

State of the Workforce Report V: Alabama

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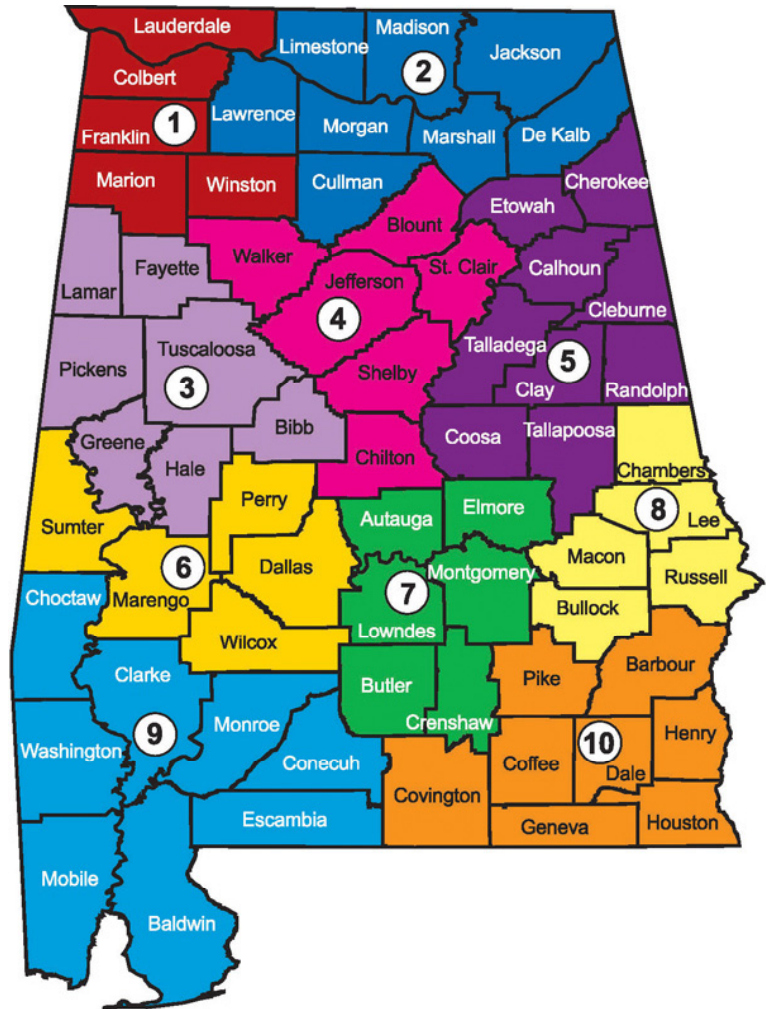
Alabama Industrial Development Training



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June 2011

Center for Business and Economic Research
University Center for Economic Development
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THE UNIVERSITY OF ALABAMA

State of the Workforce Report V: Alabama



June 2011

by

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- Alabama Department of Economic and Community Affairs
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- Alabama Department of Postsecondary Education
- Alabama Industrial Development Training
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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 9.9 percent in January 2011, with 207,644 unemployed. An underemployment rate of 24.4 percent for 2010 means that the state has a large 671,107-strong available labor pool that includes 463,463 underemployed workers who are looking for better jobs and are willing to commute farther and longer for such jobs.
- More job opportunities reduced net out-commuting drastically from 36,703 in 2000 to 6,393 in 2006, but increased commuting within the state increased congestion. However, the problem eased slightly in 2010 due to job losses resulting from the recent recession. As the state's economy recovers, congestion is likely to increase which can slow economic development. This implies that continuous maintenance and development of transportation infrastructure and systems is important.
- By sector the top five employers in the state are manufacturing, health care and social assistance, retail trade, educational services, and accommodation and food services. These five industries provided 1,011,818 jobs, 58.5 percent of the state total, in the first quarter of 2010. The leading employers are not the highest paying sectors; only manufacturing had wages that were above the state average monthly wage. Economic development should therefore 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 93,088 jobs were created per quarter from second quarter 2001 to first quarter 2010; quarterly net job flows averaged 6,483. 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; Customer Service Representatives; Elementary School Teachers, Except Special Education; and Home Health Aides.
- The top five fast-growing occupations are Veterinary Technologists and Technicians; Computer Software Engineers, Applications; Network Systems and Data Communications Analysts; Occupational Therapist Assistants; and Personal and Home Care Aides.
- The top 50 high-earning occupations are in health, management, legal, engineering, computer, postsecondary education, and science fields and have a minimum salary of \$84,980. Nine of the top 10 are health occupations.
- Of the top 41 high-demand, the top 40 fast-growing, and 50 high-earning occupations, three—Personal Financial Advisors; Computer Software Engineers, System Software; and Biological Science Teachers, Postsecondary—belong to all three categories. Five occupations are both high-demand and high-earning while 27 occupations are both high-demand and fast-growing.

- Of the state's 905 occupations and occupational categories, 117 are expected to decline over the 2008 to 2018 period. Twenty occupations are expected to sharply decline by at least 10 percent, with each losing a minimum of 190 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 2008 base, a worker surplus of 116,880 for 2018 and a worker shortfall of 73,317 for 2025 are expected. This will demand a focus on worker skills through 2018, after which both skills and the expected shortfall must be priorities for 2025. 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) 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 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.

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, 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 2010 and for January 2011. Alabama labor force information is available from the Labor Market Information (LMI) Division of the Alabama Department of Industrial Relations. LMI compiles data in cooperation with the U.S. Bureau of Labor Statistics.

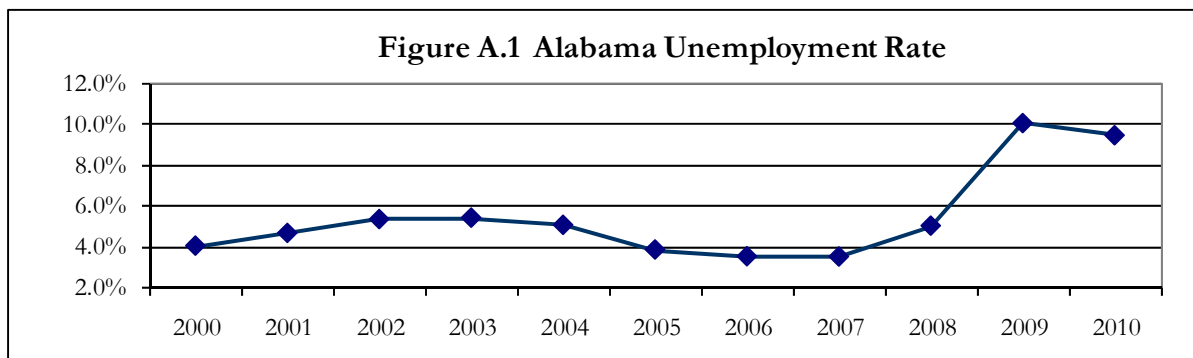
Table A.1 Alabama Labor Force Information

