STATE OF WORKFORCE REPORT XI:

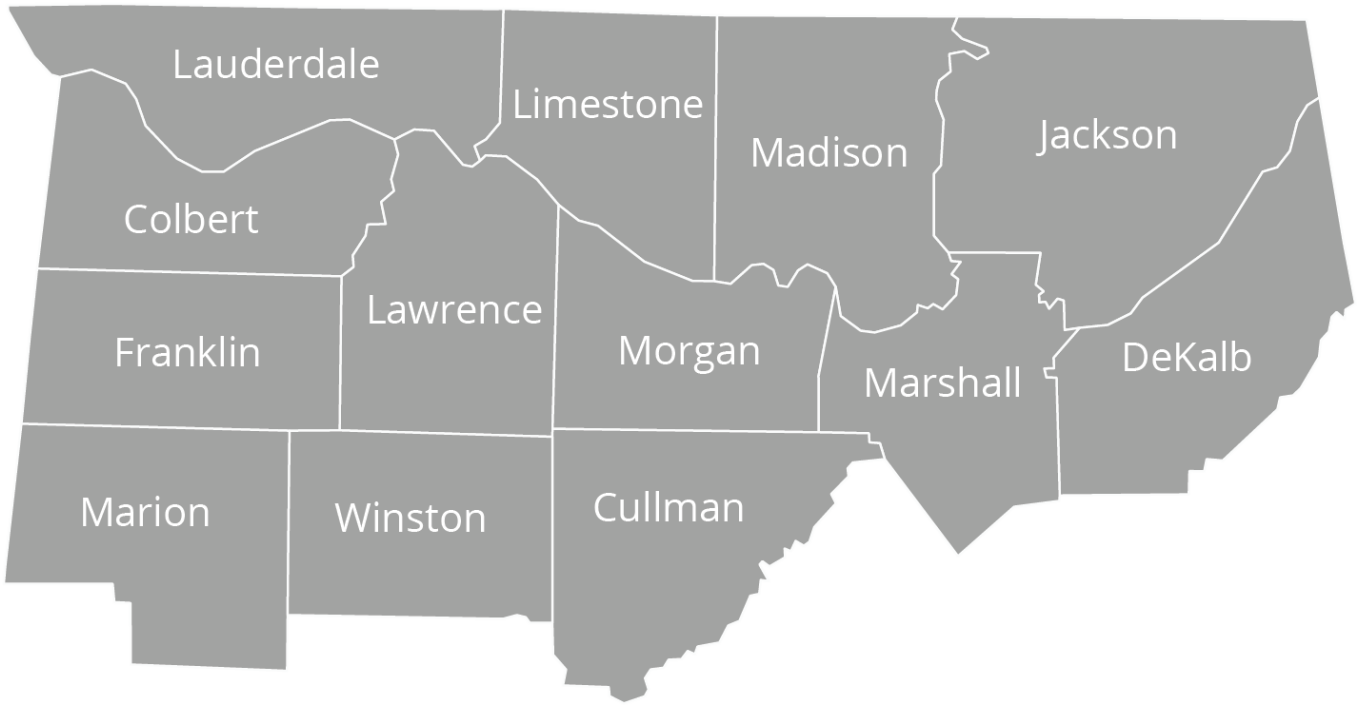
North AlabamaWorks

MAY 2017

Center for Business and Economic Research
Culverhouse College of Commerce

University of Alabama Center for Economic Development

Institute for Social Science Research



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Produced by:

Samuel Addy, Ph.D., *Sr. Res. Economist & Assoc. Dean for Economic Development Outreach*
Kilungu Nzaku, Ph.D., *Assistant Research Economist*
Ahmad Ijaz, *Executive Director & Director of Economic Forecasting*
Sarah Cover, *Economic Forecaster*
Viktoria Riiman, *Socioeconomic Analyst*
Arben Skivjani, *Economic Forecaster*
Susannah Robichaux, *Socioeconomic Analyst*
Morgan Tatum, *Project Coordinator*
Katie Howard, *Senior Graphic Designer*

Center for Business and Economic Research
Culverhouse College of Commerce
The University of Alabama
Box 870221, Tuscaloosa, AL 35487-0221
Tel: (205) 348-6191 | Fax: (205) 348-2951
uacber@cba.ua.edu

Dissemination:
Nisa Miranda, *Director*, University of Alabama Center for Economic Development

Underemployment Survey:
Debra McCallum, *Research Social Scientist and Director of the Capstone Poll*
Michael Conaway, *Project Coordinator for the Capstone Poll*
Institute for Social Science Research

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SUMMARY

- This report analyzes workforce supply and demand issues using available metrics of workforce characteristics for the North AlabamaWorks workforce region and presents implications and recommendations.

- North AlabamaWorks had a 5.1 percent unemployment rate in March 2017, with 26,541 unemployed. An underemployment rate of 23.4 percent for 2016 means that the region has an available labor pool of 143,184 that includes 116,643 underemployed workers who are looking for better jobs and are willing to commute farther and longer for such jobs.

- Net out-commuting rose from 7,875 in 2005 to 9,311 in 2014, and commuting within the region went up. Commute time and distance were down in 2016 from 2015 suggesting that congestion eased. However, continuous maintenance and development of transportation infrastructure and systems is important to avoid congestion, which can slow economic development and recovery.

- By sector the top five employers in the region are manufacturing; retail trade; health care and social assistance; professional, scientific, and technical services; and educational services. In the first quarter of 2016, they provided 249,704 jobs, 59.7 percent of the regional total. Two of the leading employers—manufacturing and professional, scientific, and technical services—paid above the region's average monthly wage of $3,566. Economic development programs should aim to diversify and strengthen the region's economy by retaining, expanding, and attracting more high-wage providing industries; workforce development should focus on preparing workers for these industries.

- On average 19,378 jobs were created per quarter from second quarter 2001 to first quarter 2016; quarterly net job flows averaged 2,157. Job creation is the number of new jobs that are added in the region 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 Laborers and Freight, Stock, and Material Movers, Hand; Registered Nurses; Team Assemblers; Customer Service Representatives; and Heavy and Tractor-Trailer Truck Drivers.

- The top five fast-growing occupations are Machinists; Personal Care Aides; Electrical Power-Line Installers and Repairers; Home Health Aides; and Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders.

- The top 50 high-earning occupations are mainly in health, management, and engineering fields and have a minimum salary of $99,434. Eight of the top 10 occupations are in health care and the remaining two are in management.

- Of the top 40 high-demand, 20 fast-growing, and 50 high-earning occupations, none belong to all three categories. Six occupations are both high-demand and high-earning, and 11 occupations are both high-demand and fast-growing.

- Of the region's 749 occupations, 108 are expected to decline over the 2014 to 2024 period. Twenty occupations are expected to decline by at least four percent and lose a minimum of 50 jobs each. Education and training for these 20 occupations should slow accordingly.

- Skill and education requirements for jobs keep rising. Educational and training requirements of high-demand, fast-growing, and high-earning occupations demonstrate the importance of education in developing the future workforce. In the future, more jobs will require postsecondary education and training at a minimum.

- The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs indicates a strong need for training in these skills. For North AlabamaWorks both the pace and scale of training needs to increase 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.

