Alabama in the Global Economy

working toward a sustainable future

Prepared for
Alabama Association
of Regional Councils

Prepared by
Center for Business and Economic Research
The University of Alabama

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Alabama in the Global Economy reflects the opinions of the authors, but not necessarily those of the faculty and staff of the Culverhouse College of Commerce or the administrative officials of The University of Alabama.

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Alabama's Competitiveness Scorecard

	2009				
	National Rank	Southeast Rank	Alabama Value	Southeast Average	2008-2009
Measures of Prosperity					
Average Annual Wage (as % of U.S.)	37	5	84.4	86.2	Gain
High Tech Share of Total Employment	*n.a.*	2	5.6	4.8	Gain
Per Capita Personal Income (as % of U.S.)	41	5	84.2	85.3	Gain
Growth in Nonfarm Employment	38	4	-5.3	-5.5	Decline
Unemployment Rate	37	3	10.1	10.4	Decline
Growth in Real GDP	31	3	-2.1	-2.5	Decline
Productivity (real GDP per employed worker)	40	5	$65,079	$69,210	Decline
Measures of Alabama's Innovation Ecosystem					
Population holding a Bachelor's Degree (Residents 25 and older)	44	6	22.5	23.7	Gain
Total R&D Expenditures ($ millions)	27	5	3,289.0	4,033.8	Gain
Venture Capital per $1,000 GDP	*n.a.*	4	$0.28	$0.33	Gain
Employed Doctoral Scientists and Engineers	28	6	5,900	9,946	Decline
Utility patents issued to state residents	37	7	382	876	Decline
Measures of Global Leadership					
Share of Total Private Employment in Foreign-Owned Firms (2007)	*n.a.*	6	5.1	5.2	*n.a.*
Exports per capita	28	4	$2,624	$2,877	Decline