	2010			
	Labor Force	Employed	Unemployed	Rate (%)
Workforce Development Region 1	100,924	90,046	10,878	10.8
Workforce Development Region 2	407,681	371,409	36,274	8.9
Workforce Development Region 3	125,452	113,257	12,196	9.7
Workforce Development Region 4	498,625	451,667	46,958	9.4
Workforce Development Region 5	185,884	165,583	20,301	10.9
Workforce Development Region 6	34,175	28,423	5,752	16.8
Workforce Development Region 7	180,673	163,096	17,577	9.7
Workforce Development Region 8	111,671	100,218	11,453	10.3
Workforce Development Region 9	310,993	276,941	34,052	10.9
Workforce Development Region 10	145,502	132,578	12,924	8.9
Jefferson County	296,600	267,363	29,237	9.9
Mobile County	181,508	161,892	19,616	10.8
Alabama	2,127,211	1,925,064	202,147	9.5
United States	153,889,000	139,064,000	14,825,000	9.6
	January 2011			
	Labor Force	Employed	Unemployed	Rate (%)
Workforce Development Region 1	101,269	89,959	11,310	11.2
Workforce Development Region 2	410,051	371,715	38,336	9.3
Workforce Development Region 3	125,654	113,527	12,127	9.7
Workforce Development Region 4	502,298	456,839	45,459	9.1
Workforce Development Region 5	184,649	165,044	19,605	10.6
Workforce Development Region 6	33,601	28,179	5,422	16.1
Workforce Development Region 7	180,595	163,162	17,433	9.7
Workforce Development Region 8	111,317	100,874	10,442	9.4
Workforce Development Region 9	312,424	278,353	34,071	10.9
Workforce Development Region 10	143,655	130,936	12,719	8.9
Jefferson County	297,174	269,256	27,918	9.4
Mobile County	185,386	165,538	19,848	10.7
Alabama	2,106,305	1,898,661	207,644	9.9
United States	152,536,000	137,599,000	14,937,000	9.8

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

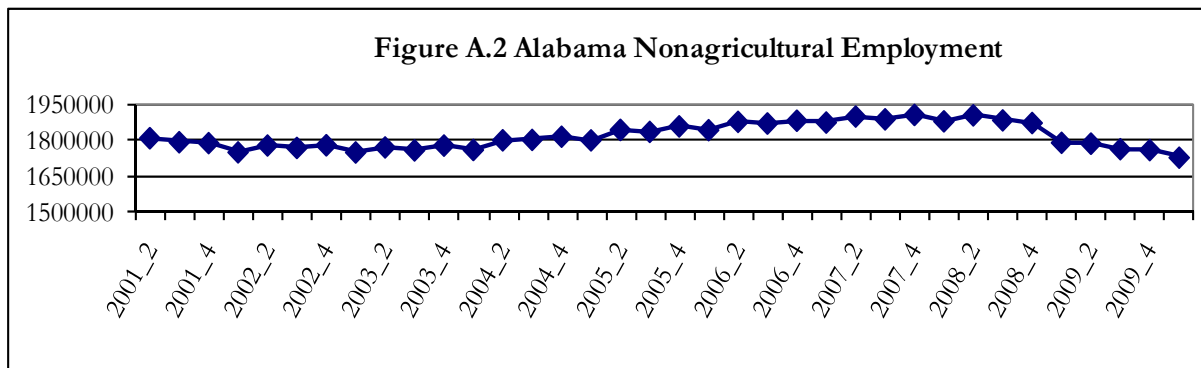
The recession that began in December 2007 has raised unemployment rates for the state and all WDRs. Unemployment rates in 2010 ranged between 8.9 percent and 16.8 percent for the WDRs, with a 9.5 percent annual average for the state. The January 2011 range for unemployment was 8.9 percent (WDR 10) to 16.1 percent (WDR 6), with a 9.9 percent rate for the state. The six-county Region 4 had the largest labor force and WDR 6 had the smallest.

Annual state unemployment rates for 2000 to 2010 are shown in Figure A.1. Unemployment was very high at 9.5 percent in 2010 but lower than the 2009 rate. A reduction in economic activity due to the recent recession led to major job losses resulting in record high unemployment rates in 2009 and 2010. Year-to-date monthly labor force data point to a higher state unemployment rate for 2011 but unemployment is declining after rising over a couple of months. In January 2011, the monthly state unemployment rate was at 9.9 percent and was above the monthly national unemployment rate of 9.4 percent. However, in April 2011 the unemployment rate declined to 9.0 percent for Alabama compared to 8.8 percent for the United States. Despite strong ongoing economic development efforts, the latest recession is likely to keep unemployment high for the next several years.



Source: Alabama Department of Industrial Relations.

Nonagricultural employment of Alabama residents in the state averaged a little over 1.8 million quarterly from the second quarter of 2001 to the first quarter of 2010 (Figure A.2). The number of jobs in the state rose from a low in the first quarter of 2002 to a high in fourth quarter 2007, but has since declined to the lowest levels for the entire period.



Source: Alabama Department of Industrial Relations and U.S. Census Bureau.

Table A.2 shows worker distribution by age in Alabama for first quarter 2010. At 42.6 percent, older workers (age 45 and over), constitute a significant part of total nonagricultural employment. The share of older workers for the WDRs ranged from 40.5 percent for Region 8 to 48.4 percent for Region 6. To meet long term occupational projections for growth and replacement, labor force participation of younger residents must increase; else older workers may be required to work longer.

Table A.2 Workers by Age Group (First Quarter 2010)

Age Group	Nonagricultural Employment	
	Number	Percent
14-18	32,186	1.9
19-24	185,680	10.7
25-34	377,512	21.8
35-44	398,840	23.0
45-54	411,445	23.8
55-64	254,661	14.7
65+	70,465	4.1
45 and over total	736,571	42.6
Total all ages	1,730,789	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 2000 more Alabamians commuted out of the state for work than nonresidents who commuted in (Table A.3). Commuter outflow exceeded inflow by about 36,700 people. Most of the commuting involved Alabama's four neighboring states: Florida, Georgia, Mississippi, and Tennessee. Together these states accounted for 85 percent, or about 35,000, of the inflow and 86 percent (67,000) of the outflow. About 1,000 of those who commuted out went to other countries.

Commuting data for 2006 show that net out-commuting shrank significantly from 36,703 to 6,393 in just six years. The level of in-commuting rose by 10,708, while out-commuting fell by 19,602 as economic development successes yielded more jobs in the state.

