

# State of the Workforce Report X: Jefferson County

Funding for this project was provided by:



Alabama Department of Labor



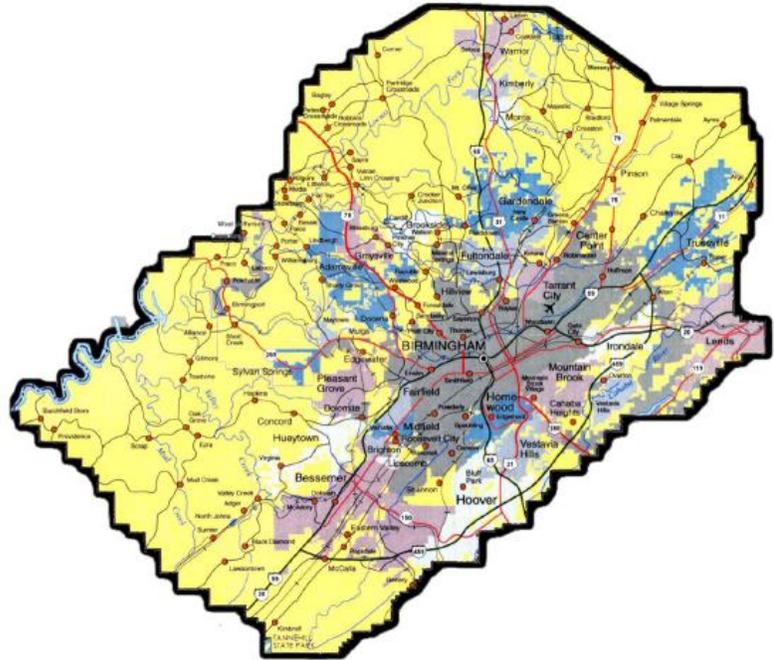
Alabama Department of Postsecondary Education



Alabama Industrial Development Training



The University of Alabama



*April 2016*

Center for Business and Economic Research  
Culverhouse College of Commerce

University of Alabama Center for Economic Development

Institute for Social Science Research

**THE UNIVERSITY OF ALABAMA**



# State of the Workforce Report X: Jefferson County



*April 2016*

*by*

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## Acknowledgments

Completion of this project was due to the timely contributions of many people. We are very grateful to the Labor Market Information (LMI) Division of the Alabama Department of Labor (ADOL). In addition to financial support from ADOL, LMI provided significant staff time and this report would not have been possible without large amounts of data from LMI.

Many thanks also to our colleagues at the Center for Business and Economic Research, the Capstone Poll, the Institute for Social Science Research, and the University of Alabama Center for Economic Development for their help on various phases of this research project. Last, but not least, much gratitude is owed to the thousands of Alabamians who responded to the extensive survey on the state's workforce and related issues, as well as to the community and industry leaders whose work on these issues provides the critical data required in reports of this kind.

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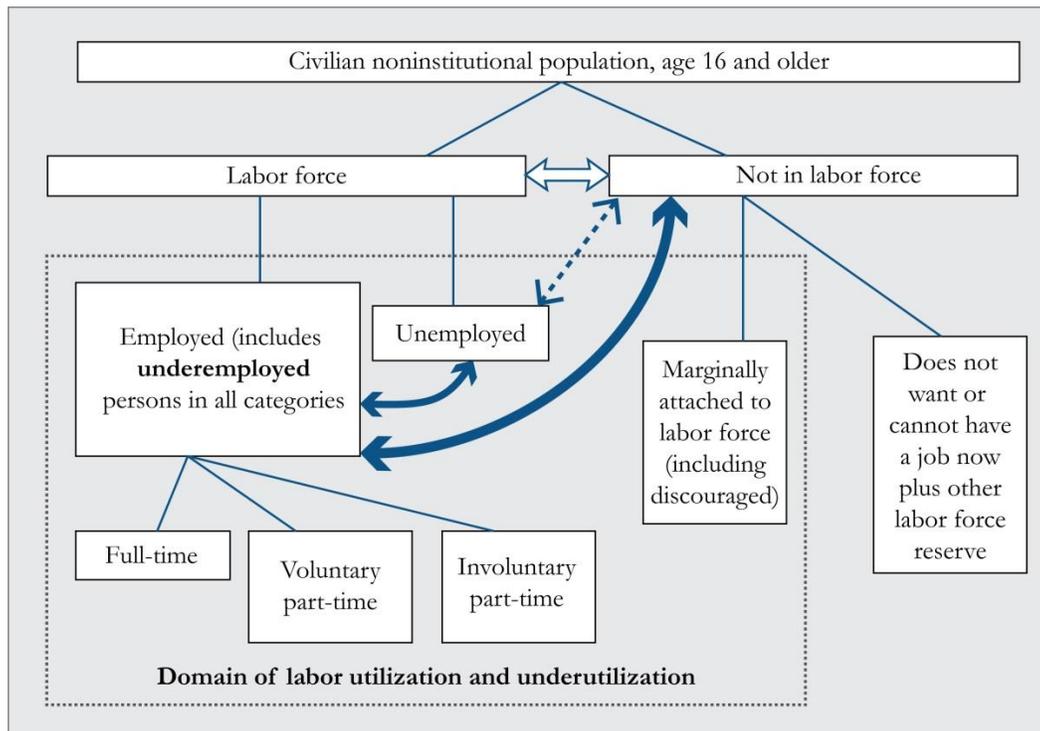
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## Summary

- This report analyzes workforce supply and demand issues using available metrics of workforce characteristics for Jefferson County, Alabama and presents implications and recommendations.
- Jefferson County had a 6.0 percent unemployment rate in March 2016, with 18,740 unemployed. An underemployment rate of 22.1 percent for 2015 means that the county has an 83,163-strong available labor pool that includes 64,423 underemployed workers who are looking for better jobs.
- Congestion worsened in 2015 compared to 2014 and remains a major concern as the county economy recovers from the last recession. From 2005 to 2014, net in-commuting rose from 56,586 to 80,880 while the total number of in- and out-commuters increased to 211,618 from 181,406. This, combined with considerable commuting within the county, suggests a strong need for constant maintenance and development of transportation infrastructure and systems to ensure that the movement of workers and goods is not impeded.
- By sector the top five employers in the county are health care and social assistance; retail trade; accommodation and food services; educational services; and manufacturing. In first quarter 2015 these five industries provided 181,824 jobs, 52.0 percent of the county total. Of these leading employers two—manufacturing and health care and social assistance—paid more than the county’s \$3,822 average monthly wage. Economic development should continue to diversify and strengthen the county’s economy by retaining, expanding, and attracting more high-wage providing industries; workforce development should focus on preparing workers for these industries.
- On average 15,863 jobs were created per quarter from second quarter 2001 to first quarter 2015; quarterly net job flows averaged 1,002. Job creation is the number of new jobs that are created either by new businesses or through expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.
- The top five high-demand occupations are Registered Nurses; Home Health Aides; Licensed Practical and Licensed Vocational Nurses; Personal Care Aides; and Health Specialties Teachers, Postsecondary.
- The top five fast-growing occupations are Personal Care Aides; Biological Science Teachers, Postsecondary; Physical Therapist Assistants; Skincare Specialists; and Diagnostic Medical Sonographers.
- The top 50 high-earning occupations are mostly in health, management, business, and engineering fields and have a minimum salary of \$89,399. Seven of the top 10 are health occupations, two are in management, and one is a legal occupation.
- Of the top 40 high-demand, 20 fast-growing, and 50 high-earning occupations, 10 occupations are in high-demand and high-earning and 12 are both high-demand and fast-growing. Only one occupation— Personal Financial Advisors—is in all the three categories.

