

# State of the Workforce Report IX: Alabama

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Alabama Industrial Development Training



The University of Alabama



June 2015

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 IX: Alabama



June 2015

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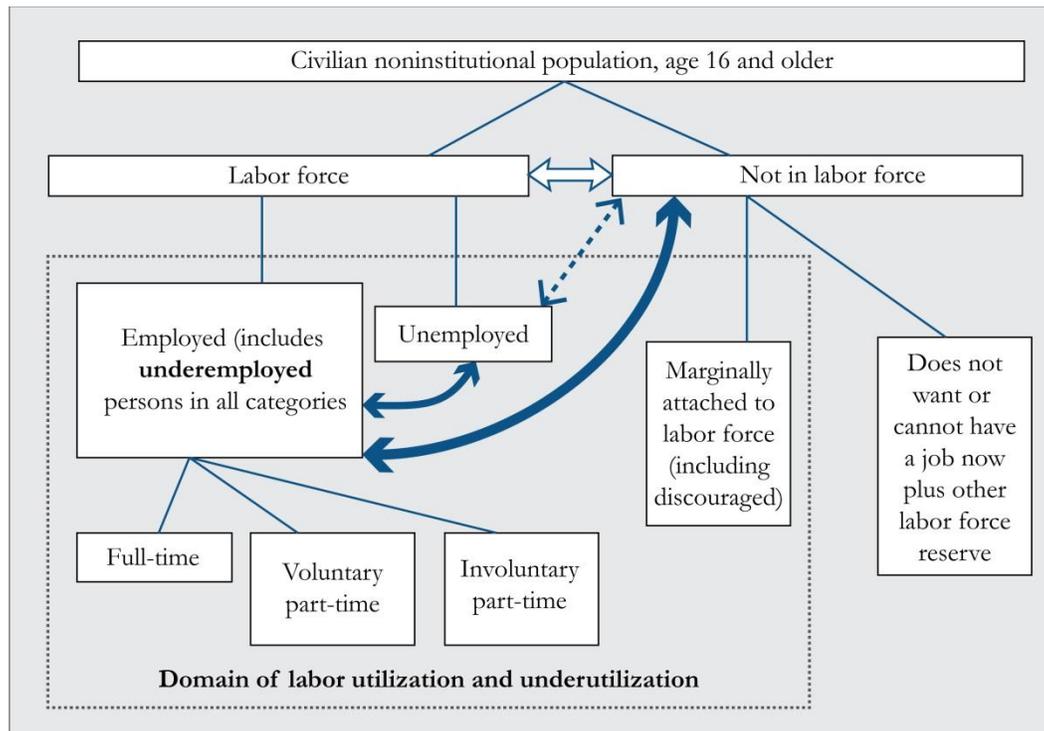
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## Summary

- This report analyzes Alabama workforce supply and demand issues using available metrics of workforce characteristics and presents implications and recommendations.
- Alabama had an unemployment rate of 5.3 percent in April 2015, with 115,076 unemployed. An underemployment rate of 25.2 percent for 2014 means that the state has a 628,473-strong available labor pool that includes 513,397 underemployed workers who are looking for better jobs and are willing to commute farther and longer for such jobs.
- Net out-commuting jumped from 20,196 in 2005 to 33,838 in 2011 and commute time went up while commute distance dropped in 2014 from 2013. This implies that congestion worsened and remains a challenge in problematic areas. Congestion is likely to persist as the economy recovers and can slow the pace of economic development. Continuous maintenance and development of transportation infrastructure and systems is therefore important.
- By sector the top five employers in the state are manufacturing, health care and social assistance, retail trade, accommodation and food services, and educational services. These five industries provided 1,063,112 jobs or 58.8 percent of the state total, in the second quarter of 2014. The leading employers are not the highest paying sectors as only manufacturing had wages that were above the state average monthly wage. Economic development should aim to diversify and strengthen the state's economy by retaining, expanding, and attracting more high-wage providing industries. Workforce development should also focus on preparing workers for these industries.
- On average about 85,877 jobs were created per quarter from second quarter 2001 to second quarter 2014; quarterly net job flows averaged 7,595. 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; Team Assemblers; General and Operations Managers; Licensed Practical and Licensed Vocational Nurses; and Personal Care Aides.
- The top five fast-growing occupations are Engine and Other Machine Assemblers; Occupational Therapist Assistants; Personal Care Aides; Diagnostic Medical Sonographers; and Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters.
- The top 50 high-earning occupations are in health, management, engineering, computer, postsecondary education, and science fields and have a minimum salary of \$93,757. Nine of the top 10 are health occupations.
- Of the top 40 high-demand, the top 20 fast-growing, and 50 high-earning occupations, two occupations—Biological Science Teachers, Postsecondary and Health Specialties Teachers, Postsecondary—belong to all three categories. Nine occupations are both high-demand and high-earning while 10 occupations are both high-demand and fast-growing.

- Of the state's 794 occupations, 114 are expected to decline over the 2012 to 2022 period. Twenty occupations are expected to sharply decline by at least 11 percent, with each losing a minimum of 110 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 tomorrow's 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. The pace of training needs to increase for technical and systems 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. 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 shortfalls of 147,460 for 2022 and 215,844 for 2030 are expected. This will demand focusing on both skills and the expected shortfall as priorities 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) use of economic opportunities to attract new residents; (3) focusing 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 state as well as raise additional tax revenues for the state and local (county and city) tax jurisdictions. This is especially important for a state that has low population and labor force growth rates as well as low per capita income.
- Together, workforce development and economic development can build a strong, well-diversified Alabama 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 comprises 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 is 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 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, and the disabled and discouraged workers). Table A.1 shows labor force information for Alabama and each Workforce Development Region (WDR) in the state for 2014 and for April 2015. 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.

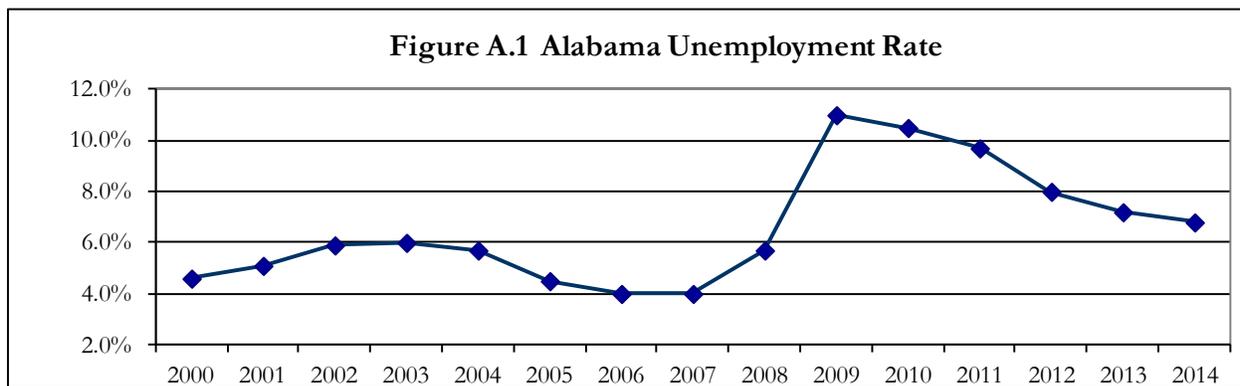
**Table A.1 Alabama Labor Force Information**

