Unemployment in the Louisville Regional Economy

An Urban Studies Institute Research Report

by

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Introduction

As 2013 draws to a close, national economic conditions continue to improve. Gross domestic product (GDP), the broadest measure of economic activity, grew at a 4.1% annual rate in the third quarter, exceeding the previous estimate of 3.6%, and fueled by private inventory investment. The Federal Reserve Bank announced that it would begin "tapering" or reducing the dollar value of assets it had been purchasing to stimulate the economy. The financial markets responded positively. Most analysts agreed that the recovery was picking up speed and some predicted the United States economy would soon return to pre-recession levels.

At the same time Fed chair Bernanke expressed confidence in the recovery, he took care to emphasize that interest rates would be kept at historic lows until unemployment fell below 6.5%. The national unemployment rate (not seasonally adjusted) for November 2013 was close to that threshold at 6.6%. However, the unemployment rate for Louisville MSA was 7.6%; for Jefferson County, 7.8% and for the Commonwealth of Kentucky, 8.0%.

An economic recovery with persistently high unemployment is new territory for economists. Cyclical factors have historically been offered to explain unemployment. But some economists speculate that structural factors are at work, signaling a fundamental change in the labor market that will have long term consequences.

This report looks at the unemployment statistics that drive our national and regional debates, compares them, and then examines them for the Louisville economy. Then the cyclical and structural explanations for persistently high unemployment are presented. Finally, the education gap in the Louisville economy is explored for its potential to depress employment locally even as national unemployment moves to pre-recession levels.

Natural Rate of Unemployment

What level of unemployment is a sign of a healthy economy? Certainly not zero, else workers could not leave their present job to retrain or seek an advanced degree. The "natural" rate of unemployment is attributed to both friction and structural factors in the labor market. Workers leave their jobs for a variety of reasons and immediately begin a new job search. If sampled during their search, they are counted as unemployed. Their temporary state of unemployment is considered a healthy friction in the labor market.

Historically economists believed the natural rate of unemployment was 5%. The Congressional Budget Office now says the natural rate has risen to 6%, a conclusion supported by a recent survey of economists by the Federal Reserve Bank of Philadelphia.

Measuring Unemployment: The Current Population Survey

The Current Population Survey (CPS) has been the primary source of labor force data in the United States since the 1940s. Prior to the Depression of the 1930s, there was little interest in unemployment rates as there were few policy tools to address them. Additionally, the prevailing economic theory of the time was confidence in the private markets to reach equilibrium at a wage rate determined by labor supply and demand for workers.

States and municipalities were the first to try a direct survey of employment status by sampling. These early efforts asked whether an individual was "gainfully employed." Unemployed persons were those that were not working but were "willing and able to work." These categories were obviously subject to some interpretation, leading to a set of more precise descriptions adopted for the first national sample of households administered by the Works Progress Administration in 1940 (US Census Bureau, 2013-a).

Today the CPS is jointly sponsored by the Bureau of Labor Statistics (BLS) and the US Census Bureau. The Census Bureau collects the data and BLS analyzes and publishes it. About 60,000 households are sampled monthly across the United States to produce a national unemployment rate that has a 1.9% coefficient of variation or 0.2 percentage points at the 90% confidence level. The best way to interpret the national unemployment rate is "We can be 90% certain that the true unemployment rate is plus or minus two-tenths of a percentage point from the estimated value."

The following definitions are used by the CPS to determine who is employed and who is unemployed.

Employed

Respondents are asked whether, in past week they (a) did any work at all (for at least 1 hour) as paid employees; worked in their own businesses, professions, or on their own farms; or worked 15 hours or more as unpaid workers in an enterprise operated by a family member or (b) were not working, but who had a job or business from which they were temporarily absent because of vacation, illness, bad weather, childcare problems, maternity or paternity leave, labor-management dispute, job training, or other family or personal reasons whether or not they were paid for the time off or were seeking other jobs. If the answer is yes, the respondent is employed. If the respondent held more than one job meeting the criteria, he/she is counted only once (US Census Bureau, 2013-b).

Unemployed

Respondents who report that they did not work during the previous week but were available for work (excluding temporary illness) ***and*** had made specific efforts to find employment some time during the 4-week period are classified as unemployed. Individuals who were waiting to be

recalled to a job from which they had been laid off need not have been looking for work to be classified as unemployed. People waiting to start a new job must have actively looked for a job within the last 4 weeks in order to be counted as unemployed. Otherwise, they are classified as not in the labor force (US Census Bureau, 2013-b).

Nonresponse rates for the CPS have lately averaged between 8-9%, about 4-5% of which is due to refusal of the residents of the selected housing units to participate in the survey. Nonresponse bias is introduced when the characteristics of those who refuse to participate are different from the characteristics of those to agree to participate.

Subnational Unemployment Statistics

Below the national level, the CPS sample is too small to support reliable estimates of state unemployment. Sub-state estimates based on sampling are simply impossible.

State monthly unemployment estimates combine current and historical data from CPS and Current Employment Survey (CES) data and the fifty state unemployment insurance programs. The estimate is produced from a time series model of the true labor force that consists of three components: a variable regression coefficient, a flexible trend component and a flexible seasonal component. These components are the "signal" in the BLS' "signal-plus-noise" modeling approach.

The noise accounts for autocorrelation in the sampling error and changes the average magnitude of the error (BLS-a, 2013). These are called model-based estimates because they use primary data in a formula to estimate state rates. State level unemployment estimates can have up to an 8% coefficient of variation, making state level estimates considerably less reliable (US Census Bureau-c, 2013).

Sub-state (MSA, county) unemployment rates are derived through what is called the "handbook method" which uses available information to estimate two categories of worker, the covered worker and the new or re-entrant in to the labor force. Covered workers are either receiving unemployment insurance benefits or have exhausted those benefits. State unemployment insurance records are used for this estimate. Estimates for new and re-entrants are based on econometric models derived from current and historical state-level CPS data.

These estimates are applied to labor market areas based on the age-population distribution of their local area's workforce. The proportion of 16-19 year olds compared to the state's proportion is used for new entrants and the same ratio of 20 and older is used to estimate re-entrants. Once a year all labor force estimates are revised to reflect updated CPS and CES data as well as Census Bureau population controls. After the revision, the models are re-run to

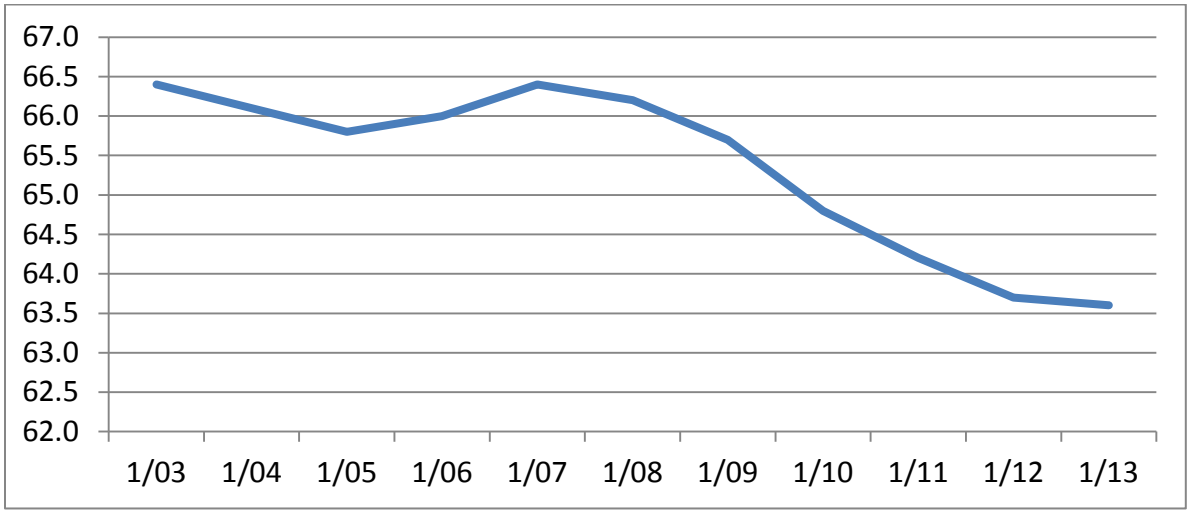
produce new estimates, a process called “smoothing” (BLS-a, 2013). BLS then publishes revised numbers after smoothing.