Executive Summary

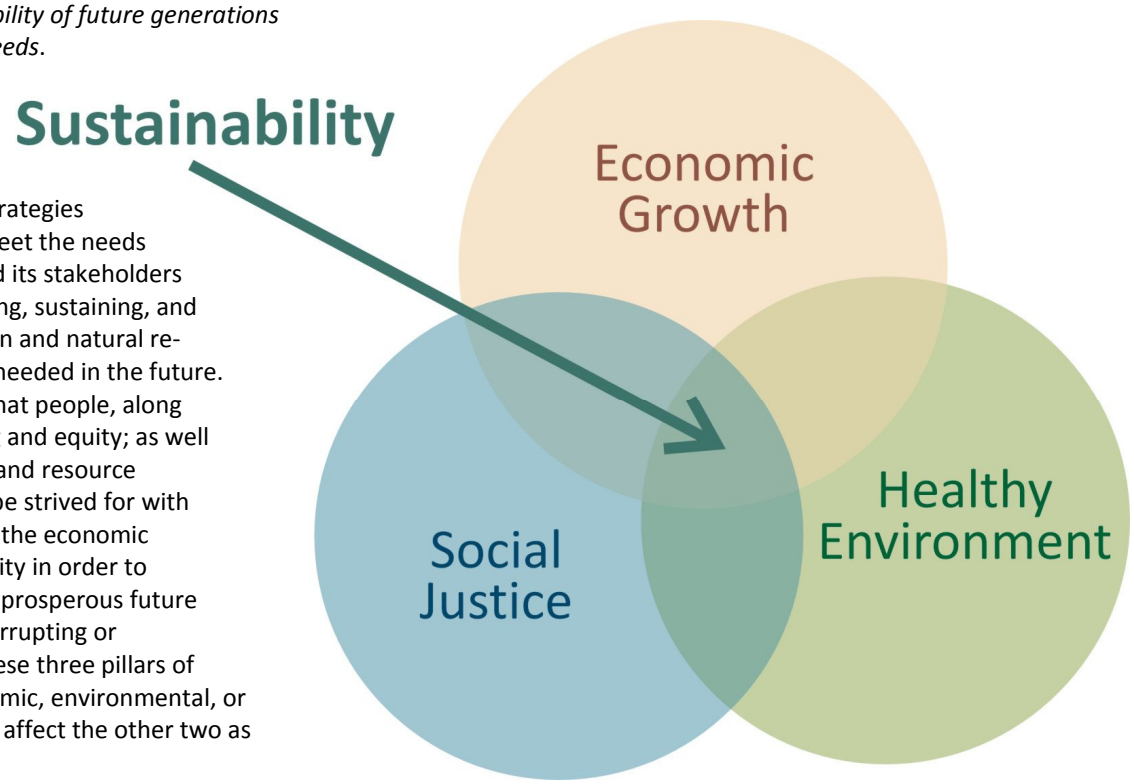
- As a state, our overriding goal is to encourage economic growth in a way that preserves our environment and improves the welfare of our people. In this context, this report examines where we are in the global economy and considers the question of "where do we go from here?"
- Alabama's economy was on a rollercoaster ride during the first decade of the 21st century, with a nice period of growth sandwiched between two gradually worsening declines. The state lost 55,700 jobs in the wake of the 2001 recession, although output steadily increased. As Alabama recovered, the four years from 2004 through 2007 brought 130,200 jobs, record low unemployment, and stronger GDP growth. During this period of prosperity, economic development successes helped diversify the state's economy, while state agencies and 2- and 4-year colleges and universities cooperated to provide a prepared workforce.
- However, no state was immune from the Great Recession that began in December 2007. While Alabama's economy plunged into recession relatively late, it fell hard—138,500 jobs were lost from 2008 through 2010 and output contracted by 2.1 percent in 2009. The groundwork laid during the decade was fundamentally sound, though, and by late 2010 employment was beginning to rebound, unemployment was back below the U.S. rate, and real GDP grew around 2.2 percent for the year.
- According to recent rankings of business climate that consider factors such as cost of doing business, workforce readiness, previous investment success, encouragement of entrepreneurship, infrastructure, and prepared sites, Alabama generally ranks in at least the top third of states. But the environment for workers and their families in terms of quality of life and education emerges as a concern that could hamper economic development.
- The state has a significantly lower labor force participation rate than the United States and most of the Southeast, at 58.2 percent. This, along with a 2009 underemployment rate of 24.3 percent, presents a challenge for Alabama's economy. Many of the state's underemployed cite lack of job opportunities in their area as a reason for underemployment. Therefore, in addition to low education levels, spatial mismatch (geographic separation of jobs and workers) likely contributes to underemployment.
- Alabama's traditional industries have gone through significant changes in recent decades as the global economy has restructured. Many mass-production operations in manufacturing have moved overseas, with the effect being a decline in employment in industries like primary metals and textiles and apparel manufacturing. This trend is expected to continue, with textiles and apparel having the bleakest outlook.
- Traditional manufacturing industries, however, as well as agriculture, will continue to be a presence in the Alabama economy through greater use of technology and skilled labor. They have a diminished presence in terms of employment, but many of their specialized operations remain, and their local output per worker has risen steadily over the last decade.
- A key development strategy for the state is through industry clusters. A cluster is a geographic concentration of interconnected companies and institutions, which are linked by certain skills of workers, inputs, or technologies. The state should focus on promoting prominent existing clusters, including biotechnology and life sciences, aerospace, and automotive, and on identifying other existing clusters.
- Alabama currently lags most other states in terms of innovation, as characterized by relatively low patent and venture capital levels. However, growing strengths in technology sectors, including life sciences, aerospace, IT, and advanced manufacturing, are helping the state move in a positive direction. Alabama's 5.6 percent share of employment in high tech for 2009 was second highest among the eight southeastern states. Tech concentrations and growth are focused on the state's metros and are supported by federal contracts and university/industry collaboration.
- While the growing auto manufacturing industry helped drive Alabama exports to a 46.0 percent gain between 2005 and 2008, autos and chemicals also made the state's exports vulnerable in the recession, with a decline of more than 22 percent in 2009. As the global economy recovers, exports are rebounding. Export orientation is closely linked with innovation; the state can increase innovation by pursuing export-oriented strategies in certain industries and by increasing research and development at its major universities.

