

# State of the Workforce Report X: Region 2

Funding for this project was provided by:



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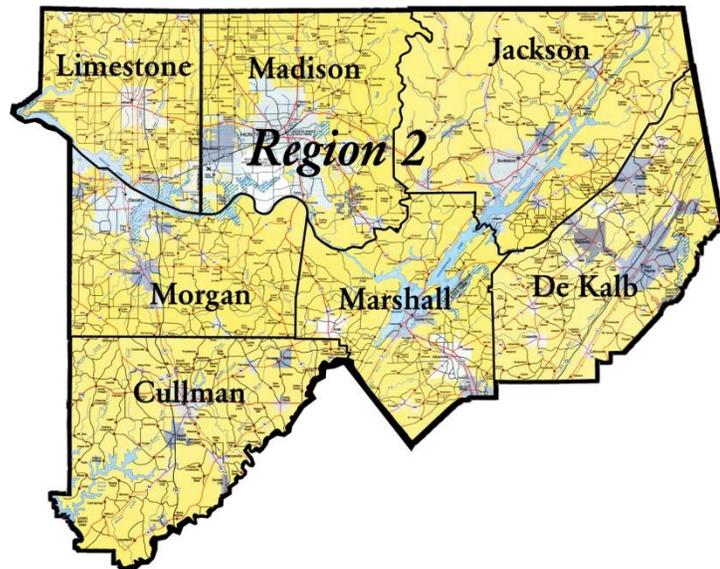
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Alabama Industrial Development Training



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: Region 2



*April 2016*

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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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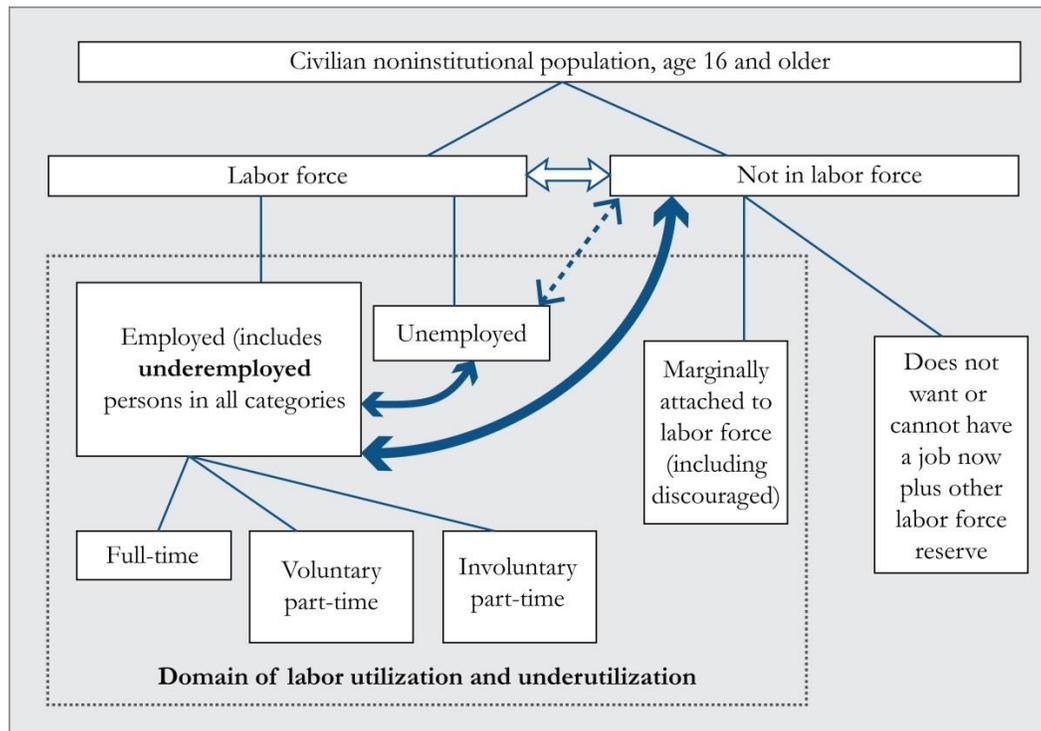
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## Summary

- This report analyzes workforce supply and demand issues using available metrics of workforce characteristics for Workforce Development Region 2 and presents implications and recommendations.
- Region 2 had a 5.7 percent unemployment rate in March 2016, with 22,383 unemployed. An underemployment rate of 23.1 percent for 2015 means that the region has a 108,484-strong available labor pool that includes 86,101 underemployed workers who are looking for better jobs and are willing to commute farther and longer for such jobs.
- Net in-commuting rose from 3,173 in 2005 to 6,778 in 2014, but increased levels of commuting to, out of, and within the region worsened congestion. Commute time and distance went up in 2015 from 2014 implying that congestion worsened. Continuous maintenance and development of transportation infrastructure and systems is important to avoid slowing economic development and recovery.
- By sector the top five employers in the region are manufacturing; retail trade; health care and social assistance; professional, scientific, and technical services; and accommodation and food services. These five industries provided 212,053 jobs, 63.3 percent of the regional total in the first quarter of 2015. Two of these leading employers—manufacturing and professional, scientific, and technical services—paid higher wages than the region’s \$3,413 monthly average. Economic development should continue to diversify and strengthen the region’s economy by retaining, expanding, and attracting more high-wage paying industries. Workforce development should also focus on preparing workers for these industries.
- On average 15,546 jobs were created per quarter from second quarter 2001 to first quarter 2015; quarterly net job flows averaged 1,724. 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; Computer Systems Analysts; Licensed Practical and Licensed Vocational Nurses; Construction Laborers; and Personal Care Aides.
- The top five fast-growing occupations are Orthotists and Prosthetists; Forging Machine Setters, Operators, and Tenders, Metal and Plastic; Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic; Occupational Therapy Assistants; and Health Educators.
- The top 50 high-earning occupations are in health, management, engineering, and computer fields and have a minimum salary of \$93,175. Eight of the top 10 are health care occupations.
- Of the top 40 high-demand, the top 20 fast-growing, and 50 high-earning occupations, none belong to all three categories. Three occupations are both high-demand and high-earning and 11 are both high-demand and fast-growing.

- Of the region's 701 occupations, 68 are expected to decline over the 2012 to 2022 period. Twenty occupations are expected to sharply decline by at least nine percent, with each losing a minimum of 20 jobs. 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 Region 2 the pace of training needs to increase for technical, systems, and complex problem solving 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.
- From a 2012 base, worker shortages of about 18,700 and 39,400 are expected for 2022 and 2030. This will demand a focus on worker skills and shortfalls through 2030. Worker shortfalls for critical occupations will need to be addressed continuously. Strategies to address skill needs and worker shortfalls might include: (1) improvements in education and its funding; (2) economic opportunities that attract new and younger residents; (3) focus on hard-to-serve populations (e.g. out-of-school youth); (4) lowering the high school dropout rate; (5) continuation and enhancement of programs to assess, retrain, and place dislocated workers; (6) encouragement of older worker participation in the labor force; and (7) facilitation of in-commuting.
- 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 region as well as raise additional local (county and city) tax revenues. This is important, even for a region that has relatively high population and labor force growth rates.
- Building a strong and well-diversified regional economy requires a combination of workforce development and economic development initiatives.