Table A.3 also shows the one-way average commute time and distance for Alabama workers in various years. Commute times and distances fell in 2010 from 2009 as more residents lost jobs due to the recent recession. However, there is significant growth of population and commuting within the state. This indicates that congestion will get worse as the state economy recovers from the recession. Congestion can delay or slow economic development by impeding the flow of goods and 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

Year	Inflow		Outflow	
	Number	Percent	Number	Percent
2000	41,494	100	78,197	100
2006	52,202	100	58,595	100

	Percent of workers				
	2004	2005/2006	2008	2009	2010
Average commute time (one-way)					
Less than 20 minutes	57.3	55.2	54.9	53.5	55.1
20 to 40 minutes	27.0	29.1	29.6	28.8	29.0
40 minutes to an hour	9.3	9.3	9.4	11.1	10.3
More than an hour	1.7	2.3	2.9	2.7	2.5
Average commute distance (one-way)					
Less than 10 miles	45.9	46.5	46.0	45.4	45.7
10 to 25 miles	29.5	30.6	32.4	32.1	32.8
25 to 45 miles	13.7	13.4	13.5	15.5	14.2
More than 45 miles	6.1	4.5	6.3	5.8	5.6

Note: Rounding errors may be present.

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

Population

The Alabama population count of almost 4.8 million for 2010 is 7.5 percent more than was recorded for 2000 (Table A.4). Population grew faster for three WDRs than for the state, but population also shrank in one region. The state's population growth of 7.5 percent was lower than the nation's 9.7 percent. Region 2 had the highest population growth at 13.4 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.

Table A.4 Population by Workforce Development Region

	1990 Census	2000 Census	2010 Census	Change 2000-2010	% Change 2000-2010
Workforce Development Region 1	211,024	230,230	234,101	3,871	1.7
Workforce Development Region 2	665,495	766,335	869,183	102,848	13.4
Workforce Development Region 3	247,125	268,208	293,927	25,719	9.6
Workforce Development Region 4	940,268	1,031,412	1,105,132	73,720	7.1
Workforce Development Region 5	405,276	424,451	436,254	11,803	2.8
Workforce Development Region 6	113,715	108,746	100,871	-7,875	-7.2
Workforce Development Region 7	340,702	381,592	409,389	27,797	7.3
Workforce Development Region 8	206,852	237,250	259,775	22,525	9.5
Workforce Development Region 9	610,415	678,997	727,145	48,148	7.1
Workforce Development Region 10	299,715	319,879	343,959	24,080	7.5
Jefferson County	651,525	662,047	658,466	-3,581	-0.5
Mobile County	378,643	399,843	412,992	13,149	3.3
Alabama	4,040,587	4,447,100	4,779,736	332,636	7.5
United States	248,709,873	281,421,906	308,745,538	27,323,632	9.7

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

Table A.5 shows Alabama’s population counts, estimates, and projections by age group. The population aged 65 and over grows rapidly after 2010, with the first of the baby boom generation turning 65 in 2011. Consequently, growth of the prime working age group (20-64) and youth (0-19) will lag behind that of the total population. 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.

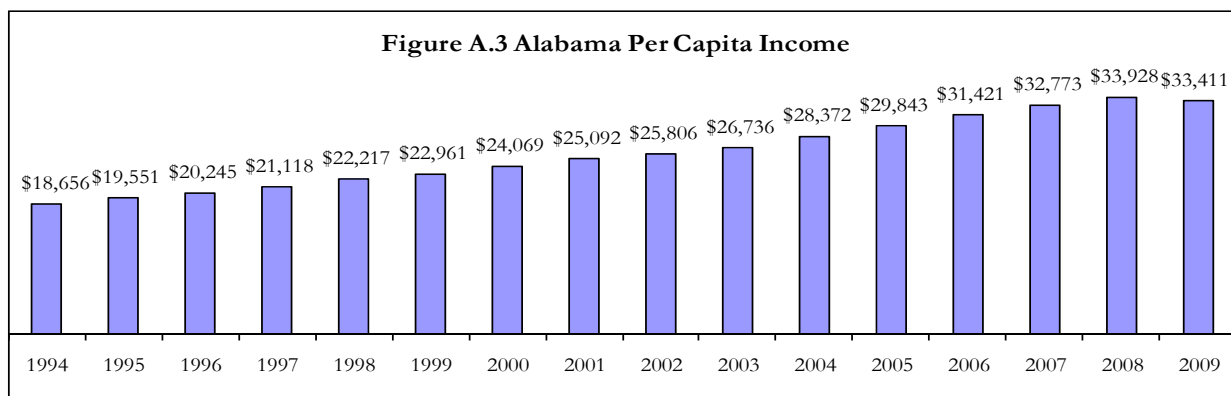
Table A.5 Alabama Population by Age Group and Projections

Age Group	2000	2008	2018	2025
0-19	1,256,169	1,257,812	1,283,951	1,324,498
20-24	306,865	329,733	334,319	338,070
25-29	301,196	305,432	331,893	319,696
30-34	301,819	292,403	319,294	335,077
35-39	340,300	304,869	313,747	333,814
40-44	345,212	326,135	310,317	331,668
45-49	315,173	349,178	320,201	316,174
50-54	285,036	337,933	339,654	326,149
55-59	225,450	302,221	357,848	330,258
60-64	190,082	252,279	334,834	355,827
65+	579,798	638,215	847,427	1,049,986
20-64 Total	2,611,133	2,800,183	2,962,107	2,986,733
Total Population	4,447,100	4,696,210	5,093,485	5,361,217
<i>Change from 2008</i>				
0-19			2.1%	5.3%
20-64			5.8%	6.7%
Total Population			8.5%	14.2%

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

Per Capita Income

Per capita income (PCI) in Alabama was \$33,411 in 2009 (Figure A.3), up 79 percent from 1994. WDR 4 had the highest PCI with \$38,868 followed by Region 7 with \$35,281 and Region 2 with \$33,908. In other regions, per capita income was lower than the Alabama state average. At \$27,444, Region 8 had the lowest PCI followed by Region 6 with \$27,745.



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

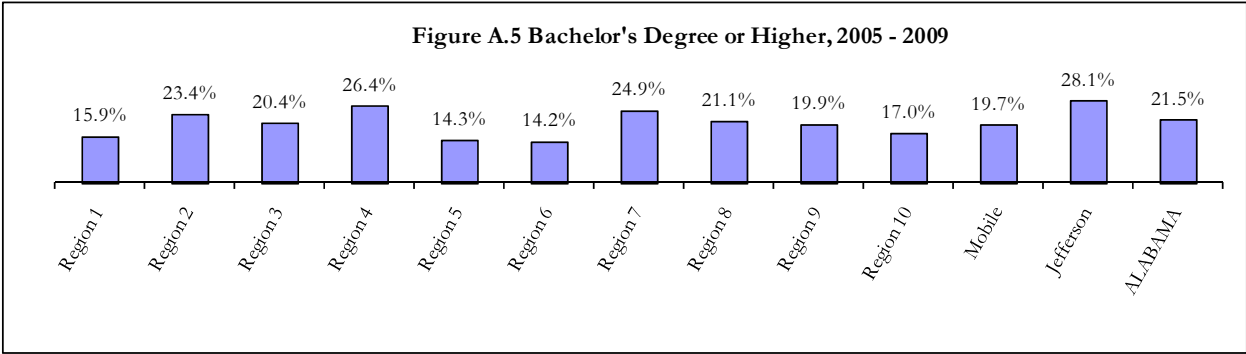
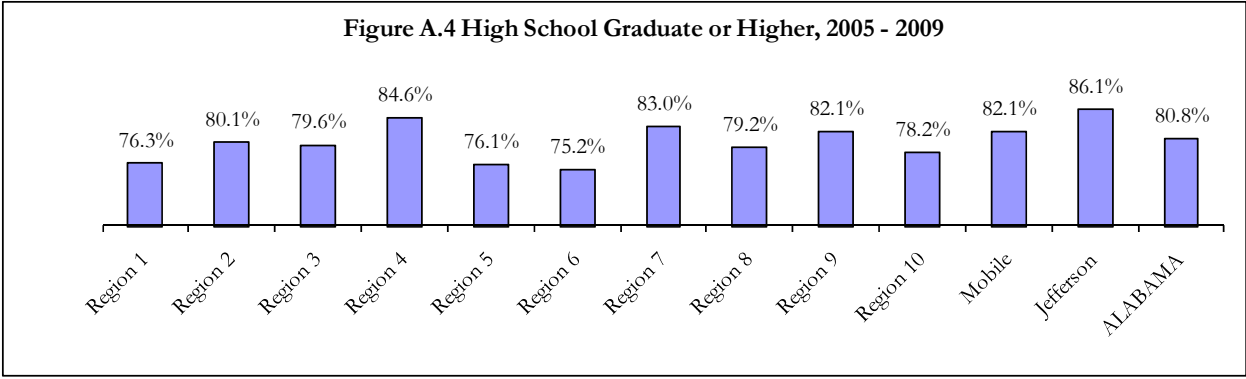
Educational Attainment