	2014 Annual Average			
	Labor Force	Employed	Unemployed	Rate (%)
WDR 1	116,657	107,545	9,112	7.8
WDR 2	391,497	366,485	25,012	6.4
WDR 3	133,870	125,004	8,866	6.6
WDR 4	525,911	494,513	31,398	6.0
WDR 5	181,354	167,998	13,356	7.4
WDR 6	34,968	31,140	3,828	10.9
WDR 7	186,051	173,478	12,573	6.8
WDR 8	123,674	115,872	7,802	6.3
WDR 9	315,437	291,477	23,960	7.6
WDR 10	142,434	132,081	10,353	7.3
Jefferson County	311,833	292,161	19,672	6.3
Mobile County	184,133	169,947	14,186	7.7
Alabama	2,150,118	2,003,910	146,208	6.8
United States	155,922,000	146,305,000	9,616,000	6.2
	April 2015			
	Labor Force	Employed	Unemployed	Rate (%)
WDR 1	114,502	107,137	7,365	6.4
WDR 2	391,223	371,730	19,493	5.0
WDR 3	135,728	128,689	7,039	5.2
WDR 4	527,608	502,227	25,381	4.8
WDR 5	179,786	169,665	10,121	5.6
WDR 6	34,742	31,855	2,887	8.3
WDR 7	186,485	176,617	9,868	5.3
WDR 8	124,231	118,173	6,058	4.9
WDR 9	316,005	297,201	18,804	6.0
WDR 10	141,250	133,190	8,060	5.7
Jefferson County	312,665	296,729	15,936	5.1
Mobile County	184,056	172,983	11,073	6.0
Alabama	2,151,559	2,036,483	115,076	5.3
United States	156,554,000	148,587,000	7,966,000	5.1

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

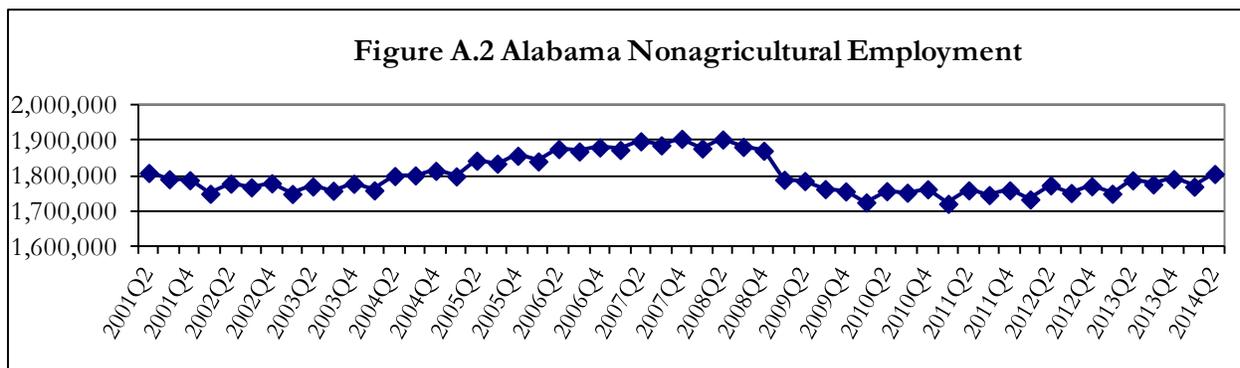
Unemployment rates for the state and all WDRs have been slowly declining since the end of the recent recession that began in December 2007. Unemployment rates in 2014 ranged between 6.0 percent and 10.9 percent for the WDRs, with a 6.8 percent annual average for the state. In April 2015 unemployment rates ranged from 4.8 percent (WDR 4) to 8.3 percent (WDR 6) for the regions, with a 5.3 percent rate for the state. WDR 4 had the largest labor force and WDR 6 had the smallest.

The unemployment rate has been declining continuously since 2009 when it was highest due to the recession (Figure A.1). A slow economic recovery has kept unemployment rates above pre-recession levels. Year-to-date monthly labor force data point to a lower state unemployment rate for 2015 as monthly unemployment rates are below the corresponding 2014 rates. In January 2015, the monthly state unemployment was at 6.0 percent. By April 2015, the state unemployment rate had fallen to 5.3 percent, slightly above the 5.1 percent national unemployment rate. Preliminary indicators point to slightly declining rates for the first half of 2015. Despite ongoing economic development efforts, the long-lasting effects of the latest recession and structural changes in the state economy are likely to keep unemployment above the pre-recession level over next few years.



Source: Alabama Department of Labor.

Nonagricultural employment of Alabama residents in the state averaged about 1.8 million quarterly from the second quarter of 2001 to the second quarter of 2014 (Figure A.2). The number of jobs in the state dropped from a high of 1.9 million in fourth quarter 2007 to a low of 1.7 million in the first quarter of 2011. Employment has shown signs of recovery after the first quarter of 2011, but was just above 1.8 million in the second of quarter of 2014. At 56.4 percent, the state's labor force participation rate was lower than the nation's 62.9 percent in 2014 and continues to drop.



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

Table A.2 shows worker distribution by age in Alabama for second quarter 2014. At 20.7 percent, older workers (age 55 and over) constitute a significant and growing part of total nonagricultural employment. The share of older workers for the WDRs ranged from 18.6 percent for Region 8 to 25.1 percent for Region 6. To meet long term occupational projections for growth and replacement, labor force participation of younger residents must increase otherwise older workers may be required to work longer.

**Table A.2 Workers by Age Group (Second Quarter 2014)**

Age Group	Nonagricultural Employment	
	Number	Percent
14-18	29,660	1.6
19-24	203,233	11.2
25-34	395,771	21.9
35-44	401,436	22.2
45-54	403,401	22.3
55-64	286,168	15.8
65+	87,792	4.9
55 and over total	373,960	20.7
Total all ages	1,807,461	100.0

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

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

## Commuting Patterns

In 2005 more Alabama residents commuted out of the state to work than nonresidents who commuted in for work (Table A.3). Commuter outflow exceeded inflow by about 20,196 people. Most of the commuting involved Alabama's four neighboring states: Georgia, Florida, Mississippi, and Tennessee.

By 2011, this is the most recent year with available data, the level of in-commuting rose by 41.0 percent to 61,251 and out-commuting increased by 49.4 percent to 95,089. Net out-commuting increased significantly from 20,196 to 33,838. The top destinations for the out-commuting Alabama residents in 2011 were Georgia (42,005), Mississippi (17,382), Florida (12,382), and Tennessee (10,394).

Table A.3 also shows the one-way average commute time and distance for Alabama workers in various years. More workers reported longer commute times but shorter distances in 2014 compared to 2013 implying that congestion may have worsened particularly in troublesome areas. As population grows and the state economy recovers from the last recession, congestion will worsen and remain a challenge. Congestion can delay or slow economic development by impeding the flow of goods and the mobility of workers. Thus, maintenance and development of transportation infrastructure and systems must continue in order to facilitate the movement of workers and goods.

