Kentucky's lower share of employment in producer services? A variety of explanations are possible. Kentucky has a lower level of educational attainment than the national average in terms of the percent of the population that has graduated high school and college. Jobs in producer services industries such as Information and Professional and Technical Services frequently require higher levels of education.

An alternative explanation might focus on the size of local economies in Kentucky. Previous research (Gale and McGranahan, 2001) has suggested that producer services have not been as prevalent in non-metropolitan areas as in metropolitan areas. Kentucky is a non-metropolitan state in many ways, with nearly one-half of population living in non-metropolitan areas compared to roughly one-fifth throughout the United States. Further, among metropolitan areas, data in Table 2 illustrate that producer services industries tend to concentrate in the largest metropolitan areas. Except for Louisville, Kentucky has relatively small metropolitan areas. All of this suggests that Kentucky's significantly lower share of employment might be consistent with the size of its population centers, rather than the result of lower education attainment in the state, or some type of public policy deterrent to these industries.

Table 4 compares the share of Kentucky employment in the three producer services industries with the national share. Results are presented separately for both metropolitan and non-

metropolitan areas. The results in Table 4 do not indicate a large difference between the share of employment in producer services among non-metropolitan areas of Kentucky and the nation. The producer services sectors account for 7.3 percent of employment in non-metropolitan counties nationally and 6.5 percent in Kentucky. Most of this difference is due to the finance and insurance industry, there is little difference for the Information and Professional and Technical Services industries. Kentucky's non-metropolitan counties are not lagging other non-metropolitan regions across the nation.

A substantial difference, however, is found between the share of employment among Kentucky metropolitan areas and U.S. metropolitan areas. Large differences are found for Information and Finance and Insurance, though the largest gap is in Professional and Technical Services.

**TABLE 4. Share of Employment in Producer Services Industries in Kentucky and the Nation, Metropolitan and Non-metropolitan Areas**

| | Share of 2002 Employment By Industry | |
|---|---|---|
| Industry | United States | Kentucky |
| Metropolitan Total | 14.8% | 11.2% |
| Information | 2.7% | 2.0% |
| Finance and Insurance | 5.2% | 4.5% |
| Professional and Technical Services | 6.9% | 4.7% |
| Non-Metropolitan Total | 7.3% | 6.5% |
| Information | 1.2% | 1.1% |
| Finance and Insurance | 3.0% | 2.4% |
| Professional and Technical Services | 3.1% | 3.0% |

*Source: U.S. Department of Labor, U.S. Department of Commerce*

## Producer Services in Kentucky Metropolitan Areas

The lower share of employment among producer services industries may be tied to the smaller size of Kentucky metropolitan areas. Kentucky principally contains small metropolitan areas (Owensboro or Ashland) or modest size cities (Lexington) rather than the major metropolitan areas illustrated in Table 2 such as New York, Chicago, and Phoenix.

One way to address this issue is to compare Kentucky Metropolitan areas with similar size areas in other states. Table 5 shows the share of employment in producer services in Kentucky metropolitan areas versus the average for similar-size metropolitan areas throughout the country. Specifically, the Kentucky metropolitan areas of Louisville, Lexington, and Owensboro are compared with twenty areas of similar size. Analysis focuses on these three metropolitan areas since these are the only three that are primarily or totally located within the state of Kentucky. Note that shares are similar between Louisville and its comparison group, and the same can be said for Lexington and Owensboro. No statistically significant differences are observed, nor is there any pattern of lower shares among Kentucky metropolitan areas.

This result for metropolitan areas appears similar to that for non-metropolitan areas. Kentucky's metropolitan areas capture about the same share of producer services employment as their peer cities. Overall, Kentucky's lower share of employment in producer services is tied both to a larger share of the population in non-metropolitan areas, and to the smaller metropolitan areas found in the state.

**TABLE 5. Share of Employment in Producer Services Industries in Kentucky Metropolitan Areas and Similar Areas in other States**

| | Industry Share of 2002 Employment By Industry | | |
|---|---|---|---|
| | Kentucky MSA | Similar-Size MSAs Average | Similar-Size MSAs Standard Deviation |
| Louisville | | | |
| Information | 2.1% | 2.4% | 0.6% |
| Finance and Insurance | 5.1% | 6.0% | 1.7% |
| Professional and Technical Services | 5.2% | 5.2% | 1.8% |
| Lexington | | | |
| Information | 2.1% | 1.9% | 0.8% |
| Finance and Insurance | 2.9% | 4.4% | 2.2% |
| Professional and Technical Services | 5.0% | 4.9% | 1.2% |
| Owensboro | | | |
| Information | 1.2% | 1.8% | 1.0% |
| Finance and Insurance | 3.9% | 3.6% | 1.0% |
| Professional and Technical Services | [1] | 3.9% | 1.4% |

*Source: U.S. Department of Labor, U.S. Department of Commerce*

[1] Percentage suppressed in federal data for privacy reasons.

## Conclusion

Producer services can be a base for the Kentucky economy in future years since the industries: 1) sell their services throughout the nation; 2) pay relatively high wages; and 3) are growing rapidly. The industries, however, account for a significantly smaller share of employment in Kentucky than the

nation. This result does not necessarily indicate that Kentucky has some untoward difficulty with the development of these industries. Rather the result is expected since Kentucky has a larger non-metropolitan population than the nation, and has smaller metropolitan areas. These areas tend to have smaller shares of producer services employment.