These models are fully satisfactory in theory, producing relatively stable estimates that we presume to be accurate, especially over time. So long as error introduced by modeling is random, the estimate is no more likely to overstate local unemployment as it is to understate local unemployment.

Labor Force Participation

Those who are neither employed nor unemployed may not be in the labor force. The labor force participation rate is the percentage of working age people (between 16 and 65) who are either working currently or searching for employment. The steady decline in labor force participation since 2000 has drawn the attention of economists.

Figure 1. United States Labor Force Participation Rate, 2003-2013.



Source: Current Population Survey, Bureau of Labor Statistics

The decline in labor force participation is not necessarily bad news. Labor force participation by teenagers (age 16-19) is at its lowest level since 1965. This can indicate that more students are opting for education rather than work. It may also indicate that jobs typically held by teenagers are being taken by adult workers.

On the other hand, persons age 55 and above have the highest historical participation rate, growing 2.2% from 2000-2010. An optimist might conclude that longer life expectancies and better health make it possible for older Americans to remain in the work force. A pessimist might counter that this age group did not save enough to retire.

The age group 25-54 is considered the bellwether for labor force participation as they have presumably completed their education and are in their prime working years. The participation rate for this group declined nearly 2% between 2000-2010. BLS predicts a further one percentage point decline from 2010-2020. There was a slightly steeper decline among men (1.9%) than women (1.5%) during the period, but many economists attribute the gender difference to the decline of manufacturing jobs relative to service jobs.

Labor participation among the age group most likely to be working (18-64) has remained relatively stable over the period 2003-2012 in Jefferson County and the Louisville MSA. The 2% decline from 2003 to 2012 mirrors national trends and can be explained more young people electing school rather than work after age 18.

Discouraged Workers

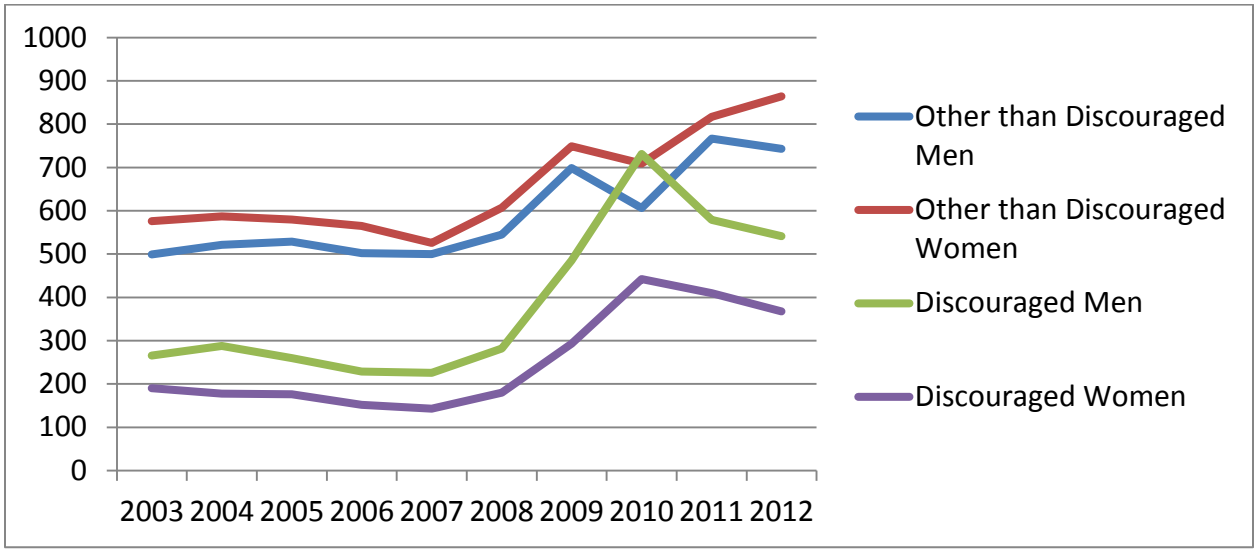
The national downward trend in labor force participation, especially among persons in prime working years, raises concern that people are dropping out of the labor force because they have stopped searching for jobs, presumably because they do not expect their search to be successful.

Figure 2 shows the spike in discouraged workers during the peak of the recession, especially among men. The overrepresentation of men in manufacturing and construction jobs, both hit hard during the recession, likely contributes to the spike. However, the fastest growing demographic category of discouraged worker is men over 55, who may have a harder time finding jobs, especially at their previous salary level. This demographic may also have been induced into early retirement by companies looking to reduce their pension obligations.

Persons not in the workforce for some reason other than discouragement did not actively look for a job in the past four weeks prior to being surveyed because they had school or family responsibilities, were ill, or had difficulty arranging child care or transportation to and from work. A small percentage of persons self-reporting in this category did not offer a reason for not actively looking for a job.

Only women who are not in the workforce for reasons other than discouragement continues to show an upward trend since 2011. In 2012, 19% of women cited family responsibilities as their reason for staying out of the work force. Another 19% were in school or training for a new job or career. Ill health or disability was cited by 10% of women in this category and 51% gave child care or transportation problems as reasons for not actively seeking a job.

Figure 2. Persons Not in Workforce by Gender and Reason 2003-2012, in Thousands.

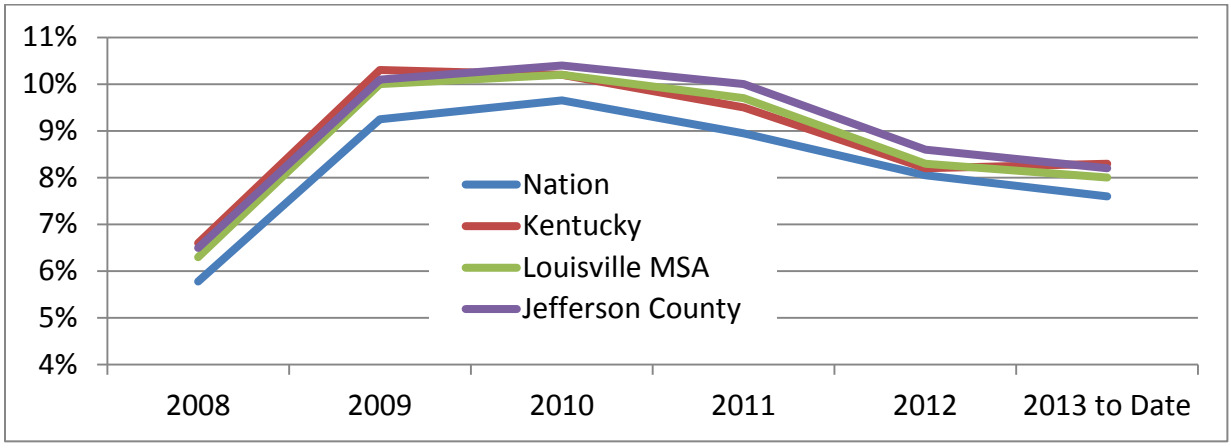


Source: Current Population Survey, Bureau of Labor Statistics

Unemployment in Kentucky, the Louisville MSA and Jefferson County

State and local unemployment rates may lead, lag or follow national employment rates.