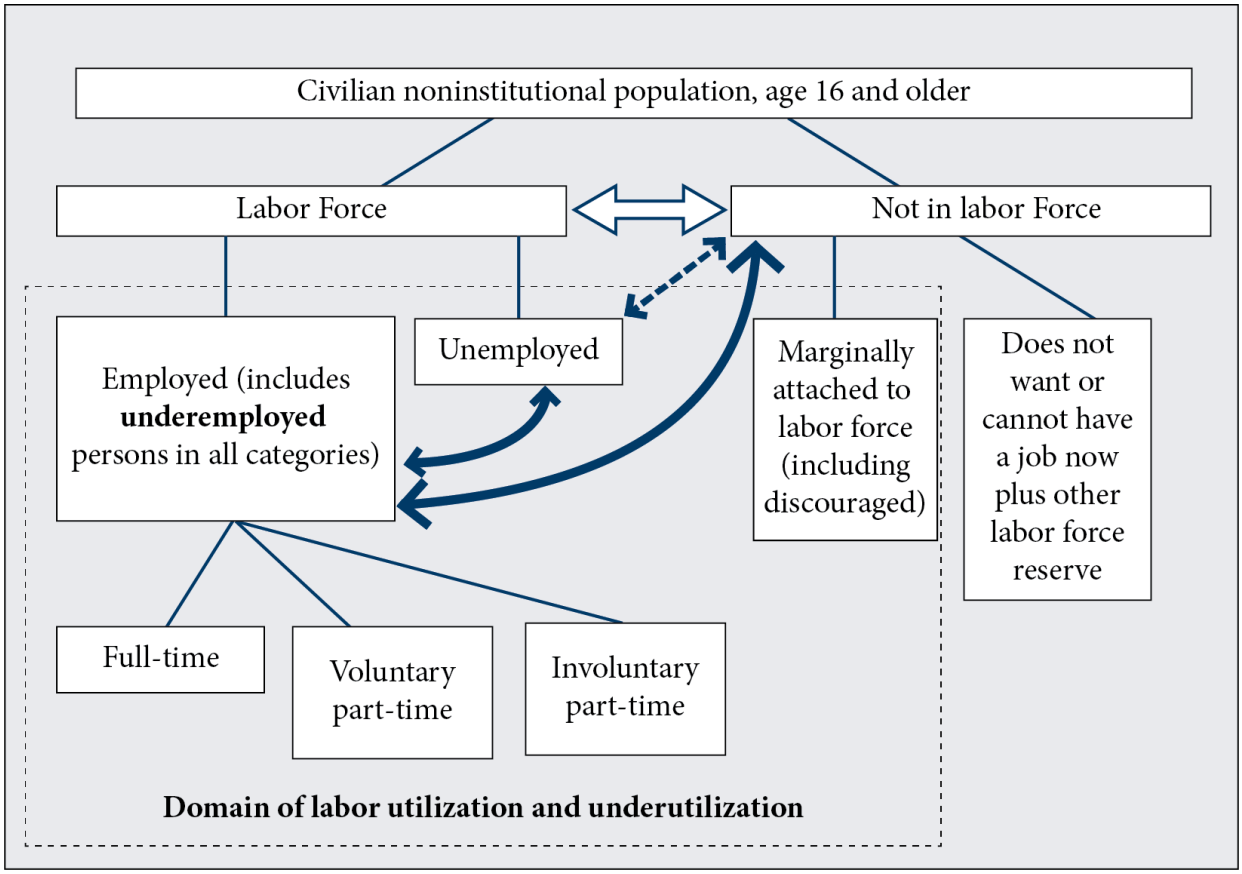
- From a 2014 base, worker shortfalls of about 42,700 and 57,000 are expected for 2024 for 2030 respectively. By 2040, worker shortfall will reach 63,700. This demands a focus on worker skills and shortages through 2040. Worker shortfalls for critical occupations will also need to be addressed continuously. Strategies to address skill needs and worker shortfalls might include: (1) improvements in education and its funding; (2) introducing economic opportunities that attract new and younger residents; (3) lowering the high school dropout rate; (4) focusing on hard-to-serve populations (e.g. out-of-school youth); (5) continuing and enhancing programs to assess, retrain, and place dislocated workers; (6) encouraging older worker participation in the labor force; and (7) facilitating 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 and priorities change over time. 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.

- The higher incomes that come with improved educational attainment and work skills would help increase personal income for the region as well as raise additional local (county and city) tax revenues. This is critical in regions that have lower population and labor force growth rate but still important in North AlabamaWorks, where population and labor force growth rates are higher than the state's.

- Regional workforce development and economic development are both necessary for a strong, well-diversified economy. Indeed, one cannot achieve success in one without the other.

Labor Utilization and Supply Flows



Source: Addy et al[1] and Canon et al[2]

The chart above presents labor utilization and supply flows that explain labor market dynamics in view of recent study findings. The civilian non-institutional population age 16 and above is comprised of participants in the labor force and nonparticipants. The labor force is made of employed and unemployed persons; the unemployed do not have a job but are actively searching for work. Employed persons include fully employed and underemployed persons in all categories of work (full-time, voluntary part-time, and involuntary part-time). Nonparticipants in the labor force include retirees (voluntary and involuntary), people who do not want to or cannot work for various reasons (e.g., disability, caring for family members, in school or training, etc.), discouraged workers, and other labor force reserves. It has been suggested that a subgroup of nonparticipants referred to as the "waiting group" is more likely than the rest of the nonparticipants to take a job if wages and conditions are satisfactory, but they do not actively search for work. New evidence has shown that between January 2003 and August 2013, the flow of nonparticipants into employment was 1.6 times that of unemployed persons transitioning into employment, which may be due to the presence of the waiting group.[1, 2] 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.

[1] 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) .
[2] Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was "Unemployed", *The Regional Economist*, January.

Workforce Supply

Labor Force Activity

The labor force includes all persons in the civilian noninstitutional population who are age 16 and over and who have a job or are actively looking for one. Typically, those who have no job and are not looking for one are not included (e.g. students, retirees, discouraged workers, and the disabled). Table 1.1 shows labor force information for North AlabamaWorks region and its 13 counties for 2016 and March 2017. 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 1.1 North AlabamaWorks Labor Force Information

	2016 Annual Average			
	Labor Force	Employed	Unemployed	Rate (%)
Colbert	23,707	22,045	1,662	7.0
Cullman	37,715	35,792	1,923	5.1
DeKalb	29,016	27,216	1,800	6.2
Franklin	13,723	12,886	837	6.1
Jackson	23,636	22,117	1,519	6.4
Lauderdale	43,009	40,246	2,763	6.4
Lawrence	13,729	12,763	966	7.0
Limestone	40,575	38,424	2,151	5.3
Madison	173,295	164,279	9,016	5.2
Marion	12,586	11,741	845	6.7
Marshall	41,255	38,994	2,261	5.5
Morgan	55,331	52,235	3,096	5.6
Winston	9,403	8,714	689	7.3
North	516,980	487,452	29,528	5.7
Alabama	2,168,608	2,038,775	129,833	6.0
United States	159,187,000	151,436,000	7,751,000	4.9

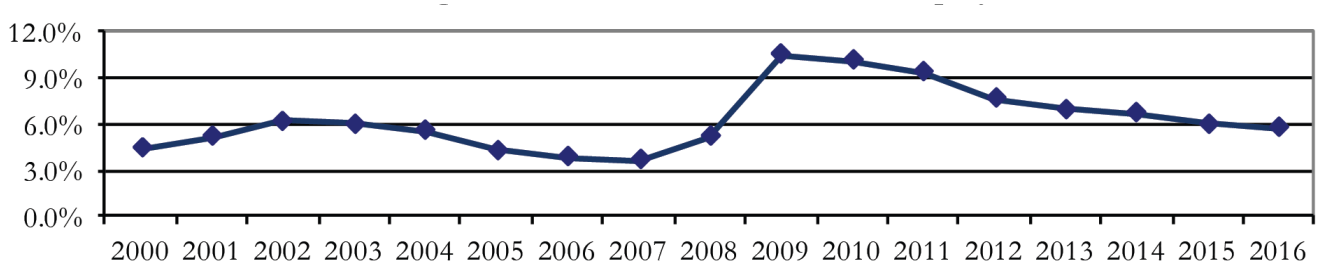
	March 2017			
	Labor Force	Employed	Unemployed	Rate (%)
Colbert	23,743	22,291	1,452	6.1
Cullman	38,054	36,324	1,730	4.5
DeKalb	28,932	27,315	1,617	5.6
Franklin	13,818	13,065	753	5.4
Jackson	23,555	22,215	1,340	5.7
Lauderdale	43,027	40,700	2,327	5.4
Lawrence	13,811	12,998	813	5.9
Limestone	41,521	39,512	2,009	4.8
Madison	177,499	169,064	8,435	4.8
Marion	12,727	11,992	735	5.8
Marshall	41,935	39,930	2,005	4.8
Morgan	56,003	53,250	2,753	4.9
Winston	9,541	8,969	572	6.0
North	524,166	497,625	26,541	5.1
Alabama	2,186,599	2,069,412	117,187	5.4
United States	159,912,000	152,628,000	7,284,000	4.6

Note: Not seasonally adjusted.
Source: Alabama Department of Labor and U.S. Bureau of Labor Statistics.

A slow recovery from the recession that began in 2007 is keeping county and regional unemployment rates higher than in the pre-recession period. County unemployment rates ranged from 5.1 percent to 7.3 percent (5.7 percent for the region) in 2016 before dropping to a range of 4.5 percent to 6.1 percent (5.1 percent for the region) in March 2017. In March 2017, Cullman County had the lowest unemployment rate and Colbert had the highest. Unemployment rates were above the Alabama's 5.4 percent in six counties that month.

The region's unemployment rates were low before the 2001 and 2007 recessions (Figure 1.1). Successful state and local economic efforts brought unemployment to record lows in 2006 and 2007. Employment losses due to the latest recession raised the regional unemployment rate to double digits in 2009 and 2010. Since then the regional unemployment rate has been declining gradually and was 5.7 percent in 2016. Year-to-date monthly labor force data point to a lower regional unemployment rate for 2017. However, the slow recovery from the recession and structural changes in the economy are expected to keep unemployment high for a few more years.