- Of the county's 723 occupations, 64 are expected to decline over the 2012 to 2022 period, with 20 sharply declining by at least 12.0 percent and losing a minimum of 10 jobs each. Education and training for these 20 occupations should slow accordingly.
- Skill and education requirements for jobs keep rising. Educational and training requirements of high-demand, fast-growing, and high-earning occupations demonstrate the importance of education in developing the future workforce. In the future, more jobs will require postsecondary education and training at a minimum.
- The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs indicates a strong need for training in these skills. For Jefferson County the pace of training needs to increase for systems, complex problem solving, and social skills. The scale of training should be raised for basic and social skills. Ideally, all high school graduates should possess basic skills so that postsecondary and higher education can focus on other and more complex skills. Employers should be an integral part of planning for training as they can help identify future skill needs and any existing gaps.
- Job growth is expected to exceed population and labor force growth through 2030. From a 2012 base, worker shortfalls of about 54,400 and 110,400 are estimated by 2022 and 2030, respectively. A focus on both worker skills and the expected shortfalls, especially for critical occupations, must be a top priority through 2030. Strategies to address skill needs and worker shortfalls could include: (1) improvements in education and its funding; (2) continuation and enhancement of programs to assess, retrain, and place dislocated workers; (3) focus on hard-to-serve populations (e.g. out-of-school youth); (4) lowering the high school dropout rate; (5) use of economic opportunities to attract new and younger residents; (6) facilitation of in-commuting; and (7) encouragement of older worker participation in the labor force.
- Improving education is important because (i) a highly educated and productive workforce is a critical economic development asset, (ii) productivity rises with education, (iii) educated people are more likely to work, and (iv) it yields high private and social rates of return on investment. Workforce development must view all of education and other programs (e.g. adult education, career technical training, worker retraining, career readiness, etc.) as one system. Funding to support workforce development may require tax reform at state and local levels and should provide for flexibility as workforce needs change over time and demand different priorities. Publicizing both private and public returns to education can encourage individuals to raise their own educational attainment levels, while also promoting public and legislative support for education.
- Higher incomes that come with improved educational attainment and work skills will help to increase personal income for the county as well as raise additional local (county and city) tax revenues. This is important, especially for a county that has declining or low population and labor force growth rates.
- Together, workforce development and economic development can build a strong, well-diversified Jefferson County economy. Indeed, one cannot achieve success without the other.

## Labor Utilization and Supply Flows



Source: Addy et al<sup>1</sup> and Canon et al<sup>2</sup>

The chart above presents labor utilization and supply flows that explain labor market dynamics in view of recent study findings. The civilian noninstitutional population age 16 and above is comprised of participants in the labor force and nonparticipants. The labor force is made of employed and unemployed persons; the unemployed do not have a job but are actively searching for work. Employed persons include fully employed and underemployed persons in all categories of work (full-time, voluntary part-time, and involuntary part-time). Nonparticipants in the labor force include retirees (voluntary and involuntary), people who do not want to or cannot work for various reasons (e.g., disability, caring for family members, in school or training, etc.), discouraged workers, and other labor force reserves. It has been suggested that a subgroup of nonparticipants referred to as the “waiting group” is more likely than the rest of the nonparticipants to take a job if wages and conditions are satisfactory, but does not actively search for work. New evidence has shown that between January 2003 and August 2013, the flow of nonparticipants into employment was 1.6 times that of unemployed persons transitioning into employment, which may be due to the presence of the waiting group<sup>1,2</sup>. Nonparticipant flows to employment are larger in services, management, and professional occupations while unemployed flows to employment are higher in physically intensive occupations such as construction workers and miners. Industry effects should vary by the type and number of occupations they contain. This finding enhances the common understanding of labor market dynamics and influences workforce availability and skills gap analyses.

<sup>1</sup> Addy, S.N., Bonnal, M., and Lira, C. (2012). Towards a More Comprehensive Measure of Labor Underutilization: The Alabama Case, *Business Economics*, vol. 47(3).

<sup>2</sup> Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was “Unemployed”, *The Regional Economist*, January.

## Workforce Supply

### Labor Force Activity

The labor force includes all persons in the civilian noninstitutional population who are age 16 and over who have a job or are actively looking for one. Typically, those who have no job and are not looking for one are not included (e.g. discouraged workers, students, retirees, and the disabled).

Table J.1 shows labor force information on Jefferson County for 2015 and for March 2016.

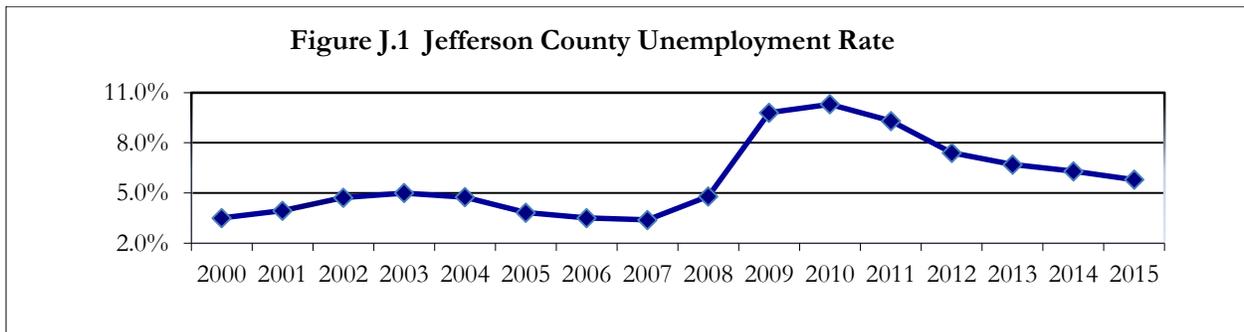
Alabama labor force information is available from the Labor Market Information (LMI) Division of the Alabama Department of Labor. LMI compiles data in cooperation with the U.S. Bureau of Labor Statistics. Jefferson County had an unemployment rate of 5.8 percent for 2015, below Alabama’s 6.1 percent rate. By March 2016 unemployment slightly increase to 6.0 percent, as the state’s rate rose to 6.2 percent.

**Table J.1 Jefferson County Labor Force Information**

	2015 Annual Average			
	Labor Force	Employed	Unemployed	Rate (%)
Jefferson County	309,229	291,303	17,926	5.8
Alabama	2,146,157	2,015,189	130,968	6.1
United States	157,130,000	148,833,000	8,296,000	5.3
	March 2016			
	Labor Force	Employed	Unemployed	Rate (%)
Jefferson County	310,378	291,638	18,740	6.0
Alabama	2,156,616	2,023,744	132,872	6.2
United States	158,854,000	150,738,000	8,116,000	5.1

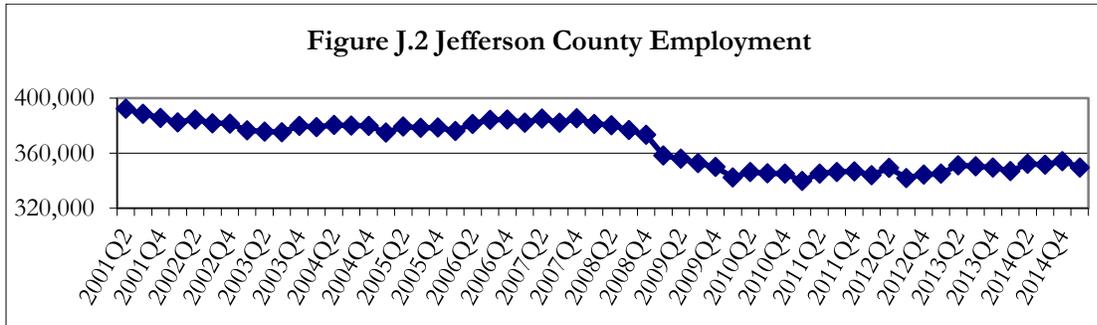
Source: Alabama Department of Labor and U.S. Bureau of Labor Statistics.

Annual unemployment rates for 2000 to 2015 are shown in Figure J.1. The county’s unemployment rate rose from 3.5 percent in 2000 to 5.0 percent in 2003 primarily because of the 2001 national economic recession. Employment gains since 2005, resulting from successful economic development efforts at both state and local levels, took unemployment to a low of 3.4 percent in 2007. However, the last recession raised the county unemployment rate to a high of 10.3 percent in 2010. The rate declined to 5.8 percent in 2015 and continue to drop although the effects of the recession still persist. Year-to-date monthly labor force data point to a slightly higher unemployment rate in 2016 than in 2015, but it is expected to drop.



Source: Alabama Department of Labor.

Nonagricultural employment, which measures jobs located in the county, averaged 366,274 quarterly from the second quarter of 2001 to the first quarter of 2015 (Figure J.2). The number of jobs has been trending downwards since the fourth quarter of 2007 and is yet to show any significant improvement. However, in the fourth quarter of 2014, employment rose to about 354,193 jobs, the highest level since the second quarter of 2009.



Source: Alabama Department of Labor and U.S. Census Bureau.