Figure 3. Average Annual Unemployment for the Period 2008-2013.



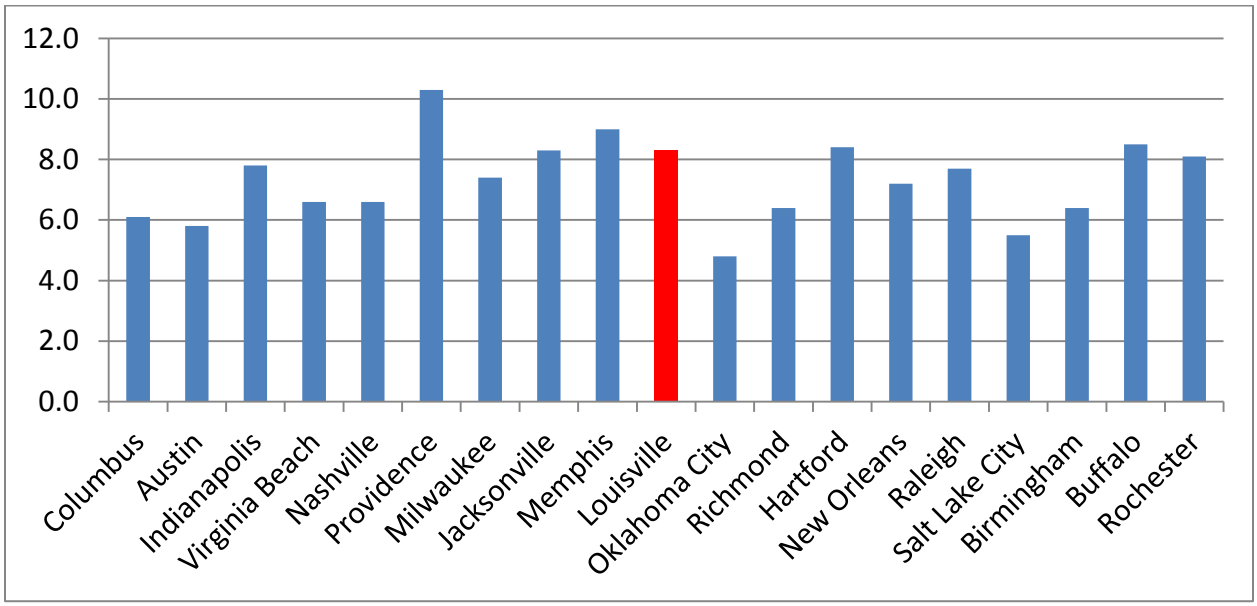
Looking at a graph of the annual unemployment rates for Kentucky and the local areas, one first notices that the unemployment rate was higher in Kentucky and the region than the national rate prior to the recession. In 2009, Kentucky, the MSA and Jefferson County were still a full percentage point higher than the national rate and have remained so until the gap narrowed in 2012. By October 2013 (the last month available before time of publication) both regional and national employment were trending down while unemployment state wide flattened.

The state unemployment rate is depressed by the high unemployment rate in certain eastern Kentucky counties. Leslie County has the highest unemployment in October 2013 at 18%. However, several counties were at or near the natural rate of unemployment (Woodford (6.1%), Grant (6.2%) and Oldham (6.4%).

Metro area employment rates in Kentucky were at or near the national rate of 7%. Elizabethtown MSA (7.7%) and Louisville MSA (7.6%) had the highest unemployment rates while Lexington MSA (6.6%) and Owensboro MSA (6.6%) had the lowest. There is little evidence that urban labor markets were more resistant to recovering their pre-recession unemployment rates relative to the rest of the country.

Figure 4 presents the unemployment rates for MSA with populations between 1-2 million, a category that includes Louisville. Of the nineteen MSAs in this population category, Providence, Rhode Island had the highest unemployment rate at 10.3 and Oklahoma City the lowest at 4.8. Louisville was in the top third with an unemployment rate of 8.3

Figure 4. Unemployment Rates for Select MSAs, 2012 Annual Average, (Not Seasonally Adjusted)



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics.

Persistent unemployment, then, is neither an urban nor rural phenomenon. In order to explore more other factors that may be related to persistent unemployment it is necessary to abandon the CPS data and turn to a source that provides employment information by age, race, gender, disability, poverty and education level – the American Community Survey (ACS).

Comparing CPS and ACS Employment Data

The ACS is not timely but it is comprehensive. The ACS replaced the long form of the decennial census program in 2000. The ACS is a "rolling" or constant survey of about 3 million households annually collected by mailed questionnaire, telephone interviews and visits by Census Bureau field representatives.

For counties with populations greater than 65,000, the ACS produces 1-year estimates each year with approximately one year lag time. Estimates for counties with populations greater than 20,000 are produced every three years and all county estimates are produced every five years. Jefferson County is large enough to have one-year estimates. One-year ACS estimates lack the precision of multi-year estimates but are available to local policy makers more quickly.

There are differences in the CPS and ACS classifications of employed, unemployed and those not in labor force. In 2009, the last year BLS did a detailed comparison between the two estimates, they found that the ACS classifications were all higher than the CPS estimate by about one-half of one percent at the national level. When the local area unemployment statistics (LAUS) compiled for the BLS (and the basis for county unemployment estimates) were compared to county ACS estimates, the ACS unemployment estimates were higher in 42 states and lower in 8 states. In Kentucky, the BLS unemployment rate was 0.4% higher than the ACS rate. (BLSb, 2013).

Why the difference? The CPS asks 16 questions to determine a respondent's labor force status while the ACS asks 7. The wording of the two survey instruments is different as well. The CPS probes more deeply into the respondent's job search method than the ACS. For example, a person might respond that he/she is looking for work and available to take a job if offered one. For ACS purposes, that respondent is unemployed. The CPS interviewer would ask if he/she monitored open positions and made any calls or submitted an application. If the respondent answered that he/she had not, the CPS interviewer would conclude the respondent is not actively looking for work and would not classify him/her as unemployed.

The high unemployment of person ages 16-19 in is a good illustration of the difference between the ACS and the CPS surveys. The CPS would cull those younger people who were not actively looking for a job, where the ACS would retain them if the young person responded that he/she was looking for a job and would take one if offered. In both the ACS and CPS, if the young person was looking for a part time job while he/she went to school, that young person would be in the labor force.

Timing also matters. The CPS reference period includes the calendar week containing the 12th of the month. The ACS is a rolling survey with no particular reference week. A seasonal worker might be unemployed for the CPS and employed for the ACS, depending on the choice of the

reference week for the ACS. Finally, recall that the BLS local unemployment estimates are not the product of a survey so there is no known margin of error. The ACS estimate has a known margin of error.