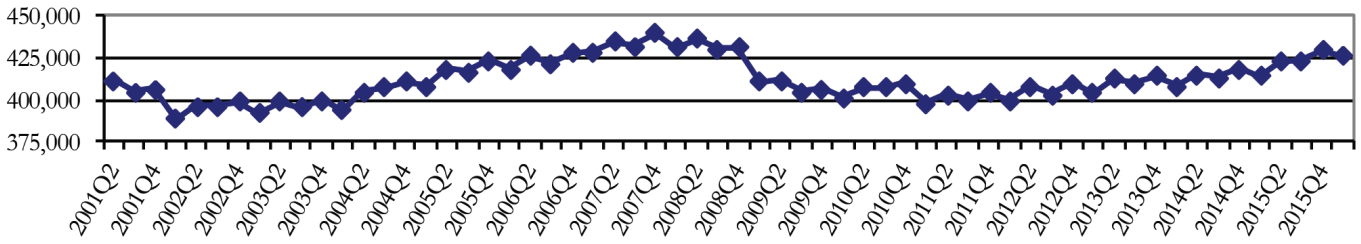
Figure 1.1 North AlabamaWorks Unemployment Rate



Source: Alabama Department of Labor.

Nonagricultural employment of the region's residents averaged 412,289 quarterly from the second quarter of 2001 to the first quarter of 2016 (Figure 1.2). The number of jobs declined sharply from the fourth quarter of 2007 through the first quarter of 2010 but has been improving. Employment has been trending upward since the third quarter of 2011 and is near pre-recession levels.

Figure 1.2 North AlabamaWorks Nonagricultural Employment



Source: Alabama Department of Labor.

Table 1.2 shows worker distribution by age in North AlabamaWorks for the first quarter of 2016. Older workers, age 55 and over, comprise 21.0 percent of the region's nonagricultural employment. This is slightly lower than the state's 21.3 percent. The region also has a smaller share of workers who are age 65 and over, 4.9 percent versus 5.1 percent for Alabama. To meet long-term occupational projections for growth and replacement, labor force participation of younger residents must increase or older workers may have to work longer.

Table 1.2 Workers by Age Group (First Quarter 2016)

	Nonagricultural Employment	
Age Group	Number	Percent
14-18	9,286	2.2
19-24	47,135	11.1
25-34	92,201	21.6
35-44	91,186	21.4
45-54	96,890	22.7
55-64	68,584	16.1
65+	20,946	4.9
55 and over total	89,530	21.0
Total all ages	426,228	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

More residents commute out of the region for work than nonresidents commute in (Table 1.3). In 2005 commuter outflow exceeded inflow by 7,875 people. Commuter inflow and outflow levels increased over the next nine years, and by 2014, net commuter outflow was 9,311. Table 1.3 also shows one-way average commute time and distance for the past two years. Average commute distance and time went down in 2016 from 2015 implying that congestion eased somewhat. However, as the regional economy recovers, congestion could pose challenges especially within Huntsville Metro area. Transportation infrastructure and systems must be maintained and developed properly to ensure that the flow of goods and the movement of workers are not interrupted. Congestion can cause interruptions that delay or slow economic development.

Population

The North AlabamaWorks population count of 1,103,284 in 2010 was 10.7 percent more than in 2000 (Table 1.4); far more than Alabama's 7.5 percent. The population grew in Cullman, DeKalb, Franklin, Lauderdale, Limestone, Madison, Marshall, and Morgan counties but shrank in the other five. Growth was greatest in Limestone, Madison, and Marshall counties. The 2016 population estimates show a 2.8 percent growth of the region's population since 2010 compared to 1.7 percent increase for Alabama. Most of the growth occurred in Limestone County. The population rose in four counties and decline in the other nine.

Table 1.5 shows North AlabamaWorks' population counts, estimates, and 2040 projections by age group. The population aged 65 and over grows rapidly after 2010, with the first of the baby boom generation turning 65. This is a major factor behind regional population growth projections. Unfortunately, the prime working age group (20-64) and youth (0-19) populations are expected to grow at a lower rate. This poses a challenge for workforce development. The region must continue investing in amenities and infrastructure or other appropriate policies to attract new and younger residents in both the short- and long-term to meet labor force needs.

Table 1.3 North AlabamaWorks Commuting Patterns

Year	North Inflow	North Outflow
2005	50,858	58,733
2006	56,354	54,012
2007	60,268	70,397
2008	65,393	68,987
2009	64,327	69,405
2010	65,572	69,815
2011	65,136	71,505
2012	64,567	71,465
2013	65,898	74,337
2014	67,143	76,454

	Inflow, 2014		Outflow, 2014	
North Counties	Number	Percent	Number	Percent
Colbert	12,069	7.2	10,887	5.8
Cullman	11,083	6.6	16,416	8.8
DeKalb	7,547	4.5	11,812	6.3
Franklin	4,874	2.9	7,109	3.8
Jackson	2,460	1.5	15,465	8.3
Lauderdale	2,398	1.4	10,393	5.6
Lawrence	10,606	6.3	22,220	11.9
Limestone	6,095	3.6	9,949	5.3
Madison	61,189	36.6	28,892	15.5
Marion	4,368	2.6	6,816	3.7
Marshall	16,141	9.7	17,433	9.4
Morgan	24,473	14.6	23,634	12.7
Winston	3,812	2.3	5,400	2.9

	Percent of Workers	
Average commute time (one-way)	**2015**	**2016**
Less than 20 minutes	51.2	51.5
20 to 40 minutes	28.1	28.9
40 minutes to an hour	9.1	8.9
More than an hour	3.9	3.5
Average commute distance (one-way)	**2015**	**2016**
Less than 10 miles	42.3	41.6
10 to 25 miles	34.2	37.6
25 to 45 miles	14.0	11.4
More than 45 miles	6.3	7.0

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.

Table 1.4 North AlabamaWorks Population

	1990 Census	2000 Census	2010 Census	2016 Estimate	Change 2000-2010	% change 2000-2010	Change 2010-2016	% change 2010-2016
Colbert	51,666	54,984	54,428	54,216	-556	-1.0	-212	-0.4
Cullman	67,613	77,483	80,406	82,471	2,923	3.8	2,065	2.6
DeKalb	54,651	64,452	71,109	70,900	6,657	10.3	-209	-0.3
Franklin	27,814	31,223	31,704	31,628	481	1.5	-76	-0.2
Jackson	47,796	53,926	53,227	52,138	-699	-1.3	-1,089	-2.0
Lauderdale	79,661	87,966	92,709	92,318	4,743	5.4	-391	-0.4
Lawrence	31,513	34,803	34,339	33,244	-464	-1.3	-1,095	-3.2
Limestone	54,135	65,676	82,782	92,753	17,106	26.0	9,971	12.0
Madison	238,912	276,700	334,811	356,967	58,111	21.0	22,156	6.6
Marion	29,830	31,214	30,776	29,998	-438	-1.4	-778	-2.5
Marshall	70,832	82,231	93,019	95,157	10,788	13.1	2,138	2.3
Morgan	100,043	111,064	119,490	119,012	8,426	7.6	-478	-0.4
Winston	22,053	24,843	24,484	23,805	-359	-1.4	-679	-2.8
North	876,519	996,565	1,103,284	1,134,607	106,719	10.7	31,323	2.8
Alabama	4,040,587	4,447,100	4,779,736	4,863,300	332,636	7.5	83,564	1.7
United States	248,709,873	281,421,906	308,745,538	323,127,513	27,323,632	9.7	14,381,975	4.7

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

Table 1.5 Population by Age Group and 2040 Projections

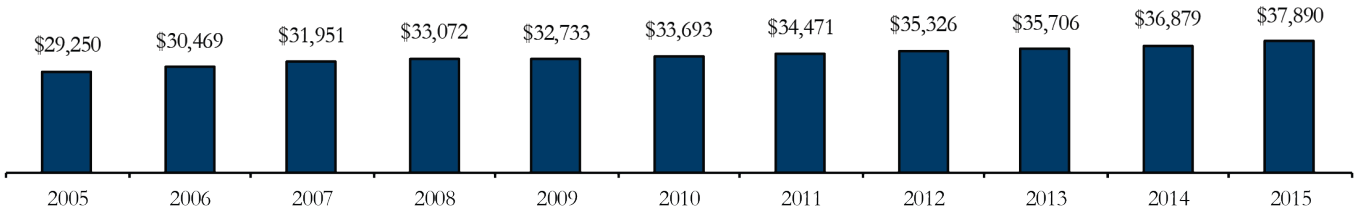
Age Group	2000	2010	2014	2024	2030	2035	2040
0-19	273,587	290,913	282,422	288,306	288,340	291728	297,848
20-24	61,772	69,805	74,946	76,014	77,684	77545	78,266
25-29	65,956	69,082	70,720	72,319	74,270	76223	76,169
30-34	70,382	66,762	70,050	72,537	76,412	78032	80,212
35-39	81,229	71,320	67,461	70,788	75,507	78688	80,501
40-44	79,116	75,214	73,619	73,061	71,812	77326	80,812
45-49	70,081	85,135	77,008	69,761	75,761	73366	79,121
50-54	65,493	81,710	85,465	73,149	70,038	76995	74,743
55-59	53,774	70,727	79,251	76,740	72,538	70265	77,518
60-64	45,997	64,547	67,593	81,610	74,333	72140	70,115
65+	129,178	158,069	178,951	227,132	262,080	277,302	285,546
20-64 Total	**593,800**	**654,302**	**666,113**	**665,979**	**668,355**	**680,580**	**697,457**
Total Population	**996,565**	**1,103,284**	**1,127,486**	**1,181,417**	**1,218,775**	**1,249,610**	**1,280,851**
Change from 2014							
0-19				2.1%	2.1%	3.3%	5.5%
20-64				0.0%	0.3%	2.2%	4.7%
Total Population				4.8%	8.1%	10.8%	13.6%