The state of Kentucky should therefore have a strong interest in maintaining and improving the growth and performance of its producer services businesses. Lower shares of employment in these industries remain the principal difference between the national and Kentucky industrial structure, and producer services tend to be high wage, and rapid growth industries. Efforts to encourage growth in these industries must be carefully designed. Powerful economic forces appear to be focusing producer services activities in larger metropolitan areas. Efforts to use business subsidies, industrial recruitment, or labor training to overcome these forces could result in a misallocation of resources. Another approach may be to examine Kentucky tax law and regulatory statutes to evaluate if either of these factors is retarding growth in producer services industries. Continued improvement in Kentucky's university system also should be beneficial, since most producer services workers require post-secondary education. This is the source for the higher wages in these industries.

A patient strategy would be to promote policies that encourage growth in the Kentucky economy, with the expectation that producer services businesses will grow, particularly as Kentucky's metropolitan areas grow. This strategy would be aided if producer services tend to de-centralize over time. Manufacturing activity used to be focused in major metropolitan areas before dispersing over the last four or five decades. A similar dispersion process may occur in producer services in the future.

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## Endnotes

[1] The presence of such jobs is not in and of itself a problem since local residents need shopping opportunities and service, and these jobs are an appropriate match for the skills and work schedule requirements of some workers.

[2] Consolidated Metropolitan Areas (CMSA) were not included since these often include multiple Metropolitan Areas (MSA).

# E-Commerce in Kentucky

*Jonathan Roenker*

*The U.S. Census Bureau's estimates of e-commerce sales reached $12.5 billion in the second quarter of 2003; a 27.6% increase over the second quarter of 2002; proof that e-commerce sales are still burgeoning despite the relatively slow economy. This article provides state-level data concerning electronic commerce for Kentucky from a recent survey conducted by the University of Kentucky Center for Business and Economic Research. Survey results indicate that while the percentage of small businesses in the state using the Internet to conduct online sales bounced back from the dip seen in the previous year's survey, the percentage of large businesses conducting online sales actually shrank from the previous year. Based on the results of the survey, 20.6% of large Kentucky businesses and 12.7% of small Kentucky businesses are involved in e-commerce. The characteristics of Kentucky firms currently selling online are considered as is these firms' experiences with e-commerce. Finally, the effects of online sales on sales and revenue of Kentucky firms are addressed.*

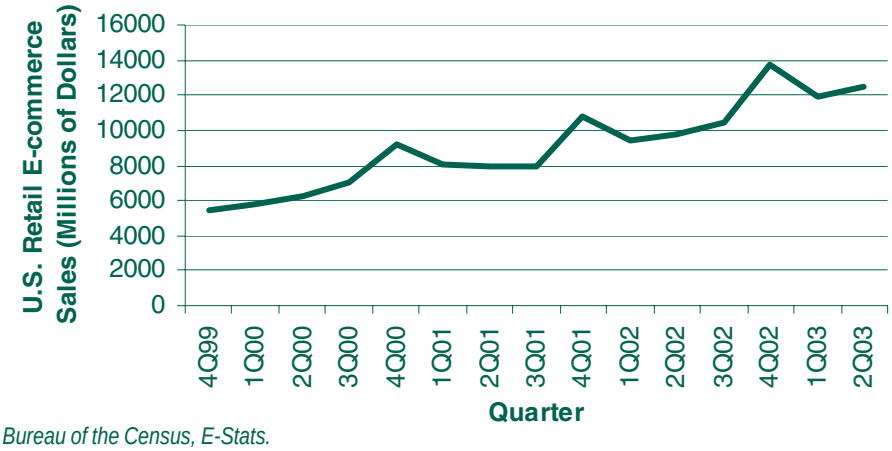
## Introduction

U.S Census Bureau estimates of E-commerce for the second quarter of 2003 reached nearly $12.5 billion; an increase of nearly twenty-eight percent over the revised second quarter 2002 estimate of $9.8 billion.[1] During this same time frame, total retail sales grew only by 5 percent. Figure 1 shows total estimated e-commerce sales by quarter. Evident from the figure is a steady growth rate of E-commerce sales over time. Further, Figure 2 shows total U.S. E-commerce sales as a percentage of total retail sales from the fourth quarter of 1999 through the second quarter of 2003. The figure further reflects the steadily growing presence of the electronic marketplace. With approximately 182 million current Internet users, of which nearly 127 million are considered active users, E-commerce transactions will continue to cut into traditional retail sales at existing "brick and mortar" institutions.[2]

## Description of Data

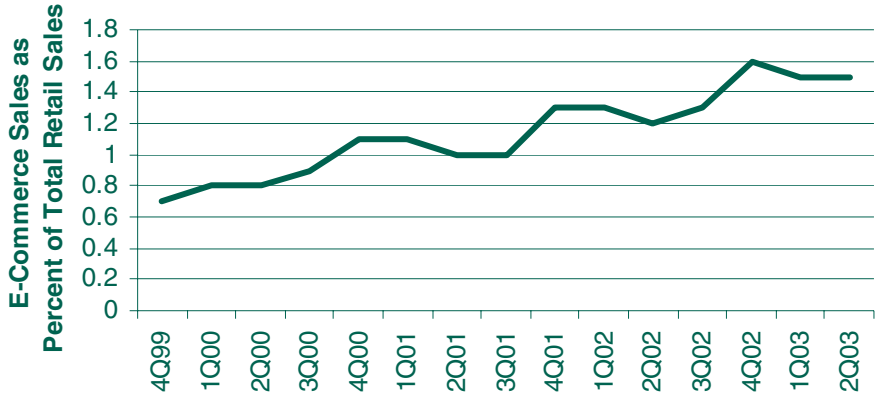
Now in its sixth year of circulation, the 2003 Business Confidence survey, conducted by the University of Kentucky Center for Business and

**Figure 1: U.S. Estimated Quarterly E-commerce Sales**




*Source: U.S. Bureau of the Census, E-Stats.*

## Figure 2: U.S. E-Commerce Sales as a Percentage of Total Retail Sales




*Source: U.S. Bureau of the Census, E-Stats.*

Economic Research, provides the data for this article. In each of the six years that the survey has been conducted, firms were asked a series of questions concerning their use of the Internet in conducting the daily business of their firm.