Educational attainment in 2005 to 2009 of Alabama residents who were 25 years old and over is shown in Table A.6 and Figures A.4 and A.5. Nearly 81 percent graduated from high school and 21.5 percent held a bachelor's or higher degree. Region 4 has the highest educational attainment and Region 6 has the lowest. Educational attainment is important as skills rise with education and high-wage jobs for the 21st century demand more skill sets.

Table A.6 Educational Attainment of Population 25 Years and Over, 2005 - 2009

	<u>Region 1</u>	<u>Region 2</u>	<u>Region 3</u>	<u>Region 4</u>	<u>Region 5</u>	<u>Region 6</u>	<u>Region 7</u>
Total	157,292	553,094	172,136	729,548	289,192	63,046	254,889
No schooling completed	1,359	5,615	1,854	5,390	2,825	1,067	2,222
Nursery to 4th grade	1,403	5,167	1,330	3,560	2,035	808	1,657
5th and 6th grade	3,197	9,911	2,980	8,557	5,423	1,515	3,026
7th and 8th grade	7,481	20,885	5,930	17,872	12,193	2,249	6,384
9th grade	6,432	17,495	4,728	16,697	11,818	2,248	6,243
10th grade	7,620	20,701	6,559	22,713	13,829	2,948	8,399
11th grade	6,872	20,060	7,023	24,352	14,394	3,056	9,884
12th grade, no diploma	2,991	10,333	4,656	12,962	6,657	1,734	5,605
High school graduate/equivalent	53,340	162,791	58,350	215,551	100,978	23,732	79,434
Some college, less than 1 year	9,142	35,489	8,944	40,766	17,421	2,828	14,814
Some college, 1+ years, no degree	21,668	77,068	24,717	120,422	41,199	7,838	39,006
Associate degree	10,748	37,947	9,945	48,056	19,067	4,091	14,744
Bachelor's degree	15,561	84,690	20,822	123,931	25,319	5,805	39,572
Master's degree	6,935	34,345	9,923	45,628	12,010	2,427	17,442
Professional school degree	1,503	6,290	2,379	15,863	2,611	430	4,496
Doctorate degree	1,040	4,307	1,996	7,228	1,413	270	1,961
	<u>Region 8</u>	<u>Region 9</u>	<u>Region 10</u>	<u>Mobile</u>	<u>Jefferson</u>	<u>Alabama</u>	
Total	145,959	465,547	218,960	260,043	441,789	3,049,663	
No schooling completed	1,518	3,734	2,465	2,174	3,141	28,049	
Nursery to 4th grade	1,249	2,473	1,940	1,264	1,792	21,622	
5th and 6th grade	2,552	5,860	4,178	2,372	4,456	47,199	
7th and 8th grade	5,089	12,427	8,139	6,733	8,822	98,649	
9th grade	4,477	11,751	7,567	6,132	7,939	89,456	
10th grade	5,974	17,300	8,810	9,805	11,955	114,853	
11th grade	6,512	18,715	9,750	11,343	15,032	120,618	
12th grade, no diploma	2,930	10,973	4,921	6,831	8,313	63,762	
High school graduate/equivalent	44,981	159,779	72,362	89,699	126,919	971,298	
Some college, less than 1 year	8,636	27,211	14,252	14,040	23,421	179,503	
Some college, 1+ years, no degree	21,015	68,723	30,695	39,943	76,736	452,351	
Associate degree	10,262	34,099	16,646	18,501	29,029	205,605	
Bachelor's degree	18,008	60,784	23,851	33,595	77,741	418,343	
Master's degree	8,116	22,536	9,664	12,170	29,564	169,026	
Professional school degree	1,787	5,820	2,293	3,326	11,774	43,472	
Doctorate degree	2,853	3,362	1,427	2,115	5,155	25,857	

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 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 24.4 percent in 2010. Applying this rate to January 2011 labor force data means that about 463,500 employed Alabama residents were underemployed (Table A.7). Adding the unemployed gives a total available labor pool of 671,107 for the state. This is 3.2 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.

Table A.7 Underemployed and Available Labor by Workforce Development Region

	<u>Alabama</u>	<u>Region 1</u>	<u>Region 2</u>	<u>Region 3</u>	<u>Region 4</u>	<u>Region 5</u>	<u>Region 6</u>
Labor force	2,106,305	101,269	410,051	125,654	502,298	184,649	33,601
Employed	1,898,661	89,959	371,715	113,527	456,839	165,044	28,179
Underemployment rate	24.4%	21.7%	22.7%	22.9%	25.2%	24.2%	28.8%
Underemployed workers	463,463	19,503	84,342	26,043	115,032	39,924	8,124
Unemployed	207,644	11,310	38,336	12,127	45,459	19,605	5,422
Available labor pool	671,107	30,813	122,678	38,170	160,491	59,529	13,546
	<u>Region 7</u>	<u>Region 8</u>	<u>Region 9</u>	<u>Region 10</u>	<u>Jefferson</u>	<u>Mobile</u>	
Labor force	180,595	111,317	312,424	143,655	297,174	185,386	
Employed	163,162	100,874	278,353	130,936	269,256	165,538	
Underemployment rate	23.7%	25.4%	24.7%	26.6%	26.1%	23.9%	
Underemployed workers	38,718	25,622	68,642	34,764	70,249	39,564	
Unemployed	17,433	10,442	34,071	12,719	27,918	19,848	
Available labor pool	56,151	36,064	102,713	47,483	98,167	59,412	

Note: Rounding errors may be present. Based on January 2011 labor force data and 2010 underemployment rates.