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

Per Capita Income

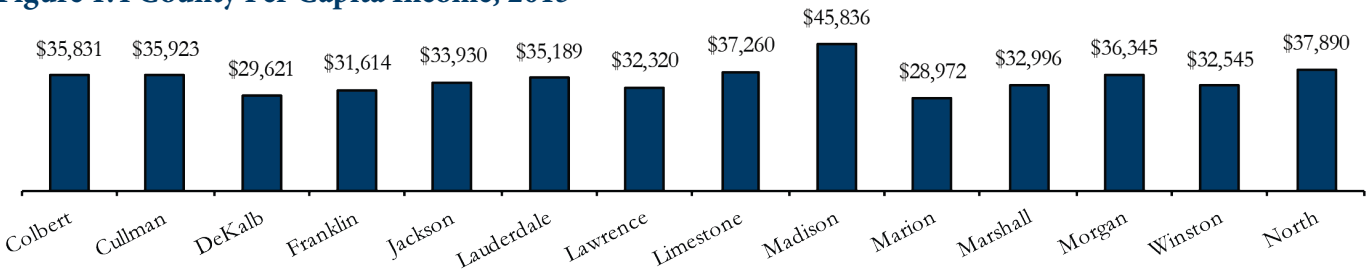
Per capita income (PCI) in North AlabamaWorks was $37,890 in 2015 (Figure 1.3), up 29.5 percent from 2005 and $140 below the state average of $38,030. Figure 1.4 shows regional PCI by county. Madison County had the highest PCI with $45,836 followed by Limestone with $37,260 while Marion had the lowest at $28,972.

Figure 1.3 North AlabamaWorks Per Capita Income



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

Figure 1.4 County Per Capita Income, 2015

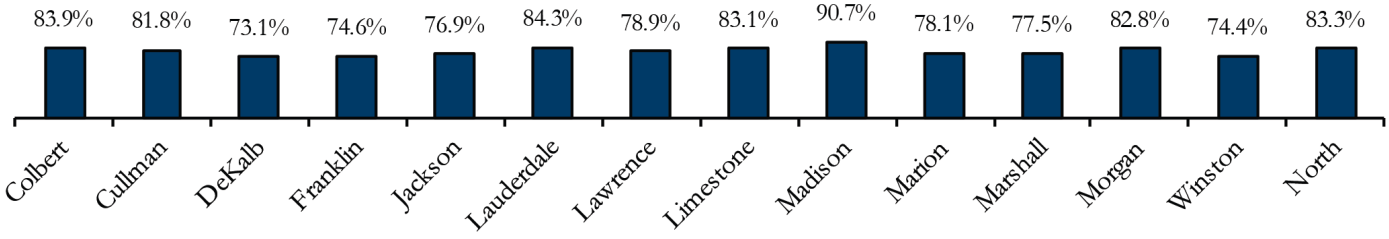


Source: U.S. Bureau of Economic Analysis and Center for Business and Economic Research, The University of Alabama.

Educational Attainment

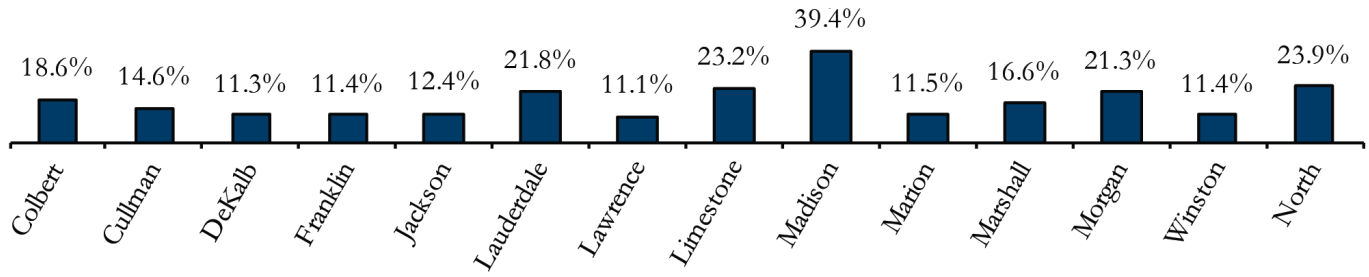
Educational attainment in 2011 to 2015 of North AlabamaWorks residents who were 25 years old and over is shown in Table 1.6 and Figures 1.5 and 1.6. About 83.3 percent graduated from high school and 23.9 percent held a bachelor's or higher degree. Madison County had the highest educational attainment while DeKalb and Lawrence had the lowest for high school graduate or higher and bachelor's degree or higher respectively. Educational attainment in all the counties is below Alabama's, except for Madison County. Job skills rise with education, so educational attainment is important as high-wage jobs in the 21st century demand more skill sets.

Figure 1.5 High School Graduate or Higher, 2011-2015



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

Figure 1.6 Bachelor's Degree or Higher, 2011-2015



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

Table 1.6 Educational Attainment of Population 25 Years and Over, 2011-2015

	Colbert	Cullman	DeKalb	Franklin	Jackson	Lauderdale	Lawrence	Limestone
Total	38,008	55,773	47,081	21,075	37,190	62,870	23,292	61,004
No schooling completed	433	704	1,506	612	629	686	339	788
Nursery to 4th grade	116	239	663	386	224	170	121	351
5th and 6th grade	216	579	1,408	557	601	373	365	852
7th and 8th grade	962	2,038	1,901	787	1,545	1,909	923	1,939
9th grade	952	2,046	1,946	595	1,174	1,668	645	1,659
10th grade	1,402	1,985	2,286	1,055	2,075	1,882	1,259	1,985
11th grade	1,319	1,504	2,117	890	1,623	2,240	703	1,862
12th grade, no diploma	736	1,030	823	473	737	943	564	878
High school graduate/equivalent	13,131	19,331	16,418	7,895	14,819	21,416	9,464	19,553
Some college, less than 1 year	2,665	3,566	2,624	1,207	1,658	4,267	1,338	3,972
Some college, 1+ years, no degree	6,179	8,681	6,063	2,804	4,489	9,903	3,351	8,853
Associate degree	2,834	5,947	4,002	1,409	2,988	3,703	1,630	4,134
Bachelor's degree	4,299	5,092	3,174	1,562	2,876	8,049	1,803	9,303
Master's degree	1,980	2,117	1,702	670	1,373	4,150	671	4,030
Professional school degree	451	713	290	136	232	763	90	441
Doctorate degree	333	201	158	37	147	748	26	404

	Madison	Marion	Marshall	Morgan	Winston	North
Total	233,276	21,650	63,035	81,977	17,251	763,628
No schooling completed	1,836	202	1,852	1,098	369	10,984
Nursery to 4th grade	855	122	904	673	175	5,015
5th and 6th grade	1,075	338	1,419	1,176	353	9,200
7th and 8th grade	2,634	835	1,934	2,087	791	20,674
9th grade	3,609	919	2,026	1,843	950	20,081
10th grade	4,480	1,050	2,562	2,722	790	25,573
11th grade	4,396	716	2,163	2,835	633	22,865
12th grade, no diploma	2,794	553	1,334	1,673	357	13,094
High school graduate/equivalent	49,752	7,471	20,104	25,383	5,816	230,768
Some college, less than 1 year	12,183	1,769	4,173	5,690	1,328	46,263
Some college, 1 + years, no degree	38,423	3,253	9,083	13,213	2,323	116,182
Associate degree	19,403	1,924	5,003	6,112	1,401	60,703
Bachelor's degree	57,690	1,592	6,767	11,783	1,179	114,964
Master's degree	26,677	737	2,865	4,222	538	51,759
Professional school degree	3,695	126	580	951	138	8,712
Doctorate degree	3,774	43	266	516	110	6,791

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 in different 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 areas with such workers regardless of the local unemployment rates. A low unemployment rate, which may falsely suggest limited labor availability, is therefore not a hindrance to the business.