Table J.2 shows worker distribution by age in Jefferson County for the first quarter of 2015. The county’s workforce is slightly older than the state’s; workers age 55 and over are 21.5 percent of the nonagricultural employment versus 21.0 percent for the state. Those who are age 65 and over constitute 5.0 percent, compared to 4.9 for Alabama. Labor force participation of younger residents must increase to meet long term occupational projections for growth and replacement or older workers may have to work longer.

**Table J.2 Workers by Age Group (First Quarter 2015)**

Age Group	Nonagricultural Employment	
	Number	Percent
14-18	4,623	1.3
19-24	35,010	10.0
25-34	80,001	22.9
35-44	78,442	22.4
45-54	76,494	21.9
55-64	57,742	16.5
65+	17,322	5.0
55 and over total	75,064	21.5
Total all ages	349,634	100.0

Note: Rounding errors may be present. Nonagricultural employment is by place of work, not residence.

Source: U.S. Census Bureau, Local Employment Dynamics Program.

### Commuting Patterns

From 2005 to 2014, net in-commuting of workers to Jefferson County rose from 56,586 to 80,880 (43 percent) and the total number of in- and out-commuters increased from 181,406 to 211,618 (Table J.3). Average commute time and distance were up in 2015 from 2014 implying that congestion worsened. With the increased commuting within the county, congestion will remain a major problem in some areas. As the county economy recovers from the last recession, congestion is likely to worsen. Thus, county transportation infrastructure and systems must be maintained and developed to ensure that the flow of goods and movement of workers are not interrupted.

**Table J.3 Commuting Patterns in Jefferson County**

Year	County Inflow	County Outflow
	Number	Number
2005	118,996	62,410
2006	118,401	69,088
2007	134,799	63,326
2008	136,685	66,672
2009	137,007	61,316
2010	138,058	60,252
2011	140,758	59,268
2012	144,666	59,302
2013	146,771	61,201
2014	146,249	65,369
		Percent of workers
<b>Average commute time (one-way)</b>		<b>2010 2011 2012 2013 2014 2015</b>
Less than 20 minutes		51.78 52.7 46.0 43.2 45.3 47.9
20 to 40 minutes		38.34 35.3 41.7 35.8 42.7 33.7
40 minutes to an hour		5.93 8.3 5.2 6.8 2.0 10.4
More than an hour		1.58 2.1 2.8 4.6 0.0 2.5
<b>Average commute distance (one-way)</b>		<b>2010 2011 2012 2013 2014 2015</b>
Less than 10 miles		46.15 46.4 41.2 38.4 39.3 41.3
10 to 25 miles		38.87 36.3 41.2 37.1 45.2 38.1
25 to 45 miles		10.93 11.4 12.4 15.1 9.6 12.3
More than 45 miles		1.21 2.5 2.9 6.3 0.0 3.9

Note: Rounding errors may be present.

Source: U.S. Census Bureau; Alabama Department of Labor; and Center for Business and Economic Research, The University of Alabama.

## Population

Jefferson County's population shrank by 0.5 percent from 2000 to 2010, while the state had 7.5 percent growth (Table J.4). However, the 2015 population estimate indicates that the county's population growth reversed and grew by 0.3 percent since 2010. Table J.5 shows Jefferson County's population counts, estimates, and projections by age group. The population aged 65 and over continues to grow rapidly after 2010, as the first of the baby boom generation turned 65 in 2011. Growth of the major working age group (20-64) will decline through 2030. This poses a challenge for workforce development. Employment growth is expected to outpace labor force growth in the medium to long term. This, together with significant in-commuting, presents communities with the opportunity to attract new residents. However, growing the population may require more investment in amenities and infrastructure.

**Table J.4 Jefferson County Population**

	1990 Census	2000 Census	2010 Census	2015 Estimate	Change 2000-2010	% change 2000-2010	Change 2010-2015	% change 2010-2015
Jefferson County	651,525	662,047	658,466	660,367	-3,581	-0.5	1,901	0.3
Alabama	4,040,587	4,447,100	4,779,736	4,858,979	332,636	7.5	79,243	1.7
United States	248,709,873	281,421,906	308,745,538	321,418,820	27,323,632	9.7	12,673,282	4.1

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

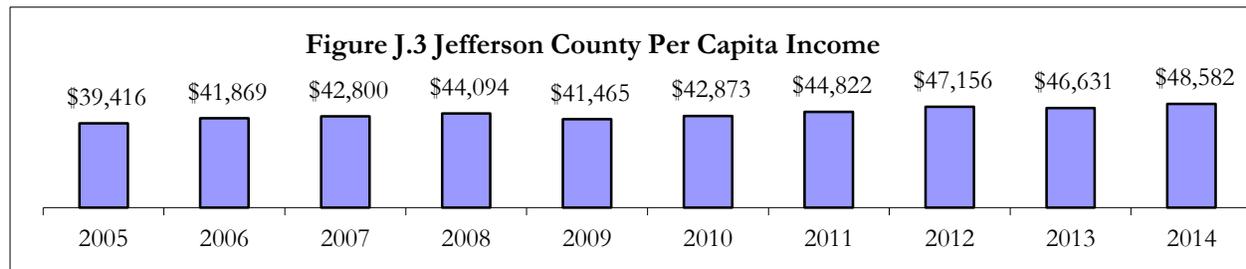
**Table J.5 Population by Age Group and Projections**

Age Group	2000	2010	2012	2022	2030
0-19	182,231	172,834	171,846	174,449	175,485
20-24	45,580	46,405	45,408	41,435	42,155
25-29	47,399	48,533	48,401	44,112	42,071
30-34	45,466	44,764	46,345	46,291	42,369
35-39	50,592	42,291	40,694	46,111	43,777
40-44	53,081	41,302	41,916	42,957	44,659
45-49	49,873	46,460	42,841	39,795	44,026
50-54	41,596	48,773	47,499	38,380	39,344
55-59	30,607	44,702	46,364	40,226	36,840
60-64	25,337	35,959	39,096	42,067	34,925
65+	90,285	86,443	89,599	112,761	129,200
20-64 Total	389,531	399,189	398,564	381,374	370,166
Total Population	662,047	658,466	660,009	668,584	674,851
<b>Change from 2012</b>					
0-19				1.5%	2.1%
20-64				-4.3%	-7.1%
Total Population				1.3%	2.2%

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

### Per Capita Income

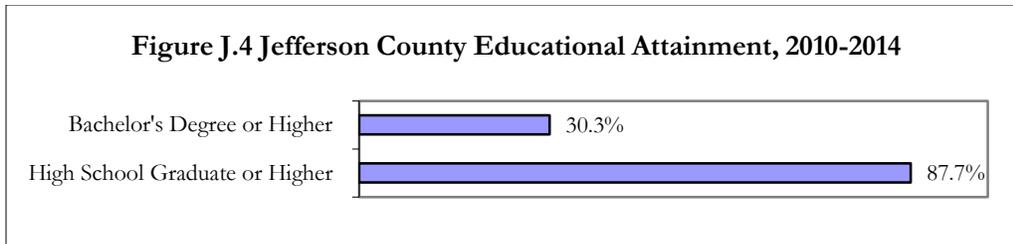
Per capita income (PCI) in Jefferson County was at \$48,582 in 2014 (Figure J.3), up 30.0 percent from 2005, and \$11,070 or 30.0 percent above the state average of \$37,512.



Source: U.S. Bureau of Economic Analysis and Center for Business and Economic Research, The University of Alabama.

### Educational Attainment

Educational attainment in 2010 to 2014 of Jefferson County residents who were 25 years old and over is shown in Figure J.4 and Table J.6. About 88.0 percent graduated from high school and 30.0 percent held a bachelor’s or higher degree, which is above the state’s average educational attainment. Educational attainment is important as skills rise with education and high-wage jobs for the 21st century demand more skill sets.



Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

**Table J.6 Educational Attainment of Population 25 Years and Over, 2010-2014**

	<u>Jefferson County</u>
Total	443,123
No schooling completed	3,528
Nursery to 4th grade	1,050
5th and 6th grade	3,734
7th and 8th grade	6,697
9th grade	6,842
10th grade	10,748
11th grade	13,939
12th grade, no diploma	7,775
High school graduate/equivalent	117,854
Some college, less than 1 year	23,399
Some college, 1+ years, no degree	79,552
Associate degree	33,605
Bachelor's degree	81,626
Master's degree	33,145
Professional school degree	12,844
Doctorate degree	6,785

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

### **Underemployment and Available Labor**

Labor force data are often limited to information on the employed and the unemployed that is available from government sources. However, this information is not complete from the perspective of employers. New or expanding employers are also interested in underemployment because current workers are potential employees. In fact, experience requirements in job ads are evidence that many prospective employers look beyond the unemployed for workers.