Again this year, the survey was distributed to two separate samples of Kentucky businesses: one containing 2,000 firms of all sizes, and the second containing 1,000 firms with at least 100 employees. In an attempt to bolster the sample size of completed surveys, the survey was mailed to recipients twice in 2003, a departure from past practices. As with all mail surveys a number of surveys were returned as undeliverable or non-applicable. Ninety-five surveys were returned as undeliverable or non-applicable from the large business sample, and 309 were returned from the all business sample. Completed surveys were received from 302 firms in the all business sample and 166 from firms in the large business sample. Examination of the two samples reveals that the characteristics of the businesses completing surveys are very similar to the characteristics of businesses in the entire sample.[3] As in past years, the all business sample is largely composed of small businesses with less than 100 employees. The completed surveys in the all business sample contained approximately 5% large businesses. Since excluding these firms from the sample reduces the sample size only marginally, they are excluded and the all business sample will therefore be referred to as the small business sample.

## Online Sales at Kentucky Businesses

For the first year since the survey's inception, the percentage of large businesses in the state offering their product over the Internet declined. In contrast, a slightly higher percentage of small businesses reported using the Internet for E-commerce than did in 2002. For the first time in six years, large firms in the states reported using the Internet for E-commerce at a lower rate than the previous year. In prior years of the survey's distribution, large firms always reported conducting E-commerce at a higher

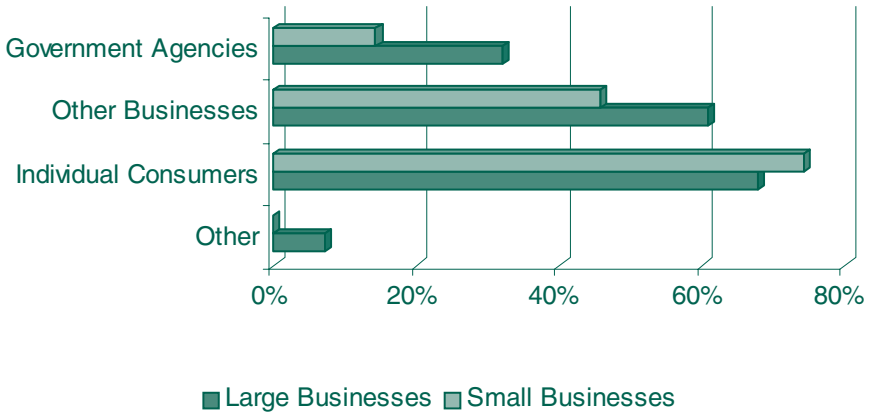
**TABLE 1**

### Percentage of Business that Sell Their Products Directly on the Internet

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| **Large Businesses** | 10.1% | 14.7% | 15.1% | 25.2% | 26.5% | 20.6% |
| **Small Businesses** | -- | -- | 9.8% | 13.3% | 11.2% | 12.7% |

Source: Author's Calculations from the 2003 Business Confidence Survey

**Figure 3**
**Customers of Kentucky Businesses Selling Online**




Source: Author's Calculations from the 2003 Business Confidence Survey

rate than the previous year. In contrast to results of last year's study, small firms reported conducting E-commerce at a higher rate that the previous year, partially compensating for the drop in usage seen in 2002.

With a lethargic economy still a problem in 2003, it appears that large businesses turned to E-commerce with less frequency than they did in the previous year. With the high costs associated with conducting E-commerce, in addition to the costs of maintaining traditional brick and mortar sales, abandonment of online sales could represent a move by large firms to shed costs during trying economic times. As the economy rebounds, growth in online sales should again gather speed.

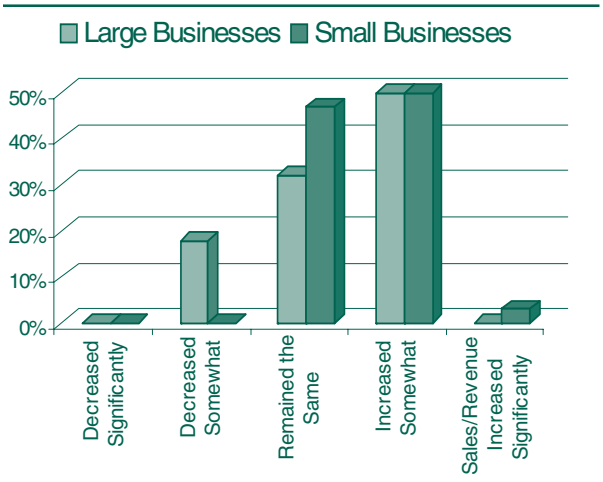
## Characteristics of Kentucky's Firms Selling Online

Although their participation rates in e-commerce are quite different, the profiles of both small and large firms selling their goods and services online are quite similar. Large firms reported having sold their products online for approximately 2.9 years on average, up from 2.8 years in 2002. This figure was only slightly smaller for small Kentucky businesses at 2.6 years, up from 2.2 years in 2002. Roughly 15% of large businesses reported initiating E-commerce within the last year, while for small firms the number was 26%. Considering all firms together, only 21% of firms reported initiating E-commerce within the past year. In the previous two survey years, these figures were 32% and 40%, respectively. This slide in the initiation rate of E-commerce by firms could again support the theory that there exists a saturation point. For three years, the initiation rate has steadily declined, showing little sign of stopping the decline. While firms in the state still appear to be expanding into e-commerce, the sluggish economy has substantially dampened the rate at which firms are establishing Internet operations. As in previous years of data from the Kentucky Business Confidence Survey, the participation gap between the two different firm size groups continues to shrink.