Table 1.7 Underemployed and Available Labor by County

	North	Colbert	Cullman	DeKalb	Franklin	Jackson	Lauderdale
Labor Force	524,166	23,743	38,054	28,932	13,818	23,555	43,027
Employed	497,625	22,291	36,324	27,315	13,065	22,215	40,700
Underemployment rate	23.4%	21.3%	25.4%	25.5%	25.5%	20.8%	17.2%
Underemployed workers	116,643	4,744	9,234	6,974	3,335	4,627	7,017
Unemployed	26,541	1,452	1,730	1,617	753	1,340	2,327
Available labor pool	143,184	6,196	10,964	8,591	4,088	5,967	9,344

	Lawrence	Limestone	Madison	Marion	Marshall	Morgan	Winston
Labor Force	13,811	41,521	177,499	12,727	41,935	56,003	9,541
Employed	12,998	39,512	169,064	11,992	39,930	53,250	8,969
Underemployment rate	23.3%	23.9%	20.7%	30.2%	30.6%	19.7%	30.2%
Underemployed workers	3,032	9,447	34,979	3,620	12,223	10,501	2,711
Unemployed	813	2,009	8,435	735	2,005	2,753	572
Available labor pool	3,845	11,456	43,414	4,355	14,228	13,254	3,283

Note: Rounding errors may be present. Based on March 2017 labor force data and 2016 underemployment rates.
Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

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

North AlabamaWorks had an underemployment rate of 23.4 percent in 2016. Applying this rate to March 2017 labor force data means that 116,643 employed residents were underemployed (Table 1.7). Adding the unemployed gives a total available labor pool of 143,184 for the region. This is 5.4 times the number of unemployed and is a more realistic measure of the available labor pool in the region. Prospective employers must be able to offer the underemployed higher wages, better benefits or terms of employment, or some other incentives to induce them to change jobs. Underemployment rates ranged from 17.2 percent for Lauderdale County to 30.6 percent for Marshall. Madison County had the largest available

labor pool and Winston had the smallest. The underemployed workers in North AlabamaWorks are more willing to commute farther and longer for a better job. For the one-way commute, 42.0 percent are prepared to travel for 20 or more minutes longer and 36.4 percent will go 20 or more extra miles. For all employees, 37.3 percent are prepared to commute for 20 or more minutes and 30.2 percent are willing to travel for 20 or more miles.

The underemployment rates for counties, AlabamaWorks regions, and the state were determined from an extensive survey of the state's workforce. A total of 1,370 complete responses were obtained from North AlabamaWorks. About 58.5 percent (802 respondents) were employed, of whom 188 stated that they were underemployed. The primary reasons given for being underemployed are low wages at the available jobs; a lack of job opportunities in their area; living too far from jobs; other family or personal obligations; owning a house in their area; child care responsibilities; and a spouse having a really good job. Ongoing economic development efforts can help in this regard. Nonworkers cite retirement and disability or other health concerns as the main reasons for their status, but some also cite a lack of job opportunities in their area and social security limitations as additional key factors. Such workers may become part of the labor force if their problems can be addressed. Indeed, a recent study found that the flow of labor force nonparticipants to employment status was 60.0 percent more than that of unemployed workers who gained employment[3]. This implies that the region's available labor pool could be larger than estimated in this report.

A comparison of underemployed workers to the overall workforce in North AlabamaWorks region shows that:

- Fewer work full-time, and more of the part-timers prefer full-time work.
- More hold multiple jobs.
- They have similar commute time but longer distance.
- More are in business and financial operations; life, physical, and social science; education, training, and library; community and social service; healthcare support; food preparation and serving related; building and grounds cleaning and maintenance; sales and related; production; and transportation and material moving occupations.
- More are in wholesale trade; retail trade; educational services; health care and social assistance; accommodation and food services; and other services industries.
- They earn less and have shorter job tenure.
- Fewer believe their jobs fit well with their education, training, skills, and experience.
- More believe they are qualified for a better job.
- More would leave their current jobs for higher income: 10.0 percent of the underemployed would leave for just up to 5.0 percent more income, compared to 5.5 percent of all employees.
- They are more willing to extend their commute for a better job.
- Fewer are satisfied with their current jobs.
- More are willing to train for a better job, except when they have to pay all the cost.
- More have sought better jobs in the preceding quarter; 37.0 percent of underemployed workers sought a better job compared to 20.5 percent of all workers.
- They have the same median age
- They are more likely to have associate and bachelor's degrees but less likely to have postgraduate degrees.
- Fewer are married and more are females.
- More are African-American or other non-white ethnic groups.

Table 1.8 shows the detailed survey results on job satisfaction and willingness to train. Responses for overall job satisfaction as well as various aspects of the job were obtained. In general, most of the region's workers (79.5 percent) are satisfied or completely satisfied with their jobs. Workers are most satisfied with the work that they do and least satisfied

[3]Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was "Unemployed", The Regional Economist, January.

with the earnings they receive. Clearly, fewer underemployed workers are satisfied with their jobs (58.5 percent). The underemployed are also most satisfied with the work they do and much more dissatisfied with their earnings than the general region's workers.

Table 1.8 Job Satisfaction and Willingness to Train (Percent)

Job Satisfaction					
	Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
Employed					
Overall	2.4	4.5	13.2	29.1	50.4
Earnings	7.9	10.1	20.8	27.9	32.4
Retention	2.2	2.1	9.4	20.1	65.1
Work	1.5	1.4	8.6	25.7	62.5
Hours	2.5	3.6	12.5	21.2	59.9
Shift	2.5	2.5	7.0	15.7	71.1
Conditions	2.9	3.0	13.1	24.8	55.6
Commuting Distance	3.2	5.0	12.3	15.5	63.6
Underemployed					
Overall	5.3	10.1	26.1	27.1	31.4
Earnings	20.7	19.2	25.5	19.7	14.4
Retention	6.4	4.3	21.3	21.3	54.8
Work	4.3	3.2	10.1	32.5	50.0
Hours	4.3	5.9	16.0	19.7	54.3
Shift	4.8	4.3	8.0	19.7	62.2
Conditions	5.9	6.4	19.7	28.2	39.4
Commuting Distance	5.3	8.0	16.0	17.0	53.7

Willingness to Train					
	Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
Employed					
For a new or better job	22.9	5.2	12.1	14.5	44.4
If paid by trainee	43.9	20.5	19.9	4.0	6.5
If paid by trainee and government	12.6	13.2	33.1	18.6	18.0
If paid by government	5.2	3.6	10.0	16.1	63.4
Underemployed					
For a new or better job	16.1	2.5	8.6	15.4	56.2
If paid by trainee	40.4	21.3	22.8	3.7	5.9
If paid by trainee and government	15.4	3.7	39.7	20.6	17.7
If paid by government	0.7	2.9	8.1	12.5	74.3

Note: Rounding errors may be present.
Source: Center for Business and Economic Research, The University of Alabama.

Workers are generally willing to train for a new or better job, with the underemployed being much more willing (71.6 percent vs. 58.9 percent). However, the willingness to train is strongly influenced by who pays for the cost of training. Workers typically do not wish to pay for the training and so their willingness is highest when the cost is fully borne by government and lowest when the trainee must pay the full costs. The underemployed are more willing to train for the new or better job except if they have to pay all the cost. 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.

Workforce Demand

Industry Mix

Since industry data for the new AlabamaWorks regions are not yet available, county employment numbers were aggregated to obtain regional industry employment. Average wages were derived using total wage aggregates. The manufacturing sector was the region's leading employer with 81,279 jobs in the first quarter of 2016 (Table 1.9). Rounding out the top five industries by employment are retail trade; health care and social assistance; professional, scientific, and technical services; and educational services. These five industries provided 249,704 jobs, 59.7 percent of the region's total. The average monthly wage across all industries in the region was $3,566; two of the leading employers paid more than this average. The highest average monthly wages were in professional, scientific, and technical services at $6,540; manufacturing $4,446; information $4,384; finance and insurance $4,367, and management of companies and enterprises with $4,364. Accommodation and food services paid the least at $1,370.

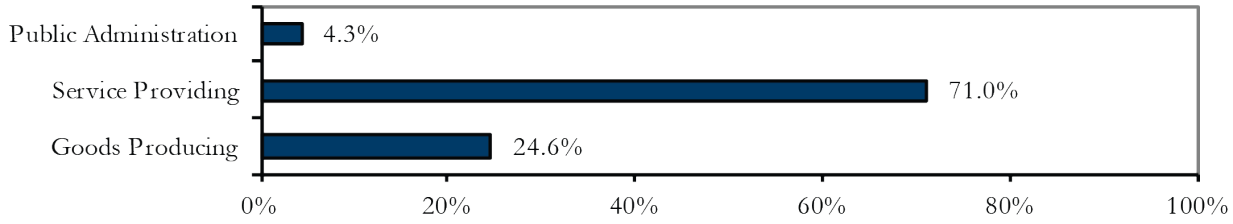
By broad industry classification, service providing industries generated 71.0 percent of jobs in first quarter 2016 (Figure 1.7). Goods producing industries were next with 24.6 percent, and public administration accounted for 4.3 percent. The distribution is for all nonagricultural jobs in the region, but there is significant variation by county.