**Table A.3 Commuting Patterns in Alabama**

Year	State Inflow	State Outflow						
	Number	Number						
2005	43,434	63,630						
2006	49,079	60,095						
2007	50,492	83,382						
2008	58,431	81,088						
2009	52,116	85,328						
2010	58,414	90,544						
2011	61,251	95,089						
	Percent of workers							
<b>Average commute time (one-way)</b>	<b>2005/2006</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Less than 20 minutes	55.2	54.9	53.5	55.1	56.3	51.7	52.1	50.4
20 to 40 minutes	29.1	29.6	28.8	29.0	27.6	31.4	28.9	28.7
40 minutes to an hour	9.3	9.4	11.1	10.3	10.2	9.9	9.3	10.7
More than an hour	2.3	2.9	2.7	2.5	2.8	3.6	3.6	2.4
<b>Average commute distance (one-way)</b>	<b>2005/2006</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Less than 10 miles	46.5	46.0	45.4	45.7	46.1	42.8	44.1	42.4
10 to 25 miles	30.6	32.4	32.1	32.8	32.5	34.4	32.7	35.2
25 to 45 miles	13.4	13.5	15.5	14.2	14.1	15.2	14.1	14.7
More than 45 miles	4.5	6.3	5.8	5.6	5.8	6.5	6.6	5.9

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

The Alabama population count of almost 4.8 million for 2010 was 7.5 percent more than in 2000 (Table A.4). The state’s population growth was lower than the nation’s 9.7 percent. Population grew faster for three WDRs than for the state, but population also shrank in one WDR. Region 2 had the highest population growth at 14.1 percent followed by Region 3 with 9.6 percent, and Region 8 at 9.5 percent. Population fell in Region 6 by 7.2 percent and in Jefferson County by 0.5 percent. The 2014 population estimates show a 1.5 percent population increase for the state with much of the growth occurring in WDR 8 and WDR 2.

Table A.5 shows Alabama’s population counts, estimates, and projections by age group. The population aged 65 and over has been growing rapidly as the baby boomer generation turns 65 and over. Consequently, growth of the prime working age group (20-64) and youth (0-19) is expected to lag that of the total population through 2030. This poses a challenge for workforce development. If employment growth outpaces labor force growth as is expected for the long term, communities that experience rapid job gains may need to consider investments in amenities and infrastructure to attract new residents.

**Table A.4 Population by Workforce Development Region**

	1990 Census	2000 Census	2010 Census	2014 Estimate	Change 2000-2010	Percent Change	Change 2010-2014	Percent Change
WDR 1	242,537	265,033	268,440	267,138	3,407	1.3	-1,302	-0.5
WDR 2	633,982	731,532	834,844	860,348	103,312	14.1	25,504	3.1
WDR 3	247,125	268,208	293,927	299,780	25,719	9.6	5,853	2.0
WDR 4	940,268	1,031,412	1,105,132	1,121,266	73,720	7.1	16,134	1.5
WDR 5	405,276	424,451	436,254	430,028	11,803	2.8	-6,226	-1.4
WDR 6	113,715	108,746	100,871	95,911	-7,875	-7.2	-4,960	-4.9
WDR 7	340,702	381,592	409,389	407,414	27,797	7.3	-1,975	-0.5
WDR 8	206,852	237,250	259,775	278,128	22,525	9.5	18,353	7.1
WDR 9	610,415	678,997	727,145	742,686	48,148	7.1	15,541	2.1
WDR 10	299,715	319,879	343,959	346,678	24,080	7.5	2,719	0.8
Jefferson County	651,525	662,047	658,466	660,793	-3,581	-0.5	2,327	0.4
Mobile County	378,643	399,843	412,992	415,123	13,149	3.3	2,131	0.5
Alabama	4,040,587	4,447,100	4,779,736	4,849,377	332,636	7.5	69,641	1.5
United States	248,709,873	281,421,906	308,745,538	318,857,056	27,323,632	9.7	10,111,518	3.3

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

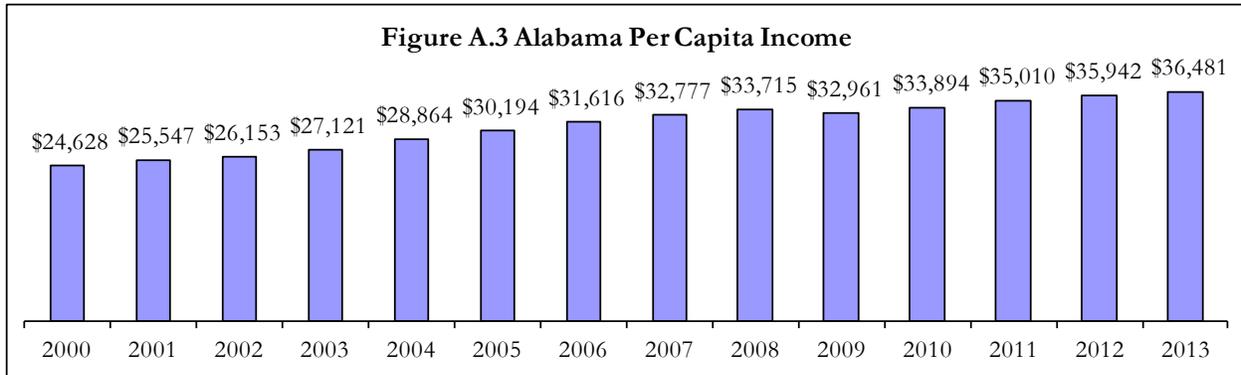
**Table A.5 Alabama Population by Age Group and Projections**

Age Group	2000	2010	2012	2022	2030
0-19	1,256,169	1,276,312	1,256,466	1,302,088	1,312,820
20-24	306,865	335,322	352,881	358,276	366,869
25-29	301,196	311,034	310,155	317,155	326,756
30-34	301,819	297,888	307,602	312,905	331,280
35-39	340,300	308,430	292,125	318,171	328,740
40-44	345,212	311,071	314,542	314,969	315,162
45-49	315,173	346,369	326,840	313,056	333,061
50-54	285,036	347,485	346,624	315,901	311,640
55-59	225,450	311,906	327,489	332,742	317,231
60-64	190,082	276,127	287,919	339,875	311,023
65+	579,798	657,792	699,380	930,467	1,118,712
20-64 Total	2,611,133	2,845,632	2,866,177	2,923,050	2,941,762
Total Population	4,447,100	4,779,736	4,822,023	5,155,605	5,373,294
<i>Change from 2012</i>					
0-19				3.6%	4.5%
20-64				2.0%	2.6%
Total Population				6.9%	11.4%