Figure 3 shows the end buyer for the online goods and services offered by surveyed firms. Large businesses have a stronger tendency to sell their goods and services to government agencies and other businesses. Smaller firms, conversely, are more likely to sell their products to individual consumers than they are to government agencies. Small firms did indicate, however, a significant propensity to sell to other businesses.

The increased sales / revenue for the different sized firms appear to come from different types of online customers. For large businesses, approximately 64% of their online customers are previous offline customers of the business, as compared to only 41% for small businesses. Small businesses, conversely, indicate that 44% of their online customers are new customers to their business, as opposed to only 25% for large businesses. As in years past, the Internet appears to be a strong tool for small Kentucky businesses, allowing them to reach customers that might not have been previously aware of or able to purchase their product or service. For both sizes of firms, the percentage of customers

## Figure 4
### Revenue Changes since the Initiation of E-Commerce




Source: Author's Calculations from the 2003 Business Confidence Survey

reported as being new to the business dropped from those reported in last year's survey. This evidence, along with declining initiation rates of E-commerce, lends further support to the notion that Kentucky is approaching the saturation point for E-commerce, ceteris paribus. If not a saturation point, the current evidence indicates that the uses for the Internet, in terms of conducting online sales, needs to be re-addressed. Those firms not currently using the Internet to conduct sales may not be doing so not because it is impossible for them to do so, but because Internet solutions for their good or service are not yet feasible or cost-effective.

### Revenues and E-Commerce

One of the primary reasons often given for a firm's initiation of online sales is to increase sales and revenues for the firm. The Business Confidence Survey asks firms each year whether or not their use of the Internet for online sales has boosted their sales or revenue. Results from the 2003 survey that nearly 50% of both large and small firms witness an increase in sales or revenue from the use of online sales. Figure 4 also indicates that nearly 80% of large businesses and over 90% of small businesses report that their sales or revenues at worst remained the same after the initiation of online sales. As in past years of the survey, firms are implementing Internet sales at a reduced rate over previous years, but still reporting that the online sales are generally helping, not harming, their sales and revenue.

## Why are Kentucky Businesses Not Currently Selling Online

While the general time trend in Kentucky is one of an increasing number of firms selling online, the majority of businesses still do not sell their product or service over the Internet. The 2003 Business Confidence Survey asked participants to indicate why it is that they have chosen not to sell their product online. Table 2 indicates that the overwhelming majority of those businesses not selling online choose not to do so due to the incompatibility of the format with their product or service. The majority of both small and large businesses indicate that they do not sell their product online because it is difficult to do so. 93.3% of large firms report that it is difficult to offer their product over the Internet, while 71.8% of small firms make the same claim. A significantly larger percentage of small firms in 2003 (14.4%) reported that online sales requires too much money to initiate than did in 2002 (5.0%).

Both large and small businesses, when asked if they planned to initiate online sales in the future, largely responded negatively. Approximately 65% of large businesses indicated that they had no future

## Table 2
### Why Firms Don't Currently Sell Online

| | Large Firms* | Small Firms* |
|---|---|---|
| **Not sure how to initiate** | 0.0% | 9.3% |
| **Difficult to conduct for my goods/services** | 93.3% | 71.8% |
| **Requires too much money/investment** | 4.5% | 14.4% |
| **Concerns over security issues** | 2.3% | 5.6% |

*Columns may not sum to 100% due to rounding
Source: Author's calculations from the 2003 Business Confidence Survey

plans for online sales, and over 60% of small businesses responded the same. While not systematic, these figures have been generally been climbing over the past several survey years. Coupled with the high number of firms indicating that online sales are difficult to conduct for their goods and services, this year's Business Confidence Survey lends further support to the idea that given current implementation of the Internet for online sales there exists a saturation point.

This year's survey witnessed a decline in the number of large firms utilizing the Internet for online sales and a slight increase in the number of small firms conducting online sales. As speculated in last year's article concerning this same subject, it appears that for those firms whom initiating online sales is most advantageous have already done so. Further support from this year's survey again indicates that firms are initiating E-commerce at slower rate. In addition, in the previous section, it was noted that while businesses continue to report that online sales helped to boost their revenue and sales, very few of the firms in the sample report that online sales have a significant impact on their sales and revenue, either positively or negatively. Evidence from the survey results suggest that new avenues of usage for the Internet as it relates to online sales must be explored. With a rising number of firms reporting that the Internet is not conducive to sales of their product, innovation is needed developing new sales approaches to help these firms realize the Internet as a means to sell their product.

## Conclusion

While the percentage of small businesses in the state using the Internet to conduct online sales bounced back from the dip seen in the previous year's survey, the percentage of large businesses conducting online sales actually shrank from the previous year. Based on the results of the survey, 20.6% of large Kentucky businesses and 12.7% of small Kentucky businesses are involved in e-commerce. Down slightly from previous years were the percentages, both for small (44.4%) and large (25.0%) businesses, of online customers who were new customers to the businesses.