Table 1.9 Industry Mix (First Quarter 2016)

Industry by 2-digit NAICS Code	Total Employment	Share	Rank	Average Monthly Wage
11 Agriculture, Forestry, Fishing and Hunting	2,083	0.49%	19	$2,919
21 Mining	674	0.16%	20	$4,303
22 Utilities	4,166	0.99%	17	$4,335
23 Construction	20,072	4.75%	8	$3,756
31-33 Manufacturing	81,279	19.2%	1	$4,446
42 Wholesale Trade	17,413	4.1%	10	$4,086
44-45 Retail Trade	48,829	11.6%	2	$2,323
48-49 Transportation and Warehousing	10,114	2.4%	11	$3,407
51 Information	4,680	1.1%	15	$4,384
52 Finance and Insurance	9,191	2.2%	12	$4,367
53 Real Estate and Rental and Leasing	4,519	1.1%	16	$3,005
54 Professional, Scientific, and Technical Services	37,247	8.8%	4	$6,540
55 Management of Companies and Enterprises	3,609	0.9%	18	$4,364
56 Administrative and Support and Waste Management and Remediation Services	28,973	6.9%	7	$2,455
61 Educational Services	34,339	8.1%	5	$3,212
62 Health Care and Social Assistance	48,010	11.4%	3	$3,157
71 Arts, Entertainment, and Recreation	7,036	1.7%	14	$1,398
72 Accommodation and Food Services	33,684	8.0%	6	$1,370
81 Other Services (Except Public Administration)	8,413	2.0%	13	$2,660
92 Public Administration	18,272	4.32%	9	$2,830
ALL INDUSTRIES	**418,226**	**100.00%**		**$3,566**

Note: Due to disclosure limitations in multiple sectors across several counties, accurate regional new hire monthly wages could not be determined.
Source: Alabama Department of Labor, U.S. Census Bureau, and Center for Business and Economic Research, The University of Alabama.

Figure 1.7 North AlabamaWorks Employment Distribution



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

Job Creation and Net Job Flows

On average, 19,378 jobs were created per quarter from second quarter 2001 to first quarter 2016. Figure 1.8 shows job creation trends have been relatively flat since the second quarter of 2010. Similarly, the average quarterly net job flows have not changed much but has shown a slight upward trend since the third quarter of 2013 (Figure 1.9). From second quarter 2001 to first quarter 2016 quarterly net job flows averaged 2,157. Quarterly net job flows fluctuated between a loss of 6,987 to a gain of 9,038 over the period. Job creation refers to the number of new jobs that are created either by new area businesses or through the expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.

Figure 1.8 Job Creation in North AlabamaWorks

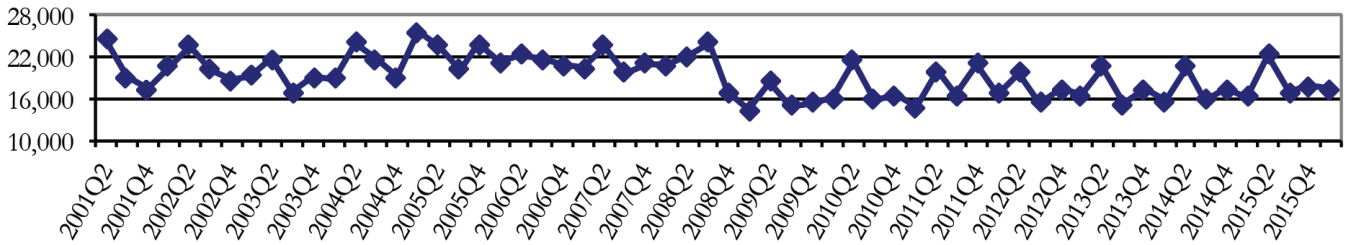
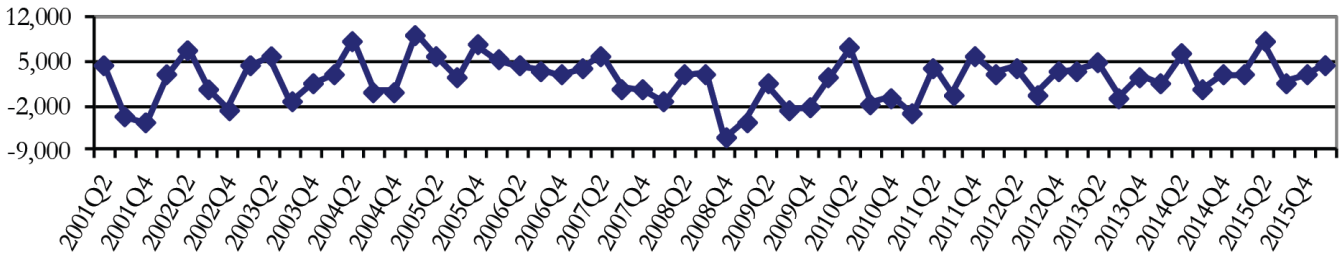


Figure 1.9 North AlabamaWorks Net Job Flows



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

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

Excluding occupational categories, there are 749 single occupations in North AlabamaWorks. Table 1.10 shows the 40 occupations that are expected to be in high-demand, ranked by projected average annual job openings over the 2014 to 2024 period. Many of these occupations are common to two of the five largest employment sectors identified earlier in Table 1.9: health care and social assistance and manufacturing. Thus, these sectors will continue to dominate employment in the region.

The top five high-demand occupations are Laborers and Freight, Stock, and Material Movers, Hand; Registered Nurses; Team Assemblers; Customer Service Representatives; and Heavy and Tractor-Trailer Truck Drivers. Eleven of the high-demand occupations are also fast-growing. This means that these 11 occupations have a minimum annual growth rate of 2.26 percent, much faster than the regional and state occupational growth rates of 0.72 percent and 0.74 percent, respectively.

The top 20 fastest growing occupations ranked by projected growth of employment are listed in Table 1.11. Many of these occupations are manufacturing or health-related. The top five fast-growing occupations are Machinists; Personal Care Aides; Electrical Power-Line Installers and Repairers; Home Health Aides; and Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders.

Table 1.12 shows the 50 selected highest earning occupations in the region. These occupations are mainly in health, management, and engineering fields. Eight of the top 10 listed are in health and two are management occupations. Any discussion of earnings must consider that wages vary with experience. Occupations with the highest entry wages may not necessarily have the highest average or experienced wages.

The selected high-earning occupations are generally not fast-growing or in high-demand. No occupation is in all three categories (Table 1.10). Eleven occupations are both high-demand and high-earning, and six are in both high-earning and high-demand.

Of the region's 749 occupations, 108 are expected to decline over the 2014 to 2024 period. Employment in the 20 sharpest-declining occupations will fall by at least four percent, with each losing a minimum of 50 jobs over the period (Table 1.13). No efforts should be made to sustain these occupations because they are declining because of structural changes in the economy of the region.

Table 1.10 Selected High-Demand Occupations (Base Year 2014 and Projected Year 2024)

Occupation	Average Annual Job Openings		
	Total	Due to Growth	Due to Separations
Laborers and Freight, Stock, and Material Movers, Hand	470	140	330
Registered Nurses	350	140	210
Team Assemblers	280	105	175
Customer Service Representatives	275	105	170
Heavy and Tractor-Trailer Truck Drivers	180	60	120
Machinists*	165	100	65
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	155	50	105
Accountants and Auditors	145	40	100
Aerospace Engineers	**135**	**15**	**120**
Maintenance and Repair Workers, General	130	30	100
Welders, Cutters, Solderers, and Brazers	125	55	75
Industrial Machinery Mechanics	120	55	65
Electrical Power-Line Installers and Repairers*	120	55	65
Licensed Practical and Licensed Vocational Nurses	115	35	80
Personal Care Aides*	115	95	25
Software Developers, Applications	**85**	**45**	**40**
Home Health Aides*	85	50	35
Software Developers, Systems Software	**80**	**45**	**35**
Mechanical Engineers	80	25	55
Industrial Engineers	70	15	55
Medical Assistants	65	35	30
Electrical Engineers	**60**	**15**	**45**
Electricians	60	30	30
Management Analysts	**55**	**25**	**35**
Computer Systems Analysts	55	35	20
Computer User Support Specialists	50	30	20
Electrical and Electronics Engineering Technicians	45	10	35
Insurance Sales Agents	40	15	30
Computer-Controlled Machine Tool Operators, Metal and Plastic	40	15	25
Training and Development Specialists	35	10	25
Nurse Practitioners*	35	20	15
Physical Therapist Assistants*	35	20	15
Network and Computer Systems Administrators	30	15	15
Bus and Truck Mechanics and Diesel Engine Specialists	30	15	15
Operations Research Analysts	**25**	**15**	**10**
Physical Therapists*	20	10	10
Speech-Language Pathologists*	20	10	10
Information Security Analysts*	10	10	5
Web Developers*	10	10	5
Occupational Therapists*	10	10	5