## 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 reserve. It has been suggested that a subgroup of nonparticipants referred to as the “waiting group” are more likely than the rest of the nonparticipants to take a job if wages and conditions are satisfactory, but they do 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 and 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. students, retirees, discouraged workers, and the disabled). Table 2.1 shows labor force information for Region 2 and its seven counties for 2015 and 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.

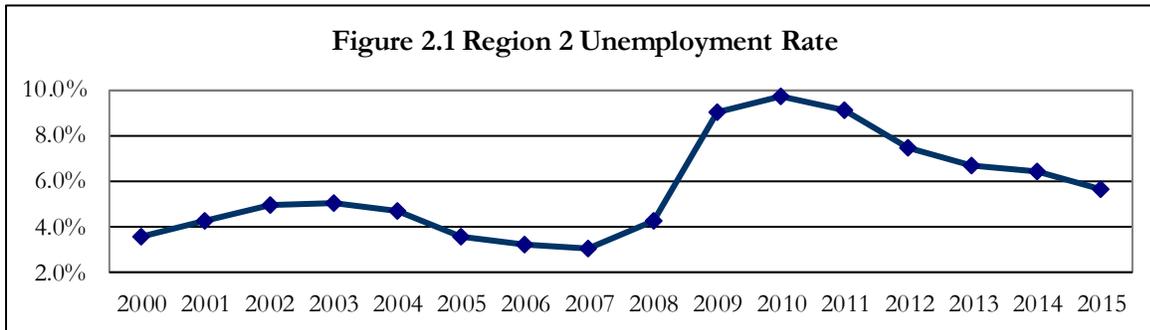
**Table 2.1 Region 2 Labor Force Information**

	<b>2015 Annual Average</b>			
	Labor Force	Employed	Unemployed	Rate (%)
Cullman	36,181	34,273	1,908	5.3
DeKalb	28,858	27,118	1,740	6.0
Jackson	23,512	21,963	1,549	6.6
Limestone	39,607	37,445	2,162	5.5
Madison	169,738	160,435	9,303	5.5
Marshall	40,348	38,019	2,329	5.8
Morgan	55,106	51,888	3,218	5.8
Region 2	393,350	371,141	22,209	5.6
Alabama	2,146,157	2,015,189	130,968	6.1
United States	157,130,000	148,833,000	8,296,000	5.3
	<b>March 2016</b>			
	Labor Force	Employed	Unemployed	Rate (%)
Cullman	36,818	34,784	2,034	5.5
DeKalb	28,799	26,982	1,817	6.3
Jackson	23,512	21,996	1,516	6.4
Limestone	39,814	37,623	2,191	5.5
Madison	170,493	161,247	9,246	5.4
Marshall	40,713	38,344	2,369	5.8
Morgan	55,127	51,917	3,210	5.8
Region 2	395,276	372,893	22,383	5.7
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.

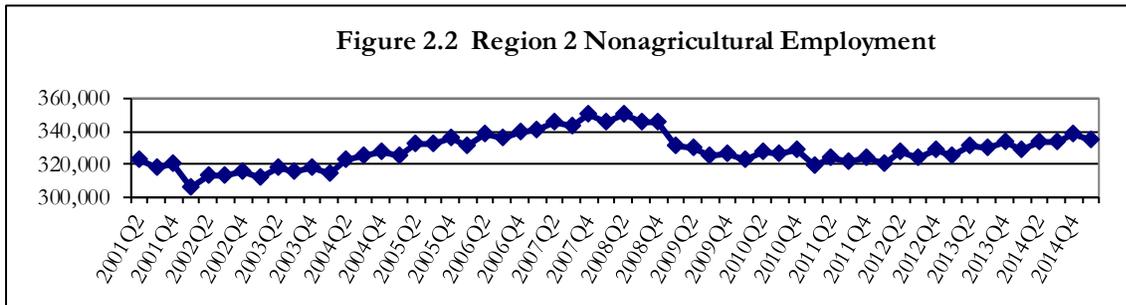
The recession that began in December 2007 raised regional and county unemployment rates to record highs. A slow recovery from the recession has continued to lower county unemployment which ranged from 5.3 percent to 6.6 percent for 2015 (5.6 percent for the region) to between 5.4 percent and 6.4 percent in March 2016 (5.7 percent for the region). The unemployment rate was lowest in Madison County and highest in Jackson. Only Jackson and Limestone counties had unemployment rates above Alabama's 6.2 percent.

The region's unemployment rates were low before the 2001 and 2007 recessions (Figure 2.1). The 2003 high of 5.0 percent was due to the effects of the 2001 recession. Successful state and local economic development efforts lowered unemployment to a record low of 3.0 percent in 2007. However, the recent recession led to major job losses and to date recovery is still in progress. In 2010 unemployment rose to 9.7 percent but declined to 5.6 percent in 2015. Year-to-date monthly labor force data point to a about the same regional unemployment rate level seen in 2015, but it is still expected to be slightly lower. The slow recovery from the recent recession and structural changes of the economy are expected to keep unemployment rates above pre-recession period for a few more years.



Source: Alabama Department of Labor.

Nonagricultural employment of the region's residents averaged 328,453 quarterly from the second quarter of 2001 to the first quarter of 2015 (Figure 2.2). The number of jobs dropped in 2008 and 2009 due to the recession and remained flat until the first quarter of 2012. Since the second quarter of 2012, the number of employed has been gradually trending up and is approaching 340,000.



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

Table 2.2 shows worker distribution by age in Region 2 for the first quarter of 2015. Older workers, age 55 and over, comprise 20.4 percent of the region's nonagricultural employment, below the state's 21.0 percent. The region's 4.7 percent of workers who are age 65 and over is also slightly below the state's 4.9 percent. To meet future occupational projections for growth and replacement, labor force participation of younger residents must increase otherwise older workers may have to work longer.