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

Underemployment rates for counties, WDRs, and the state were determined from an extensive survey on the state's workforce. A total of 10,255 complete responses were obtained. About 46 percent (4,744 respondents) were employed, of whom 1,158 stated that they were underemployed. Among the WDRs, underemployment ranged from 21.7 percent for Region 1 to 28.8 percent for Region 6. Region 4 has the most available labor, followed by Region 2, with the two regions accounting for 42.2 percent of the state's available labor pool. Among counties, Covington had the highest rate of underemployment at 36.8 percent, and Washington had the lowest rate with 13.3 percent. Thirty-five counties had underemployment rates above the state's 24.4 percent.

In 2010 a lack of job opportunities in their area, low wages at available jobs, living too far from jobs, other family or personal obligations, child care responsibilities, and owning a house in their area are the primary reasons given for being underemployed. 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. Thus the state's available labor pool could be larger than estimated in this report.

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 almost the same commute times and distances.
- The underemployed are almost similarly distributed across industries and occupations but there are slightly more in accommodation and food services and retail trade 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.
- More would leave their current jobs for higher income.
- More are willing to commute longer and farther 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.
- They have slightly lower educational attainment
- The median age is the same.
- 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. In general most Alabama workers (75.8 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 (55.2 percent). The underemployed are also more dissatisfied with their earnings.

Workers are generally willing to train for a new or better job, with the underemployed being much more willing (73.4 percent vs. 60.8 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. In every case of cost burden considered, the underemployed are more willing to train for the new or better job. The results strongly show 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.

Table A.8 2010 Job Satisfaction and Willingness to Train (Percent)

Job Satisfaction						
		Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
Employed						
Overall		3.7	4.3	15.9	27.8	48.0
	Earnings	10.4	10.1	22.2	26.2	30.6
	Retention	4.6	4.8	10.7	20.1	57.8
	Work	1.7	2.6	8.8	24.1	62.5
	Hours	4.7	4.1	11.1	20.1	59.7
	Shift	3.0	3.0	7.8	16.4	69.3
	Conditions	3.3	4.9	14.5	25.9	51.0
	Commuting Distance	3.9	5.0	10.9	14.8	64.8
Underemployed						
Overall		8.6	8.8	27.0	27.0	28.2
	Earnings	23.0	17.5	26.3	18.2	14.6
	Retention	10.0	9.3	14.9	23.1	41.3
	Work	4.2	5.4	14.8	26.6	48.8
	Hours	10.3	6.1	14.3	21.4	47.4
	Shift	5.2	5.0	10.9	17.4	61.1
	Conditions	7.2	8.9	19.9	25.5	38.4
	Commuting Distance	5.2	6.5	13.0	14.9	59.9
Willingness to Train						
		Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
Employed						
For a new or better job		19.1	4.0	15.2	13.2	47.6
	If paid by trainee	44.6	19.1	20.5	5.8	6.9
	If paid by trainee and government	12.9	12.0	34.5	19.1	18.6
	If paid by government	4.6	2.8	9.9	14.4	66.5
Underemployed						
For a new or better job		11.7	2.3	11.8	13.6	59.8
	If paid by trainee	39.9	19.4	22.2	6.3	8.2
	If paid by trainee and government	9.3	9.6	30.8	21.7	24.6
	If paid by government	3.0	1.7	5.4	11.2	77.0

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 241,853 jobs in the first quarter of 2010 (Table A.9). Rounding out the top five industries by employment are health care and social assistance, retail trade, educational services, and accommodation and food services. These five industries provided 1,011,818 jobs, 58.5 percent of the state total. The average monthly wage across all industries in the state was \$3,116. New hire monthly earnings averaged \$1,841 or 59.1 percent of the average monthly wage. The highest average monthly wages were for utilities \$5,945, mining \$5,574, and professional, scientific, and technical services at \$4,962. Accommodation and food services paid the least at \$1,261. Mining had the highest average monthly new hire wages with \$4,443. The utilities sector was next at \$3,777, followed by professional, scientific, and technical services with \$3,654. Arts, entertainment, and recreation paid newly hired workers the least, \$927.

Table A.9 Industry Mix (First Quarter 2010)

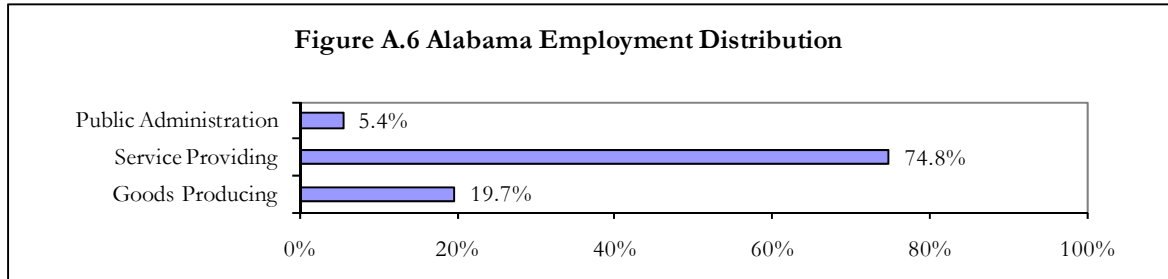
Industry by 2-digit NAICS Code	Total Employment	Share	Rank	Average Monthly Wage	Average Monthly New Hire Earnings
11 Agriculture, Forestry, Fishing and Hunting	11,241	0.65%	19	\$2,582	\$1,869
21 Mining	7,407	0.43%	20	\$5,574	\$4,443
22 Utilities	21,110	1.22%	16	\$5,945	\$3,777
23 Construction	81,459	4.70%	9	\$3,311	\$3,186
31-33 Manufacturing	241,853	13.95%	1	\$3,815	\$2,579
42 Wholesale Trade	71,051	4.10%	10	\$4,146	\$2,874
44-45 Retail Trade	226,986	13.09%	3	\$2,169	\$1,344
48-49 Transportation and Warehousing	52,589	3.03%	12	\$3,034	\$2,338
51 Information	25,264	1.46%	14	\$3,815	\$1,970
52 Finance and Insurance	69,026	3.98%	11	\$4,527	\$2,971
53 Real Estate and Rental and Leasing	23,607	1.36%	15	\$2,808	\$1,987
54 Professional, Scientific, and Technical Services	95,617	5.51%	6	\$4,962	\$3,654
55 Management of Companies and Enterprises	16,971	0.98%	18	\$4,104	\$2,769
56 Administrative and Support and Waste Management and Remediation Services	89,722	5.17%	8	\$2,133	\$1,587
61 Educational Services	165,972	9.57%	4	\$3,109	\$1,087
62 Health Care and Social Assistance	232,324	13.40%	2	\$3,025	\$1,980
71 Arts, Entertainment, and Recreation	17,827	1.03%	17	\$1,598	\$927
72 Accommodation and Food Services	144,683	8.34%	5	\$1,261	\$944
81 Other Services (Except Public Administration)	45,016	2.60%	13	\$2,464	\$1,717
92 Public Administration	94,511	5.45%	7	\$3,231	\$1,953
ALL INDUSTRIES	1,730,787	100.00%		\$3,116	\$1,841

Note: Rounding errors may be present.