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

## Per Capita Income

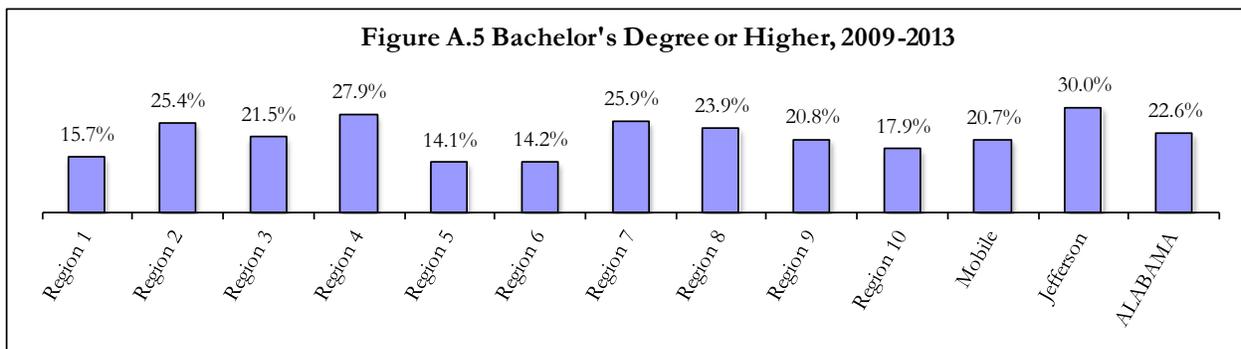
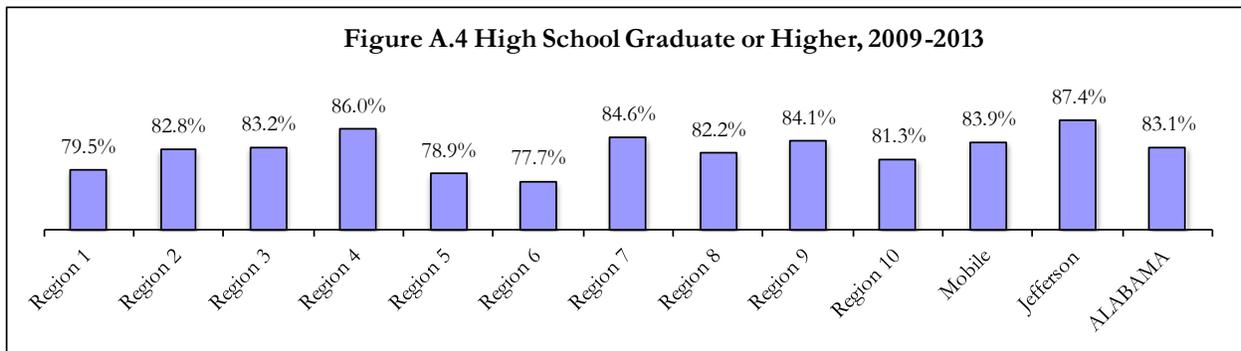
Per capita income (PCI) in Alabama was \$36,481 in 2013 (Figure A.3), up 48.1 percent from 2000. WDR 4 had the highest PCI with \$42,916 followed by Region 7 with \$37,907 and Region 2 with \$37,278. The other regions had lower PCI than the state average. At \$30,341, Region 8 had the lowest PCI followed by Region 6 with \$31,242.



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

### Educational Attainment

Educational attainment of Alabama residents who were 25 years old and over is shown in Table A.6 and Figures A.4 and A.5. These figures are based on American Community Survey's 5-year estimates for 2009 through 2013. About 83 percent of the population had graduated from high school and 23 percent held a bachelor's or higher degree. Region 4 had the highest educational attainment followed by Region 7 while Region 6 and Region 5 had the lowest. Educational attainment is important as skills rise with education, and high-wage jobs in the 21st century demand more skill sets.



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

**Table A.6 Educational Attainment of Population 25 Years and Over, 2009-2013**

	<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>	<b>Region 4</b>	<b>Region 5</b>	<b>Region 6</b>	<b>Region 7</b>
Total	184,057	566,591	184,507	746,506	297,262	64,173	266,780
No schooling completed	2,737	7,974	2,341	6,670	4,276	1,277	3,466
Nursery to 4th grade	1,110	4,716	820	2,739	1,788	626	1,110
5th and 6th grade	2,749	8,422	1,913	7,520	4,548	1,120	2,862
7th and 8th grade	7,162	15,591	4,736	14,870	10,939	1,911	6,079
9th grade	6,132	14,488	4,580	15,593	9,386	1,728	6,082
10th grade	7,599	19,668	6,662	20,996	12,946	2,819	8,144
11th grade	6,787	17,385	6,633	24,136	12,784	3,162	8,115
12th grade, no diploma	3,516	9,274	3,386	12,022	6,046	1,666	5,133
High school graduate/equivalent	63,991	159,875	63,364	207,467	103,777	24,401	80,492
Some college, less than 1 year	12,170	34,507	9,781	42,398	20,286	3,297	15,245
Some college, 1+ years, no degree	28,168	87,208	29,606	128,213	46,653	8,850	43,714
Associate degree	13,020	43,824	11,058	55,621	21,919	4,175	17,239
Bachelor's degree	18,377	91,087	23,993	132,216	26,445	5,784	43,379
Master's degree	7,555	39,918	10,945	50,581	11,494	2,632	19,217
Professional school degree	1,687	7,352	2,536	16,641	2,457	392	3,941
Doctorate degree	1,297	5,302	2,153	8,823	1,518	333	2,562
	<b>Region 8</b>	<b>Region 9</b>	<b>Region 10</b>	<b>Mobile</b>	<b>Jefferson</b>	<b>Alabama</b>	
Total	163,019	488,825	231,618	269,898	441,488	3,193,338	
No schooling completed	2,403	6,012	3,555	3,999	3,622	40,711	
Nursery to 4th grade	1,089	1,895	1,658	919	1,326	17,551	
5th and 6th grade	1,983	4,537	3,404	1,971	3,783	39,058	
7th and 8th grade	3,685	11,385	6,993	5,443	7,052	83,351	
9th grade	3,913	11,301	6,601	6,417	7,015	79,804	
10th grade	5,946	15,174	8,563	8,465	10,999	108,517	
11th grade	6,350	18,005	8,481	10,566	14,557	111,838	
12th grade, no diploma	3,604	9,560	4,163	5,574	7,220	58,370	
High school graduate/equivalent	48,395	162,791	77,177	88,998	117,235	991,730	
Some college, less than 1 year	9,792	28,469	15,468	15,452	22,913	191,413	
Some college, 1+ years, no degree	25,244	79,201	34,973	45,253	80,707	511,830	
Associate degree	11,628	38,911	19,078	20,967	32,547	236,473	
Bachelor's degree	23,018	67,471	26,623	36,855	81,219	458,393	
Master's degree	10,549	23,698	11,263	13,009	32,777	187,852	
Professional school degree	2,085	6,315	2,240	3,617	12,244	45,646	
Doctorate degree	3,335	4,100	1,378	2,393	6,272	30,801	

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 WDRs with 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.

The Alabama underemployment rate was 25.2 percent in 2014. Applying this rate to April 2015 labor force data means that 513,397 employed Alabama residents were underemployed (Table A.7). Adding the unemployed gives a total available labor pool of 628,473 for the state. This is 5.5 times the number of unemployed and is a more realistic measure of the available labor pool in the state. 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 are willing to commute farther and longer for a better job. Over 45 percent are prepared to add 20 or more minutes to their one-way commute and over 34 percent are willing to add 20 or more extra miles for a better job.

**Table A.7 Underemployed and Available Labor by WDR**

	<b>Alabama</b>	<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>	<b>Region 4</b>	<b>Region 5</b>	<b>Region 6</b>
Labor force	2,151,559	114,502	391,223	135,728	527,608	179,786	34,742
Employed	2,036,483	107,137	371,730	128,689	502,227	169,665	31,855
Underemployment rate	25.2%	24.0%	23.2%	28.1%	25.1%	22.2%	27.6%
Underemployed workers	513,397	25,713	86,204	36,136	126,210	37,615	8,798
Unemployed	115,076	7,365	19,493	7,039	25,381	10,121	2,887
<b>Available labor pool</b>	<b>628,473</b>	<b>33,078</b>	<b>105,697</b>	<b>43,175</b>	<b>151,591</b>	<b>47,736</b>	<b>11,685</b>
	<b>Region 7</b>	<b>Region 8</b>	<b>Region 9</b>	<b>Region 10</b>	<b>Jefferson</b>	<b>Mobile</b>	
Labor force	186,485	124,231	316,005	141,250	312,665	184,056	
Employed	176,617	118,173	297,201	133,190	296,729	172,983	
Underemployment rate	28.7%	30.6%	24.5%	22.2%	24.0%	25.2%	
Underemployed workers	50,671	36,208	72,725	29,595	71,215	43,540	
Unemployed	9,868	6,058	18,804	8,060	15,936	11,073	
<b>Available labor pool</b>	<b>60,539</b>	<b>42,266</b>	<b>91,529</b>	<b>37,655</b>	<b>87,151</b>	<b>54,613</b>	

Note: Rounding errors may be present. Based on April 2015 labor force data and 2014 underemployment rates.