- Considerable success in growing the economy through foreign direct investment (FDI) over the past decade has raised Alabama's profile globally and is thus breeding further success. Community programs aimed at meeting the cultural needs of international employees and their families, as well as targeted workforce training, help make Alabama an attractive destination for further FDI.
- Transportation is a key factor in the development of the state's economy. Vehicle miles traveled (VMT) per capita in Alabama is among the highest in the nation. Changing development patterns to reduce VMT as well as strategically investing in non-roadway transportation facilities (e.g. railroads) will be important to avoiding congestion and promoting transport of the large amount of bulky materials that originate and/or are processed in the state. The economy may further benefit by connecting more areas to the burgeoning air cargo hub in Huntsville and to other large transport hubs at Memphis and Atlanta.
- Population growth of 7.5 percent brought 332,636 new residents to the state between 2000 and 2010; that compares to a 9.7 percent U.S. increase. Gains picked up at mid-decade as job growth helped lure residents from other states and countries. However, Alabama sees relatively little net inmigration of 22 to 39 year olds holding an Associate's degree or higher. With an above-average median age of 38.9 and the baby boom generation beginning to move into the 65 and older group, attracting and retaining young adults is essential to providing the workers we need.
- Alabama has one of the lowest educational attainment ranks in the United States, with 82.1 percent of residents 25 and older having a high school diploma or equivalent and 22.0 percent earning a bachelor's degree. Improvements are being made from the preschool level through adult education, including great expansion in technical training programs offered by community colleges to create a targeted and prepared workforce.
- The leading causes of death in the state over the past decade were heart disease, cancer, stroke, lung disease, and motor vehicle accidents, claiming over 332,000 Alabamians. With a sizeable percentage of low birth weight babies, our infant mortality rate was high at 9.5 per 1,000 births in 2009.
- The obesity rate increased 7.7 percentage points to 31.6 percent from 1999 to 2009, directly accounting for 9.1 percent of all medical costs. A third of Alabamians haven't been able to afford healthcare to mitigate these and other costs. Thirty percent of people under the age of 65 were without health insurance for all or part of 2007 to 2008; most were members of working families.
- Alabama's average household wage increased by almost $10,000 from 2000 to $38,055 in 2008. Homeownership is among the highest of all the states at 74.1 percent, while monthly household costs are some of the lowest in the country with a median of $681. The state has among the lowest rates of owners and renters spending more than 30 percent of their monthly income on housing costs.
- Alabama's rural areas have different demographics from urban areas, are suitable for different industries, and therefore should have different development strategies. Rural areas on average have higher proportions of residents age 65 and over and lower proportions of residents of working age in the labor force. More rural residents are presently employed in manufacturing, but development efforts should not aim to significantly grow population or employment in large industries. Instead, rural areas should look to strategies like increased agriculture to serve nearby markets, and ecotourism, including recreational opportunities.
- Of its 33,550,719.9 acres, there are over 1.3 million acres of state or federally protected lands in Alabama. The state ranks third in the country in timberland acreage with 22,700,000 acres–accounting for about 70 percent of its total land area. The growth of Alabama's hardwood and pine forests exceeded removals by over 20 percent from 2000 to 2005.
- Alabama's wetlands hold some of the greatest biodiversity on the continent with over 20 percent of the nation's freshwater passing through the state's waterways. Yet many of these areas remain unprotected from development.
- Most of the state's metro areas stay under the 15 microgram per cubic meter measure for the 3-year annual mean, which is the standard for fine particle pollution as established by the EPA in 1997.

Working Toward a Sustainable Future

Sustainable development, as defined by the United Nations World Commission on Environment and Development, is *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*.

Similarly, business sustainability has been defined as adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining, and enhancing the human and natural resources that will be needed in the future. This idea demands that people, along with their well-being and equity; as well as the environment and resource conservation, must be strived for with the same ferocity as the economic vitality of a community in order to have a dignified and prosperous future society. In effect, corrupting or neglecting one of these three pillars of sustainability–economic, environmental, or social–will adversely affect the other two as well.



Though indices presented in this discussion are intended to gauge Alabama's economic, social, and environmental sustainability, the measurements are a process, and not an end result. Sustainability is a dynamic endeavor of continuous improvement and adjustment of a community's goals and practices of growth around the principles of responsibility and resilience.

Enhancing Alabama's competitiveness in the global economic market and providing employment opportunities for citizens is the highest priority for social and economic health. The most important aspect of retaining economic wealth is realizing the degree to which each of Alabama's industries relies on natural resources, and maintaining those resources for continued use. Alabama policymakers and businesses must remember that "nature does not care how much wealth creation was the side effect of the damage done to it; the absolute level of impact is the core of current environmental problems."

Alabama Economy

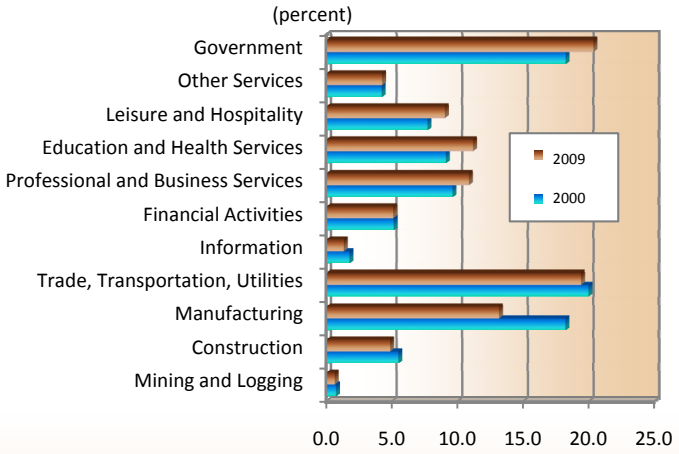
Alabama's economy continues to transition