Source: Alabama Department of Industrial Relations and U.S. Census Bureau.

The leading employers were not the highest paying sectors. Indeed, only one of the top five employers (manufacturing) paid wages above the state average. The smallest employer, mining, paid

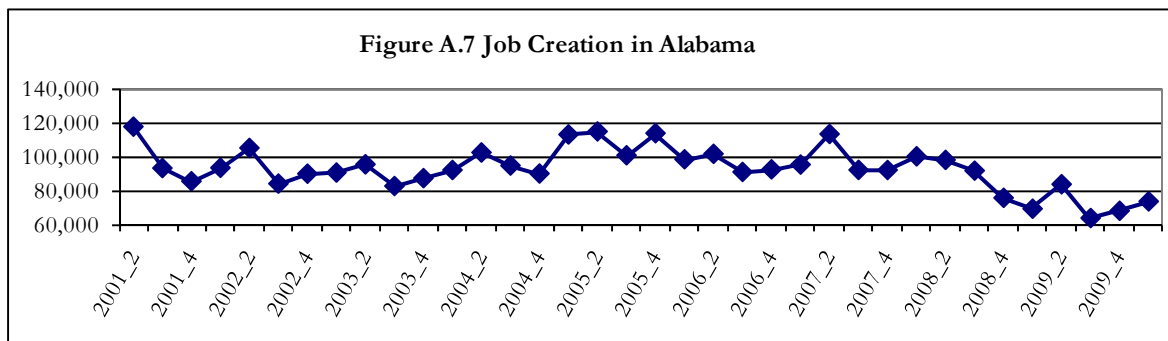
the highest wages. By broad industry classification, service providing industries generated 74.8 percent of total state jobs in first quarter 2010 (Figure A.6). Goods producing industries were next with 19.7 percent and public administration accounted for 5.4 percent. The distribution is for all nonagricultural jobs and there is significant variation by WDR.



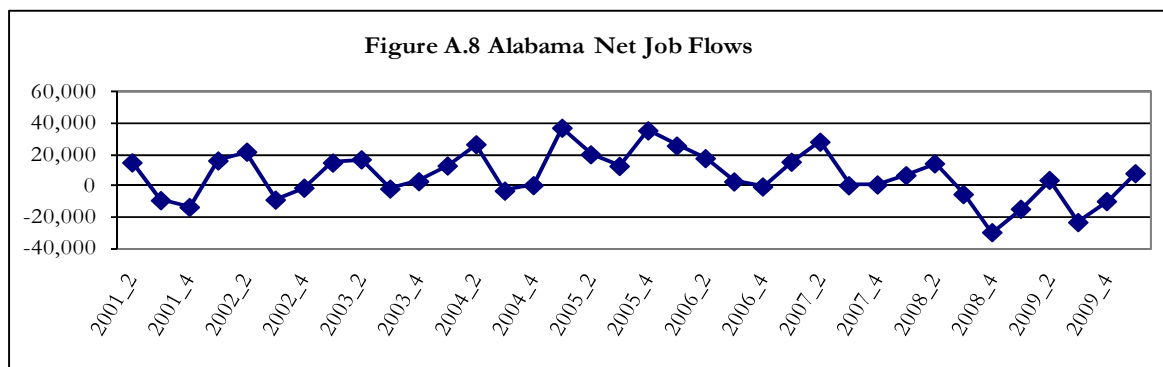
Source: Alabama Department of Industrial Relations and U.S. Census Bureau.

Job Creation and Net Job Flows

Quarterly job creation averaged 93,088 from second quarter 2001 to first quarter 2010. Figure A.7 shows job creation was lowest in the third quarter of 2009 at 63,723, but has been going up since. Net job flows averaged 6,483 per quarter in the same period (Figure A.8). Quarterly net job flows have ranged from a loss of 29,812 to a gain of 37,083. Net job flows clearly fluctuate greatly, but have also been going up since the third quarter of 2009. 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 Industrial Relations and U.S. Census Bureau



Source: Alabama Department of Industrial Relations and U.S. Census Bureau

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

Out of a total 905 occupations and occupational categories statewide, 790 are single occupations. Table A.10 shows the 41 occupations that are expected to be in high-demand, ranked by projected average annual job openings over the 2008 to 2018 period. Many of these occupations are common to three of the five largest employment sectors identified earlier (Table A.9): manufacturing; health care and social assistance; and educational services. Thus, these sectors will continue to dominate employment in the state.

The top five high-demand occupations are Registered Nurses; Team Assemblers; Customer Service Representatives; Elementary School Teachers, Except Special Education; and Home Health Aides. Twenty-seven of the high-demand occupations are also fast-growing. This means that these 27 occupations have a minimum annual growth rate of 2.18 percent or about twice the statewide occupational growth rate of 1.01 percent.

The 40 fastest growing occupations ranked by projected growth of employment are listed in Table A.11. More than half of these occupations are health or computer-related. The top five fast-growing occupations are Veterinary Technologists and Technicians; Computer Software Engineers, Applications; Network Systems and Data Communications Analysts; Occupational Therapist Assistants; and Personal and Home Care Aides.

Table A.12 shows the 50 highest earning occupations. In general, these occupations are in health, management, legal, 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 \$84,980 for Economists and the highest is \$227,290 for Surgeons.

The high-earning occupations are generally not fast-growing or in high-demand. Five occupations are both high-demand and high-earning (Table A.10). The following three occupations are in high-demand, fast-growing, and high-earning:

1. Personal Financial Advisors
2. Computer Software Engineers, System Software
3. Biological Science Teachers, Postsecondary

Of the state's 905 occupations and occupational categories, 117 are expected to decline over the 2008 to 2018 period. Employment in the 20 sharpest-declining occupations will fall by at least 10 percent, with each losing a minimum of 190 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 Alabama economy.