The overwhelming majority of businesses not currently using the Internet for online sales indicated they did not use it due to the incompatibility of their product being sold in this manner. In addition, a significant portion of these firms indicated that they had no plan to use the Internet in the future for the purpose of online sales. With a second year of survey results confirming many of the negative results seen in the previous year's survey, it does appear that a saturation point, in terms of the number of businesses conducting online sales, does exist. While this may only be a temporary condition, new avenues of bringing products to the market via the Internet must be explored in order to return to the growth in usage seen three to five years ago.

## Endnotes

1. United States Census Bureau, http://www.census.gov/mrts/www/current.html
2. *Nielsen//NetRatings.* http://www.nielsen-netratings.com/news.jsp?section=dat_to&country=us
3. For more information, see the "Survey Methodology" section of the 2001 *Business Confidence Survey, Kentucky Business and Economic Outlook: Volume 5, Number 1*

# Incentives for Housing Investment:
## The Case of Historic Rehabilitation Tax Credits

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*Tax credit programs to encourage the rehabilitation of historic properties have become an increasingly popular policy tool for states across the country. Such a program in Kentucky would attract between 70 to 175 homeowners as participants in a typical year with participation concentrated in the urban area of the state. As a tax incentive program, an historic rehabilitation tax credit should generate additional economic activity and tax revenue that would mitigate some of the fiscal costs of the program. The level of mitigation depends on what percentage of program participants conduct the rehabilitation specifically in response to the tax credit.*

## Introduction

Rehabilitation tax credit programs for historic properties have become an increasingly popular policy tool for states across the country. Dozens of states over the last decade have passed rehabilitation tax credit programs. These programs provide income tax credits (or a freeze on property taxes) to defray a portion of construction costs for households that make approved renovations to designated homes. The typical policy will allow tax credits of between 20% and 30% of rehabilitation costs, or a freeze on property tax increases for a decade after rehabilitation. States also may make tax credits available to businesses that renovate designated historic commercial properties. These programs and the resulting improvements in the physical infrastructure of historic neighborhoods and commercial areas have been seen as a way to promote infill development, revitalize Main Street areas, and promote tourism.

Historic preservation programs also are an interesting example of a public incentive program and thereby raise a host of familiar questions. What is the rationale for targeting credits to certain types of properties? How effective can the policy be in encouraging the changes it promotes? Will the fiscal loss from the program equal the full value of the credit, or will the dynamic effects of encouraging investment create new activity and tax revenue to offset the fiscal loss? This article will address these questions both in general and for the Commonwealth of Kentucky, a state that has the fourth highest number of listings in the National Register of Historic Places and ranks seventh in the nation in number of National Register historic districts.

## A. Why Historic Rehabilitation Tax Credits?

Historic rehabilitation tax credit programs provide incentives to develop housing and commercial properties for a subset of properties and neighborhoods in the community rather than to all properties. Such a targeted policy relies on the assumption that the public places a value on the preservation and revitalization of historic structures and the neighborhoods where they are located, and that these values are greater than a general valuation of the upkeep of existing homes throughout the community. If this assertion were not true, it might make more sense to make rehabilitation credits available to all existing homes rather than targeting historic properties.

Recent public policy choices may reflect an underlying public interest in subsidizing historic rehabilitation. As mentioned earlier, dozens of rehabilitation tax credit programs have been adopted by states recently. There also have been recent expansions in related programs, such as Main Street redevelopment programs.

These developments suggest that the public does place a premium on the rehabilitation of historic properties. In addition, there have been studies that have demonstrated that the public is willing to pay

to protect particular culturally significant properties (Navrud and Ready, 2002). However, there have not, to our knowledge, been any economic studies that have measured whether or not the average household places such a premium on rehabilitation of historic properties in general.

There is more economic research to support the notion that the public places a value on avoiding the development of green space surrounding urban areas, a policy that is promoted by programs that encourage the rehabilitation of existing properties. These studies suggest that the public places a value on the preservation of farmland near to urban areas in Kentucky and elsewhere.

In their 1997 article, "Measuring Amenity Benefits from Farmland: Hedonic Pricing vs. Contingent Valuation," authors Richard Ready, Mark Berger, and Glenn Blomquist examined the economic valuation of horse farms in Kentucky. The authors found that residents were willing to pay $24.84 per year to prevent a loss of 25 percent of horse farms in their county and $89.56 to prevent a 50 percent loss. Other results have examined all farmland, not just horse farms. Beasley et al (1986) studied the willingness-to-pay for the retention of farmland in the urban fringe of south central Alaska. The average household in this study was willing to pay $76 annually to avoid "moderate" development of farmland on the urban fringe.

Overall, these findings suggest that economic research provides only limited support to the key assumptions that underlie decisions to target tax credits towards historic rehabilitation. This however is primarily the result of a lack of research on some of the relevant topics. Where research is lacking, policy-makers are left to rely on constituent interest in the program and national trends in adopting these programs, as evidence of a public interest.

## B. Program Usage

States such as Kentucky have tens of thousands of designated historic properties. How many of these properties are likely to be rehabilitated as a result of historic tax credit programs? The experience of several existing incentive programs shows that Kentucky business people will utilize incentive programs in large numbers. Rypkema (1997) notes the certified rehabilitation of 1,370 nonresidential structures in Kentucky resulting in private sector investment of nearly $432 million. Further, in 1998, the Renaissance Kentucky Program was founded to further encourage the rehabilitation of the facades of historic downtown businesses. The 2002 report listed a total of 274 Facade Grant applications submitted with over 2 million dollars in grant money expended.