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 1.11 Selected Fast-Growing Occupations (Base Year 2014 and Projected Year 2024)

Occupation	Employment		Percent Change	Annual Growth (Percent)	Average Annual Job Openings
	2014	2024			
Machinists*	2,330	3,320	42	3.60	165
Personal Care Aides*	2,930	3,860	32	2.79	115
Electrical Power-Line Installers and Repairers*	NA	NA	37	3.18	120
Home Health Aides*	1,510	2,030	34	3.00	85
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	710	980	38	3.28	45
Nurse Practitioners*	570	770	35	3.05	35
Physical Therapist Assistants*	440	630	43	3.65	35
Information Security Analysts*	300	380	27	2.39	10
Web Developers*	280	360	29	2.54	10
Occupational Therapists*	220	300	36	3.15	10
Physical Therapists*	310	430	39	3.33	20
Speech-Language Pathologists*	**350**	**470**	**34**	**2.99**	**20**
Occupational Therapy Assistants	160	240	50	4.14	10
Physician Assistants	80	110	38	3.24	5
Baggage Porters and Bellhops	NA	NA	38	3.31	10
Rail Car Repairers	NA	NA	50	4.14	10
Fiberglass Laminators and Fabricators	NA	NA	42	3.54	5
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	260	340	31	2.72	15
Painters, Transportation Equipment	250	320	28	2.50	10
Physical Therapist Aides	NA	NA	25	2.26	5

Note: Employment data are rounded to the nearest 10 and job openings are rounded to the nearest 5. Occupations in bold are also high-earning.
* Qualify as both high-demand and fast-growing occupations. NA-Not Available
Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

Table 1.12 Selected High-Earning Occupations (Base Year 2014 and Projected Year 2024)

Occupation	Employment		Annual Growth (Percent)	Average Annual Job Openings	Mean Annual Salary ($)
	2014	2024			
Anesthesiologists	NA	NA	2.03	15	302,765
Physicians and Surgeons, All Other	1,000	1,190	1.75	45	249,637
Psychiatrists	40	50	2.26	0	243,120
Internists, General	50	60	1.84	0	221,367
Chief Executives	460	470	0.22	10	206,175
Family and General Practitioners	130	140	0.74	5	198,165
Pediatricians, General	130	150	1.44	5	194,591
Dentists, General	340	390	1.38	10	179,963
Nurse Anesthetists	290	350	1.90	10	161,486
Marketing Managers	140	150	0.69	5	152,154
Administrative Law Judges, Adjudicators, and Hearing Officers	10	10	0.00	0	149,766
Architectural and Engineering Managers	1,190	1,290	0.81	45	146,527

Table 1.12 (continued)

Computer and Information Systems Managers	1,080	1,310	1.95	35	139,144
Podiatrists	20	20	0.00	0	134,772
Pharmacists	1,270	1,280	0.08	30	129,708
General and Operations Managers	6,550	7,210	0.96	230	127,758
Atmospheric and Space Scientists	100	110	0.96	5	127,443
Financial Managers	980	1,070	0.88	30	126,893
Sales Managers	530	590	1.08	20	126,055
Physicists	170	180	0.57	5	124,175
Nuclear Engineers	140	120	-1.53	5	121,966
Computer and Information Research Scientists	120	130	0.80	5	121,528
Managers, All Other	1,850	1,920	0.37	50	120,971
Personal Financial Advisors	280	340	1.96	15	119,492
Aerospace Engineers*	4,120	4,280	0.38	135	118,066
Engineers, All Other	3,610	3,490	-0.34	70	117,864
Purchasing Managers	420	420	0.00	10	117,832
Training and Development Managers	NA	NA	0.00	0	116,615
Medical Scientists, Except Epidemiologists	**NA**	**NA**	**0.00**	**0**	**116,085**
Lawyers	810	850	0.48	15	113,877
Computer Hardware Engineers	1,250	1,340	0.70	35	113,778
Administrative Services Managers	220	240	0.87	5	113,200
Electronics Engineers, Except Computer	1,640	1,710	0.42	45	112,144
Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	**NA**	**NA**	**0.00**	**0**	**110,459**
Software Developers, Systems Software*	2,400	2,840	1.70	80	107,999
Industrial Production Managers	820	870	0.59	30	107,544
Materials Engineers	340	350	0.29	15	106,740
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	210	230	0.91	10	106,615
Psychologists, All Other	20	20	0.00	0	106,320
Natural Sciences Managers	60	60	0.00	0	106,193
Engineering Teachers, Postsecondary	110	110	0.00	0	104,607
Software Developers, Applications*	2,950	3,380	1.37	85	103,196
Chemical Engineers	210	220	0.47	5	103,068
Operations Research Analysts*	540	690	2.48	25	102,779
Electrical Engineers*	2,080	2,220	0.65	60	101,373
Optometrists	160	200	2.26	10	100,864
Education Administrators, Postsecondary	370	400	0.78	15	100,156
Human Resources Managers	320	350	0.90	15	99,880
Computer Programmers	2,380	2,120	-1.15	60	99,434
Management Analysts*	2,480	2,710	0.89	55	99,434

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 2016 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 Deptartment of Labor

Table 1.13 Selected Sharp-Declining Occupations (Base Year 2014 and Projected Year 2024)

Occupation	Employment		Net Change	Percent Change
	2014	2024		
Meat, Poultry, and Fish Cutters and Trimmers	6,190	5,810	-380	-6
Postal Service Mail Carriers	1,240	900	-340	-27
Cooks, Fast Food	2,200	1,860	-340	-15
Sewing Machine Operators	1,550	1,240	-310	-20
Bookkeeping, Accounting, and Auditing Clerks	4,790	4,490	-300	-6
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2,200	1,920	-280	-13
Computer Programmers	2,380	2,120	-260	-11
Tellers	2,340	2,120	-220	-9
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	980	830	-150	-15
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	390	280	-110	-28
Bill and Account Collectors	950	850	-100	-11
Cooks, Short Order	1,190	1,090	-100	-8
Switchboard Operators, Including Answering Service	250	160	-90	-36
Postal Service Clerks	270	190	-80	-30
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	400	320	-80	-20
Textile Bleaching and Dyeing Machine Operators and Tenders	300	230	-70	-23
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	290	230	-60	-21
Graders and Sorters, Agricultural Products	680	620	-60	-9
Dishwashers	1,100	1,040	-60	-5
Telecommunications Equipment Installers and Repairers, Except Line Installers	1,290	1,240	-50	-4

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.

Table 1.14 Skill Types and Definitions

Basic Skills: Developed capacities that facilitate learning or the more rapid acquisition of knowledge.

Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.

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.

Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

Learning Strategies — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.

Mathematics — Using mathematics to solve problems.

Monitoring — Monitoring / Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.

Science — Using scientific rules and methods to solve problems.

Speaking — Talking to others to convey information effectively.

Writing — Communicating effectively in writing as appropriate for the needs of the audience.

Complex Problem Solving Skills: Developed capacities used to solve novel, ill-defined problems in complex, real-world settings.

Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

Resource Management Skills: Developed capacities used to allocate resources efficiently.

Management of Financial Resources — Determining how money will be spent to get the work done and accounting for these expenditures.

Management of Material Resources — Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.

Management of Personnel Resources — Motivating, developing, and directing people as they work, identifying the best people for the job.

Time Management — Managing one's own time and the time of others.

Social Skills: Developed capacities used to work with people to achieve goals.

Coordination — Adjusting actions in relation to others' actions.

Instructing — Teaching others how to do something.

Negotiation — Bringing others together and trying to reconcile differences.

Persuasion — Persuading others to change their minds or behavior.

Service Orientation — Actively looking for ways to help people.

Social Perceptiveness — Being aware of others' reactions and understanding why they react as they do.

Systems Skills: Developed capacities used to understand, monitor, and improve socio-technical systems.

Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Systems Analysis — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

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.

Technical Skills: Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems.

Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Equipment Selection — Determining the kind of tools and equipment needed to do a job.

Installation — Installing equipment, machines, wiring, or programs to meet specifications.

Operation and Control — Controlling operations of equipment or systems.

Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.

Operations Analysis — Analyzing needs and product requirements to create a design.

Programming — Writing computer programs for various purposes.

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Repairing — Repairing machines or systems using the needed tools.

Technology Design — Generating or adapting equipment and technology to serve user needs.

Troubleshooting — Determining causes of operating errors and deciding what to do about it.

Source: O*NET Online (http://online.onetcenter.org/skills/).