Workers in occupations that underutilize their experience, training, and skills are underemployed. These workers might look for other work because their current wages are below what they believe they can earn or because they do not wish to be underemployed. Underemployment occurs for various reasons including (i) productivity growth, (ii) spousal employment and income, and (iii) family constraints or personal preferences. Underemployment is unique to areas because of the various contributing factors combined with each area's economic, social, and geographic characteristics.

The existence of underemployment identifies economic potential that is not being realized. It is extremely difficult to measure this economic potential because of uncertainties regarding additional income that the underemployed can bring to an area. It is clear, however, that underemployment provides opportunities for selective job creation and economic growth. A business that needs skills prevalent among the underemployed could locate in places that have such workers regardless of those areas' unemployment rates. A low unemployment rate, which may falsely suggest limited labor availability, is therefore not a hindrance to the business.

The underemployed present a significant labor pool because they tend to respond to job opportunities that they believe are better for reasons that include (i) higher income, (ii) more benefits, (iii) superior terms and conditions of employment, and (iv) a better match with skills, training, and experience. The underemployed also create opportunities for entry level workers as they leave lower-paying jobs for better-paying ones. Even if their previously held positions are lost or not filled (perhaps due to low unemployment or adverse economic conditions), there is economic growth in gaining higher-paying jobs. Such income growth boosts consumption, savings, and tax collections. Quantifying the size of the underemployed is a necessary first step in considering this group for economic development, workforce training, planning, and other purposes. It is important to note that the underemployed can take on more responsibilities and earn more income, but they cannot be counted on to address possible future worker shortages as they are already employed.

Jefferson County had an underemployment rate of 22.1 percent in 2015. Applying this rate to March 2016 labor force data means that 64,423 workers were underemployed (Table J.7). Adding the unemployed gives a total available labor pool of 83,163 for the county. This is 4.4 times the number of unemployed and is a more realistic measure of the available labor pool in the county. Prospective employers must be able to offer the underemployed higher wages, better benefits or terms of employment, or some other incentives to induce them to change jobs. The underemployed workers are willing to commute longer times for a better job but for shorter distances compared to all workers. For the one-way commute, 30.0 percent are prepared to travel 20 or more minutes longer and 23.3 percent will go 20 or more extra miles.

**Table J.7 Underemployed and Available Labor**

	Jefferson County
Labor Force	310,378
Employed	291,638
Underemployment rate	22.1%
Underemployed workers	64,423
Unemployed	18,740
<b>Available labor pool</b>	<b>83,163</b>

Note: Rounding errors may be present. Based on March 2016 labor force data and the 2015 underemployment rate.

Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

Underemployment rates for counties, Workforce Development Regions (WDRs), and the state were determined from an extensive survey on the state's workforce. A total of 329 complete responses were obtained from Jefferson County in 2015. About 50.0 percent (163 respondents) were employed, of whom 36 respondents stated that they were underemployed. A lack of job opportunities in their area, low wages at available jobs, childcare responsibilities, other family or

personal obligations, and other undisclosed reasons were the primary reasons given for being underemployed. Ongoing economic development efforts can help in this regard. Nonworkers cite retirement, disability or other health concerns, other undisclosed reasons, and social security limitations as the main reasons for their status. Some of these workers may become part of the labor force if their problems can be addressed. Indeed a recent study found that the flow of labor force nonparticipants to employment status was 60 percent more than that of unemployed workers who gain employment.<sup>3</sup> This implies that the county's available labor pool could be larger than estimated in this report.

A comparison of underemployed workers to the overall workforce in Jefferson County shows that:

- Fewer work full-time and more of the part-timers would like to work full-time.
- More hold multiple jobs.
- They have longer commute times and distances.
- More work in education, training, and library; protective services; building and grounds cleaning and maintenance; sales and related; office and administrative support; construction and extraction; installation, maintenance, and repair; production; and transportation and material moving occupations.
- They have shorter job tenure and earn less.
- More are in mining; construction; retail trade; transportation and warehousing; finance and insurance; administrative and support and waste management and remediation; educational services; and public administration industries.
- Fewer believe their jobs fit well with their education and training, skills, and experience.
- More believe they are qualified for a better job.
- More would leave their current jobs for higher income if offered as little as five percent more.
- They are more willing to commute longer times for a better job but for shorter distances.
- Fewer are satisfied with their current jobs.
- More have sought better jobs in the preceding quarter.
- More are willing to train for a better job even if they have to pay the full cost of training.
- Fewer are married and more are female.
- Their median age, 53, is three years older than that of all employees.
- Fewer are Hispanic.
- Fewer are African-American or other nonwhite ethnic groups.
- More have higher educational attainment.

Table J.8 shows the detailed survey results on job satisfaction and willingness to train. Responses for overall job satisfaction as well as various aspects of the job were obtained. In general most of the county's workers (74.2 percent) are satisfied or completely satisfied with their jobs. Workers are most satisfied with their work shift and least satisfied with their earnings. Fewer underemployed workers (63.9 percent) are satisfied or completely satisfied with their jobs. The underemployed are also most satisfied with their work shift and most dissatisfied with their earnings.

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<sup>3</sup> Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was "Unemployed", *The Regional Economist*, January.

Workers are generally willing to train for a new or better job, with the underemployed being much more willing (66.7 percent vs. 54.9 percent). However, the willingness to train is strongly influenced by who pays for the cost of training. Workers typically do not wish to pay for the training and so their willingness is highest when the cost is fully borne by government and lowest when the trainee must pay the full costs. Underemployed workers are more willing to train for the new or better job even if they have to pay the full cost of training. The results show that workers expect the government to bear at least a part of the training cost. This expectation may result from worker awareness of government workforce programs that provide such assistance.

**Table J.8 Job Satisfaction and Willingness to Train (Percent)**

		Job Satisfaction				
		Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
<b>Employed</b>						
Overall		3.7	1.8	19.6	32.5	41.7
	Earnings	9.2	11.0	20.3	22.7	35.6
	Retention	4.3	8.6	14.1	21.5	50.9
	Work	4.3	2.5	7.4	22.1	63.8
	Hours	3.1	1.8	14.1	22.1	58.9
	Shift	0.6	3.1	9.2	16.6	69.9
	Conditions	1.8	3.1	15.3	28.2	51.5
	Commuting Distance	1.8	4.9	8.6	19.0	65.0
<b>Underemployed</b>						
Overall		11.1	5.6	19.4	36.1	27.8
	Earnings	27.8	16.7	22.2	13.9	19.4
	Retention	8.3	16.7	25.0	27.8	22.2
	Work	13.9	2.8	16.7	13.9	52.8
	Hours	2.8	0.0	22.2	27.8	47.2
	Shift	0.0	2.8	16.7	16.7	63.9
	Conditions	2.8	11.1	19.4	38.9	27.8
	Commuting Distance	2.8	2.8	16.7	19.4	58.3
		Willingness to Train				
		Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
<b>Employed</b>						
For a new or better job		24.1	3.8	15.8	17.3	37.6
	If paid by trainee	43.6	21.8	21.8	6.9	3.0
	If paid by trainee and government	6.9	16.8	38.6	19.8	13.9
	If paid by government	4.0	4.0	5.0	9.9	73.3
<b>Underemployed</b>						
For a new or better job		16.7	3.3	13.3	16.7	50.0
	If paid by trainee	48.0	16.0	16.0	12.0	8.0
	If paid by trainee and government	4.0	24.0	32.0	20.0	20.0
	If paid by government	0.0	0.0	8.0	8.0	84.0

Note: Rounding errors may be present.

Source: Center for Business and Economic Research, The University of Alabama.