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

Underemployment rates for counties, WDRs, and the state were determined from an extensive survey on the state's workforce. A total of 8,896 complete responses were obtained. About 39 percent (3,487 respondents) were employed, of whom 879 stated that they were underemployed. Among the WDRs, underemployment ranged from 22.2 percent for Region 5 and Region 10 to 30.6 percent for Region 8. Region 4 has the most available labor, followed by Region 2. The two regions account for about 41 percent of the state's available labor pool. Among counties, Bullock had the highest rate of underemployment at 40.0 percent, followed by Elmore with 39.1 and Butler at 36.6 percent. Jackson County had the lowest underemployment rate at 8.7 percent, followed by Houston at 10.9 percent and Cleburne with 12.2 percent. Thirty-five counties had underemployment rates above the state's 25.2 percent.

The primary reasons for being underemployed are 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 spouse or partner having a really good job. Ongoing economic development efforts can help in this regard. Nonworkers cite retirement, disability or other health concerns, a lack of job opportunities in their area, and social security limitations 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 percent more than that of unemployed workers who gain employment.<sup>3</sup> This implies that the state's available labor pool could be larger than estimated in this report.

<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.

A comparison of underemployed workers to the overall state workforce shows that:

- Fewer work full-time and more of the part-timers prefer full-time work.
- More hold multiple jobs.
- They have slightly longer commute distances and times.
- The underemployed are for the most part distributed evenly across occupations. However, there are more in transportation and material moving, production, office and administrative support, sales and related; personal care and service, building and grounds cleaning and maintenance, food preparation and serving, protective service, healthcare support, and education training, and library occupations.
- By industry, more are in accommodation and food services; arts, entertainment, and recreation; educational services; transportation and warehousing; retail trade; and other services industries.
- They earn less and have less job tenure.
- Fewer believe their jobs fit well with their education and training, skills, and experience.
- More believe they are qualified for a better job based on their education and training, skills, and experience.
- More would leave their current jobs for higher income.
- More are willing to commute more than 20 minutes and over 20 miles 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 pay part or all of the cost.
- More have sought better jobs in the preceding quarter.
- Their educational attainment is somewhat similar to all employees, but slightly more have some college education with no degree, an associate degree, or a bachelor's degree.
- The median age, 51, is a year and half lower than that of all employees.
- Fewer are married, male, or white.
- More are Hispanic and African American or other nonwhite ethnicities.

Table A.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. Most Alabama workers (76.1 percent) are satisfied or completely satisfied with their jobs. Workers are most satisfied with the work that they do and least satisfied with the earnings they receive. Clearly, fewer underemployed workers are satisfied with their jobs (57.0 percent). The underemployed are also more dissatisfied with their earnings and most satisfied with the work they do.

Workers are generally willing to train for a new or better job, with the underemployed being much more willing (70.0 percent vs. 57.6 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. This strongly suggests that workers expect the government to bear at least part of the training cost. This expectation may result from worker awareness of government workforce programs that provide such assistance. The underemployed are more willing to train for the new or better job even if they have to bear the full cost.

**Table A.8 2014 Job Satisfaction and Willingness to Train (Percent)**

		<b>Job Satisfaction</b>				
		Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
<b>Employed</b>						
Overall		3.4	4.0	16.4	27.0	49.1
	Earnings	10.5	9.6	21.5	25.8	32.0
	Retention	4.0	4.4	11.1	17.9	61.2
	Work	1.4	2.2	8.0	23.5	64.7
	Hours	4.8	4.1	10.9	20.6	59.4
	Shift	3.4	3.1	7.1	15.1	71.0
	Conditions	3.4	4.6	13.3	25.1	53.4
	Commuting Distance	3.8	4.6	10.6	14.7	65.9
<b>Underemployed</b>						
Overall		8.8	8.0	25.9	28.4	28.6
	Earnings	23.7	17.3	23.9	19.6	15.1
	Retention	8.1	7.6	19.7	19.7	45.6
	Work	3.5	4.1	12.7	26.3	52.8
	Hours	11.8	6.8	15.1	20.6	45.5
	Shift	7.4	5.0	9.4	17.1	60.9
	Conditions	8.3	8.4	19.0	25.3	38.7
	Commuting Distance	7.4	6.1	12.5	13.7	60.3
		<b>Willingness to Train</b>				
		Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
<b>Employed</b>						
For a new or better job		24.6	3.1	13.5	11.2	46.5
	If paid by trainee	45.5	18.3	18.3	6.0	7.6
	If paid by trainee and government	12.3	12.4	33.3	19.1	18.4
	If paid by government	3.3	2.4	9.6	15.0	67.4
<b>Underemployed</b>						
For a new or better job		15.0	3.1	10.7	9.6	60.4
	If paid by trainee	43.5	19.4	18.7	6.0	8.7
	If paid by trainee and government	12.1	11.0	29.5	23.2	19.8
	If paid by government	2.2	1.9	7.2	12.3	74.8

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 Alabama with 254,575 jobs in the second quarter of 2014 (Table A.9). Rounding out the top five industries by employment are health care and social assistance, retail trade, accommodation and food services, and educational services. These five industries provided 1,063,112 jobs, 58.8 percent of the state total. The average monthly wage across all industries in the state was \$3,204. New hire monthly earnings averaged \$2,196 or 68.5 percent of the average monthly wage. The highest average monthly wages were for mining at \$6,196; utilities \$5,725; professional, scientific, and technical services at \$5,299; and finance and insurance \$4,725. Accommodation and food services paid the least at \$1,216. Mining had the highest average monthly new hire wage at \$5,173 followed by professional, scientific, and technical services at \$4,273 and utilities at \$3,610. Accommodation and food services paid newly hired workers the least, \$1,031.