Part Time and Full Time Workers

One ACS question asks respondents "During the past twelve months how many weeks did you work?" The 2012 ACS 1-year estimates for Jefferson County and the Louisville MSA follow:

Table 1. Weeks Worked in the Past 12 Months, Population 16-64 years, Jefferson County, Louisville MSA, Total and by Gender.

	Total		Male		Female	
	Metro	MSA	Metro	MSA	Metro	MSA
Population 16 to 64 years	493,213	855,099	241,322	421,369	251,891	433,730
Worked 50 to 52 weeks	57.3%	56.8%	59.9%	59.7%	54.8%	54.0%
Worked 40 to 49 weeks	5.5%	5.2%	5.4%	5.0%	5.6%	5.4%
Worked 27 to 39 weeks	4.7%	4.8%	4.3%	4.6%	5.1%	5.0%
Worked 14 to 26 weeks	3.9%	3.9%	4.2%	4.2%	3.5%	3.7%
Worked 1 to 13 weeks	5.4%	5.2%	5.7%	5.4%	5.2%	5.1%
Did not work	23.1%	23.9%	20.4%	21.0%	25.7%	26.8%

Source: ACS 1-Year Estimates, Census Bureau.

For the approximately 500,000 persons aged 16-34 in the workforce, about 57% worked all year. The 50-52 weeks category includes paid vacations. The gender difference is slight - approximately 2.5% more men worked the full year than women.

Table 2. Usual Weeks Worked in the Past 12 Months, Population 16-64 years, Jefferson County, Louisville MSA, Total and by Gender.

	Total		Male		Female	
	Metro	MSA	Metro	MSA	Metro	MSA
Usually worked 35 or more hours per week	58.6%	58.3%	64.2%	64.6%	53.4%	52.2%
Usually worked 15 to 34 hours per week	15.1%	14.8%	12.7%	11.8%	17.5%	17.6%
Usually worked 1 to 14 hours per week	3.1%	2.9%	2.7%	2.5%	3.4%	3.4%
Did not work	23.1%	23.9%	20.4%	21.0%	25.7%	26.8%

Source: ACS 1-Year Estimates, Census Bureau.

Table 2 presents results for the question "How many hours per week do you usually work?" The results provide a sense of the normal distribution of part time and full time workers. About 58%

of the Metro and MSA respondents are employed full time, and about 15% employed part time. The 23% who did not work would be considered unemployed if they were actively seeking employment. Otherwise they would not be in the labor force.

Table 3 presents characteristics of the employed and unemployed for Jefferson County and the Louisville MSA. Note that the survey population changes with different characteristics. For example, employment status by age cohort and race is presented for populations aged 16 and over, but employment status by gender, poverty and disability status is presented for populations 20-64. Finally, employment status by educational attainment is presented for populations 25-64.

Race, Ethnicity and Gender

The disparity between the unemployment rate for whites and those for other races has been well documented and is consistent with national trends. Note that the unemployment rate for African Americans approaches 17% in Jefferson County while the unemployment rate for whites is under 8%. Hispanics and those identifying themselves as to or more races also have substantially higher unemployment rates than whites. Asian populations, however, have the lowest unemployment rate. In fact, their rate is below the "natural rate" of employment.

Small gender differences exist in unemployment in Jefferson County and the MSA. Again, national gender differences in unemployment have been explained by male overrepresentation in industries like manufacturing and construction. Women are overrepresented in service industries that fared better than manufacturing and construction during the recession. However, a significant difference is evident among females with young children.

Poverty

In order to interpret the unemployment rate for those in poverty in Jefferson County and the MSA, it is necessary to consult the Census Bureau's Poverty Thresholds for 2012, which are presented in Table 4.

The Census Bureau is directed by Office of Budget and Management Statistical Policy Directive Number 14 to annually produce a set of money income thresholds that determine who is in poverty. There is no adjustment for geography. Income is defined as money income before taxes.

Table 3. Employment Status by Age, Race and Origin, Gender, Disability Status and Educational Attainment for Jefferson County and Louisville MSA, 2012.

	Total		In Labor Force		Employed		Unemployment Rate	
	County	MSA	County	MSA	County	MSA	County	MSA
Population 16 years and over	597,240	1,030,747	65.80%	65.3%	59.30%	59.3%	9.60%	9.0%
AGE								
16 to 19 years	36,281	66,323	42.6%	43.6%	31.4%	32.2%	26.4%	26.2%
20 to 24 years	50,418	84,594	80.9%	80.0%	69.9%	68.8%	13.1%	13.5%
25 to 44 years	202,239	342,557	85.1%	84.2%	76.8%	76.7%	9.40%	8.4%
45 to 54 years	107,107	193,078	79.8%	80.0%	72.8%	74.0%	8.70%	7.4%
55 to 64 years	97,168	168,547	63.3%	62.1%	59.3%	58.2%	6.30%	6.3%
65 to 74 years	55,524	98,691	27.2%	25.2%	26.1%	24.0%	4.20%	4.7%
75 years and over	48,503	76,957	5.50%	5.6%	5.00%	5.3%	8.30%	5.4%
RACE AND ORIGIN								
White	452,228	855,426	66.1%	65.6%	60.9%	60.3%	7.70%	7.8%
Black or African American	116,376	133,521	63.9%	63.3%	52.9%	52.6%	16.90%	16.4%
Asian	13,165	16,666	69.1%	69.7%	66.2%	66.3%	4.10%	4.5%
Two or more races	11,129	15,889	68.6%	62.7%	56.7%	52.3%	15.40%	14.8%
Hispanic or Latino	23,754	36,180	78.8%	76.4%	66.8%	65.8%	14.20%	13.0%
White, not Hispanic or Latino	434,838	829,999	65.6%	65.2%	60.6%	60.1%	7.40%	7.6%

	Total		In Labor Force		Employed		Unemployment Rate	
	County	MSA	County	MSA	County	MSA	County	MSA
Population 20 to 64 years	456,932	788,776	78.8%	78.0%	71.4%	71.2%	9.1%	8.4%
SEX								
Male	222,701	387,320	82.0%	81.4%	74.0%	74.0%	9.3%	8.6%
Female	234,231	401,456	75.7%	74.7%	68.9%	68.5%	8.9%	8.2%
With children under 6 years	35,250	60,812	74.9%	75.4%	64.5%	67.2%	13.6%	10.7%
POVERTY STATUS PAST 12 MONTHS								
Below poverty level	73,048	113,215	55.1%	53.5%	35.4%	35.7%	35.4%	33.0%
DISABILITY STATUS								
With any disability	59,586	101,906	40.5%	40.8%	31.5%	32.6%	22.1%	19.9%
EDUCATIONAL ATTAINMENT								
Population 25 to 64 years	406,514	704,182	78.5%	77.8%	71.6%	7.5%	8.6%	7.7%
Less than high school graduate	35,519	66,639	52.9%	53.3%	42.2%	43.7%	20.4%	18.0%
High school graduate (GED)	108,147	214,979	74.6%	73.9%	64.3%	66.2%	13.8%	10.4%
Some college or associate's degree	128,314	221,966	80.5%	80.8%	73.5%	74.4%	8.3%	7.5%
Bachelor's degree or higher	134,534	200,598	86.5%	86.6%	83.4%	83.4%	3.3%	3.4%

Notes:

1. The American Community Survey is a rolling survey, which means that some of the respondents would have been interviewed in 2011 for the 2012 1-year estimates.
2. Characterizes of the respondent for which the entry was “N” were removed from the table. An “N” entry for the estimate and margin of error indicates that the data cannot be displayed because the number of sample cases was too small.