While change in the economic make-up of the state is a continual process, the forces that drive this change are themselves always evolving. The increasingly global nature of business and trade is an important factor in this transition. Economic development initiatives and successes, of course, have a profound effect on the direction and pace of change, while externally-driven events can exert both positive and negative influences. Shifts that were underway in the 1990s accelerated during the first decade of the 21st century, significantly altering the composition of the Alabama economy. The "Great Recession" that began in December 2007 and ended in June 2009 impacted the trajectory of many sectors of the economy.

State's industry composition now much more service oriented

Alabama's transformation to a service-based economy was well underway during the 1990s. While total employment rose 18.1 percent between 1990 and 2000, manufacturing jobs declined 3.4 percent. At the same time, services added more than 176,000 workers for an increase of 42.7 percent. Every service-providing sector except government posted double-digit gains over the decade; government employment increased 7.7 percent during this time. In 1990 manufacturing accounted for 22.2 percent of nonfarm employment in the state and services provided 25.3 percent. By 2000 the shares were 18.2 and 30.6 percent, respectively.

Alabama Employment Share by Industry
(percent)



This transition continued during the decade that began in 2000, with manufacturing job losses accelerating as the recessions of 2001 and 2007 to 2009 severely impacted the sector. From 2000 through 2009, Alabama shed almost 30 percent of its manufacturing jobs, as employment dropped by 103,600 to just 247,800. During the same time period, services employment rose 12.7 percent to 665,300. While manufacturing's share of total nonfarm employment fell from 18.2 percent in 2000 to 13.1 percent in 2009, the percent of employment in services increased from 30.6 to 35.3 percent. Education and health services saw the largest job growth, adding 35,000 employees for a 22.8 percent gain. Government employment increased from 18.2 to 20.3 percent of the total during the 2000 to 2009 interval.

Alabama Employment Change by Industry
(percent)

	2000 to 2007	2007 to 2010
Total Nonfarm	3.9	-6.9
Mining and Logging	-7.2	-10.1
Construction	6.7	-24.3
Manufacturing	-15.7	-19.3
Trade, Transportation, Utilities	2.4	-7.8
Information	-17.2	-17.1
Financial Activities	0.9	-8.1
Professional and Business Services	19.2	-8.3
Education and Health Services	18.8	2.1
Leisure and Hospitality	17.1	-1.7
Other Services	0.0	-1.6
Government	7.1	2.5

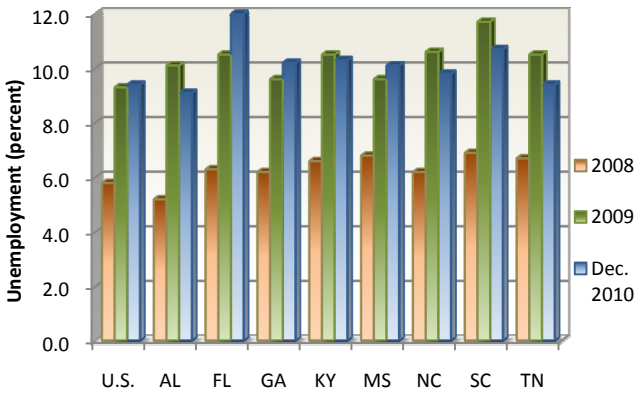
Last two recessions dealt stiff blows to employment

The state's employment fell as a result of two recessions in the past decade—from March to November 2001 and December 2007 to June 2009—but grew strongly in between. While 55,700 jobs were lost from 2000 to 2003, a robust 130,200 were added during 2004 through 2007. Sectors showing the most job growth prior to 2007 included professional and business, education and health, and leisure and hospitality services. During 2008 through 2010, education and health services and government were the only major sectors adding positions. The mid-decade gains in nonfarm employment were more than wiped out by the Great Recession as Alabama shed 138,500 jobs across the 2008 through

2010 period. Statewide employment was just beginning to turn around in September 2010, with the monthly total above the same month a year ago for the first time since May 2008.