**Table A.9 Industry Mix (Second Quarter 2014)**

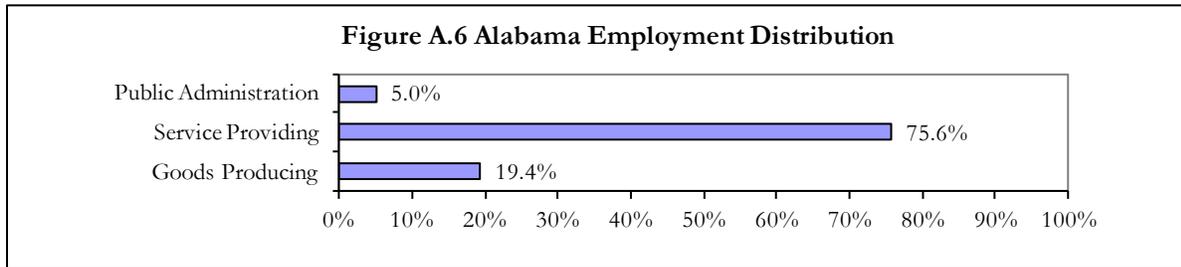
Industry by 2-digit NAICS Code	Total Employment	Share	Rank	Average Monthly Wage	Average Monthly New Hire Earnings
11 Agriculture, Forestry, Fishing and Hunting	11,492	0.64%	19	\$2,807	\$2,365
21 Mining	7,236	0.40%	20	\$6,196	\$5,173
22 Utilities	20,858	1.15%	16	\$5,725	\$3,610
23 Construction	76,485	4.23%	9	\$3,546	\$3,286
31-33 Manufacturing	254,575	14.08%	1	\$4,185	\$2,932
42 Wholesale Trade	73,009	4.04%	10	\$4,420	\$3,559
44-45 Retail Trade	230,206	12.74%	3	\$2,085	\$1,532
48-49 Transportation and Warehousing	59,268	3.28%	12	\$3,344	\$2,829
51 Information	23,393	1.29%	15	\$4,212	\$3,132
52 Finance and Insurance	71,062	3.93%	11	\$4,725	\$3,339
53 Real Estate and Rental and Leasing	23,557	1.30%	14	\$3,082	\$2,367
54 Professional, Scientific, and Technical Services	95,340	5.27%	7	\$5,299	\$4,273
55 Management of Companies and Enterprises	16,518	0.91%	18	\$4,211	\$3,074
56 Administrative and Support and Waste Management and Remediation Services	111,037	6.14%	6	\$2,013	\$1,917
61 Educational Services	167,087	9.24%	5	\$3,132	\$1,621
62 Health Care and Social Assistance	242,009	13.39%	2	\$3,195	\$2,349
71 Arts, Entertainment, and Recreation	18,616	1.03%	17	\$1,692	\$1,235
72 Accommodation and Food Services	169,235	9.36%	4	\$1,216	\$1,031
81 Other Services (Except Public Administration)	45,494	2.52%	13	\$2,622	\$1,959
92 Public Administration	90,983	5.03%	8	\$3,255	\$2,007
<b>ALL INDUSTRIES</b>	<b>1,807,460</b>	<b>100.00%</b>		<b>\$3,204</b>	<b>\$2,196</b>

Note: Rounding errors may be present.

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

The leading employers were not the highest paying sectors. Of the top five employers, only manufacturing paid wages above the state average. The highest wages were in small employers—mining; professional, scientific, and technical services; utilities; and finance and insurance. By broad industry classification, service providing industries generated 75.6 percent of total state jobs in

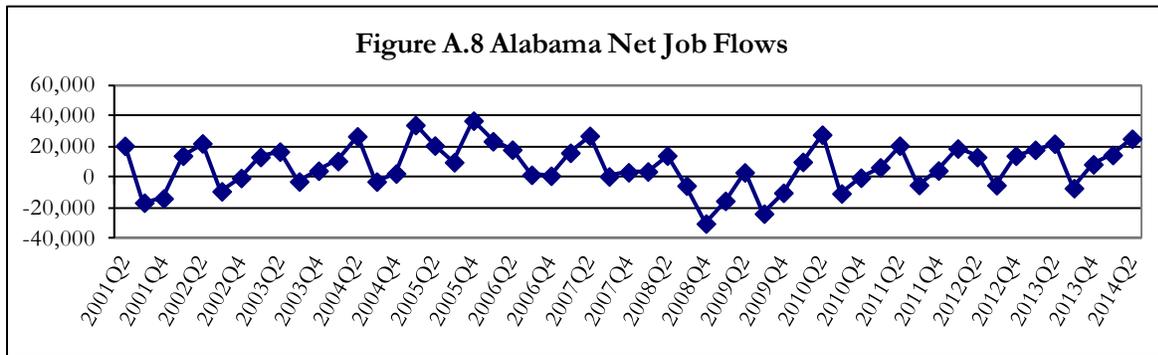
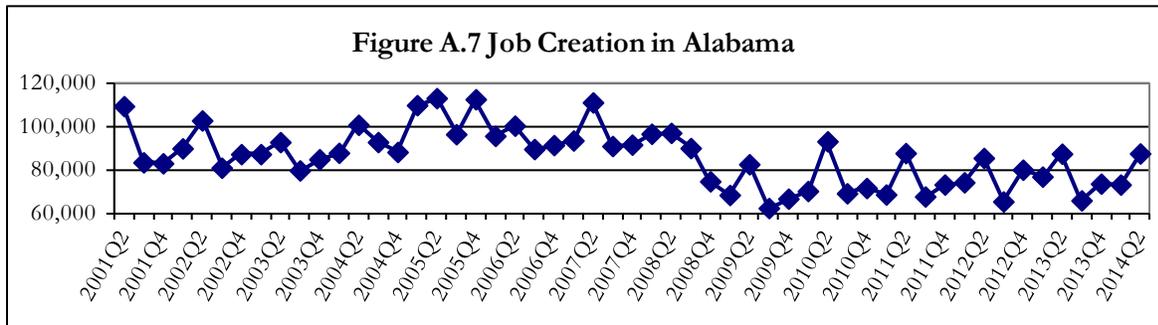
second quarter 2014 (Figure A.6). Goods producing industries were next with 19.4 percent and public administration accounted for 5.0 percent. The distribution is for all nonagricultural jobs and there is significant variation by WDR.



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

### Job Creation and Net Job Flows

The state’s job creation and net job flows are presented in Figures A.7 and A.8. Quarterly job creation averaged 85,877 from second quarter 2001 to second quarter 2014. Both job creation and net job flows have fluctuated significantly since 2008 and have been rising since the third quarter 2013. Quarterly net job flows averaged 7,595 and ranged from a loss of 30,056 in the fourth quarter of 2008 to a gain of 37,281 in the fourth quarter of 2005. Job creation refers to the number of new jobs that are created either by new 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

Statewide there are 794 single occupations in Alabama. Table A.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 A.9): health care and social assistance. Thus, this sector will continue to dominate employment in the state.

Three of the top five high-demand occupations are in health care and social assistance sector. The top five high-demand occupations are Registered Nurses; Team Assemblers; General and Operations Managers; Licensed Practical and Licensed Vocational Nurses; and Personal Care Aides. Ten of the high-demand occupations are also fast-growing. This means that these 10 occupations have a minimum annual growth rate of 2.9 percent, almost thrice the statewide occupational growth rate of 1.0 percent. Nine of the high-demand occupations are also high-earning occupations.

The 20 fastest growing occupations ranked by projected growth of employment are listed in Table A.11. Half of these occupations are health-related. The top five fast-growing occupations are Engine and Other Machine Assemblers; Occupational Therapy Assistants; Personal Care Aides; Diagnostic Medical Sonographers; and Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters. Two of the fast-growing occupations are also high-earning occupations.

Table A.12 shows the 50 highest earning occupations. In general, these occupations are in health, management, engineering, computer, postsecondary education, and science fields. Nine of the top 10 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 lowest high-earning salary is \$93,757 for Medical and Health Services Managers and the highest is \$252,362 for Surgeons.

The high-earning occupations are generally not fast-growing or in high-demand. Nine occupations are both high-demand and high-earning (Table A.10). Only two high-earning occupation—Biological Science Teachers, Postsecondary and Health Specialties Teachers, Postsecondary—are in all three tables (Table A.11).