Table 1.15 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	38	42	48
Active Listening	83	95	86
Critical Thinking	90	95	88
Learning Strategies	5	5	8
Mathematics	13	0	18
Monitoring	63	100	48
Reading Comprehension	73	63	84
Science	8	5	36
Speaking	68	79	80
Writing	38	26	54
Complex Problem Solving Skills			
Complex Problem Solving	48	37	68
Resource Management Skills			
Management of Financial Resources	0	0	2
Management of Material Resources	0	0	0
Management of Personnel Resources	0	0	16
Time Management	28	26	14
Social Skills			
Coordination	30	42	24
Instructing	15	21	12
Negotiation	5	0	12
Persuasion	10	11	10
Service Orientation	28	47	12
Social Perceptiveness	38	58	36
Systems Skills			
Judgment and Decision Making	60	58	76
Systems Analysis	10	0	12
Systems Evaluation	15	0	12
Technical Skills			
Equipment Maintenance	10	5	0
Equipment Selection	8	0	0
Installation	3	0	0
Operation and Control	18	32	0
Operation Monitoring	20	32	0
Operations Analysis	15	5	16
Programming	10	5	6
Quality Control Analysis	13	21	2
Repairing	10	5	0
Technology Design	0	0	0
Troubleshooting	15	11	0

Note: Rounding errors may be present.
Source: O*NET Online 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 1.14 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 pursuit of 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 1.15 shows the percentage of selected occupations in the region that list a particular skill as primary. We define primary skills as the 10 most important skills in the required skill set for an occupation. It is important to note that a particular skill may be more important and more extensively used in one occupation than another. Table 1.15 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.

High-earning occupations require more active learning, learning strategies, math, reading comprehension, science, speaking, writing, complex problem solving, management of personnel resources, financial resources management, negotiation, judgment and decision making, systems analysis, and operations analysis skills than both high-demand and fast-growing jobs. These are skills that require postsecondary education and long training periods. However, high-earning jobs require less social skills and technical skills. High-demand occupations require more systems and complex problem solving and technical skills than fast-growing occupations.

Table 1.16 shows skill gap indexes for all the 35 skills shown in Table 1.14 based on 2014 to 2024 occupation projections. Skills gap indexes range from 0 up to 100 and are standardized measures of the difference 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 the skill is over the specified projection period.

For policy and planning purposes, skill gap indexes have to be considered together with replacement indexes, which illustrate the expected share 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, system, resource management, 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. Both the pace and scale of training need to increase for basic and social skills. The pace of training for technical skills needs to increase as well.

Education and Training Issues

Educational attainment in North AlabamaWorks is about the same as the state. Just over 83 percent of residents age 25 and over have graduated from high school, compared to 84 percent for Alabama. About 24 percent have a bachelor's or higher degree, similar to the state. Skill and education requirements for jobs keep rising. This highlights a strong need to raise educational attainment in the region.

Table 1.17 shows the number of selected occupations in the region for which a particular education/training category is most common. In general, high-earning occupations require high educational attainment; all the top high-earning occupations require a bachelor's or higher degree. Twenty-one (52.5 percent) of the top 40 high-demand occupations require an associate degree at the minimum and 18 (45.0 percent) require a bachelor's or higher degree. Nine (45.0 percent) of the top 20 fast-growing occupations require an associate's degree at the minimum, with six (30.0 percent) requiring a bachelor's or higher degree.

The 2014 to 2024 occupational projections indicate that in the future more jobs will require postsecondary education and training at a minimum. Job ads are increasingly requiring a high school diploma or GED at a minimum. Of the region's 749 occupations, 108 are expected to decline over the period and education and training for these should slow accordingly.

Table 1.16 Skills Gap Indexes (Base Year 2014 and Projected Year 2024)

Skill	Skill Type	Total Openings (Projected Demand)	Skills Gap Index	Replacement Index
Active Listening	Basic	12,180	72	77
Speaking	Basic	11,830	72	74
Monitoring	Basic	10,610	70	67
Critical Thinking	Basic	10,135	70	64
Coordination	Social	9,820	70	62
Social Perceptiveness	Social	9,125	73	57
Reading Comprehension	Basic	9,075	71	57
Service Orientation	Social	8,510	74	53
Time Management	Resource	8,160	70	51
Judgment and Decision Making	Systems	7,340	70	46
Complex Problem Solving	Complex	5,930	69	37
Active Learning	Basic	5,815	69	37
Writing	Basic	5,795	70	36
Persuasion	Social	5,060	72	32
Instructing	Social	4,750	68	30
Negotiation	Social	3,575	76	22
Learning Strategies	Basic	3,365	68	21
Mathematics	Basic	3,080	78	19
Systems Analysis	Systems	2,970	70	19
Systems Evaluation	Systems	2,835	69	18
Operation Monitoring	Technical	2,740	67	17
Management of Personnel Resources	Resource	2,590	70	16
Quality Control Analysis	Technical	2,540	70	16
Operation and Control	Technical	2,235	67	14
Troubleshooting	Technical	1,560	66	10
Operations Analysis	Technical	1,265	67	8
Equipment Maintenance	Technical	1,140	65	7
Repairing	Technical	865	64	5
Science	Basic	790	70	5
Management of Financial Resources	Resource	625	75	4
Management of Material Resources	Resource	585	78	4
Equipment Selection	Technical	545	61	3
Technology Design	Technical	380	67	2
Programming	Technical	275	58	2
Installation	Technical	215	70	1

Note: These are annualized skills indexes for 2014 to 2024.
Source: Center for Business and Economic Research, The University of Alabama; Alabama Department of Labor; and O*Net Online.

Table 1.17 Number of Selected Occupations by Education/Training Requirement

Most Common Education/Training Requirements Categories	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
Doctoral Degree or First Professional Degree	1	1	17
Master's Degree	3	4	3
Bachelor's Degree Plus On-the-job Training or Work Experience	3	1	16
Bachelor's Degree	11	0	14
Associate Degree Plus On-the-job Training or Work Experience	0	0	0
Associate Degree	3	3	0
Postsecondary Non-Degree Plus On-the-job Training or Work Experience	1	0	0
Postsecondary Non-Degree	2	0	0
Some College, no Degree Plus On-the-job Training or Work Experience	0	0	0
Some College, no Degree	1	0	0
High School Diploma Plus On-the-job Training or Work Experience	12	8	0
High School Diploma	0	0	0
No Formal Education Credential Plus On-the-job Training Work Experience	3	2	0
No Formal Educational Credential	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. 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

From a 2014 base, worker shortfalls in North AlabamaWorks of 42,693 and 56,970 are estimated by 2024 and 2030 respectively (Table 1.18). The worker shortfall is projected to reach 63,685 in 2040. A focus on worker skills and the expected shortfall must be a priority through 2040.

Table 1.18 Expected Worker Shortfall

	2014-2024	2014-2030	2014-2035	2014-2040
Total population growth (percent)	4.8	8.1	12.3	13.6
Age 20-64 population growth (percent)	0.0	0.3	2.1	4.7
Job growth (percent)	9.7	13.3	16.0	19.2
Worker shortfall (percent)	9.7	13.0	13.9	14.5
Worker shortfall (number)	42,693	56,970	60,892	63,685

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

Since employment is critical to economic development, 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 of the high school dropout rate; (5) use of economic opportunities to attract new and younger residents; (6) encouragement of older worker participation in the labor force; and (7) facilitation of in-commuting.

Improving education is vital because a highly educated and productive workforce is a critical economic development asset. The educational and training requirements of high-demand, fast-growing, and high-earning occupations show the significance of education in developing the future workforce. The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs in particular demonstrates a strong need for training in these skills. The pace and scale of training needs to increase 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 1.13 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 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 region's population growth rate is low and the working age group is expected to decline in the future. This might hinder the region's 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 higher-paying job opportunities from the region's economic development successes. Investment in amenities and infrastructure may be needed to support such growth. In-migration is generally more beneficial to a region than in-commuting since it grows the economy faster and adds to the tax base.

Policies that facilitate and encourage older worker participation are needed as older workers can help meet the region's workforce challenge. Such policies can be related to income taxation, job flexibility, and retirement programs. As the share of older people in the population is projected to increase (see Table 1.5), it becomes even more important that they be active in the workforce. Older worker participation has been rising nationally since the early 1990s. This has been attributed to reasons including:

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

Diversifying the region's economy will strengthen it. This demands that economic development also focus on retaining, expanding, and attracting businesses that provide more high-earning jobs. Current workers—including the underemployed—would welcome higher-earning opportunities. An economic development focus on diversification would require that workforce development pay attention to postsecondary and higher educational systems to ensure a ready and available workforce for new and expanding businesses. The higher incomes earned by graduates of these institutions would help raise personal income for the region and provide additional local (county and city) tax revenue. Raising personal income by improving educational attainment and technological skills for a region 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 in one without the other.

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