2009 saw the brunt of Alabama's job losses in the most recent recession. The state's 5.3 percent employment decline for that year was worse than the nation's 4.3 percent drop, but better than four southeastern states (Florida, Georgia, South Carolina, and Tennessee) and the same as North Carolina. Losses across Alabama slowed markedly to 1.0 percent on an annual basis in 2010. Unemployment, which was well below the United States and the rest of the Southeast at 3.5 percent in 2007, crept up to 5.2 percent in 2008 and jumped to 10.1 percent in 2009—above the nation's 9.3 percent, but better than five other southeastern states. By December 2010, the 9.1 percent share of Alabama workers who were unemployed was back below the U.S.'s 9.4 percent rate and lower than the seven other southeastern states. The 2011 forecast from the Center for Business and Economic Research at The University of Alabama has the state's employment growing 0.7 percent in 2011 and 2.3 percent in 2012.

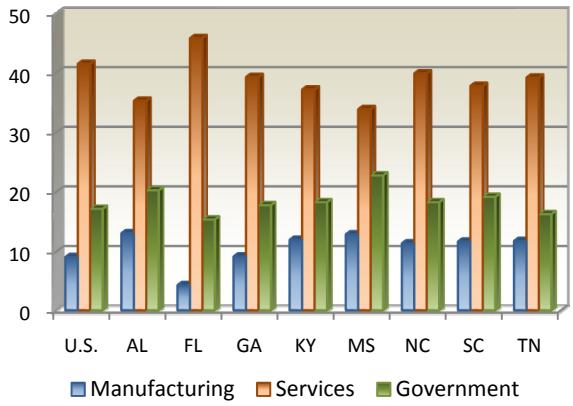
Recession's Impact on Unemployment Rate



Alabama still more manufacturing-heavy

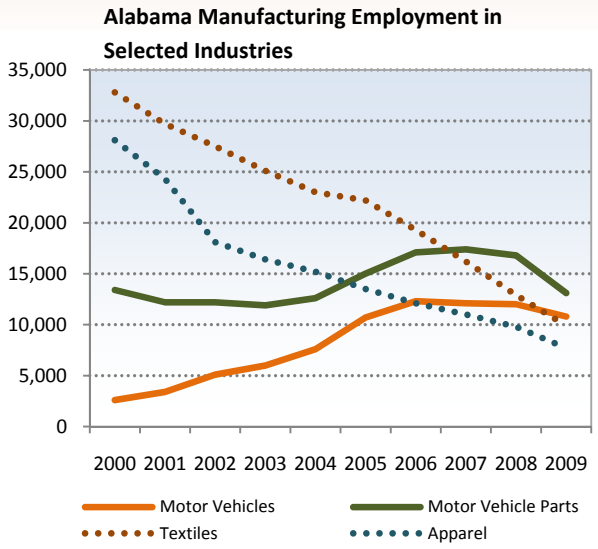
At 13.1 percent, manufacturing's 2009 share of Alabama nonfarm employment was well above the U.S. average of 9.1 percent and the highest among the southeastern states. Mississippi's manufacturing sector accounted for 12.9 percent of jobs, while Kentucky was third highest at 12.0 percent. Manufacturing provides only 4.4 percent of employment in Florida and 9.2 percent in Georgia. The share of Alabama employment in government is second highest in the Southeast at 20.3 percent, behind Mississippi's 22.8 percent; the U.S. average is 17.2 percent. In the region, only Florida's 45.8 percent of jobs in services is above the nation's 41.5 percent. Alabama has the second lowest share at 35.3 percent.

Sector Share of Nonagricultural Employment, 2009
(percent)



Manufacturing transformed by globalization

Over the last two decades, dominance in Alabama's manufacturing sector has shifted away from nondurables and into durable goods industries. Nondurable goods manufacturers provided over 190,000 jobs in 1990 (52.3 percent of the manufacturing total), but just about 94,000 in 2009 (a 37.9 percent share). The state's apparel industry shed 31,400 jobs during the 1990s as competition drove employment offshore. Attrition continued after 2000, with another 20,400 apparel jobs lost between 2000 and 2009; with only 6,400 remaining in November 2010, there is little downside left. After being relatively stable during the 1990s, textile and textile product mills shed 22,900 jobs from 2000 to 2009; November 2010 employment amounted to just 9,000. At least nondurables should be more stable now, as other component industries including food, paper, and plastics and rubber saw much less attrition during the decade.