Table A.10 Selected High-Demand Occupations (Base Year 2008 and Projected Year 2018)

Occupation	Average Annual Job Openings		
	Total	Due to Growth	Due to Separations
Registered Nurses	1,525	830	700
Team Assemblers	1,460	780	680
Customer Service Representatives	1,210	540	670
Elementary School Teachers, Except Special Education	755	325	430
Home Health Aides*	485	390	95
Pharmacy Technicians*	430	230	200
Computer Systems Analysts*	380	185	195
Medical Assistants*	340	255	85
Management Analysts	265	150	115
Construction Managers	260	130	130
Bill and Account Collectors*	250	160	90
Computer Software Engineers, Applications*	190	140	45
Computer Software Engineers, Systems Software*	190	120	70
Network and Computer Systems Administrators*	185	100	85
Network Systems & Data Communications Analysts*	180	125	55
Pharmacists	180	100	80
Aircraft Mechanics and Service Technicians*	170	130	35
Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders*	155	100	55
Dental Hygienists*	150	95	55
Mechanical Engineers	150	65	85
Dental Assistants*	140	90	50
Industrial Engineers*	140	75	60
Aircraft Structure, Surfaces, Rigging, & System Assemblers*	125	75	50
Fitness Trainers and Aerobics Instructors*	125	70	50
Cost Estimators	110	55	55
Medical and Public Health Social Workers*	110	60	50
Special Education Teachers, Preschool, Kindergarten, & Elementary School	100	50	50
Logisticians	90	55	40
Paralegals and Legal Assistants	90	55	35
Biological Science Teachers, Postsecondary*	85	50	35
Physical Therapists*	80	55	25
Vocational Education Teachers, Postsecondary*	75	50	25
Personal Financial Advisors*	70	50	20
Veterinarians*	65	40	30
Physical Therapist Assistants*	60	45	15
Commercial Pilots*	55	25	30
Railroad Conductors and Yardmasters	55	20	35
Occupational Therapists*	45	25	15
Transportation Inspectors*	45	20	25
Anesthesiologists	40	20	20
Database Administrators*	40	30	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 Industrial Relations and Center for Business and Economic Research, The University of Alabama.

Table A.11 Selected Fast-Growing Occupations (Base Year 2008 and Projected Year 2018)

Occupation	Employment		Percent Change	Annual Growth (Percent)	Average Annual Job Openings
	2008	2018			
Veterinary Technologists and Technicians	800	1,180	48	3.96	60
Computer Software Engineers, Applications*	3,170	4,580	44	3.75	190
Network Systems and Data Communications Analysts*	2,790	4,030	44	3.75	180
Occupational Therapist Assistants	380	530	39	3.38	20
Personal and Home Care Aides	3,440	4,780	39	3.34	190
Medical Assistants*	6,770	9,320	38	3.25	340
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders*	2,640	3,630	38	3.24	155
Home Health Aides*	10,530	14,430	37	3.20	485
Skin Care Specialists	270	370	37	3.20	15
Aircraft Mechanics and Service Technicians*	3,610	4,930	37	3.17	170
Physical Therapist Assistants*	1,270	1,720	35	3.08	60
Pharmacy Technicians*	6,550	8,850	35	3.06	430
Court Reporters	200	270	35	3.05	10
Vocational Education Teachers, Postsecondary*	1,510	2,020	34	2.95	75
Physician Assistants	450	600	33	2.92	20
Rail Car Repairers	360	480	33	2.92	20
Entertainment Attendants and Related Workers, All Other	NA	NA	33	2.89	70
Dental Hygienists*	3,010	3,930	31	2.70	150
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers*	2,430	3,170	30	2.69	125
Industrial Engineers*	2,540	3,310	30	2.68	140
Dental Assistants*	2,870	3,740	30	2.68	140
Transportation Inspectors*	700	910	30	2.66	45
Physical Therapists*	1,900	2,450	29	2.57	80
Medical Appliance Technicians	140	180	29	2.54	5
Physical Therapist Aides	670	860	28	2.53	30
Database Administrators*	1,060	1,350	27	2.45	40
Avionics Technicians	880	1,120	27	2.44	35
Bill and Account Collectors*	5,940	7,560	27	2.44	250
Medical and Public Health Social Workers*	2,320	2,950	27	2.43	110
Network and Computer Systems Administrators*	3,700	4,680	26	2.38	185
Commercial Pilots*	1,030	1,300	26	2.36	55
Veterinarians*	1,450	1,830	26	2.35	65
Fitness Trainers and Aerobics Instructors*	2,800	3,520	26	2.31	125
Computer Software Engineers, Systems Software*	4,740	5,950	26	2.30	190
Computer Systems Analysts*	7,310	9,160	25	2.28	380
Environmental Engineering Technicians	400	500	25	2.26	20
Biological Science Teachers, Postsecondary*	2,100	2,620	25	2.24	85
Occupational Therapists	1,100	1,370	25	2.22	45
Personal Financial Advisors*	2,060	2,560	24	2.20	70
Mental Health Counselors	1,080	1,340	24	2.18	50

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 Industrial Relations and Center for Business and Economic Research, The University of Alabama.

Table A.12 Selected High-Earning Occupations (Base Year 2008 and Projected Year 2018)

Occupation	Employment		Annual Growth (Percent)	Average Annual Job Openings	Mean Annual Salary (\$)
	2008	2018			
Surgeons	880	990	1.18	25	227,290
Orthodontists	110	120	0.87	5	224,070
Internists, General	880	970	0.98	25	203,510
Physicians and Surgeons, All Other	3,970	4,570	1.42	130	202,950
Anesthesiologists*	1,060	1,280	1.90	40	196,320
Dentists, General	1,870	2,050	0.92	55	177,810
Pediatricians, General	440	490	1.08	15	171,320
Dentists, All Other Specialists	80	90	1.18	5	168,340
Chief Executives	5,290	5,440	0.28	160	166,350
Psychiatrists	250	290	1.50	10	164,210
Family and General Practitioners	1,170	1,320	1.21	35	142,850
Lawyers	7,860	8,760	1.09	240	117,390
Podiatrists	200	230	1.41	10	116,710
Administrative Law Judges, Adjudicators, and Hearing Officers	120	120	0.00	5	116,460
Pharmacists*	4,520	5,540	2.06	180	115,060
Engineering Managers	2,620	2,850	0.84	75	110,730
Physicists	230	260	1.23	10	110,240
Biological Science Teachers, Postsecondary*	2,100	2,620	2.24	85	109,990
Personal Financial Advisors*	2,060	2,560	2.20	70	108,240
Natural Sciences Managers	170	170	0.00	5	106,700
Engineers, All Other	4,180	4,560	0.87	85	103,070
Aerospace Engineers	2,590	2,940	1.28	85	102,510
Computer and Information Systems Managers	2,280	2,640	1.48	75	102,230
Agricultural Sciences Teachers, Postsecondary	NA	NA	1.68	10	101,570
Computer and Information Scientists, Research	340	380	1.12	15	100,770
Marketing Managers	1,030	1,150	1.11	35	100,740
Financial Managers	5,190	5,680	0.91	125	99,710
Education Administrators, Postsecondary	2,150	2,440	1.27	90	97,820
Materials Scientists	20	20	0.00	0	97,020
Health Specialties Teachers, Postsecondary	1,020	1,230	1.89	40	96,760
Athletes and Sports Competitors	NA	NA	1.60	10	95,880
General and Operations Managers	34,740	35,380	0.18	905	95,880
Sales Managers	3,210	3,550	1.01	105	95,300
Chiropractors	810	940	1.50	25	94,150
Optometrists	590	680	1.43	20	93,870
Purchasing Managers	990	1,100	1.06	40	93,820
Computer Hardware Engineers	1,190	1,310	0.97	50	93,250
Law Teachers, Postsecondary	230	280	1.99	10	92,610
Physical Scientists, All Other	NA	NA	0.80	5	92,160
Mining and Geological Engineers, Including Mining Safety Engineers	160	170	0.61	5	92,010
Human Resources Managers, All Other	720	800	1.06	20	89,740
Electronics Engineers, Except Computer	1,690	1,810	0.69	50	89,010
Managers, All Other	11,340	12,380	0.88	330	88,130
Airline Pilots, Copilots, and Flight Engineers	380	400	0.51	15	87,970
Psychologists, All Other	120	130	0.80	5	87,810
Landscape Architects	130	140	0.74	5	87,490
Education Administrators, All Other	490	530	0.79	20	86,980
Chemical Engineers	650	660	0.15	20	86,220
Computer Software Engineers, Systems Software*	4,740	5,950	2.30	190	85,560
Economists	160	180	1.18	5	84,980

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 2010 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 Industrial Relations.