Of the state's 794 specific occupations, 114 are expected to decline over the 2012 to 2022 period. Employment in the 20 sharpest-declining occupations will fall by at least 11 percent, with each losing a minimum of 110 jobs over the period (Table A.13). No efforts should be made to sustain these occupations because they are declining as a result of structural changes in the state economy.

**Table A.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	1755	865	890
Team Assemblers	1115	645	470
<b>General and Operations Managers</b>	<b>865</b>	<b>355</b>	<b>515</b>
Licensed Practical and Licensed Vocational Nurses	695	340	355
Personal Care Aides*	575	500	75
Home Health Aides*	495	340	160
Industrial Machinery Mechanics	455	185	270
Carpenters	410	275	140
First-Line Supervisors of Construction Trades and Extraction Workers	365	245	115
Computer User Support Specialists	305	190	115
Computer Systems Analysts	245	155	90
Management Analysts	215	125	90
Medical Secretaries*	210	155	55
<b>Pharmacists</b>	<b>195</b>	<b>75</b>	<b>125</b>
Dental Hygienists	170	90	80
Engine and Other Machine Assemblers*	165	130	35
Construction Managers	160	90	75
Cost Estimators	145	65	85
Software Developers, Applications	135	90	50
Physical Therapists*	135	80	55
Logisticians	125	80	45
Physical Therapist Assistants*	125	80	40
Computer-Controlled Machine Tool Operators, Metal and Plastic	125	65	60
<b>Software Developers, Systems Software</b>	<b>120</b>	<b>75</b>	<b>45</b>
Healthcare Social Workers	120	65	55
<b>Health Specialties Teachers, Postsecondary*</b>	<b>120</b>	<b>85</b>	<b>35</b>
Medical and Clinical Laboratory Technicians	120	60	60
<b>Medical and Health Services Managers</b>	<b>110</b>	<b>50</b>	<b>60</b>
<b>Computer and Information Systems Managers</b>	<b>100</b>	<b>55</b>	<b>40</b>
<b>Biological Science Teachers, Postsecondary*</b>	<b>100</b>	<b>75</b>	<b>25</b>
Market Research Analysts and Marketing Specialists	95	65	35
Nurse Practitioners	90	55	35
Nursing Instructors and Teachers, Postsecondary	65	45	20
Diagnostic Medical Sonographers*	65	50	15
<b>Personal Financial Advisors</b>	<b>50</b>	<b>30</b>	<b>20</b>
Information Security Analysts	50	35	15
Occupational Therapists	50	35	15
Speech-Language Pathologists	45	30	20
<b>Anesthesiologists</b>	<b>35</b>	<b>15</b>	<b>15</b>
Physician Assistants*	25	15	10

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 A.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			
Engine and Other Machine Assemblers*	2150	3440	60	4.81	165
Occupational Therapy Assistants	360	530	50	3.94	25
Personal Care Aides*	10730	15700	46	3.88	575
Diagnostic Medical Sonographers*	1130	1630	45	3.73	65
Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	340	490	42	3.72	20
Physical Therapist Assistants*	1870	2680	43	3.66	125
<b>Biological Science Teachers, Postsecondary*</b>	<b>1730</b>	<b>2460</b>	<b>42</b>	<b>3.58</b>	<b>100</b>
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	290	410	42	3.52	20
Home Health Aides*	8340	11730	41	3.47	495
Insulation Workers, Mechanical	550	770	41	3.42	30
Interpreters and Translators	360	500	39	3.34	20
Meeting, Convention, and Event Planners	470	640	35	3.14	25
Brickmasons and Blockmasons	840	1140	35	3.10	40
Medical Secretaries*	4450	6010	35	3.05	210
Physician Assistants*	430	580	36	3.04	25
<b>Health Specialties Teachers, Postsecondary*</b>	<b>2460</b>	<b>3310</b>	<b>34</b>	<b>3.01</b>	<b>120</b>
Physical Therapists*	2290	3080	35	3.01	135
Health Technologists and Technicians, All Other	590	790	34	2.96	25
Helpers--Electricians	1860	2490	34	2.96	90
Physical Therapist Aides	540	720	34	2.92	30

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.

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

**Table A.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	370	440	1.75	15	252,362
Anesthesiologists*	680	850	2.26	35	245,745
Obstetricians and Gynecologists	230	250	0.84	10	239,040
Psychiatrists	250	300	1.84	10	209,878
Physicians and Surgeons, All Other	4470	5390	1.89	205	208,683
Internists, General	430	480	1.11	15	204,121
Dentists, General	1300	1450	1.10	50	186,431
Chief Executives	1740	1810	0.40	45	183,753
Pediatricians, General	440	480	0.87	15	177,436
Family and General Practitioners	750	820	0.90	25	175,007
Orthodontists	90	100	1.06	0	173,059
Dentists, All Other Specialists	60	70	1.55	5	172,764
Nurse Anesthetists	990	1180	1.77	40	148,184
Petroleum Engineers	NA	NA	2.92	5	129,735
Architectural and Engineering Managers	2770	2990	0.77	90	125,428
<b>Biological Science Teachers, Postsecondary*</b>	<b>1730</b>	<b>2460</b>	<b>3.58</b>	<b>100</b>	<b>124,456</b>
General and Operations Managers*	27430	30970	1.22	865	119,850
Computer and Information Systems Managers*	2930	3500	1.79	100	119,169
Pharmacists*	5160	5890	1.33	195	119,015
Administrative Law Judges, Adjudicators, and Hearing Officers	140	130	-0.74	0	117,110
Financial Managers	4570	4950	0.80	125	116,112
Natural Sciences Managers	NA	NA	0.54	5	113,653
Podiatrists	100	120	1.84	5	112,233
Sales Managers	2280	2480	0.84	70	111,913
Marketing Managers	690	740	0.70	20	111,323
Nuclear Engineers	NA	NA	-0.42	5	110,623
Physicists	190	200	0.51	5	108,739
<b>Health Specialties Teachers, Postsecondary*</b>	<b>2460</b>	<b>3310</b>	<b>3.01</b>	<b>120</b>	<b>108,163</b>
Engineers, All Other	4590	4490	-0.22	85	107,709
Lawyers	7040	7800	1.03	190	106,789
Engineering Teachers, Postsecondary	560	620	1.02	15	106,232
Aerospace Engineers	3250	3700	1.31	120	104,728
Purchasing Managers	960	1000	0.41	25	104,298
Economists	60	60	0.00	0	104,277
Computer and Information Research Scientists	320	360	1.18	10	103,897
Personal Financial Advisors*	1120	1430	2.47	50	101,706
Electronics Engineers, Except Computer	1890	1980	0.47	50	100,315
Computer Hardware Engineers	1290	1410	0.89	40	99,980
Sales Engineers	220	230	0.45	5	99,260
Airline Pilots, Copilots, and Flight Engineers	420	390	-0.74	10	98,482
Software Developers, Systems Software*	3430	4180	2.00	120	96,298
Economics Teachers, Postsecondary	150	170	1.26	5	96,289
Optometrists	400	470	1.63	20	96,204
Education Administrators, Postsecondary	2100	2390	1.30	85	95,037
Materials Engineers	420	430	0.24	15	95,027
Managers, All Other	6280	6820	0.83	190	94,948
Administrative Services Managers	880	970	0.98	25	94,449
Air Traffic Controllers	220	220	0.00	10	94,029
Financial Analysts	760	860	1.24	30	93,967
Medical and Health Services Managers*	2420	2910	1.86	110	93,757