But, to what extent will Kentucky households utilize a historic rehabilitation income tax credit? Some will, as is demonstrated below. However, as with any incentive program, there will be many who would not wish to participate, for a variety of reasons. First of all, many of these historic properties are not in need of rehabilitation. Some of these properties have been maintained and updated carefully over the decades. Others have already undergone substantial rehabilitation in recent years. Owners of other historic properties may be unlikely to benefit from the program, or do not have the wealth and income required to proceed with a renovation that is only partially subsidized by the policy. For example, Rypkema (1997) found that over 200 of Kentucky's 385 registered historic districts have 20% or more of the households living below the poverty line.[1] Other homeowners, due to their age or other factors, may simply not see a benefit from rehabilitation even if subsidized.

As a result of these factors, only a portion of historic properties will be candidates that could be influenced into rehabilitation by the availability of a tax credit program. What percentage of designated historic homes is likely to participate in the program? We examined data from several of the more than two dozen states that have implemented rehabilitation tax credits in order to determine the rate of participation, which is also known as the take-up rate. Our analysis focused on residential properties rather than commercial properties.

Unfortunately, given that most existing programs are at most six years old, data on the number of homeowners who actually participate in the program is limited. Some research has been done in this area, however. Cronyn (2003) with the assistance of state and national sources performed a detailed analysis of four states, including Maryland, Missouri, North Carolina, and Virginia. Cronyn compiled the number of project applications on a year-to-year basis beginning with the implementation of each state's program and compared them to the number of designated projects in each state to arrive at a rough

estimate of expected usage. Those numbers have been used with some modifications to project an estimated take-up rate for Kentucky residential projects. As is seen in Table 1 below, the annual take-up rate would range between 0.20 percent and 0.35 percent per year.[2] Note that results in Table 1 are "long-run" take-up rates after the program has been in place for several years. It was found that it takes approximately three to four years for a program to mature, which is logically consistent with the amount of time necessary for both marketing and application process effects.

A similar analysis was performed for states using property tax incentives rather than income tax incentives. These states freeze property taxes after improvements as a tax incentive for rehabilitation. Data from the National Historic Preservation Office and the State Historic Preservation Offices of Georgia and Arizona was used to arrive at designated property numbers and approved projects. These take-up rates also are reported below.

## Table 1
### Annual Take-Up Rates for Tax Credit for Rehabilitation of Historic Homes:
High and Low Scenario

| Annual Take Up Rates (Residential Income Tax Incentive) | |
|---|---|
| **High** (based on Maryland rates) | .35% |
| **Low** (based on Missouri rates) | .20% |

| Annual Take Up Rates (Residential Property Tax Incentive) | |
|---|---|
| **High** (based on Georgia rates) | .30% |
| **Low** (based on Arizona rates) | .15% |

How many properties should these take-up rates be applied to, that is, how many designated historic properties are there in Kentucky? We included in our estimate a combination of contributing properties listed in the National Register, both individually and within historic districts, along with an estimate of buildings designated only at the local level. While this number includes both residential and non-residential structures, residential structures have been found to represent a sufficient majority of listed structures. This was further confirmed through an analysis of the listings for Jefferson Co., Kentucky, which contains approximately one-fourth of Kentucky's designated properties, that found that at least 80 percent are residential. According to data provided by the Kentucky Heritage Council, Kentucky lists a total of 38,655 contributing buildings listed in the national register. For our purposes, an additional 10 percent was added to reflect an estimate of buildings with a local but not a national designation for a base total of 42,521 buildings.

Further, this number can be expected to rise in the future, based on trend line analysis from other states. Data from other states indicates that the number of registered properties rises in the years that follow the inception of a tax credit, presumably as property owners seek any property value premium associated with the availability of a tax credit.

In order to establish a growth trend for Kentucky additions to the stock of designated properties, the percentage growth per year for several states was applied to the Kentucky existing designated property number. The years selected for the comparative states are based on the date of the establishment of the incentive programs in those states. Table 2 shows how the number of designaed properties would grow in Kentucky if it followed the pattern of expansion that occured in Maryland, or in Missouri.

Based on the take-up rates in Table 1, and the estimated number of current and future designated properties in Table 2, an estimate was made of the number of Kentucky properties that would participate in the program each year. The estimate was based on the Maryland Scenario in Table 2, to err on the conservative side. As is seen in Table 3, the number of projects for a Kentucky residential rehabilitation income tax credit was estimated to be between 100 to 175 projects per year once the program has matured. The number of projects for a property tax freeze rehabilitation program was estimated to be between 70 and 150. With either program, the estimate is between 70 and 175 projects per year. Thus, over a period of two decades, 7% or fewer of designated historic properties would be expected to participate in the rehabilitation program. However, this would mean the rehabilitation of several thousand historic properties in Kentucky over that period.

## Table 2
### Designated Historic Properties As Households React to Tax Credit

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| **Maryland Scenario** | 42,521 | 42,919 | 42,972 | 43,687 | 49,397 |
| **Missouri Scenario** | 42,521 | 43,167 | 46,164 | 52,088 | 59,086 |

More generally, the results point to a familiar theme among public incentive programs - that the level of participation is often far less than would be suggested by program eligibility. This means that the program will not always have as large an impact as might be envisioned. Another implication is that the fiscal cost of the program also will not be as great as originally envisioned.