## Workforce Demand

### Industry Mix

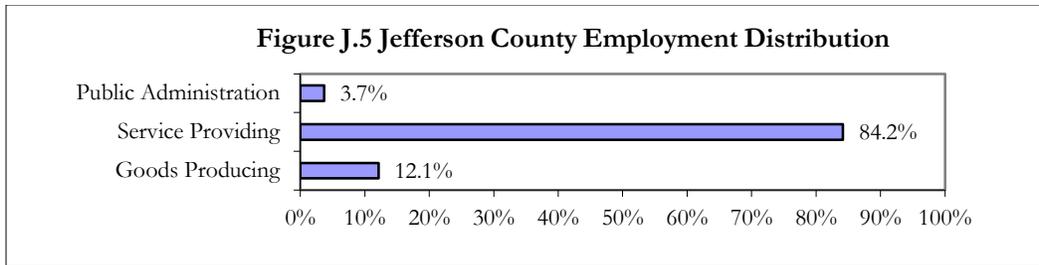
The health care and social assistance sector was the leading employer with 56,757 jobs in the first quarter of 2015 (Table J.9). Rounding out the top five industries by employment are retail trade; accommodation and food services; educational services; and manufacturing. These five industries provided 181,824 jobs, about 52 percent of the Jefferson County total. The average monthly wage across all industries in the county was \$3,822; two leading employers—manufacturing and health care and social assistance—paid more. New hire monthly earnings averaged \$2,195, about 57 percent of the average monthly wage. The highest average monthly wages were for utilities at \$9,965, mining \$6,662, finance and insurance at \$6,302, information at \$5,671, and management of companies and enterprises at \$5,420. Accommodation and food services paid the least at \$1,408. Utilities had the highest average monthly new hire wages with \$8,120, followed by mining at \$4,863 and finance and insurance with \$4,019. Arts, entertainment, and food services paid newly hired workers the least, \$1,066.

**Table J.9 Industry Mix (First Quarter 2015)**

Industry by 2-digit NAICS Code	Total Employment	Share	Rank	Average Monthly Wage	Average Monthly New Hire Earnings
11 Agriculture, Forestry, Fishing and Hunting	83	0.02%	20	\$3,532	\$2,955
21 Mining	1,465	0.51%	19	\$6,662	\$4,863
22 Utilities	6,414	1.83%	16	\$9,965	\$8,120
23 Construction	15,545	4.45%	10	\$4,163	\$3,031
31-33 Manufacturing	24,968	7.14%	5	\$4,556	\$2,989
42 Wholesale Trade	19,889	5.69%	8	\$5,221	\$3,711
44-45 Retail Trade	42,720	12.22%	2	\$2,158	\$1,348
48-49 Transportation and Warehousing	12,444	3.56%	12	\$3,318	\$2,200
51 Information	7,822	2.24%	14	\$5,671	\$3,237
52 Finance and Insurance	24,049	6.88%	6	\$6,302	\$4,019
53 Real Estate and Rental and Leasing	5,351	1.53%	17	\$3,883	\$2,818
54 Professional, Scientific, and Technical Services	19,202	5.49%	9	\$5,363	\$3,629
55 Management of Companies and Enterprises	6,427	1.84%	15	\$5,420	\$2,633
56 Administrative and Support and Waste Management and Remediation Services	22,490	6.43%	7	\$2,017	\$1,650
61 Educational Services	27,533	7.87%	4	\$3,538	\$1,878
62 Health Care and Social Assistance	56,757	16.23%	1	\$3,835	\$2,627
71 Arts, Entertainment, and Recreation	3,615	1.03%	18	\$1,816	\$1,066
72 Accommodation and Food Services	29,846	8.54%	3	\$1,408	\$1,191
81 Other Services (Except Public Administration)	10,054	2.88%	13	\$3,552	\$2,196
92 Public Administration	12,961	3.71%	11	\$3,775	\$2,098
<b>ALL INDUSTRIES</b>	<b>349,635</b>	<b>100.00%</b>		<b>\$3,822</b>	<b>\$2,195</b>

Source: Alabama Department of Labor and U.S. Census Bureau.

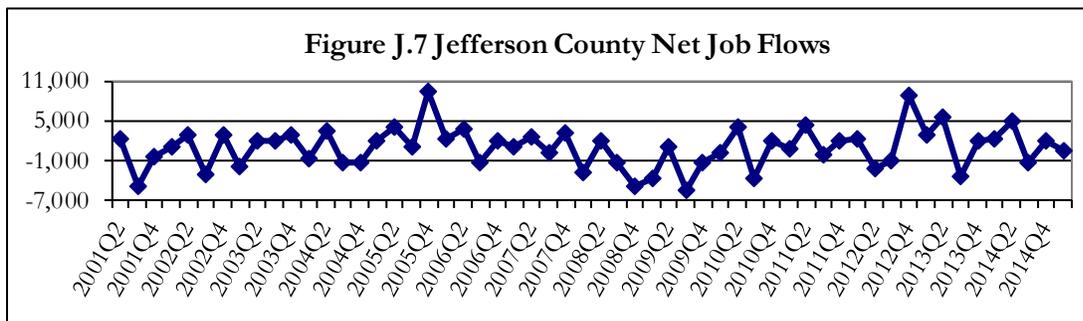
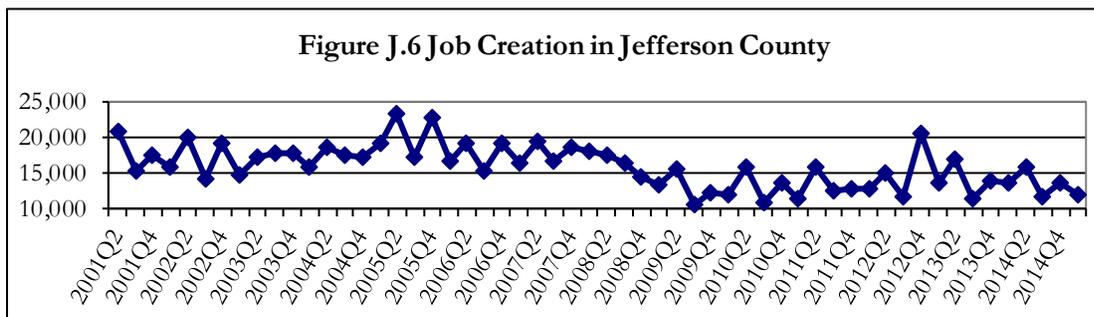
By broad industry classification, service providing industries provided 84.2 percent of all nonagricultural jobs in the county in first quarter 2015 (Figure J.5). Goods producing industries were next with 12.1 percent, and public administration accounted for 3.7 percent.



Source: Alabama Department of Labor and U.S. Census Bureau.

### Job Creation and Net Job Flows

On average, 15,863 jobs were created per quarter from second quarter 2001 to first quarter 2015 (Figure J.6); quarterly net job flows averaged 1,002 (Figure J.7). Both job creation and net job flows fluctuated considerably and were above pre-recession levels in fourth quarter of 2012. However, they resumed fluctuations and dropped in the first quarter of 2015. Quarterly net job flows have ranged from a loss of 5,333 to a gain of 9,370. Job creation refers to the number of new jobs that are created either by new area businesses or through the expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.



Source: Alabama Department of Labor and U.S. Census Bureau.

## High-Demand, Fast-Growing, High-Earning, and Sharp-Declining Occupations

Jefferson County has a total of 723 single occupations. Table J.10 shows the 40 occupations that are expected to be in high-demand, ranked by projected average annual job openings over the 2012 to 2022 period. Many of these occupations are common to the largest employment sector identified earlier (Table J.9): health care and social assistance. Thus, this sector will continue to dominate employment in the county.

The top five high-demand occupations are Registered Nurses; Home Health Aides; Licensed Practical and Licensed Vocational Nurses; Personal Care Aides; and Health Specialties Teachers, Postsecondary. Twelve of the high-demand occupations are also fast-growing. This means that these 12 occupations have a minimum annual growth rate of 2.92 percent, much faster than the county and state occupational growth rates of 1.10 percent and 0.99 percent, respectively.

The 20 fastest growing occupations ranked by projected growth of employment are listed in Table J.11. Most of these occupations are related to health care suggesting that the health care and social assistance industry will continue to be a major employer in the county. The top five fast-growing occupations are Personal Care Aides; Biological Science Teachers, Postsecondary; Physical Therapist Assistants; Skincare Specialists; and Diagnostic Medical Sonographers.

Table J.12 shows the top 50 highest earning occupations in Jefferson County. These occupations are mainly in health, management, business, and engineering fields. Seven of the top 10 listed high-earning occupations are health occupations and two are in management. Any discussion of earnings must consider that wages vary with experience. Occupations with the highest entry wages may not necessarily have the highest average or experienced wages.

The selected high-earning occupations are generally not fast-growing or in high-demand. Indeed, only one occupation-- Personal Financial Advisors—is in all three categories. Ten occupations are both high-earning and in high-demand (Table J.10).