**Table 2.2 Workers by Age Group (First Quarter 2015)**

Age group	Nonagricultural Employment	
	Number	Percent
14-18	6,428	1.9
19-24	36,946	11.0
25-34	72,784	21.7
35-44	72,934	21.8
45-54	77,389	23.1
55-64	52,806	15.8
65+	15,693	4.7
55 and over total	68,499	20.4
Total all ages	334,980	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**

In 2005 workers who commuted into the region exceeded workers who commuted out by 3,173 (Table 2.3). Commuter inflows grew faster than outflows in the region and by 2014 net in-commuting was about 6,800. There is significant commuting within the region as well. Madison County has the largest number of in- and out-commuting residents. Table 2.3 also shows that one-way average commute time and distance were up in 2015 from 2014 implying that congestion worsened in the region. As population continues to grow and the region recovers from the last recession, people will continue experiencing longer commute times and distances to work. Thus, transportation infrastructure and systems must be developed and maintained properly to ensure that the flow of goods and movement of workers are not hindered. Slowing the mobility of workers and goods could impede economic development in the region.

**Table 2.3 Commuting Patterns**

<b>Year</b>	<b>Region 2 Inflow</b>		<b>Region 2 Outflow</b>					
	Number		Number					
2005	54,271		51,098					
2006	61,150		48,035					
2007	64,430		59,498					
2008	68,843		58,759					
2009	67,406		58,775					
2010	68,579		58,847					
2011	68,295		60,767					
2012	68,367		60,686					
2013	69,553		63,487					
2014	70,768		63,990					
<b>Region 2 Counties</b>	<b><u>Inflow, 2014</u></b>		<b><u>Outflow, 2014</u></b>					
	Number	Percent	Number	Percent				
Cullman	11,083	8.1	16,416	12.6				
DeKalb	7,547	5.5	11,812	9.1				
Jackson	6,095	4.4	9,949	7.6				
Limestone	10,606	7.7	22,220	17.0				
Madison	61,189	44.6	28,892	22.2				
Marshall	16,141	11.8	17,433	13.4				
Morgan	24,473	17.8	23,634	18.1				
			Percent of workers					
<b>Average commute time (one-way)</b>			<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Less than 20 minutes			53.4	56.4	55.3	50.5	51.6	51.1
20 to 40 minutes			35.0	31.4	30.3	31.8	32.0	30.2
40 minutes to an hour			8.3	7.8	7.4	7.9	7.9	8.5
More than an hour			1.7	1.9	2.6	2.4	1.1	2.5
<b>Average commute distance (one-way)</b>			<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Less than 10 miles			43.8	46.0	43.1	40.7	42.8	42.6
10 to 25 miles			40.4	36.4	38.7	39.8	40.2	36.3
25 to 45 miles			11.2	11.9	12.5	11.5	12.3	13.9
More than 45 miles			3.1	4.0	4.9	4.6	2.6	4.9

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

Region 2's population count of 834,844 for 2010 was 14.1 percent more than was recorded for 2000 (Table 2.4). The region's population growth was greater than both the state and nation rates of 7.5 percent and 9.7 percent respectively. With the exception of Jackson County, the entire region had positive population growth. Population growth was fastest in Limestone and Madison counties. The fast population growth could partially be attributed to the military Base Realignment and Closures (BRAC) and related economic development activities in Huntsville, Alabama. The 2015

estimates show a 3.6 percent population growth from 2010 which is more than the state's 1.7 percent growth with the highest growth occurring in Limestone and Madison counties. Population continued to decline in Jackson County.

Table 2.5 shows Region 2's population counts, estimates, and projections by age group. The 65 and over age group is expected to grow rapidly, with the first of the baby boom generation having turned 65. As a result, growth of the prime working age group (20-64) and youth (0-19) will lag that of the total population. Job growth is expected to outpace labor force and population growth in the region, which could pose a challenge to economic development.

**Table 2.4 Region 2 Population by County**

	1990 Census	2000 Census	2010 Census	2015 Estimates	Change 2010-2010	% change 2000-2010	change 2010-2015	% change 2010-2015
Cullman	67,613	77,483	80,406	82,005	2,923	3.8	1,599	2.0
DeKalb	54,651	64,452	71,109	71,130	6,657	10.3	21	0.0
Jackson	47,796	53,926	53,227	52,419	-699	-1.3	-808	-1.5
Limestone	54,135	65,676	82,782	91,663	17,106	26.0	8,881	10.7
Madison	238,912	276,700	334,811	353,089	58,111	21.0	18,278	5.5
Marshall	70,832	82,231	93,019	94,725	10,788	13.1	1,706	1.8
Morgan	100,043	111,064	119,490	119,565	8,426	7.6	75	0.1
Region 2	633,982	731,532	834,844	864,596	103,312	14.1	29,752	3.6
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 2.5 Population by Age Group and Projections**

Age Group	2000	2010	2012	2022	2030
0-19	203,461	223,537	221,653	235,741	242,179
20-24	45,337	52,926	55,541	61,391	64,484
25-29	48,784	54,020	54,612	58,226	62,203
30-34	52,363	51,938	54,010	58,139	64,900
35-39	61,180	54,557	51,916	59,896	64,015
40-44	59,389	57,356	57,679	58,742	60,827
45-49	51,670	65,357	62,831	57,671	65,063
50-54	47,763	61,901	64,497	59,430	58,710
55-59	38,594	52,697	56,874	64,123	59,437
60-64	32,846	47,304	49,192	63,265	60,014
65+	90,145	113,251	121,639	164,203	206,792
20-64 Total	437,926	498,056	507,152	540,883	559,653
Total Population	731,532	834,844	850,444	940,827	1,008,624
<i>Change from 2012</i>					
0-19				6.4%	9.3%
20-64				6.7%	10.4%
Total Population				10.6%	18.6%

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

## Per Capita Income

Per capita income (PCI) in Region 2 was \$38,333 in 2014 (Figure 2.3), up 24 percent from 2005, and \$821 above the state average of \$37,512. Madison County at \$44,517 was the only county in the region with higher PCI than the state. PCI was lowest in DeKalb County at \$29,724.