**Table 3**
**Annual Number of Projects**
**Using Tax Incentive for Rehabilitation of Historic Homes:**
High and Low Scenario

| Annual Number of Income Tax Credit Projects in KY* | |
|---|---|
| **High** (50,000 X .0035) | 175 |
| **Low** (50,000 X .002) | 100 |

| Annual Number of Property Tax Freeze Projects in KY* | |
|---|---|
| **High** (50,000 X .003) | 150 |
| **Low** (50,000 X .0015) | 70 |

*estimate based on 50,000 designated properties

One other common feature of incentive programs also should be kept in mind. Many participants in these programs are "free riders", that is, individuals who would have undertaken the desired action whether or not the incentive was available, but are able to receive the incentive. For the topic at hand, these are individuals who would have made major renovations to historic properties whether or not the tax credit was available. Certainly, a portion of the 70 to 175 annual projects listed above would have occurred in any case. Thus, it may not be appropriate for a tax incentive program to be credited with the entire number of projects listed in Table 3. This also has a key implication for the fiscal analysis of the historic rehabilitation tax credit program, as is discussed later.

What percentage of program participants would represent new projects encouraged by the tax credit, versus projects that would have occurred in any case? Cronyn (2002) in a study of Maryland conducted a follow-up survey of approved project recipients. Respondents were asked whether they would have invested in the project without the tax incentive. For residential properties, 43% said the tax was necessary for the project to go forward. This figure shows that the tax credit was crucial for a significant number of program participants, but also allows that a significant percentage of projects would have been undertaken anyway.

While the amount of participation is important in determining the feasibility of an incentive program, it is also useful to look at the potential distribution of such participation. Using Census data the map in Figure 1 illustrates the density by county of pre-World War II housing structures (not necessarily historically designated). As expected, the counties with the highest number of structures are Jefferson, Kenton, and Fayette counties. This illustration underlines the increasing consensus in historic preservation literature that fully evaluating the impact of residential historic preservation is highly dependent upon location.

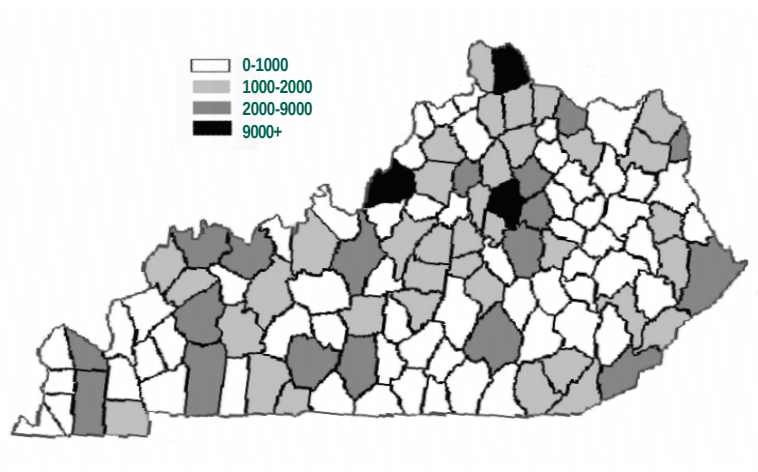
As is evident from the map, the impact of residential preservation will necessarily be more relevant in some areas than in others. Additionally, there may be significant discrepancies in the valuation of amenities between rural areas and the more densely populated urban centers of the state. Densely populated urban areas may place the preservation of green space at the community's edge high on their list of priorities, and see residential rehabilitation as a way to mitigate the disintegration of existing housing structures. Less densely populated areas with a small existing housing stock may be less concerned with the rehabilitation of historic residential structures and more concerned with residential rehabilitation in general. In such a situation, a non-targeted incentive might be deemed more appropriate.

## C. Fiscal Consequences

A tax credit program may stimulate economic activity, generate a socially-valuable amenity, and otherwise generate a group of desirable outcomes. But, one other potential outcome of such a program is to reduce the amount of tax revenue coming to government. This section addresses the likely fiscal consequences of a tax credit program for rehabilitation of historic properties. Analysis is undertaken for an income tax credit for rehabilitation of historic homes, though the same approach would apply for analyzing a credit for rehabilitation of commercial properties, or a tax incentive based on freezing property taxes obligations at before-rehabilitation levels.

The fiscal loss of a tax credit incentive will not be as large as the value of the credit itself. This is because the tax credit program will also stimulate new economic activity and there will be tax revenue associated with this. In particular, the increased

## Figure 1
### Distribution of Pre-1939 Housing Structures




property values of program participants will lead to additional property taxes as a result of the tax credit program. Further, these property tax increments will be earned every future year (unless a freeze in property taxes is part of the incentive program). The cumulative revenue impact could be quite substantial. There also may be an increase in property values for designated properties that do not participate, since these properties retain the option to utilize the credit in later years. For simplicity, we will not include these impacts in the current analysis.

The potential for property tax revenue increases to offset the fiscal loss from the tax credit is especially great since property value is taxed at a higher rate than income in Kentucky, or at least in the urban areas of Kentucky where many designated historic properties are located. The marginal income tax rate in Kentucky is 6 percent. The annual state real estate property tax rate is just 0.135 percent. But, local property taxes are much higher. Using the example of Louisville, Kentucky, the local property tax rate is 0.523 percent and school district tax rate is 0.528 percent for a total tax rate of 1.051 percent (Greater Louisville, Inc, 2003). The total state and local property tax rate is 1.186 percent annually in Louisville. But, this tax is levied on the value of the historic rehabilitation improvement year after year. The value of this revenue can be put in terms of its present value by discounting future tax revenues at a 7% real discount rate and then adding annual revenues together. The resulting present value of property taxes would be suitable for comparison with Kentucky's 6 percent marginal income tax rate. The present value of an annual property tax rate of 1.186 percent is 16.9 percent.