Table A.13 Selected Sharp-Declining Occupations (Base Year 2008 and Projected Year 2018)

Occupation	Employment		Net Change	Percent Change
	2008	2018		
Sewing Machine Operators	6,610	4,850	-1760	-27
Farmers and Ranchers	NA	NA	-1440	-11
Packers and Packagers, Hand	8,990	7,810	-1180	-13
File Clerks	2,430	1,470	-960	-40
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2,430	1,480	-950	-39
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators & Tenders	2,290	1,400	-890	-39
Order Clerks	2,680	1,910	-770	-29
Electrical and Electronic Equipment Assemblers	2,840	2,460	-380	-13
Pressers, Textile, Garment, and Related Materials	2,340	1,980	-360	-15
Computer Operators	1,330	980	-350	-26
Photographic Processing Machine Operators	690	390	-300	-43
Extruding and Form Machine Setters, Operators and Tending Synthetic & Glass Fibers	870	580	-290	-33
Textile Bleaching and Dyeing Machine Operators and Tenders	780	490	-290	-37
Switchboard Operators, Including Answering Service	2,830	2,550	-280	-10
Textile Cutting Machine Setters, Operators, and Tenders	830	550	-280	-34
Mail Clerks and Mail Machine Operators, Except Postal Service	1,440	1,200	-240	-17
Post Svc Mail Sorters, Processors, & Processing Machine Operators	1,890	1,650	-240	-13
Textile, Apparel, and Furnishings Workers, All Other	710	480	-230	-32
Paper Goods Machine Setters, Operators, and Tenders	2,190	1,970	-220	-10
New Accounts Clerks	1,050	860	-190	-18

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

Source: Alabama Department of Industrial Relations 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 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 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>Basic Skills: 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>Complex Problem Solving Skills: 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>Resource Management Skills: 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>Social Skills: 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>Systems Skills: 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>Technical Skills: 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
Basic Skills			
Active Learning	41	33	50
Active Listening	95	93	80
Critical Thinking	98	85	82
Learning Strategies	12	8	10
Mathematics	10	8	10
Monitoring	68	70	40
Reading Comprehension	73	68	72
Science	15	10	34
Speaking	90	88	76
Writing	44	40	48
Complex Problem Solving Skills			
Complex Problem Solving	51	53	66
Resource Management Skills			
Management of Financial Resources	2	0	2
Management of Material Resources	0	0	0
Management of Personnel Resources	5	2	8
Time Management	22	15	18
Social Skills			
Coordination	46	38	28
Instructing	20	13	12
Negotiation	7	3	4
Persuasion	7	8	10
Service Orientation	39	50	12
Social Perceptiveness	41	45	36
Systems Skills			
Judgment and Decision Making	68	65	74
Systems Analysis	17	13	10
Systems Evaluation	10	10	4
Technical Skills			
Equipment Maintenance	2	8	0
Equipment Selection	0	0	0
Installation	0	0	0
Operation and Control	10	10	2
Operation Monitoring	17	20	6
Operations Analysis	12	10	16
Programming	10	10	4
Quality Control Analysis	7	13	0
Repairing	2	8	0
Technology Design	0	0	0
Troubleshooting	2	10	0

Note: Rounding errors may be present.

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

High-earning occupations require more active learning, science, writing, complex problem solving, personnel resource management, judgment and decision making, persuasion, and operations analysis skills than both high-demand and fast-growing jobs. These are skills that require long training periods and postsecondary education. However, high-earning jobs require less social and technical skills. High-demand occupations require more basic, resource management, and systems skills, but slightly less technical and complex problem solving skills than fast-growing occupations.

Table A.16 shows skill gap indexes for all 35 skills in Table A.14. Skills gap indexes range up to 100 and are standardized measures of the gap between current supply and projected demand. The index does not provide any information about current or base year skill supply. Its focus is on the projection period, which for Table A.16 is 2008 to 2018, 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. 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

Educational attainment in Alabama is low compared to the nation as a whole. About 81 percent of Alabamians age 25 and over have graduated from high school, compared to 84.6 percent for the nation. Of that population, 21.5 percent of Alabamians have a bachelor's or higher degree; 27.5 percent of all Americans do. 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-seven (66 percent) of the 41 high-demand occupations require an associate degree at the minimum and 23 (56 percent) require a bachelor's or higher degree. Twenty-one (52 percent) of the 40 fast-growing occupations require an associate degree at the minimum and 16 (40 percent) require a bachelor's or higher degree.

The 2008 to 2018 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 905 occupations and occupational categories, 117 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)

Skill	Total Openings (Projected Demand)	Replacement Index	Skills Gap Index
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

Source: Alabama Department of Industrial Relations.

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
First Professional Degree	3	1	16
Doctoral Degree	1	1	4
Master's Degree	2	4	3
Work Experience Plus a Bachelor's or Higher Degree	2	1	13
Bachelor's Degree	15	9	12
Associate Degree	4	5	0
Postsecondary Vocational Training	4	7	0
Work Experience in a Related Occupation	1	1	1
Long-term On-the-job Training	0	2	1
Moderate-term On-the-job Training	7	5	0
Short-term On-the-job Training	2	4	0

Note: The last three education and training requirements categories are based on the length of time it generally takes an average worker to achieve proficiency for occupations in which postsecondary training is usually not needed for entry. **Long-term** requires more than 12 months on-the-job training that can include up to four years of apprenticeship, formal classroom instruction, and short-term employer-sponsored training. Trainees are generally considered to be employed in the occupation. **Moderate-term** requires one to 12 months on-the-job experience and informal training. **Short-term** requires up to one month on-the-job experience and training.

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

Implications and Recommendations

From a 2008 base, a worker surplus of 116,880 for 2018 and a worker shortfall of 73,317 for 2025 are expected (Table A.18). A focus on worker skills must be a priority through 2018, after which both skills and the expected shortfall must be priorities for 2025. Worker shortfalls for critical occupations will need to be addressed through 2025.

Table A.18 Expected Worker Shortfall

	2008-2018	2008-2025
Total population growth (percent)	8.5	14.2
Age 20-64 population growth (percent)	5.8	6.7
Job growth (percent)	1.2	9.5
Worker shortfall (percent)	-4.6	2.9
Worker shortfall (number)	-116,880	73,317

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) 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 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 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 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 can 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 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 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.