Source: 2012 ACS 1-year Estimates, Census Bureau

Users of this data should be aware that certain important exclusions apply. For example, for populations 65 and older, Social Security income and pensions and retirement income is counted, but capital gains are not.

Noncash benefits are not included in the calculation of income. For example, the value of Supplemental Nutrition Assistance Payments (also known as food stamps) is not included. The value of rent or other housing subsidies are not included in the income calculation. However, unemployment compensation and public assistance are counted because they are realized in a cash form.

Table 4. Poverty Thresholds for 2012 by Size of Family and Number of Related Children Under 18 Years

Size of Family Unit	Related Children Under 18 Years								
	None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person									
Under 65	$11,945								
65 years and over	$11,011								
Two people									
Householder under 65	$15,374	$15,825							
Householder 65 years and over	$13,878	$15,765							
Three people	$17,959	$18,480	$18,498						
Four people	$23,681	$24,069	$23,283	$23,364					
Five people	$28,558	$28,974	$28,087	$27,400	$26,981				
Six people	$32,847	$32,978	$32,298	$31,647	$30,678	$30,104			
Seven people	$37,795	$38,031	$37,217	$36,651	$35,594	$34,362	$33,009		
Eight people	$42,271	$42,644	$41,876	$41,204	$40,249	$39,038	$37,777	$37,457	
Nine people or more	$50,849	$51,095	$50,416	$49,845	$48,908	$47,620	$46,454	$46,165	$44,387

Source: US Census Bureau

Educational Attainment

The relationship between unemployment and education attainment is stunning. Nationally, the unemployment rate for those with less than a high school education is 14.2% and for those with a high school diploma or GED is 10.1%. In the two Census geographies that contain Kentucky, the rates are lower. In Kentucky, the unemployment rate for persons with less than a high school education is 15% and 9.2% for those with a high school diploma or equivalent.

Bollinger (2013) noted that Kentucky's unemployment rate for persons over 25 (when most have completed their schooling) is higher than the national average, driven by the percent of

workers who do not hold a Bachelor's degree. In fact, Bollinger estimated that had Kentucky's mix of workers with different levels of education been the same as the national educational mix, Kentucky's unemployment rate would have been consistently lower, about 0.8%. The higher proportion of workers without a Bachelor's degree in Kentucky may explain why Kentucky's unemployment rate was about one percentage point higher before and during the recession, and has flattened as the economy enters recovery.

In Jefferson County and the Louisville MSA, the unemployment rates for persons with less than a high school education and those with a high school diploma are even high than in the state.

Table 5. Unemployment Rate by Educational Attainment, 2012.

	Jefferson County	MSA	Kentucky	Census Division*	Census Region**	USA
Less than high school graduate	20.4%	18.8%	15.0%	16.1%	13.9%	14.2%
High school graduate (GED)	13.8%	10.4%	9.2%	9.7%	9.9%	10.1%
Some college or associate's degree	8.3%	7.5%	7.9%	8.1%	7.9%	8.0%
Bachelor's degree or higher	3.3%	3.4%	3.2%	3.3%	3.9%	4.2%

Source: US Census Bureau

*East South Central includes Kentucky, Tennessee, Mississippi and Alabama
**South includes Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, South Carolina, and North Carolina. Virginia. West Virginia. Maryland, Delaware and the District of Columbia.

Compared to the nation, the difference in unemployment for persons without a high school diploma or the equivalent is 6.2% for Jefferson County 4.6% for the Louisville MSA. The final section of this report addresses the role of educational attainment and unemployment more fully.

Explaining Persistent Unemployment

In a perfectly functioning labor market, the supply of labor and the demand for labor are in equilibrium. If the market is experiencing a failure, it could be a failure on the demand side or the supply side.

Economic theory says an employer knows when it is time to fill a vacant position (or create a new position) because the employer understand his/her production function. He/she understands the relationship between the inputs of capital, labor and other factors to the

output of goods and services. When the employer discerns that the cost of an additional unit of labor is lower than the productivity of the labor input, he/she adds the employee at the proper wage rate. An employee that is more productive contributes more to output and commands a higher wage.

Workers have a wage rate at which they would be willing to accept a job, a reservation wage. A job offer below the reservation wage, all other things being equal, would be rejected. Many factors can contribution to the reservation wage, which is presumed to vary over the course of the individual's working life. At wage rates above the reservation wage, the individual will be induced to trade leisure for work.

It is important to consider a perfectly functioning labor market as a starting point for a discussion of potential market failure. The market failure can occur in labor supply or labor demand; that is, decisions by employers and decisions by workers.

Cyclical and Structural Unemployment

Cyclical unemployment is attributable to business cycle fluctuations in output. The economy normally cycles through booms and recessions. Unemployment increases when the economy contracts, as measured by GDP or the output of goods and services produced by labor and property located in the US. When GDP contracts for two consecutive quarters or more, the economy is considered to be in recession. Falling demand results in falling business revenues and eventually worker layoffs. When the recession ends, demand increases and workers are rehired. Sometimes.

However, some employers may have discovered that they no longer need as many employees to produce their desired level of output and do not rehire some of the laid off workers, at least until demand for their products and services increases enough to make adding more workers necessary. Some employers may invest in technology that makes some workers redundant. Instead of rehiring workers, the employer may look for workers with the skills to operate the new technology.

National fiscal and monetary policy has been predicated on cyclical explanations for persistent unemployment. The Economic Stimulus Act of 2008 added $152 billion to the economy, primarily in the form of tax rebates to middle income Americans. The American Recovery and Reinvestment Act of 2009 pumped an additional $830 million in to the economy. At the same time the Federal Reserve slashed interest rates by purchasing bonds and other forms of debt to induce businesses to expand and hire new workers.

Proponents of cyclical explanations for persistent unemployment say the fiscal and monetary stimulus was helpful but inadequate. Aggregate demand for goods and services has not

rebounded enough to induce employers to hire at the level that returns the economy to pre-recession levels of employment. Indeed, post-recession GDP growth has been sluggish compared to historical standards, and most economists expected a weak pace of recovery to continue for a decade, accompanied by a slow decline in unemployment.

The cyclical factors certainly help explain labor demand shortfalls and the rise of the long term unemployed, but structural factors may be at work as well. One hotly debated structural factor is skills mismatch. Skills mismatch arises when the skills of individuals looking for jobs and the skills employers are looking for in an employee are not compatible. The result is that workers take longer to find jobs and open positions go vacant longer. Some labor economists theorize that skills mismatch explains the rise in long term unemployment.

Labor Demand Considerations

There have been a number of potential market failures noted by labor economists since it became evident that the recovery would be characterized by persistent unemployment.

Employers Are Reluctant to Add Back Labor Due to Uncertainty

Factor costs of production are very well understood and very closely watched. However the contribution of labor is much less well understood than its cost. Simply put, employers may not know the marginal contribution of labor. In an expansion, it may not be so important for employers to understand the marginal contribution of labor. However, in a recession fueled by uncertainty, employers minimized risk. They laid off some workers and worked remaining labor longer hours as the recovery proceeded. This is evident from productivity gains that were realized even as unemployment rates increased. Holding on to good workers who had been trained was a risk-minimizing position during a time of considerable uncertainty.