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

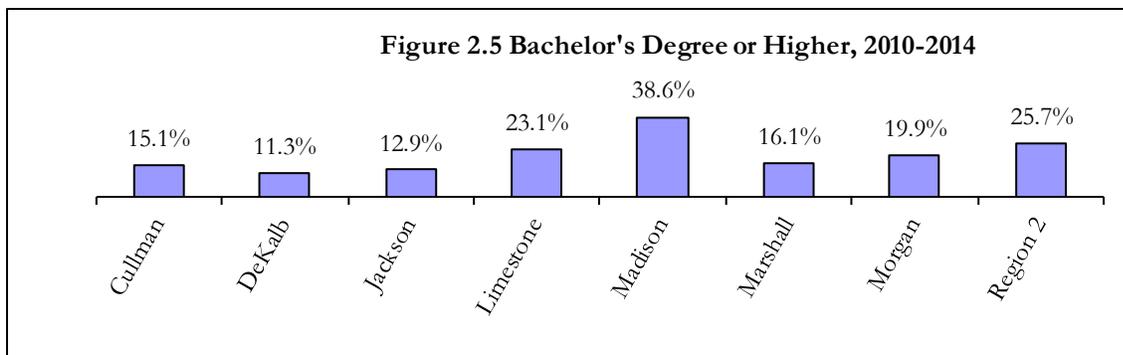
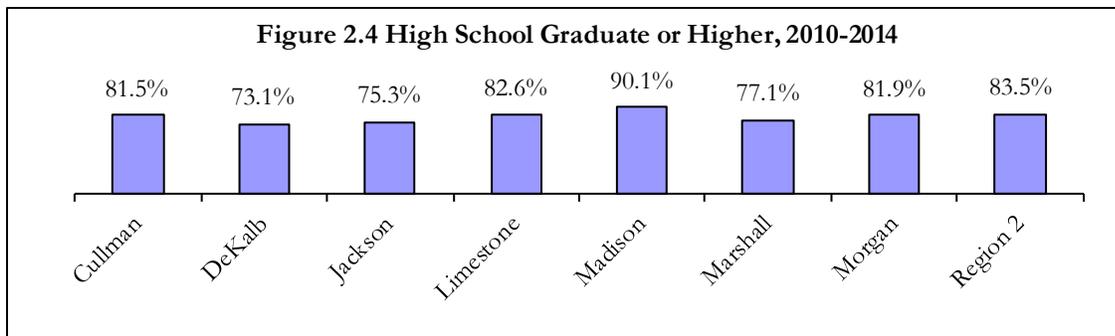
## Educational Attainment

Educational attainment in 2010 to 2014 of Region 2 residents who were 25 years old and over is shown in Table 2.6 and Figures 2.4 and 2.5. About 84.0 percent graduated from high school and 26.0 percent held a bachelor's or higher degree. Madison County has higher educational attainment than the other counties, the region, and the state. DeKalb has the lowest educational attainment. Educational attainment is important as skills rise with education and high-wage jobs for the 21st century demand more skill sets.

**Table 2.6 Educational Attainment of Population 25 Years and Over, 2010-2014**

	Cullman	DeKalb	Jackson	Limestone	Madison	Marshall	Morgan	Region 2
Total	55,380	47,081	37,170	59,598	229,780	62,506	81,509	573,024
No schooling completed	830	1,506	695	872	1,760	1,798	1,201	8,662
Nursery to 4th grade	351	663	330	341	916	1,057	727	4,385
5th and 6th grade	714	1,408	550	708	1,396	1,768	1,276	7,820
7th and 8th grade	2,058	1,901	1,584	1,854	2,916	1,965	2,374	14,652
9th grade	1,970	1,946	1,294	1,646	3,722	1,847	1,634	14,059
10th grade	2,072	2,286	2,378	1,850	4,798	2,475	2,864	18,723
11th grade	1,295	2,117	1,579	2,212	4,086	2,100	2,951	16,340
12th grade, no diploma	929	823	777	884	3,182	1,308	1,758	9,661
High school graduate/equivalent	18,381	16,418	13,893	18,672	48,645	20,310	26,021	162,340
Some college, less than 1 year	3,729	2,624	1,982	3,904	12,805	3,575	5,972	34,591
Some college, 1+ years, no degree	8,903	6,063	4,673	8,636	38,462	9,284	12,645	88,666
Associate degree	5,762	4,002	2,623	4,265	18,296	4,931	5,887	45,766
Bachelor's degree	5,224	3,174	2,881	9,193	55,297	6,459	10,873	93,101
Master's degree	2,103	1,702	1,493	3,831	25,884	2,728	3,972	41,713
Professional school degree	828	290	302	355	4,008	656	840	7,279
Doctorate degree	231	158	136	375	3,607	245	514	5,266

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



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 wish to not 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 pool of labor 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.

Region 2 had an underemployment rate of 23.1 percent in 2015. Applying this rate to March 2016 labor force data means that 86,101 employed residents were underemployed (Table 2.7). Adding the unemployed gives a total available labor pool of 108,484 for the region. This is 4.8 times the number of unemployed and is a more realistic measure of the available labor pool in the region. 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. Underemployment rates ranged from 17.0 percent for Limestone County to 29.8 percent for Jackson. Jackson County had the smallest available labor pool and Madison had the largest. The underemployed workers are more willing to commute longer times and distances for a better job. For the one-way commute, 40.0 percent are prepared to commute for 20 or more minutes longer and 30.5 percent will go 20 or more extra miles.

**Table 2.7 Underemployed and Available Labor by County**

	<b>Region 2</b>	<b>Cullman</b>	<b>DeKalb</b>	<b>Jackson</b>	<b>Limestone</b>
Labor Force	395,276	36,818	28,799	23,512	39,258
Employed	372,893	34,784	26,982	21,996	36,981
Underemployment rate	23.1%	23.4%	23.9%	29.8%	17.0%
Underemployed workers	86,101	8,153	6,451	6,553	12,751
Unemployed	22,383	2,034	1,817	1,516	2,277
<b>Available labor pool</b>	<b>108,484</b>	<b>10,187</b>	<b>8,268</b>	<b>8,069</b>	<b>15,028</b>
			<b>Madison</b>	<b>Marshall</b>	<b>Morgan</b>
Labor Force			170,493	40,713	55,127
Employed			161,247	38,344	51,917
Underemployment rate			20.0%	27.7%	26.1%
Underemployed workers			32,249	10,606	13,545
Unemployed			9,246	2,369	3,210
<b>Available labor pool</b>			<b>41,495</b>	<b>12,975</b>	<b>16,755</b>

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

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 856 complete responses were obtained from Region 2. About 56.0 percent (485 respondents) were employed, of whom 112 stated that they were underemployed. A lack of job opportunities in their area, low wages at available jobs, living too far from jobs, other family or personal obligations, owning a house in their area, childcare responsibilities, and taking care of someone other than a child are the primary reasons

given for being underemployed. Ongoing economic development efforts can help in this regard. Nonworkers cite retirement and disability or other health concerns as the main reasons for their status. Such 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 60.0 percent more than that of unemployed workers who gain employment.<sup>3</sup> This implies that the region's available labor pool could be larger than estimated in this report.

A comparison of underemployed workers to the overall workforce in Region 2 shows that:

- Fewer work full-time and more of the part-timers prefer full-time work.
- More have multiple jobs.
- They have longer commute times and distances.
- More are management; community and social services; healthcare support; protective services; food preparation and serving; building and grounds cleaning and management; sales and related; farming, fishing, and forestry; and construction and extraction occupations.
- More are in agriculture, forestry, fishing, and hunting; construction; retail trade; manufacturing; transportation and warehousing; health care and social assistance; and accommodation and food services occupations.
- They have shorter job tenure and earn less.
- 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 paid at least five percent more.
- More are willing to commute longer times and distances for a better job.
- Fewer are satisfied with their current jobs.
- More are willing to train for a better job even if they have to bear the full cost of training.
- More have sought better jobs in the preceding quarter.
- Their median age is slightly lower than that of the overall workforce.
- Fewer have 4-year degrees and above and more have high school diploma and associate degrees as highest level of education.
- Fewer are married or male.
- Fewer are Hispanic or white and more are African American or other ethnic groups.