Note: Employment and salaries data are rounded to the nearest 10; job 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. 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 A.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	31220	26250	-4970	-16
Meat, Poultry, and Fish Cutters and Trimmers	13140	11750	-1390	-11
Postal Service Mail Carriers	4910	3600	-1310	-27
Sewing Machine Operators	3740	2740	-1000	-27
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2430	1840	-590	-24
Data Entry Keyers	2210	1710	-500	-22
Postal Service Mail Sorters, Processors, and Processing Machine Operators	1320	930	-390	-30
Postal Service Clerks	1020	700	-320	-32
Paper Goods Machine Setters, Operators, and Tenders	2340	2060	-280	-12
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	1030	780	-250	-24
Switchboard Operators, Including Answering Service	1730	1490	-240	-14
Textile Bleaching and Dyeing Machine Operators and Tenders	520	320	-200	-39
Fallers	480	290	-190	-40
Computer Operators	1060	890	-170	-16
Slaughterers and Meat Packers	700	560	-140	-19
Word Processors and Typists	590	450	-140	-23
Office Machine Operators, Except Computer	1220	1090	-130	-11
Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	730	600	-130	-17
Meter Readers, Utilities	770	660	-110	-14
Roof Bolters, Mining	530	420	-110	-21

Note: Employment data are rounded to the nearest 10.

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 A.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 education 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 A.15 shows the percentage of selected occupations in Alabama 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 A.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 A.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 A.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	38	35	54
Active Listening	98	80	90
Critical Thinking	98	90	90
Learning Strategies	10	10	10
Mathematics	8	5	18
Monitoring	73	80	56
Reading Comprehension	85	70	82
Science	15	10	34
Speaking	93	80	88
Writing	53	30	60
<b>Complex Problem Solving Skills</b>			
Complex Problem Solving	58	25	72
<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	12
Time Management	35	50	12
<b>Social Skills</b>			
Coordination	45	55	28
Instructing	23	35	14
Negotiation	0	0	8
Persuasion	8	10	12
Service Orientation	35	45	12
Social Perceptiveness	55	55	42
<b>Systems Skills</b>			
Judgment and Decision Making	65	40	80
Systems Analysis	10	5	8
Systems Evaluation	5	0	2
<b>Technical Skills</b>			
Equipment Maintenance	3	0	0
Equipment Selection	3	0	0
Installation	0	0	0
Operation and Control	5	5	2
Operation Monitoring	10	10	2
Operations Analysis	3	0	8
Programming	5	5	2
Quality Control Analysis	13	15	0
Repairing	3	5	0
Technology Design	0	0	0
Troubleshooting	3	5	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, reading comprehension, science, writing, complex problem solving, management of personnel resources, judgment and decision making, negotiation, persuasion skills, and operations analysis than both high-demand and fast-growing jobs. These skills require long training periods and postsecondary education. However, high-earning jobs require less social and technical skills in general. High-demand occupations require more basic and systems but less social skills than fast-growing occupations.

Table A.16 shows skill gap indexes for all 35 skills in Table A.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 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 current 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 and systems skills while the scale of training should be raised for basic and social skills.

## **Education and Training Issues**

Alabama's educational attainment is low compared to the nation as a whole. About 83 percent of Alabamians age 25 and over have graduated from high school, compared to 86 percent for the United States. Of that total population over age 25, about 23 percent in Alabama have a bachelor's or higher degree, which is lower than the nation's 29 percent. Skill and education requirements for jobs keep rising. This highlights a strong need to raise educational attainment in the state.

Table A.17 shows the number of selected occupations in Alabama for which a particular education/training category is most common. In general, high-earning occupations require high educational attainment levels; all but two of the high-earning occupations require a bachelor's or higher degree. Twenty-nine (73 percent) of the 40 high-demand occupations require an associate degree at the minimum and 24 (60 percent) require a bachelor's or higher degree. Nine (45 percent) of the 20 fast-growing occupations require an associate degree at the minimum and six (30 percent) require 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 state's 794 occupations, 114 are expected to decline over the period and education and training for these should slow accordingly.

**Table A.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	36,815	61	100
Active Listening	36,730	62	97
Critical Thinking	33,390	61	94
Active Learning	29,920	61	91
Speaking	29,290	61	89
Coordination	28,650	61	86
Monitoring	26,490	61	83
Instructing	26,285	61	80
Writing	25,955	61	77
Time Management	24,730	60	74
Learning Strategies	23,790	61	71
Social Perceptiveness	21,990	60	69
Service Orientation	19,375	59	66
Persuasion	18,055	62	63
Judgment and Decision Making	17,540	62	60
Complex Problem Identification	16,520	60	57
Mathematics	15,015	61	54
Equipment Selection	12,735	61	51
Troubleshooting	8,805	61	49
Negotiation	9,320	67	46
Equipment Maintenance	7,755	61	43
Management of Personnel Resources	8,835	69	40
Installation	6,285	59	37
Repairing	4,675	60	34
Operations Analysis	4,410	61	31
Quality Control	4,385	62	29
Management of Financial Resources	5,230	70	26
Operation Monitoring	5,210	69	23
Systems Evaluation	3,535	58	20
Operation and Control	4,585	64	17
Science	3,245	61	14
Systems Analysis	2,620	53	11
Technology Design	2,430	58	9
Management of Material Resources	2,950	73	6
Programming	605	50	3

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

Source: Alabama Department of Labor.

**Table A.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	5	3	22
Master's Degree	6	1	3
Bachelor's or Higher Degree plus Work Experience	5	1	12
Bachelor's Degree	8	1	11
Associate Degree	5	3	1
Postsecondary Non-Degree Plus On-the-job Training or Work Experience	0	0	0
Postsecondary Non-Degree	1	0	0
Some College, no Degree Plus On-the-job Training or Work Experience	1	0	0
Some College, no Degree	0	0	0
High School Diploma Plus On-the-job Training or Work Experience	7	7	1
High School Diploma	0	1	0
Less than High School Plus On-the-job Training or Work Experience	2	3	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

Alabama's job growth is projected to be faster than labor force growth. From a 2012 base, worker shortfalls of 147,460 and 215,844 for 2022 and 2030 respectively are expected (Table A.18). The state must therefore focus on worker skills and the projected shortfalls as the top priorities through 2030. Worker shortfalls for critical occupations will also need to be addressed through 2030.

**Table A.18 Expected Worker Shortfall**

	2012-2022	2012-2030
Total population growth (percent)	6.9	11.4
Age 20-64 population growth (percent)	2.0	2.6
Job growth (percent)	9.8	14.1
Worker shortfall (percent)	7.8	11.4
Worker shortfall (number)	147,460	215,844

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

Employment is critical to economic development, and so strategies to address any 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) use of economic opportunities to attract new 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 in general 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 and systems skills while the scale of training is also 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 A.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, residents of 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, 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 state's population growth rate is low and may hinder its ability to meet the 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 state's numerous economic development successes. Investment in amenities and infrastructure may be needed to support such growth. In-migration is generally more beneficial to the state 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 could help meet the state's workforce challenge. 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 (Table A.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 full 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 state's economy will strengthen it. This demands that economic development must 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 state and provide additional tax revenue for the state and local (county and city) tax jurisdictions. Raising personal income by improving educational attainment and technological skills for a state that has low population and labor force growth rates is an effective economic development strategy. Together, workforce development and economic development can build a strong, well-diversified economy. Indeed, one cannot achieve success without the other.