Table 4 shows the likely long-term fiscal impact of a property tax credit program in Kentucky for the case of Louisville, Kentucky. We assume that there are ten rehabilitated historic homes in Louisville in the year in question, and that the cost of each rehabilitation is $50,000. We further assume a state income tax credit equal to 20 percent so that each participating household receives an income tax credit of $10,000. Table 4 shows a $100,000 tax credit (ten projects of $10,000) and then the present value of the long-run increase in both local and state property tax revenues assuming that the rehabilitation projects increase the value of each home by $50,000.

Note that three columns are included in Table 4, one for each of three separate scenarios. These columns represent alternative assumptions about the percentage of these ten projects which are new projects facilitated by the tax credit versus projects that would have occurred even without the credit. There will be no long-term property tax increase associated with projects that would have occurred even in the absence of a credit. These "free-riding"

## Table 4
### Fiscal Impact Under Alternative Scenarios for Louisville, Kentucky

| Level of Government & Revenue Type | 20% New Projects | 40% New Projects | 60% New Projects |
|---|---|---|---|
| **State Government** | | | |
| Income Tax Revenue | -$100,000 | -$100,000 | -$100,000 |
| Property Tax Revenue | $1,930 | $3,860 | $5,790 |
| **Local Government** | | | |
| Local Property Tax Revenue | $7,047 | $14,940 | $22,410 |
| School District Tax Revenue | $7,600 | $15,200 | $22,800 |
| **Total Fiscal Impact** | -$83,000 | -$66,000 | -$49,000 |

projects are simply taking the credit without any change in their behavior. The property tax impact will result from those cases where the tax credit did induce the project to occur.

Table 4 presents fiscal impact scenarios with a low assumption that 2 of 10 (20 percent) of the rehabilitation projects occur due to the credit, a mid assumption that 4 of 10 (40 percent) occur due to the credit, and a high assumption that 6 of 10 (60 percent) occur due to the credit. Note that the mid assumption is quite close to Cronyn's (2002) finding that 43 percent of historic home rehabilitations in the Maryland income tax credit program required the income tax credit in order to proceed.

Note that the size of the net fiscal impact from the tax credit is very dependent on what is assumed about the percentage of "free riders." The net fiscal loss is much lower if 60 percent of projects are induced by the tax credit than if 20 percent are induced. Lastly, note also that there is a difference between the levels of government where the fiscal impact is positive or negative. The rehabilitation tax credit could lead to a significant positive tax revenue impact for local school districts.

Further, note that Louisville was used as an example since it relies on a mix of property and occupation tax revenue for its revenue and therefore has moderate local property tax rates for a Kentucky locality. Property tax revenue impacts would be much higher, and the resulting net fiscal loss much lower, in rehabilitation projects in Kentucky cities that rely more heavily on property taxes such as Covington or Newport, and much lower in rural counties where property taxes are lower. Also, as was noted earlier, the analysis does not consider other types of property tax increases that might occur, such as increases for properties that neighbor rehabilitated homes, or designated properties that do not participate in the program. Including these factors would also modestly reduce the fiscal loss across all classes of cities and counties.

A final point pertains to legal restrictions – in many counties binding legal restrictions – on the growth of property tax revenues raised by local governments in Kentucky. These restrictions limit the growth in local property tax revenues to 4 percent per year. If growth in revenues is expected to exceed that percentage, then property tax rates must be cut to bring revenue increases in line with the limit. That 4 percent annual growth limit has been met in most localities over the last decade, as Kentucky's population has grown and property values have risen rapidly, as nationwide. In such an environment, property value increases generated by an historic rehabilitation tax credit would not lead to more property tax revenues, but instead to an even greater cut in the property tax rate. The resulting increase in disposable household income would presumably be spent, yielding additional sales, income and miscellaneous tax income for Kentucky state government, and occupation and miscellaneous tax revenue for local governments. The magnitude of these tax increases would be less than the local and school district property taxes listed in Table 4. However, it is uncertain whether the 4 percent growth rate will remain binding in future years, or whether the law restricting growth to 4 percent may be modified or eliminated.

## Conclusion

Rehabilitation tax credit programs for historic properties have become an increasingly popular policy tool for states across the country. These programs have attracted as many as several hundred participants per year.

Our analysis indicates that an historic rehabilitation tax credit program in Kentucky would attract between 70 to 175 homeowners as participants in a typical year (analogous figures were not estimated for commercial properties). This level of participation would limit the fiscal impact of the program as it pertains to a homeowners tax credit program, but would still result in several thousand participants over a period of two decades. Participation would likely be concentrated in the urban areas of the state, where many historic properties are located, though participation would occur throughout the state.

As a tax incentive program, the historic rehabilitation tax credit should generate additional economic activity that will lead to new tax revenue. This dynamic impact will help mitigate the fiscal impact of the program, so that the net fiscal impact is less than the value of income tax credits issued. The level of mitigation depends strongly on what percentage of program participants conducted the rehabilitation in response to the tax credit rather than simply taking the credit as part of an already planned project.

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## Endnotes

[1] Low-income homeowners would have the option of selling the property to others with more means to take advantage of the tax credit. This may occur since the value of the property would probably rise in response to this possibility.

[2] While the Cronyn (2003) study based its take-up rates on project applications, the emphasis for this study was based on anticipated actual expenditures. The project applications data was therefore calibrated based on approved project totals by state from the National Trust for Historic Preservation. Based on existing data, Maryland and Missouri were again used to establish a base range. The number of approved applications was compared to the number of designated properties over a number of years to establish a range.