Bolstered by success in transportation equipment and aerospace, durable goods manufacturing has fared much better than nondurables since 2000. The sector rebounded from the 2001 recession to just 700 below its 2000 level of 187,900 in 2006, before being hit with steep losses that dropped employment 17.9 percent to 153,700 in 2009. Aerospace products and parts was the only industry to post job gains across the decade as the housing crisis caused sharp cutbacks in wood products and furniture production and the recession's impact on consumer and business spending forced manufacturers to curtail output of motor vehicles, electrical equipment and appliances, and computer and electronic products. Durable goods production and employment is gradually rebounding as the economy recovers.

Mercedes 1993 decision to come to Alabama a turning point

Alabama's automotive manufacturing industry launched when Mercedes' first M-Class rolled off the production line in 1997 and grew with the Honda Odyssey in 2000 and the Hyundai Sonata in 2005. Other models and Toyota engine production have been added along the way. The supplier base in the state has grown as firms serving the state's auto plants and Georgia's Kia plant have more than replaced older auto supplier firms that closed during this decade. From 2000 to a peak in 2006, motor vehicle manufacturers added 9,700 jobs, while parts manufacturers gained 4,000 up to a 2007 peak. These numbers were dampened by the recent recession though, with OEM employment falling by around 2,000 and suppliers cutting about 500 jobs as consumers struggled and demand for cars and light trucks fell. Data show sales beginning to rebound in 2010, and stronger growth is forecast for 2011 and 2012. Relatively new and flexible plants, productivity improvements, and new and redesigned models are putting Alabama's automotive sector back on a growth trajectory.

More than as a starting point for motor vehicle production, Mercedes' selection of Alabama for its first U.S. plant was significant in raising the profile of the state within the international business community. Foreign direct investment by the automotive companies that followed, as well as by firms including ThyssenKrupp, Hyundai Heavy Industries, SSAB, EADS, Austal, and many others, continues to make an important contribution to growing the state's economy.

Importance of growing service-providing industries recognized

While Alabama has long had incentives available to attract new manufacturing industries and encourage expansion of existing manufacturing firms, a milestone was reached in 2009 with legislative approval of new statutory economic development incentives directed at attracting high-tech, information-driven companies and green industry. Eligible projects include corporate headquarters, research and development facilities, financial institutions, and "green" employers. Although Alabama has existing strengths in many of these areas, attracting and growing these types of employers is important to meeting the challenges of the global economy.

Publicly-traded Companies Headquartered in State, 2011	
Alabama	28
Florida	206
Georgia	122
Kentucky	33
Mississippi	17
North Carolina	106
South Carolina	31
Tennessee	69

These white collar incentives come at a crucial time. The number of publicly-traded firms headquartered in Alabama has shrunk over the years as mergers, acquisitions, and bankruptcies in the financial sector, acquisitions and relocations in

biotechnology, and bankruptcies and moves in manufacturing have taken their toll. Where there were 48 headquarters in 1998, there were only 28 in February 2011. Among our southeastern peers, only Mississippi had fewer. Corporate headquarters are important for both their own diverse staffs and for local firms that provide ancillary services. And, with sizeable manufacturing employment growth unlikely, call and data center projects that could be supported by these incentives provide needed jobs.

Alabama has significant clusters of research activity, focusing on areas including bioscience, information technology, missile defense, other national defense arenas, and aerospace (see the Clusters chapter in this report). Much recent growth has been driven by relocation of headquarters for the Missile Defense Agency, Army Materiel Command, and several other commands to Huntsville's Redstone Arsenal, with related private contractors expanding or moving into the area. The public/private partnership that supported construction of the HudsonAlpha Institute for Biotechnology exemplifies the effectiveness of collaboration in developing the state's knowledge economy.

Creating green jobs

The state is in a good position to attract jobs that will be created as a result of the national emphasis on growing the clean energy economy through initiatives including research, building nuclear power facilities, and developing clean coal technologies, as well as programs for energy efficiency and renewable energy. A recent study by Collaborative Economics found that Alabama's green economy, while still relatively small, is diverse. Compared to the national average, the state has a particular concentration in water and wastewater treatment and a growing transportation cluster of firms providing biofuels. According to the Pew Charitable Trusts, from 1998 to 2007 Alabama jobs in clean energy grew 2.2 percent, faster than the 1.6 percent gain in total employment during the same period. In 2007, 799 clean energy businesses provided 7,849 jobs for a state ranking of 29th.