Uncertainty about the fundamental soundness of US capital markets produced a liquidity crunch which made it difficult for businesses to borrow for payroll and other inputs. Planned expansions may have been postponed as capital was harder to acquire. Brunnermeier (2009) noted that the interconnectedness of American financial institutions, their incentives to take on debt, and tendency to ignore the warning signs of a mismatch in asset-liability maturities explains why the liquidity crisis was economy-wide and persistent.

Other factors were also in play. There was considerable debate surrounding the policies aimed at stimulating aggregate demand. Prominent economists were arguing in the popular media that more stimulus spending was needed to speed the recovery (notably Paul Krugman) while others were arguing that stimulating private investment through tax cuts and reducing government spending was the right path to recovery (notably James Buchanan). Arguments among economists are the norm, but employers may have been paying special attention

because of the magnitude of the recession and the uncertainty surrounding financial institutions. The politically contentious atmosphere in Washington may have also played a part.

Employers Inflated Qualifications, Lowered Wage Offer for New Workers

This view was popularized by Cappelli (2012) who noted that the larger pool of unemployed workers created incentives for employers to delay hiring decisions, inflate qualifications, and offer submarket wages. The argument is simple. Employers see a glut of labor on the market as evidenced by the high national unemployment rate. They conclude a new hire can be over qualified but willing to work at the same rate as a qualified employee. For example, the employer may advertise for a worker with a bachelor's degree if the position did not require the degree because there should be an oversupply of college educated workers in the labor market willing to work at a lower salary.

A 2012 Talent Shortage Survey (Manpower Group, 2012) seems to sustain Cappelli's point. In the United States 49% of employers reported difficulties filling specific job roles, and 19% identified as a reason that the applicant was looking for more pay than was being offered. At the same time, only 8% were willing to increase starting salaries. In that same survey, 37% of employers identified providing training to existing staff as their strategy to overcome the talent shortage, 18% chose hiring people without the skills but with the potential to grow. Only 11% chose increasing starting salaries as their strategy.

There are also some more academic treatments of the issue. Davis, et al. (2012) found that employers were able to fill vacant positions relatively easily throughout the recession, but evidenced a relatively low recruiting intensity per vacancy well beyond the end of the recession. They also found that dispersion in the ease of hiring across industries was reduced for the same period. Davis, et al. interpreted this as employers imposing relatively higher hiring standards on new applicants even as the differences across industries in the ease of hiring lessened. The implication is that employers' tendency to "cherry-pick" the best applicants from an enlarging pool of job seekers was not focused on any one sector of the economy.

Discrimination against the Unemployed

Ghayad and Dickens (2012) disaggregated characteristics of the unemployed (by industry, age, education, blue vs. white collar) and discovered that those who had been unemployed for more than six months were significantly less likely to find employment than those who were unemployed less than six months, holding factors like skills and experience constant. In fact, they concluded that how long one has been unemployed statistically trumps all other factor including education and experience.

Ghayad was intrigued enough to conduct a field experiment. He sent out resumes of 4800 fictitious workers for 600 real jobs posted on an online job board. Of the 4800 applications,

3600 were unemployed. All were males with similar education history. He varied their employment history, how long they had been unemployed and recorded the number of callbacks. He found that workers who had been unemployed for six months or long were called back at a rate of 2%. Those with medium length unemployment had a 14% call back rate. Those with short term unemployment had a 16% callback rate. Most surprisingly, those with no industry experience but who were short-term unemployed had a callback rate of 9% compared to a 2% callback rate for those with industry experience who had been unemployed 6 months of longer.

Using criteria like unemployment length to sort applicants is easier for employers. The proliferation of online job postings has reduced the cost of a search to employers and employees. Many employers will not accept applications other than through their online systems. They use electronic sorting processes to identify a pool of applicants who have the desired qualifications. For example, if an employer wants an employee with a college degree, all applicants who do not have a college degree are eliminated at the first cull. Even though the process is efficient, it eliminates from consideration persons who may be qualified for the job based on their experience and previous training because they do not have a college degree.

Employers may use the same culling process to eliminate from consideration qualified workers who are currently unemployed and especially applicants who have been unemployed for longer periods of time. Since it would make no sense for employers to be intentionally biased against applicants who are otherwise qualified, one has to presume employers think that the length of unemployment is a proxy for some other characteristic. One potential explanation is that the employer may believe that work skills become outdated after six months, especially in technology intensive occupations.

The most troublesome explanation is that potential employers believe an economic downturn may have offered prior employers an opportunity to shed difficult or unproductive workers that the organization was willing to retain in better economic times. Post-recession productivity statistics demonstrated that firms tended to work existing labor more intensively rather than hire new employees. Perhaps potential employers assume that the long-term unemployed might not be as flexible in their work arrangements, able to adapt to a changing business environment or willing to take on more work. Whatever the reason, the evidence suggests that some employers declined to consider applicants who have been unemployed for more than six months when the pool of qualified currently employed and short-term unemployed applicants seemed relatively large.

As of July 2013, nine states had introduced legislation that made it illegal for employers to refuse to consider candidates based on their length of unemployment (NCSL, 2013). Some take the form of prohibiting advertising a job that required the successful applicant to be currently

employed. California's legislation (vetoed by the Governor in September 2013) would have made it unlawful for an employer, an employment agency or an internet jobs website to publish an advertisement that included provisions pertaining to an applicant's current employment status. The Equal Employment Opportunity Commission (EEOC) began considering unemployment discrimination in the spring of 2011 but has not taken action to date.

Labor Supply Considerations

Most economists agree that the explanation for persistently high unemployment can be found in the declining labor force participation rate. The problem is that one is then left to explain the reason for a declining labor force participation rate. Two explanations dominate the discussion: first, worker preferences changed and/or second, there was a labor market distortion.

Changing Worker Preferences

Just as employers may have unrealistic expectations about the willingness of overqualified workers to accept a position at a below market wage, re-entrants or new entrants into the workforce may have unrealistic expectations about the willingness of employers to respond to their preferences for the work environment. Recently unemployed workers may expect their new employer to offer the same set of amenities as their previous employer.

There is only anecdotal evidence for change in worker preferences. Looking that the national data from the Current Population Survey that tracks persons not in the labor force by reason, there is a modest rise in women citing reasons other than discouragement for not actively looking for work. Other reasons include school or family responsibilities, ill health, transportation problems and a variety of other unspecified reasons. Recent studies on labor force participation decisions suggest that unmarried women with dependent children who are head of households have postponed re-entry into the labor force as compared to married women with dependent children.

Labor Market Distortions

Mulligan (2011) is among the most prominent proponents of labor market distortions in the form of an expanded social safety net to explain the slow re-entry of workers into the labor force. He notes that homeowners may have taken advantage of mortgage renegotiation contracts and students of student loan renegotiation opportunities. The 2009 stimulus package also increased the threshold of Supplemental Nutrition Assistance Program (SNAP) benefits, commonly known as food stamps.