Table 2.8 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 region's workers (78.3 percent) are satisfied or completely satisfied with their jobs. Workers are most satisfied with the work they do and least satisfied with the earnings they receive. Clearly, fewer underemployed workers are satisfied with their jobs (58.0 percent). The underemployed are much more dissatisfied with their earnings and are most satisfied with their work shift.

Workers are generally willing to train for a new or better job, with the underemployed being more willing (68.6 percent vs. 55.7 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

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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.

willingness is highest when the cost is fully borne by government and lowest when the trainee must pay the full costs. The underemployed are more willing to train for the new or better job even if they have to bear the full cost. The results strongly 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 2.8 Job Satisfaction and Willingness to Train (Percent)**

		Job Satisfaction				
		Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
<b>Employed</b>						
Overall		1.9	5.0	14.9	29.8	48.5
	Earnings	7.5	9.1	23.0	26.1	34.4
	Retention	3.1	3.9	11.4	19.3	61.9
	Work	0.8	2.5	7.9	26.5	62.3
	Hours	2.5	6.2	11.4	23.6	56.1
	Shift	1.7	3.1	7.7	15.9	71.6
	Conditions	1.9	3.5	14.3	20.7	59.6
	Commuting Distance	2.9	5.2	9.5	16.2	66.3
<b>Underemployed</b>						
Overall		2.7	15.2	24.1	24.1	33.9
	Earnings	23.2	17.0	29.5	19.6	9.8
	Retention	8.9	11.6	23.2	23.2	40.2
	Work	0.9	5.4	15.2	25.9	52.7
	Hours	6.3	10.7	18.8	24.1	39.3
	Shift	2.7	5.4	10.7	24.1	57.1
	Conditions	3.6	10.7	20.5	17.9	47.3
	Commuting Distance	8.0	7.1	8.9	19.6	56.3
		<b>Willingness to Train</b>				
		Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
<b>Employed</b>						
For a new or better job		24.7	3.4	15.0	9.8	45.9
	If paid by trainee	40.1	20.6	21.2	5.5	8.6
	If paid by trainee and government	12.0	11.6	31.2	19.5	21.9
	If paid by government	5.1	3.4	8.9	12.7	67.1
<b>Underemployed</b>						
For a new or better job		21.0	1.9	7.6	12.4	56.2
	If paid by trainee	39.8	25.3	14.5	7.2	7.2
	If paid by trainee and government	8.4	10.8	31.3	16.9	27.7
	If paid by government	3.6	3.6	4.8	7.2	77.1

Note: Rounding errors may be present.

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

## Workforce Demand

### Industry Mix

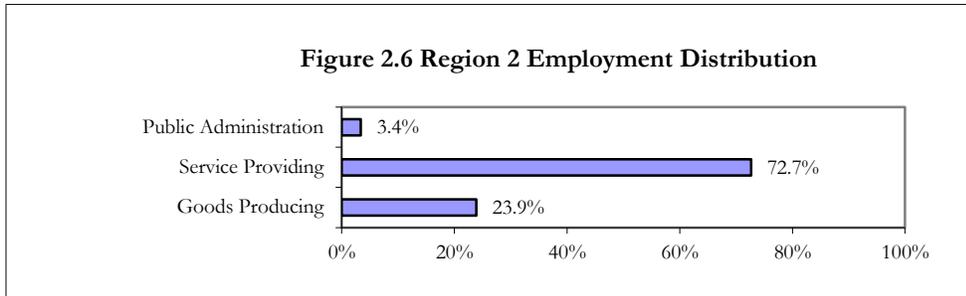
The manufacturing sector was the leading employer in Region 2 with 64,795 jobs in first quarter 2015 (Table 2.9). Rounding out the top five industries by employment are retail trade; health care and social assistance; professional, scientific, and technical services; and accommodation and food services. These five industries provided 212,053 jobs, 63.3 percent of the regional total. The average monthly wage across all industries in the region was \$3,413; two of the leading employers paid more than this average. New hire monthly earnings averaged \$2,142, about 63 percent of the region's average monthly wage. The highest average monthly wages were for professional, scientific, and technical services at \$6,462; management of companies and enterprises \$5,100; utilities \$4,721; wholesale trade \$4,684; and finance and insurance \$4,465. Accommodation and food services paid the least at \$1,136. Professional, scientific, and technical services had the highest average monthly new hire wages with \$5,236, followed by mining at \$3,472 and wholesale trade \$3,462. Accommodation and food services paid newly hired workers the least, \$947.

**Table 2.9 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	1,602	0.48%	19	\$2,826	\$2,368
21 Mining	186	0.06%	20	\$4,291	\$3,472
22 Utilities	2,307	0.69%	17	\$4,721	\$2,426
23 Construction	13,520	4.04%	8	\$3,094	\$2,708
31-33 Manufacturing	64,795	19.34%	1	\$4,400	\$2,910
42 Wholesale Trade	11,018	3.29%	10	\$4,684	\$3,462
44-45 Retail Trade	41,932	12.52%	2	\$2,048	\$1,275
48-49 Transportation and Warehousing	9,122	2.72%	11	\$3,132	\$2,535
51 Information	3,805	1.14%	14	\$4,007	\$2,369
52 Finance and Insurance	7,211	2.15%	12	\$4,465	\$2,666
53 Real Estate and Rental and Leasing	3,323	0.99%	15	\$2,800	\$2,190
54 Professional, Scientific, and Technical Services	35,793	10.69%	4	\$6,462	\$5,236
55 Management of Companies and Enterprises	2,282	0.68%	18	\$5,100	\$2,774
56 Administrative and Support and Waste Management and Remediation Services	22,822	6.81%	7	\$2,068	\$1,592
61 Educational Services	25,456	7.60%	6	\$3,099	\$1,139
62 Health Care and Social Assistance	39,954	11.93%	3	\$3,009	\$2,042
71 Arts, Entertainment, and Recreation	2,495	0.74%	16	\$1,551	\$1,069
72 Accommodation and Food Services	29,579	8.83%	5	\$1,136	\$947
81 Other Services (Except Public Administration)	6,414	1.91%	13	\$2,305	\$1,858
92 Public Administration	11,364	3.39%	9	\$2,984	\$2,080
<b>ALL INDUSTRIES</b>	<b>334,980</b>	<b>100.00%</b>		<b>\$3,413</b>	<b>\$2,142</b>