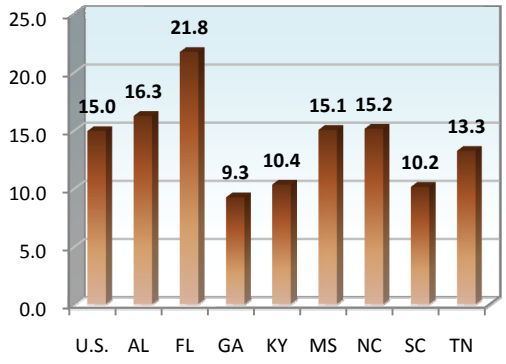
Industries in the state are increasingly embracing green practices. The E3 (Economy, Energy, and Environment) federal/state cooperative initiative is helping Alabama's auto suppliers improve their competitive advantage by following green practices. More builders are adopting sustainable practices and the state is well-positioned geographically to attract manufacturers of sustainable materials as LEED certification grows and materials must be sourced from within a 500-mile radius.

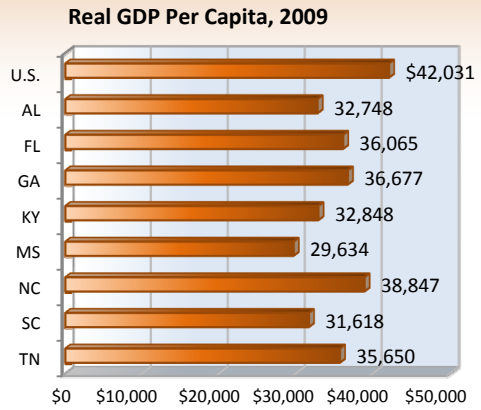
Alabama's economy expanding

Prerecession, Alabama was growing its economy at a faster pace than the nation as a whole. Real GDP, the total output of goods and services produced in the state, increased steadily from 2000 to 2008, before declining in 2009. Over the 2000 to 2009 period, Alabama GDP posted a gain of 16.3 percent that was better than the U.S. increase of 15.0 percent and ranked 2nd among our southeastern peers. Looking at GDP per capita, there was strong improvement during the 2000 to 2009 period—Alabama's per capita real GDP rose 9.9 percent compared to the U.S. increase of 5.7 percent and better than all southeastern states except Mississippi. But we still have some catching up to do since, at $32,748, 2009 output per resident was just 77.9 percent of the U.S. average and ranked 6th in the Southeast.

Change in Real GDP, 2000-2009

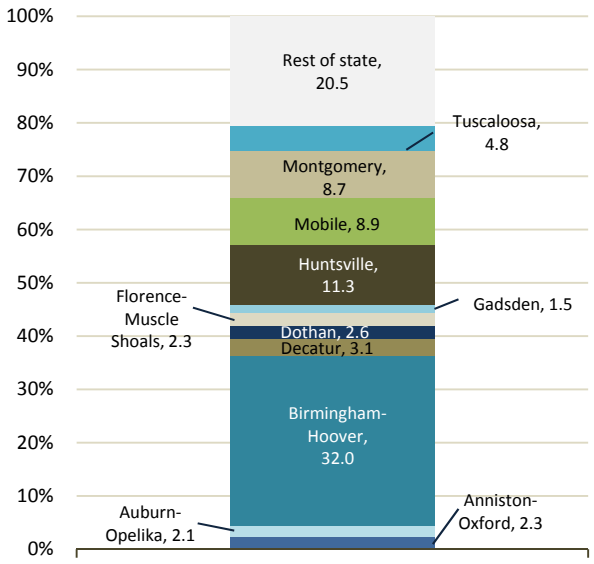
(percent)





Alabama GDP was still increasing in 2008, while the Florida, Georgia, North Carolina, and South Carolina economies were already contracting. Output declined across the Southeast during 2009; Alabama's drop of 2.1 percent was the same as the nation's and lower than all of its peers except Kentucky and Mississippi. Florida, Georgia, North Carolina, and Tennessee saw their economies shrink by more than 3 percent in 2009. The state's economy began growing again in 2010, with UA's Center for Business and Economic Research estimating a 2.2 percent gain. Real GDP increases are expected to accelerate to 3.4 percent in 2011 and 3.6 percent during 2012, both above increases forecasted for the United States by IHS Global Insight.