Most important, the extension of unemployment benefits to unprecedented lengths raised the reservation wage. Unemployment insurance durations increased from 26 weeks before the recession to up to 99 weeks in 2010 and 2011. Mazumder (2011) argued that this impact alone

accounted for one percent of the unemployment rate, and others (see Grubb 2011) argued the effect was even greater. However, Rothstein (2012) countered that the effect was significantly smaller – about 0.3 percentage points – with the reduction in search effort among those receiving benefits even smaller.

Though the evidence is inconclusive, expanded unemployment benefits certainly impacted the reservation wage. There is a plethora of economic analysis of reservation wage components and the relationship between duration of unemployment insurance benefits and the reservation wage. Clearly, an unemployed worker would have little incentive to accept a position paying only marginally more than his/her monthly unemployment relief. Transactions cost associated with employment, especially transportation and child care, would mitigate against taking a lower paying job in many circumstances.

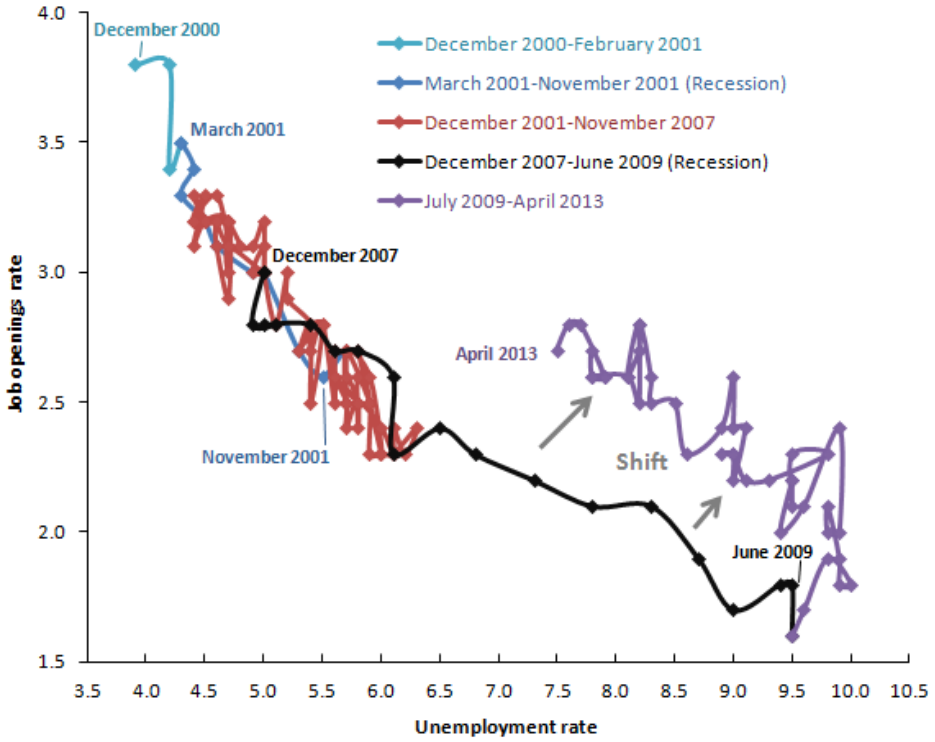
Finally, the unique circumstance of the role of the housing market in the economic recession of 2008-2009 has been identified as another potential distortion in labor supply. Persons who found themselves with mortgages higher than the market value of their homes may have been unable or unwilling to sell the home at current market rates to relocate for another job – sometimes called "house lock." This would certainly increase the friction associated with the matching of qualified workers with willing employers and appears to be supported by interstate migration rates that are at a post-WWII low. While this explanation appeals to common sense, there is little consensus on its cumulative impact on unemployment rates. Farber (2012) estimated that the nearly 11 million homeowners with negative equity accounted for only about 10% of households in the country, a proportion that is unlikely to have a significant impact on labor mobility.

Skills Mismatch

One way to conceptualize the competing explanations for labor market failure is to examine the Beveridge Curve, named for the British economist William Beveridge who postulated a negative relationship between job vacancy rate and unemployment rate. The curve is created by using data from the Job Opening and Labor Turnover Survey (JOLTS) and the unemployment rate, both provided by BLS.

Movements along the Beveridge curve are explained by cyclical factors such as changes in aggregate demand and changes in worker productivity. A shift in the Beveridge curve is explained by structural factors such as skills mismatch, or a widened gap between the skills employers want and the skills the unemployed have.

Figure 5. The Beveridge Curve, Seasonally Adjusted, December 2000-April 2013.



Source: Bureau of Labor Statistics, http://www.bls.gov/opub/ted/2013/ted_20130612.htm.

Another way to consider the relationship is that movements along the Beveridge curve correspond to changes in firms' incentives to hire, while shifts in the Beveridge curve correspond to changes in firms' ability to hire. This is the theoretical context in which most tests of structural vs. cyclical explanations for higher than expected post-recession unemployment rates have been tested.

The evidence for a structural shift created by skills mismatch is mixed, but the weight of the evidence is negative. Faberman and Mazumder (2012) hypothesized that if workers were scarce in occupations in high demand, employment would have returned to 2007 pre-recession levels for those workers. However, if workers at all skill levels experienced reduced employment levels, it would indicate that skills mismatch did not explain persistent unemployment. They found some evidence of skills mismatch in certain occupations, notably engineers, but concluded that employment of workers in the middle skill range remained below the pre-recession levels. Interestingly, employment levels for lower skilled workers did not fall as much as for middle skill workers. High skill workers have recovered back to pre-recession levels.

Rothstein (2012) found scant evidence for mismatch as well. He concluded: "(t)here is no sign in the data that employers with jobs to fill are having trouble filling them, except perhaps in a few

isolated and small submarkets such as resource extraction" (p.28). He joins Barlevy (2011) in concluding that labor demand problems both were and are the primary determinant of labor market problems, commenting that "we may wrongly conclude that firms find it more difficult to hire when in fact they are voluntarily choosing to search in a way that reduces the odds of hiring (p. 93)."