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

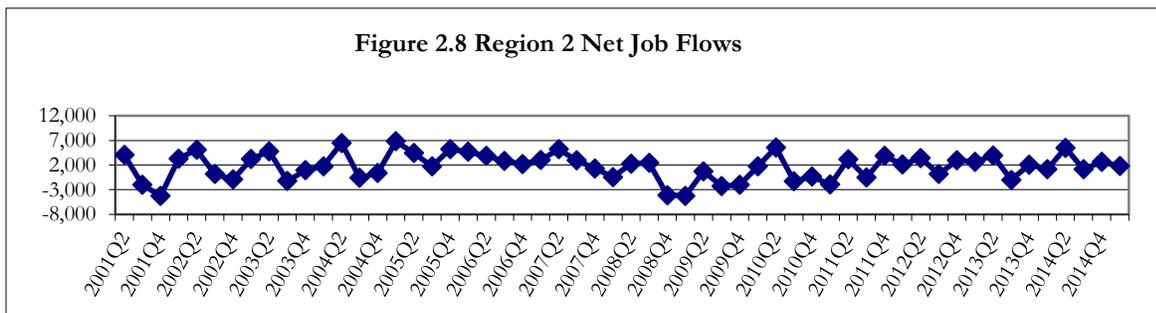
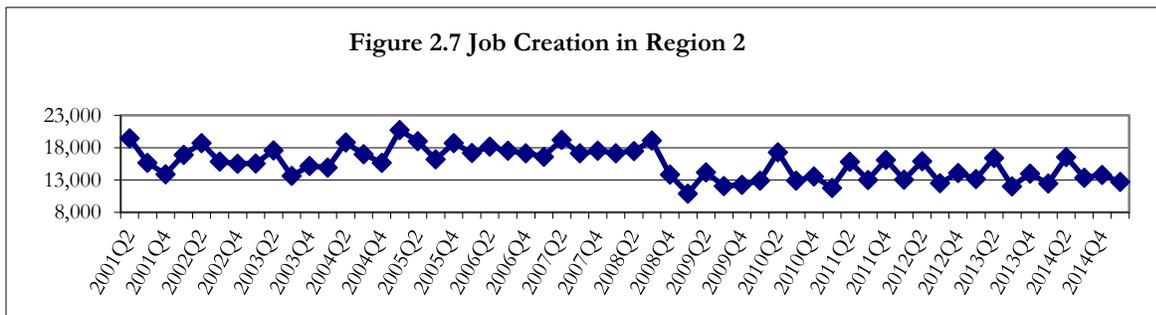
By broad industry classification, service providing industries generated 72.7 percent of jobs in first quarter 2015 (Figure 2.6). Goods producing industries were next with about 23.9 percent and public administration accounted for 3.4 percent. The distribution is for all nonagricultural jobs in the region, but there is significant variation by county.



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

### Job Creation and Net Job Flows

On average, 15,546 jobs were created per quarter from second quarter 2001 to first quarter 2015 (Figure 2.7); quarterly net job flows averaged 1,724 (Figure 2.8). Quarterly net job flows over the period have fluctuated between a loss of 4,279 to a gain of 6,839. Both job creation and net job flows rose in the second quarter of 2014 then dropped and are yet to show any improvement. Job creation refers to the number of new jobs that are added into the region 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

There are 701 single occupations in Region 2 excluding occupational categories. Table 2.10 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 one of the five largest employment sectors identified earlier (Table 2.9): health care and social assistance. Thus, this sector will continue to dominate employment in the region.

The top five high-demand occupations are Registered Nurses, Computer Systems Analysts, Licensed Practical and Licensed Vocational Nurses, Construction Laborers, and Personal Care Aides. Eleven of the high-demand occupations are also fast-growing. This means that these 11 occupations have a minimum annual growth rate of 3.03 percent, much faster than the regional and state occupational growth rates of 1.01 percent and 0.99 percent, respectively.

The 20 fastest growing occupations ranked by projected growth of employment are listed in Table 2.11. Most of these occupations are related to the health care industry. The top five fast-growing occupations are Orthotists and Prosthetists; Forging Machine Setters, Operators, and Tenders, Metal and Plastic; Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic; Occupational Therapy Assistants; and Health Educators.

Table 2.12 shows the 50 selected highest earning occupations in the region. These occupations are mainly in health, management, engineering, and computer fields. Eight of the top 10 listed are health occupations. 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. Only three occupations are both high-earning and in high-demand (Table 2.10). None of the occupations are in all the three categories.

Of the region's 701 occupations, 68 are expected to decline over the 2012 to 2022 period. Employment in the 20 sharpest-declining occupations will fall by at least nine percent, with each losing a minimum of 20 jobs over the period (Table 2.13). No efforts should be made to sustain these occupations because they are declining due to structural changes in the economy of the region.

**Table 2.10 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	275	135	140
Computer Systems Analysts	115	75	40
Licensed Practical and Licensed Vocational Nurses	105	55	50
Construction Laborers	105	55	50
Personal Care Aides*	100	85	15
Computer User Support Specialists	95	60	30
Industrial Machinery Mechanics	90	35	55
Home Health Aides*	80	50	25
Carpenters	75	50	25
<b>Software Developers, Applications</b>	<b>70</b>	<b>45</b>	<b>25</b>
First-Line Supervisors of Construction Trades and Extraction Workers	70	50	20
Machinists	70	35	35
<b>Software Developers, Systems Software</b>	<b>65</b>	<b>40</b>	<b>25</b>
Electricians	65	35	30
Medical Assistants	55	30	20
Engine and Other Machine Assemblers	45	25	20
Computer-Controlled Machine Tool Operators, Metal and Plastic	45	25	20
<b>Computer and Information Systems Managers</b>	<b>40</b>	<b>25</b>	<b>15</b>
Dental Hygienists*	40	25	15
Medical Secretaries*	40	30	10
Plumbers, Pipefitters, and Steamfitters	40	25	15
Network and Computer Systems Administrators	35	15	15
Construction Managers	30	15	15
Cost Estimators	30	10	15
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	30	15	15
Market Research Analysts and Marketing Specialists	20	10	5
Physical Therapists*	20	15	10
Medical and Health Services Managers	15	5	5
Information Security Analysts*	15	15	5
Database Administrators	15	10	5
Surgical Technologists	15	10	5
Physical Therapist Assistants*	15	10	5
Computer Network Architects	10	5	5
Speech-Language Pathologists	10	5	5
Nurse Practitioners	10	5	5
Diagnostic Medical Sonographers*	10	10	5
Forging Machine Setters, Operators, and Tenders, Metal and Plastic*	10	10	0
Nursing Instructors and Teachers, Postsecondary*	5	5	0
Occupational Therapists	5	5	0
Occupational Therapy Assistants*	5	5	0