Of the county's 723 single occupations, 64 are expected to decline over the 2012 to 2022 period. Employment in the 20 sharpest-declining occupations will fall by at least 12 percent, with each losing a minimum of 10 jobs over the period (Table J.13). No efforts should be made to sustain these occupations because they are declining as a result of structural changes in the economy of the county.

**Table J.10 Selected High-Demand Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Average Annual Job Openings		
	Total	Due to Growth	Due to Separations
Registered Nurses	525	260	265
Home Health Aides*	125	85	35
Licensed Practical and Licensed Vocational Nurses	110	55	55
Personal Care Aides*	105	95	10
Health Specialties Teachers, Postsecondary	85	60	25
First-Line Supervisors of Construction Trades and Extraction Workers	80	55	25
Industrial Machinery Mechanics	80	35	45
Medical Assistants	75	45	30
Carpenters	75	50	25
Biological Science Teachers, Postsecondary*	70	55	15
<b>Management Analysts</b>	<b>50</b>	<b>30</b>	<b>20</b>
Medical Secretaries*	50	35	10
<b>Construction Managers</b>	<b>45</b>	<b>25</b>	<b>20</b>
Computer Systems Analysts	45	30	15
Computer User Support Specialists	45	25	20
<b>Pharmacists</b>	<b>45</b>	<b>20</b>	<b>25</b>
Physical Therapists*	40	20	15
Medical and Clinical Laboratory Technicians	40	20	20
Cost Estimators	35	15	20
Market Research Analysts and Marketing Specialists	35	25	10
Software Developers, Applications	30	20	10
Civil Engineers	30	15	15
Physical Therapist Assistants*	30	20	10
<b>Medical and Health Services Managers</b>	<b>25</b>	<b>10</b>	<b>15</b>
Healthcare Social Workers	25	15	10
Dental Hygienists	25	15	10
<b>Computer and Information Systems Managers</b>	<b>20</b>	<b>10</b>	<b>10</b>
<b>Personal Financial Advisors*</b>	<b>20</b>	<b>15</b>	<b>5</b>
<b>Software Developers, Systems Software</b>	<b>15</b>	<b>10</b>	<b>5</b>
Nursing Instructors and Teachers, Postsecondary*	15	10	5
Occupational Therapists	15	10	5
<b>Nurse Anesthetists</b>	<b>15</b>	<b>10</b>	<b>5</b>
Nurse Practitioners	15	10	5
Cardiovascular Technologists and Technicians	15	10	5
Diagnostic Medical Sonographers*	15	10	5
Logisticians*	10	5	0
<b>Clinical, Counseling, and School Psychologists</b>	<b>10</b>	<b>5</b>	<b>5</b>
Physician Assistants*	10	5	0
Medical Equipment Repairers*	10	5	5
<b>Surgeons</b>	<b>5</b>	<b>5</b>	<b>5</b>

Note: Occupations are growth- and wages-weighted and data are rounded to the nearest 5. Occupations in bold are also high-earning. \* - Qualify as both high-demand and fast-growing occupations.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

**Table J.11 Selected Fast-Growing Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Percent Change	Annual Growth (Percent)	Average Annual Job Openings
	2012	2022			
Personal Care Aides*	1,530	2,480	62	4.95	105
Biological Science Teachers, Postsecondary*	NA	NA	57	4.66	70
Physical Therapist Assistants*	430	650	52	4.22	30
Skincare Specialists	80	120	48	4.14	5
Diagnostic Medical Sonographers*	230	340	45	3.99	15
Physical Therapist Aides	110	160	38	3.82	5
Home Health Aides*	1,920	2,790	46	3.81	125
Logisticians*	140	200	40	3.63	10
Physician Assistants*	140	200	40	3.63	10
Substance Abuse and Behavioral Disorder Counselors	190	270	39	3.58	10
<b>Personal Financial Advisors*</b>	<b>360</b>	<b>500</b>	<b>39</b>	<b>3.34</b>	<b>20</b>
Brickmasons and Blockmasons	130	180	35	3.31	5
Nursing Instructors and Teachers, Postsecondary*	330	450	34	3.15	15
Social and Human Service Assistants	280	380	38	3.10	15
Medical Secretaries*	1,010	1,370	36	3.10	50
Medical Equipment Repairers*	170	230	36	3.07	10
Physical Therapists*	640	860	34	3.00	40
Emergency Medical Technicians and Paramedics	NA	NA	32	2.92	15
Insulation Workers, Mechanical	120	160	43	2.92	5
Helpers--Electricians	210	280	37	2.92	10

Note: Employment data are rounded to the nearest 10 and job openings are rounded to the nearest 5. Occupations in bold are also high-earning.

\* - Qualify as both high-demand and fast-growing occupations. NA – Not available.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

**Table J.12 Selected High-Earning Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Annual Growth (Percent)	Average Annual Job Openings	Mean Annual Salary (\$)
	2012	2022			
Surgeons*	130	160	2.10	5	271,530
Psychiatrists	60	80	2.92	5	249,942
Internists, General	80	90	1.18	5	241,947
Physicians and Surgeons, All Other	1,120	1,340	1.81	50	235,836
Chief Executives	360	380	0.54	10	220,304
Dentists, General	280	340	1.96	10	196,171
Natural Sciences Managers	20	20	0.00	0	147,824
Nurse Anesthetists*	310	390	2.32	15	141,149
Lawyers	2,270	2,570	1.25	65	137,924
Optometrists	NA	NA	2.54	5	136,951
General and Operations Managers	6,360	7,180	1.22	200	130,928
Family and General Practitioners	NA	NA	1.18	5	124,843
Financial Managers	1,320	1,430	0.80	35	124,128
Computer and Information Systems Managers*	560	680	1.96	20	123,898
Marketing Managers	180	200	1.06	5	120,740
Education Administrators, Postsecondary	420	480	1.34	15	119,362
Architectural and Engineering Managers	500	540	0.77	15	116,766
Sales Managers	770	830	0.75	25	115,028
Clinical, Counseling, and School Psychologists*	250	300	1.84	10	113,537
Pharmacists*	1,060	1,230	1.50	45	111,033
Human Resources Managers	280	330	1.66	10	110,608
Purchasing Managers	170	180	0.57	5	110,541
Medical and Health Services Managers*	600	720	1.84	25	106,156
Public Relations and Fundraising Managers	160	180	1.18	5	105,729
Management Analysts*	1,170	1,470	2.31	50	105,453
Advertising and Promotions Managers	60	60	0.00	0	105,324
Administrative Services Managers	260	290	1.10	5	104,348
Construction Managers*	1,170	1,420	1.96	45	104,046
Captains, Mates, and Pilots of Water Vessels	20	30	4.14	0	102,869
Training and Development Managers	40	40	0.00	0	102,312
Managers, All Other	1,210	1,310	0.80	35	99,214
Computer Network Architects	290	320	0.99	10	98,778
<b>Personal Financial Advisors*</b>	<b>360</b>	<b>500</b>	<b>3.34</b>	<b>20</b>	<b>97,650</b>
Transportation Inspectors	30	30	0.00	0	95,032
Computer Hardware Engineers	40	60	4.14	5	94,557
Economists	20	20	0.00	0	94,364
Materials Engineers	30	30	0.00	0	93,917
Computer Programmers	1,340	1,480	1.00	50	93,598
Detectives and Criminal Investigators	140	150	0.69	5	93,341
Physicists	20	20	0.00	0	93,176
Industrial Production Managers	260	260	0.00	5	92,699
Agents and Business Managers of Artists, Performers, and Athletes	NA	NA	2.26	0	92,635
Electronics Engineers, Except Computer	300	320	0.65	10	92,500
Engineers, All Other	330	380	1.42	10	92,376
Software Developers, Systems Software*	400	510	2.46	15	92,158
Transportation, Storage, and Distribution Managers	250	270	0.77	10	92,077
Financial Examiners	70	70	0.00	0	90,702
Commercial Pilots	110	130	1.68	5	90,278
Aerospace Engineers	20	30	4.14	0	89,444
Compensation and Benefits Managers	40	40	0.00	0	89,399

Note: Employment data are rounded to the nearest 10; openings to the nearest 5. The salary data provided are based on the May 2014 release of the Occupational Employment Statistics (OES) combined employment and wage file. Estimates for specific occupations may include imputed data. NA – Not available. Occupations in bold are also fast-growing.

\* - Qualify as both high-earning and high-demand occupations.

Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

**Table J.13 Selected Sharp-Declining Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Net Change	Percent Change
	2012	2022		
Farmers, Ranchers, and Other Agricultural Managers	4,380	3,400	-980	-23
Postal Service Mail Carriers	790	580	-210	-27
Postal Service Mail Sorters, Processors, and Processing Machine Operators	540	380	-160	-30
Data Entry Keyers	390	290	-100	-24
Bakers	420	350	-70	-16
Helpers--Extraction Workers	NA	NA	-60	-25
Switchboard Operators, Including Answering Service	440	380	-60	-12
Postal Service Clerks	170	120	-50	-32
Computer Operators	280	230	-50	-18
Locomotive Firers	NA	NA	-30	-41
Editors	130	110	-20	-16
Mine Cutting and Channeling Machine Operators	NA	NA	-20	-65
Logging Equipment Operators	100	80	-20	-20
Word Processors and Typists	110	90	-20	-14
Roof Bolters, Mining	NA	NA	-10	-24
Mine Shuttle Car Operators	NA	NA	-10	-24
Earth Drillers, Except Oil and Gas	NA	NA	-10	-23
Meter Readers, Utilities	60	50	-10	-17
Postmasters and Mail Superintendents	30	20	-10	-22
Fallers	20	10	-10	-22

Note: Employment data are rounded to the nearest 10. NA – Not available.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

### Skills and Skills Gap Analyses

Jobs require skill sets and it is necessary that jobholders have the relevant skills. Table J.14 shows skill types and definitions as provided by O\*NET Online, which offers skill sets for all occupations ranked by the degree of importance. High-earning occupations typically require skills that are obtained in the pursuit of the high educational attainment levels that such jobs require. Lower earning occupations require more basic skill sets. Some occupations have no minimum skill set requirements (e.g. dishwashers and maids).

Table J.15 shows the percentage of selected occupations in the county that list a particular skill as primary. We define primary skills as the 10 most important skills in the required skill set for an occupation. It is important to note that a particular skill may be more important and more extensively used in one occupation than another. Table J.15 does not address such cross-occupational skill importance comparisons. In general, basic skills are most frequently listed as primary, which means that they are important for practically all jobs.

**Table J.14 Skill Types and Definitions**

<p><b>Basic Skills:</b> Developed capacities that facilitate learning or the more rapid acquisition of knowledge.</p> <p>Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.</p> <p>Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.</p> <p>Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.</p> <p>Learning Strategies — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.</p> <p>Mathematics — Using mathematics to solve problems.</p> <p>Monitoring — Monitoring / Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.</p> <p>Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.</p> <p>Science — Using scientific rules and methods to solve problems.</p> <p>Speaking — Talking to others to convey information effectively.</p> <p>Writing — Communicating effectively in writing as appropriate for the needs of the audience.</p> <p><b>Complex Problem Solving Skills:</b> Developed capacities used to solve novel, ill-defined problems in complex, real-world settings.</p> <p>Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.</p> <p><b>Resource Management Skills:</b> Developed capacities used to allocate resources efficiently.</p> <p>Management of Financial Resources — Determining how money will be spent to get the work done and accounting for these expenditures.</p> <p>Management of Material Resources — Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.</p> <p>Management of Personnel Resources — Motivating, developing, and directing people as they work, identifying the best people for the job.</p> <p>Time Management — Managing one's own time and the time of others.</p> <p><b>Social Skills:</b> Developed capacities used to work with people to achieve goals.</p> <p>Coordination — Adjusting actions in relation to others' actions.</p> <p>Instructing — Teaching others how to do something.</p> <p>Negotiation — Bringing others together and trying to reconcile differences.</p> <p>Persuasion — Persuading others to change their minds or behavior.</p> <p>Service Orientation — Actively looking for ways to help people.</p> <p>Social Perceptiveness — Being aware of others' reactions and understanding why they react as they do.</p> <p><b>Systems Skills:</b> Developed capacities used to understand, monitor, and improve socio-technical systems.</p> <p>Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.</p> <p>Systems Analysis — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.</p> <p>Systems Evaluation — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.</p> <p><b>Technical Skills:</b> Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems.</p> <p>Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.</p> <p>Equipment Selection — Determining the kind of tools and equipment needed to do a job.</p> <p>Installation — Installing equipment, machines, wiring, or programs to meet specifications.</p> <p>Operation and Control — Controlling operations of equipment or systems.</p> <p>Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.</p> <p>Operations Analysis — Analyzing needs and product requirements to create a design.</p> <p>Programming — Writing computer programs for various purposes.</p> <p>Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.</p> <p>Repairing — Repairing machines or systems using the needed tools.</p> <p>Technology Design — Generating or adapting equipment and technology to serve user needs.</p> <p>Troubleshooting — Determining causes of operating errors and deciding what to do about it.</p>
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Source: O\*NET Online (<http://online.onetcenter.org/skills/>).

**Table J.15 Percentage of Selected Occupations for Which Skill Is Primary**

	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
<b>Basic Skills</b>			
Active Learning	40	40	42
Active Listening	93	90	82
Critical Thinking	95	100	82
Learning Strategies	8	15	4
Mathematics	10	0	12
Monitoring	68	75	42
Reading Comprehension	85	80	76
Science	18	10	20
Speaking	90	90	80
Writing	48	35	46
<b>Complex Problem Solving Skills</b>			
Complex Problem Solving	58	35	62
<b>Resource Management Skills</b>			
Management of Financial Resources	3	0	2
Management of Material Resources	0	0	0
Management of Personnel Resources	8	0	24
Time Management	30	40	22
<b>Social Skills</b>			
Coordination	43	60	36
Instructing	23	30	8
Negotiation	0	0	12
Persuasion	8	20	14
Service Orientation	43	65	12
Social Perceptiveness	58	70	42
<b>Systems Skills</b>			
Judgment and Decision Making	63	40	74
Systems Analysis	13	0	6
Systems Evaluation	5	0	4
<b>Technical Skills</b>			
Equipment Maintenance	5	5	0
Equipment Selection	3	0	0
Installation	0	0	0
Operation and Control	3	0	2
Operation Monitoring	10	5	2
Operations Analysis	5	0	8
Programming	5	0	2
Quality Control Analysis	8	15	2
Repairing	5	10	0
Technology Design	0	0	0
Troubleshooting	5	10	0

Note: Rounding errors may be present.

Source: O\*NET Online and Center for Business and Economic Research, The University of Alabama.

High-earning occupations require more active learning, mathematics, science, complex problem solving, personnel resource management, negotiation, judgment and decision making, and operations analysis than both high-demand and fast-growing jobs. Many of these skills typically require long training periods and postsecondary education. However, high-earning jobs require significantly less technical and social skills. High-demand occupations require more resource management, complex problem solving, and systems skills than fast-growing occupations.

Table J.16 shows skill gap indexes for all 35 skills in Table J.14 based on a previous projections period (2008 to 2018). Although the skills gap indexes are for a previous projection period, they are applicable to current projections. Skills gap indexes range up to 100 and are standardized measures of the gap between current supply and projected demand. The index does not provide any information about current or base year skill supply. Its focus of the index is on the projection period and it identifies critical skill needs. The index essentially ranks expected training needs. The higher the index the more critical is the skill over the specified projection period.

For policy and planning purposes, skill gap indexes have to be considered together with replacement indexes, which are the expected shares of job openings due to replacement. Replacement is necessary because of turnover and people leaving the labor force. The smaller the replacement index, the larger the share of job openings due to growth, which in turn implies a need to increase the pace of skill training. Skill gap indexes point to the need to ramp up the scale of skill training while replacement indexes address the pace of training.

By skill type, the skill gap indexes show that basic skills are most critical followed by social, complex problem solving, resource management, system, and technical skills. The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs indicates a strong need for training in these skills. The pace of training needs to increase for systems, complex problem solving, and social skills; the scale of training should be raised for basic and social skills.

## **Education and Training Issues**

Educational attainment in Jefferson County is better than that of the state as a whole. Of the residents age 25 and over, about 88 percent had graduated from high school according to 2010-2014 five-year estimates by American Community Survey, compared to 84 percent for Alabama. Over 30 percent had a bachelor's or higher degree versus 23 percent for the state. Skill and education requirements for jobs keep rising. This highlights a strong need to continue raising educational attainment in the county.