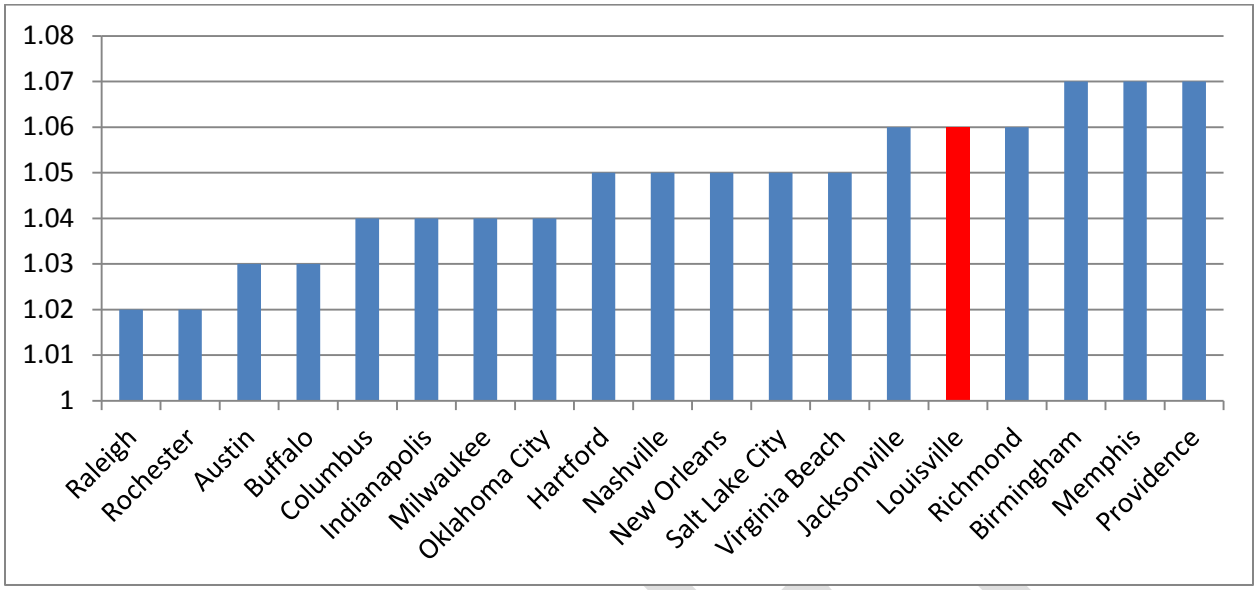
Lazear and Spletzer (2012) considered the possibility that a structural shift in the Beveridge curve induced by mismatch had indeed occurred during the recession but had either been temporary or was industry specific, both of which could have led scholars to underestimate mismatch as a structural issue. They constructed an industrial mismatch index for the period 2007- late 2011 and industrial mismatch rose substantially during the recession and abated quickly thereafter. Despite the fact that the unemployment rate was about twice as high in 2011 as in 2007, the industrial composition of mismatch was largely unchanged. They concluded that there is "no evidence that that the recession resulted in a long-lasting skills gap that would require retraining experienced workers to work in different industries (p. 20)." That is, the number of unemployed persons increased but industries with high unemployment to vacancy rates before the recession had high unemployment to vacancy rates after the recession.

The Education Gap

The skills gap and education gap are not the same thing just as educational attainment and skill level are different concepts, but they are related. The education gap is the extent to which the demand for workers with certain levels of education attainment exceeds the supply of those workers. Kentucky and the Louisville area economy lag behind the nation in educational attainment. A 2012 Brookings report analyzed the education gap in larger metropolitan areas. The report concluded that an education gap was present in most large metropolitan areas, noting that about 40% of the US population age 25 and over that had a high school diploma or less lived in large metro areas but only 25% of jobs advertised online were open to them (Rothwell, 2012, p. 6).

To understand how the conclusion was reached, Rothwell (2012) calculated the demand for workers using Help Wanted Online (HWOL) data and the supply of workers across six categories of educational attainment, from less than high school to doctorate/professional degree. Data on attainment was taken from the ACS. The education gap index was calculated as the years of education required by the average job vacancy in an MSA divided by the years of education attained by the average person of working age in that MSA. Values below zero indicate that the average worker has enough education to do the average job; values above zero suggest the average education level is less than the region's demand for educated workers (Rothwell, 2012, p. 4).

Figure 6. Education Gap Index for Selected Metropolitan Areas.



Source: Education, Job Openings and Unemployment in Metropolitan Areas, Brookings Institution, 2012.

The highest education gap was in the McAllen, Texas MSA (1.14) and the lowest in the Madison, Wisconsin MSA (0.99). Louisville's gap was 1.06, in the top third of the MSAs with populations between 1-2 million. The average years of education required by vacant jobs for the Louisville MSA was 14.2, an associate's degree or some college. The average years of education attained by working age population (25 or older) was 13.4, a high school diploma or equivalent but less than an associate's degree.

To bring the education gap into fuller perspective, Table 8 presents the share of openings for Louisville MSA by the six degree categories used in the Brookings report and the percent of the MSA's population with those degrees from 2012 ACS data.

The demand for workers with some college is equal to the supply of workers with some college in the Louisville MSA. At all education levels above some college, demand exceeds supply. At all education levels below some college, supply exceeds demand.

Finally, there are greater than 5 job openings per every unemployed worker with a bachelor's degree or more in the Louisville MSA but only one opening for every unemployed worker with a high school diploma. Although the data are not available to draw a definitive conclusion, it is very likely that there is less than one job opening for every worker without a high school diploma.

Table 6. Share of Job Openings Requiring Certain Levels of Educational Attainment and the Percent of Louisville MSA Population Have that Level of Educational Attainment, 2012.

Education Level	Share of Openings	Share of Population	Unemployment Rate	Annual Job Openings Per Unemployed Worker
Doctorate or Professional	5%	3%	N	N
Master's	9%	7%	N	N
Bachelor's	25%	16%	3.40%	5.2
Associate's	11%	7%	N	N
Some College	23%	23%	7.50%	1.8
High School Diploma or Equivalent	21%	31%	10.40%	1
Less than High School Diploma	7%	13%	18%	N

Source: *Education, Job Openings and Unemployment in Metropolitan Areas*, Brookings Institution, 2012 and ACS 1 Year Estimates, Census Bureau.

N: The ACS estimates are available for only four educational attainment categories: Bachelor's or above, Associate's or some college, high school diploma, and less than high school diploma,

Summary and Conclusions

The structural vs. cyclical debate surrounding the high post-recession unemployment rate may be highly enjoyable for economists, but can leave policymakers perplexed. History will likely judge both the structural and cyclical camps to be right to some extent. The following are some issues that have emerged from the research that are important to understand regional and local unemployment.

- Aggregate demand remains sluggish despite the federal stimulus and uncertainty remains high about economy's path to full recovery.
- Employers may inflate qualifications (i.e., require a Bachelor's degree when one is not needed for the position) on the erroneous assumption that high overall unemployment rates means a large pool of unemployed workers with college degrees.
- Similarly, employers may assume that qualified workers at all education levels are willing to work for below-market rates based on the overall unemployment rate, when unemployment rates for skilled workers may actually be very low.
- Employers may discriminate against the long-term unemployed. Technology allows employers to quickly eliminate certain applicants from their hiring pool, including persons who do not have the desired levels of education and the long-term unemployed.

- Unemployed workers may have unrealistic expectations about achieving the same wages, benefits and working conditions as they had before the recession.
- The extension of unemployment benefits and expansion of other assistance programs increased the reservation wage, inducing some workers to delay their jobs search in hopes that the economy would recover quickly. This decision may have put them into the category of "long term unemployed" which reduced their marketability to potential employers.
- Distortions in the housing market may have created "house lock" for some workers, making it difficult or impossible to relocate for a new job.
- Skills mismatch is more evident at the local level than the national level, and it may explain why certain workers have more difficulty finding employment than others.

Annual employment data produced by the ACS demonstrates that unemployment rates are not equally distributed over the local population. Educational attainment appears to be the driver of employment disparities, especially in Kentucky and the Louisville regional economy. Certain groups of citizens, especially young people who do not finish high school, are especially at risk.

The education gap and skills mismatch are intertwined. Even though the Louisville economy has a mix of high, medium and low skill jobs, evidence that the demand for workers with a bachelor's degree or higher will exceed the supply in the Louisville regional labor market but that the supply of workers without a bachelor's degree will exceed local demand is concerning.

In early 2014 the Urban Studies Institute will complete a comprehensive report on skills mismatch in the Louisville regional economy sponsored by Kentuckiana Works. The results will help define the skills that will be demanded of the regional workforce in future years. It will also describe the current capacity of the regional secondary and higher education systems to produce graduates with those skills. The report should be useful as policymakers look for ways to stimulate economic growth based on a balanced and productive regional labor force.

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