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 2.11 Selected Fast-Growing Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Percent Change	Annual Growth (Percent)	Average Annual Job Openings
	2012	2022			
Orthotists and Prosthetists	NA	NA	63	6.05	5
Forging Machine Setters, Operators, and Tenders, Metal and Plastic*	NA	NA	86	6.05	10
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	70	110	48	4.62	5
Occupational Therapy Assistants*	90	140	54	4.52	5
Health Educators	40	60	37	4.14	5
Diagnostic Medical Sonographers*	190	280	47	3.95	10
Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	150	220	45	3.90	10
Information Security Analysts*	260	380	50	3.87	15
Interpreters and Translators	90	130	50	3.75	5
Mental Health Counselors	120	170	36	3.54	5
Physical Therapist Assistants*	270	380	38	3.48	15
Substance Abuse and Behavioral Disorder Counselors	100	140	36	3.42	5
Veterinary Technologists and Technicians	200	280	41	3.42	10
Personal Care Aides*	2,080	2,900	40	3.38	100
Nursing Instructors and Teachers, Postsecondary*	110	150	41	3.15	5
Home Health Aides*	1,410	1,920	36	3.14	80
Dental Hygienists*	680	920	35	3.07	40
Insulation Workers, Mechanical	NA	NA	38	3.07	10
Physical Therapists*	370	500	35	3.06	20
Medical Secretaries*	890	1200	35	3.03	40

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 2.12 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			
Anesthesiologists	NA	NA	2.10	5	263,927
Psychiatrists	NA	NA	4.14	0	241,065
Physicians and Surgeons, All Other	940	1,170	2.21	45	212,522
Internists, General	60	60	0.00	0	204,733
Chief Executives	310	330	0.63	10	198,679
Family and General Practitioners	140	150	0.69	5	197,483
Dentists, General	220	250	1.29	10	171,963
Nurse Anesthetists	210	240	1.34	5	156,183
Pediatricians, General	60	70	1.55	5	150,891
Architectural and Engineering Managers	1,160	1,260	0.83	40	136,402
Personal Financial Advisors	90	110	2.03	5	130,427
Computer and Information Systems Managers*	1,080	1,310	1.95	40	127,754
General and Operations Managers	5,260	5,950	1.24	165	126,371
Nuclear Engineers	NA	NA	0.00	5	123,515
Pharmacists	800	930	1.52	30	120,778
Clinical, Counseling, and School Psychologists	180	210	1.55	10	118,891
Marketing Managers	160	170	0.61	5	117,569
Lawyers	780	860	0.98	20	117,435
Financial Managers	750	820	0.90	20	116,531
Sales Engineers	90	100	1.06	5	116,496
Natural Sciences Managers	70	70	0.00	0	114,150
Physicists	110	110	0.00	5	112,484
Podiatrists	NA	NA	0.00	0	110,885
Engineers, All Other	3,330	3,050	-0.87	60	110,718
Purchasing Managers	380	380	0.00	10	108,563
Managers, All Other	1,290	1,380	0.68	35	107,400
Aerospace Engineers	3,200	3,550	1.04	110	106,543
Sales Managers	330	350	0.59	10	105,576
Computer and Information Research Scientists	280	310	1.02	10	104,811
Electronics Engineers, Except Computer	1,230	1,270	0.32	30	103,920
Software Developers, Systems Software*	2,120	2,510	1.70	65	103,412
Training and Development Managers	20	20	0.00	0	102,314
Computer Hardware Engineers	1,120	1,190	0.61	30	101,545
Electrical Engineers	1,810	1,980	0.90	55	101,312
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	180	190	0.54	5	101,262
Engineering Teachers, Postsecondary	NA	NA	1.55	0	99,059
Art Directors	60	70	1.55	0	99,037
Materials Engineers	320	310	-0.32	10	98,668
Administrative Services Managers	170	190	1.12	5	98,366
Human Resources Managers	210	240	1.34	10	98,228
Operations Research Analysts	450	530	1.65	15	96,627
Physician Assistants	40	50	2.26	0	96,124
Software Developers, Applications*	2,010	2,470	2.08	70	96,075
Industrial Production Managers	640	660	0.31	15	95,059
Management Analysts	2,260	2,540	1.17	65	95,002
Optometrists	70	80	1.34	5	95,002
Airline Pilots, Copilots, and Flight Engineers	160	140	-1.33	5	94,634
Financial Analysts	100	110	0.96	5	94,272
Public Relations and Fundraising Managers	40	40	0.00	0	94,031
Mechanical Engineers	1,390	1,570	1.23	65	93,175

Note: Employment and salaries data are rounded to the nearest 10; openings to the nearest 5. The salary data provided are based on the May 2012 release of the Occupational Employment Statistics (OES) combined employment and wage file. Estimates for specific occupations may include imputed data. Occupations in bold are also fast-growing.

\* - Qualify as both high-earning and high-demand occupations. NA - Not available

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

**Table 2.13 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	6,740	5,840	-900	-13
Meat, Poultry, and Fish Cutters and Trimmers	3,250	2,860	-390	-12
Postal Service Mail Carriers	880	620	-260	-30
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	890	680	-210	-24
Sewing Machine Operators	810	630	-180	-21
Food Cooking Machine Operators and Tenders	NA	NA	-140	-12
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	300	180	-120	-39
Data Entry Keyers	490	390	-100	-20
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	350	280	-70	-19
Slaughterers and Meat Packers	NA	NA	-60	-21
Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	300	250	-50	-16
Textile Bleaching and Dyeing Machine Operators and Tenders	220	170	-50	-23
Postal Service Clerks	160	110	-50	-35
Postal Service Mail Sorters, Processors, and Processing Machine Operators	150	100	-50	-32
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	280	240	-40	-14
Word Processors and Typists	100	60	-40	-35
Couriers and Messengers	260	230	-30	-13
Financial Specialists, All Other	230	200	-30	-11
Switchboard Operators, Including Answering Service	210	180	-30	-14
Computer Operators	200	180	-20	-9

Note: Employment data are rounded to the nearest 10. NA - Not available due to disclosure restrictions.