Table J.17 shows the number of selected occupations in the county for which a particular education/training category is most common. In general, high-earning occupations require high educational attainment levels; just five of the 50 high-earning occupations do not require a bachelor's or higher degree. Thirty-one (78.0 percent) of the 40 high-demand occupations require at least an associate degree and 24 (60.0 percent) require a bachelor's or higher degree. Nine (45.0 percent) of the 20 fast-growing occupations require an associate's degree or higher at the minimum, with six (30.0 percent) requiring a bachelor's or higher degree.

The 2012 to 2022 occupational projections indicate that future jobs will require postsecondary education and training at a minimum. Job ads are increasingly asking for at least a high school

diploma or GED. Of the county's 723 single occupations, 64 are expected to decline over the period. The 20 sharpest-declining occupations will fall by at least 12 percent, and education and training for these should slow accordingly.

**Table J.16 Skills Gap Indexes (Base Year 2008 to Projected Year 2018)**

Skill	Total Openings (Projected Demand)	Replacement Index	Skills Gap Index
Reading Comprehension	6,595	70	100
Active Listening	6,525	71	97
Critical Thinking	5,935	69	94
Speaking	5,265	68	91
Active Learning	5,245	69	89
Coordination	5,060	69	86
Monitoring	4,810	69	83
Writing	4,660	69	80
Time Management	4,370	69	77
Instructing	4,480	69	74
Learning Strategies	4,215	68	71
Social Perceptiveness	3,900	68	69
Service Orientation	3,670	67	66
Judgment and Decision Making	3,190	70	63
Persuasion	3,250	70	60
Complex Problem Identification	2,895	68	57
Mathematics	2,595	69	54
Equipment Selection	1,945	69	51
Negotiation	1,745	74	49
Troubleshooting	1,430	69	46
Equipment Maintenance	1,230	69	43
Management of Personnel Resources	1,525	80	40
Installation	995	67	37
Operations Analysis	705	70	34
Operation and Control	740	71	31
Systems Evaluation	595	65	29
Repairing	700	68	26
Science	555	66	23
Management of Financial Resources	950	79	20
Quality Control	640	70	17
Operation Monitoring	815	76	14
Systems Analysis	430	62	11
Technology Design	380	70	9
Management of Material Resources	520	80	6
Programming	80	63	3

Note: The skills gap indexes are from 2008 to 2018 projection period and not 2012 to 2022.

Source: Alabama Department of Labor.

**Table J.17 Number of Selected Occupations by Education/Training Requirement**

Most Common Education/Training Requirements Categories	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
Doctoral Degree or First Professional Degree	6	2	11
Master's Degree	6	2	3
Bachelor's or Higher Degree Plus Work Experience	3	0	21
Bachelor's Degree	9	2	10
Associate Degree	7	3	0
Postsecondary Non-Degree Plus On-the-job Training	0	0	0
Postsecondary Non-Degree	2	2	0
Some College, no Degree Plus On-the-job Training	1	0	0
Some College, no Degree	0	0	0
High School Diploma Plus On-the-job Training	4	7	5
High School Diploma	0	0	0
Less than High School Plus On-the-job Training	2	2	0
Less than High School	0	0	0

Note: The on-the-job training refers to the typical on-the-job training needed to attain competency in the occupation in addition to the typical education needed for entry to the occupation. This could be long-term, moderate-term, or short-term on-the-job training. **Long-term** requires more than 12 months on-the-job training. **Moderate-term** requires one to 12 months of on-the-job training. **Short-term** requires up to one month of on-the-job training. These types of training are more common in occupations that require postsecondary non-degree or less educational attainment. Other types of on-the-job training requirements that may be needed but are not shown on the table are apprenticeship and internship/residency that are typical in certain professions many of which require higher educational attainment.

Source: O\*NET Online; Center for Business and Economic Research, The University of Alabama; and Alabama Department of Labor.

## Implications and Recommendations

The main working age population is declining and job growth is expected to exceed both population and labor force growth through 2030 (Table J.18). From a 2012 base, worker shortfalls of 54,381 and 110,368 are estimated by 2022 and 2030, respectively. These jobs are likely to be filled through increased in-commuting, which will worsen congestion. A focus on both worker skills and the expected shortfalls, especially for critical occupations, must be a top priority through 2030.

**Table J.18 Expected Worker Shortfall**

	2012-2022	2012-2030
Total population growth (percent)	1.3	2.2
Age 20-64 population growth (percent)	-4.3	-7.1
Job growth (percent)	10.6	23.1
Worker shortfall (percent)	14.9	30.3
Worker shortfall (number)	54,381	110,368

Source: Center for Business and Economic Research, The University of Alabama.

Employment is critical to economic development and so strategies to address skill needs and worker shortfalls must be adopted and implemented. For Jefferson County, such strategies should aim at increasing labor force participation, encouraging in-migration, and raising worker productivity and could include: (1) improvements in education and its funding; (2) continuation and enhancement of programs to assess, retrain, and place dislocated workers; (3) focus on hard-to-serve populations (e.g. out-of-school youth); (4) lowering the high school dropout rate; (5) use of economic opportunities to attract new and younger residents; (6) facilitation of in-commuting; and (7) encouragement of older worker participation in the labor force.

Improving education is vital because a highly educated and productive workforce is a critical economic development asset. The educational and training requirements of high-demand, fast-growing, and high-earning occupations show the significance of education in developing the workforce of the future. The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs demonstrates a strong need for training in these skills. The pace of training needs to increase for systems, complex problem solving, and social skills while the scale of training is raised for basic and social skills. Ideally, all high school graduates should possess basic skills so that postsecondary and higher education can focus on other and more complex skills while enhancing these basic skills. Employers should be an integral part of planning for training as they can help identify future skill needs and any existing gaps. Education and training for the 20 sharp-declining occupations in Table J.13 should slow accordingly.

Another very important reason to improve education is that more educated people are more likely to work; data on worker participation and educational attainment show that labor force participation increases with worker education. Productivity also rises with education, which yields high private and social returns. Workforce development must view all educational and other programs (e.g. adult education, career technical training, worker retraining, career readiness, etc.) as one system. Funding to support workforce development may require tax reform at state and local levels and must provide for flexibility as workforce needs change over time and demand different priorities.

Programs to assess, retrain, and place dislocated workers—especially those affected by outsourcing and structural changes in the economy—should be continued and enhanced because they can improve the labor force participation rate. Hard-to-serve populations include out-of-school youth, persons in poverty, those receiving welfare, residents of sparsely populated areas, and those on active parole. These populations are often outside of the mainstream economy and are poor. They usually have difficulty finding work because of low levels of educational attainment, geographic or other barriers, or a lack of occupational skills. They are a potential human resource, but investment in training, transportation, child care, infrastructure, etc. may be needed to tap this resource.

In-migration is one way of growing the labor force as it helps population growth. The county's low population growth rate may hinder its ability to meet expected job demand barring future economic slowdowns. Higher employment demand could be partially served by in-commuting. However, new residents can be attracted using the high-paying job opportunities from the county's economic development successes. Investment in amenities and infrastructure may be needed to support such growth. In-migration is generally more beneficial than in-commuting since it grows the economy faster and adds to the tax base.

Policies that facilitate and encourage older worker participation are needed as older workers can help meet the county's workforce challenges. Such policies could be related to income taxation, job flexibility, and retirement programs. As the share of older people in the population is projected to increase (see Table J.5), it becomes even more important that they be active in the workforce. Older worker participation has been rising nationally since the early 1990s. This has been attributed to reasons including:

- Older workers can work longer because they are healthier
- The number of physically demanding jobs is falling
- Defined contribution plans are replacing pensions
- There are fewer employer-paid retiree health insurance programs
- Social security reforms affecting those born after 1938 (i) gradually raise the normal retirement age from 65 to 67, (ii) increase the rate at which monthly payments rise with delayed benefits, and (iii) eliminate the reduction in benefits for those working beyond the full retirement age.

Diversifying the county's economy will strengthen it. This demands that economic development also focus on retaining, expanding, and attracting businesses that provide more high-earning jobs. Current workers—including the underemployed—would welcome higher-earning opportunities. An economic development focus on diversification would require that workforce development pay attention to postsecondary and higher educational systems to ensure a ready and available workforce for new and expanding businesses. The higher incomes earned by graduates of these institutions will help raise personal income for the county and provide additional local (county and city) tax revenue. Raising personal income by improving educational attainment and technological skills is an effective economic development strategy, especially for a county that has fairly low population and labor force growth rates. Together, workforce development and economic development can build a strong, well-diversified economy. Indeed, one cannot achieve success without the other.