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 2.14 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 2.15 shows the percentage of selected occupations in the region 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 2.15 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 2.14 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 2.15 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	55	48
Active Listening	95	95	88
Critical Thinking	90	95	88
Learning Strategies	5	10	6
Mathematics	8	5	22
Monitoring	68	80	48
Reading Comprehension	75	80	80
Science	5	5	30
Speaking	83	95	82
Writing	40	55	50
<b>Complex Problem Solving Skills</b>			
Complex Problem Solving	48	25	68
<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	18
Time Management	35	45	14
<b>Social Skills</b>			
Coordination	48	55	26
Instructing	15	25	6
Negotiation	0	0	12
Persuasion	5	10	14
Service Orientation	28	55	14
Social Perceptiveness	48	65	42
<b>Systems Skills</b>			
Judgment and Decision Making	58	55	80
Systems Analysis	15	5	12
Systems Evaluation	10	0	8
<b>Technical Skills</b>			
Equipment Maintenance	8	0	0
Equipment Selection	3	0	0
Installation	3	0	0
Operation and Control	13	5	2
Operation Monitoring	23	15	2
Operations Analysis	8	0	14
Programming	8	5	4
Quality Control Analysis	10	5	0
Repairing	5	0	0
Technology Design	0	0	0
Troubleshooting	5	0	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 mathematics, science, complex problem solving, personnel resources management, persuasion, negotiation, judgment and decision making, and operation analysis than both high-demand and fast-growing jobs. These skills require postsecondary education and long training periods. However, high-earning jobs require slightly less social skills (except persuasion and negotiation) and significantly less technical skills (except operations analysis) than high-demand and fast-growing occupations. High-demand occupations require somewhat more complex problem solving, systems, technical, and resource management skills (personnel and financial resources) than fast-growing occupations but less social skills.

Table 2.16 shows skill gap indexes for all 35 skills in Table 2.14 based on previous occupation projections (2008 to 2018). 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. It focuses on the projection period and 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. Although the skills gap indexes are for a previous projection period, they are applicable to the current occupation projections. 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 technical, systems, and complex problem solving skills; the scale of training should be raised for basic and social skills.

## **Education and Training Issues**

Educational attainment in Region 2 is above that of the state as a whole. About 84.0 percent of residents age 25 and over had graduated from high school in 2010 to 2014, same as for the state. About 26.0 percent have a bachelor's or higher degree versus 23.0 percent for Alabama. Skill and education requirements for jobs keep rising. This highlights a strong need to raise educational attainment as rates vary considerably across the region.

Table 2.17 shows the number of selected occupations in the region for which a particular education/training category is most common. In general, high-earning occupations require high educational attainment levels; all but one of the top 50 high-earning occupations requires a bachelor's or higher degree. Twenty-two (55.0 percent) of the 40 high-demand occupations require an associate degree at the minimum and 17 (43.0 percent) require a bachelor's or higher degree. Twelve (60.0 percent) of the 20 fast-growing occupations require an associate degree at the minimum, with seven (35.0 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 requiring a high school diploma or GED at a minimum. Of the region's 701 occupations, 68 are expected to decline over the period and education and training for these should slow accordingly.

**Table 2.16 Skills Gap Indexes (Base Year 2008 and Projected Year 2018)**

<b>Skill</b>	<b>Total Openings (Projected Demand)</b>	<b>Replacement Index</b>	<b>Skills Gap Index</b>
Reading Comprehension	7,800	55	100
Active Listening	7,785	55	97
Critical Thinking	6,865	55	94
Speaking	6,325	54	91
Active Learning	6,360	55	89
Coordination	6,060	55	86
Writing	5,635	55	83
Time Management	5,425	54	80
Instructing	5,570	55	77
Monitoring	5,440	55	74
Learning Strategies	5,100	55	71
Social Perceptiveness	4,255	54	69
Service Orientation	3,775	52	66
Complex Problem Identification	3,785	54	63
Judgment and Decision Making	3,995	55	60
Persuasion	3,990	56	57
Mathematics	3,580	54	54
Equipment Selection	2,950	56	51
Troubleshooting	2,100	55	49
Negotiation	1,980	61	46
Management of Personnel Resources	1,880	61	43
Operations Analysis	1,520	53	40
Installation	1,500	55	37
Equipment Maintenance	1,450	56	34
Systems Analysis	1,070	48	31
Systems Evaluation	1,155	51	29
Quality Control	1,430	57	26
Technology Design	975	50	23
Management of Financial Resources	1,170	61	20
Science	930	53	17
Repairing	830	60	14
Operation and Control	1,030	62	11
Operation Monitoring	1,070	66	9
Management of Material Resources	745	63	6
Programming	270	46	3

Source: Alabama Department of Labor.

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

**Table 2.17 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	1	1	15
Master's Degree	4	3	2
Bachelor's or Higher Degree Plus Work Experience	5	2	19
Bachelor's Degree	7	1	13
Associate Degree	5	5	0
Postsecondary Non-Degree Plus On-the-job Training	0	0	0
Postsecondary Non-Degree	3	0	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	11	6	1
High School Diploma	0	0	0
Less than High School Plus On-the-job Training	3	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

Region 2’s job growth is projected to outpace total population and labor force growth. From a 2012 base, worker shortfalls of 18,712 and 39,406 are expected in 2022 and 2030 respectively (Table 2.18). Worker shortfalls may be somewhat understated because of the expected impact of Base Realignment and Closures at the Redstone Arsenal Military Facility in Huntsville. A focus on worker skills and the expected shortfall must be a priority through 2022 and 2030. Worker shortfalls for critical occupations will need to be addressed continuously through 2030 as well.

**Table 2.18 Expected Worker Shortfall**

	2012-2022	2012-2030
Total population growth (percent)	10.6	18.6
Age 20-64 population growth (percent)	6.7	10.4
Job growth (percent)	12.1	21.9
Worker shortfall (percent)	5.5	11.5
Worker shortfall (number)	18,712	39,406

Note: Rounding errors may be present.

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

Employment is critical to economic development and so strategies to address potential shortfalls must be adopted and implemented. Such strategies should aim at increasing labor force participation, encouraging in-migration, and raising worker productivity. Efforts to address the need for higher labor force participation, higher productivity, and faster labor force growth to meet workforce demand must 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) economic opportunities that attract new and younger residents; (6) encouragement of older worker participation in the labor force; and (7) facilitation of in-commuting.

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 technical, systems, and complex problem solving 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 while enhancing these basic skills. Employers should be an integral part of planning for training as they can help to identify future skill needs and any existing gaps. Education and training for the 20 sharp-declining occupations in Table 2.13 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 of the 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 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 persons in poverty, those receiving welfare, those in sparsely populated areas, and those on active parole. These populations are often outside of the mainstream economy and are in poverty. They usually have difficulty finding work because they have low levels of educational attainment, lack occupational skills, or face geographic or other barriers. They are a potential human resource and investment in training, transportation, childcare, infrastructure, etc. may be needed to tap this resource.

In-migration is one way of growing the labor force to fill the critical, specialized skill needs seen in some areas of Region 2. While the region's population growth rate is above average, there is a strong need for workers with higher education and experience in science and engineering to meet the expected job demand. Higher employment demand could be partially served by in-commuting. However, new residents can be attracted using higher-paying job opportunities from the region's economic development successes. Investment in amenities and infrastructure may be needed to support such growth. In-migration is generally more beneficial to a region 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 region's workforce challenge. Such policies can 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 2.5), 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 region'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 would help raise personal income for the region 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 even for a region that has relatively high 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.