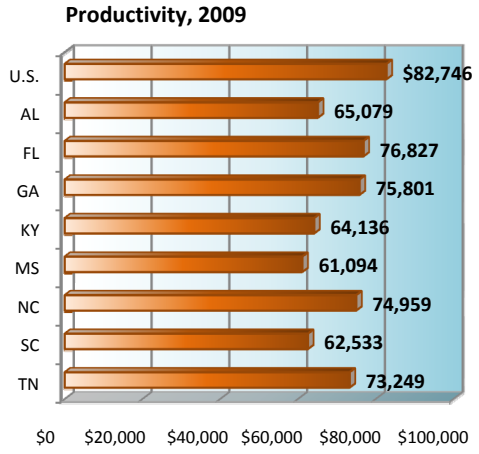
The Birmingham-Hoover metropolitan area is the largest economic center in the state, generating 32.0 percent of Alabama GDP in 2008. But Alabama is fortunate to have a number of other sizeable metro economies: Huntsville accounted for 11.3 percent of output in 2008, Mobile 8.9 percent, and Montgomery 8.7 percent. This dispersion and the unique strengths of each area contribute to a diverse and resilient state economy.



Metro Percent of State GDP, 2008

Productivity and wages improving generally

Across the 2000 to 2008 period productivity of the average Alabama worker steadily increased, before dipping modestly in 2009. Real GDP generated per employed worker amounted to $65,079 in 2009 and was up 14.1 percent since 2000 versus 16.8 percent nationwide. While this growth ranked 4th in the Southeast, Alabama productivity was 78.6 percent of the U.S. average. Increased technology in manufacturing and Alabama's changing manufacturing emphases are raising productivity in this sector; manufacturing produced 20 percent of the state's GDP with just over 13 percent of workers in 2009. Transportation equipment manufacturing is particularly efficient, generating around 5 percent of output with 2.5 percent of employment.



Earnings of Alabama workers rose steadily between 2000 and 2009, posting a 35.8 percent increase that was higher than the nation's 30.7 percent gain. At 84.4 percent of the average U.S. wage in 2009, wages need to continue strong improvement if Alabama is to move up from a national ranking of 36th. While the job mix is improving, Alabama will have to continue to create jobs in high-earning industries, including professional, scientific, and

technical services; finance and insurance; wholesale trade; and management. Low-earning industries, including accommodation and food services and retail trade, saw the highest percentage employment gains as the state began to recover from the recession between November 2009 and November 2010.

Attractive business climate important to growing economy

In today's competitive global environment, economic development success requires effective public policy to attract the knowledge and innovation-based jobs that can raise the quality of life of Alabama's citizens. While a state can still lay claim to relatively low business costs and taxes, as well as attractive incentives, it must also be able to provide quality infrastructure and an educated and trained workforce.

A number of reports place Alabama in a relatively favorable position in terms of cost of doing business. The Milken Institute's *2007 Cost-of-Doing Business Index* ranks Alabama as the 12th least expensive state, considering wages, tax burden, electricity costs, and rents; in the Southeast, only South Carolina and Tennessee ranked higher. On CNBC's *Top States for Business 2010* ranking, Alabama's cost of business came in at 14th. But when factors including quality of life and education are considered, CNBC ranks Alabama only 43rd, assigning particularly low ratings to quality of life, education, and access to capital. However, this ranking had the state 14th for workforce and 11th on cost of living. These are among the many variables that factor into business location decisions.

How a state is perceived by site selection professsionals can influence whether a potential new business even takes a look. On the 2010 Site Consultants Survey of the *Top States for Business*, Alabama was 4th among states named most often by site consultants as a top state—behind Tennessee, Texas, and South Carolina. For both the composite cost/business friendly/tax and the labor/workforce development indexes we came in 4th, while on permitting/infrastructure/shovel ready sites, Alabama was 3rd. The state's Advantage Site program could be a positive contributor to the last index. Existing successes with foreign direct investment have Alabama on the radar for future international projects. Another 2010 measure of business climate by Site Selection magazine ranked the state 10th in the nation, although just 5th in the Southeast.

Looking at a combination of 15 state policy factors, the 2010 ALEC-*Laffer State Economic Outlook Ranking* has Alabama 17th best among the 50 states in terms of competitiveness in attracting investment and human capital. Among key areas that could be targeted for study as the state works to improve business growth are the sales tax burden, the liability system, and workers' compensation costs.

Alabama Earnings by Selected Industry First Quarter 2010

	Average Monthly Earnings
All industries	**$3,116**
High-earning industries:	
Utilities	$5,945
Mining	5,574
Professional/scientific/ technical services	4,962
Finance & insurance	4,527
Wholesale trade	4,146
Management	4,104
Information	3,815
Manufacturing	3,815
Low-earning industries:	
Administrative & support services	$2,133
Retail trade	2,073
Arts/entertainment/recreation	1,598
Accommodation & food services	1,261

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

With small businesses responsible for much of the new firm and job creation, it is important to assess the state's policy climate for entrepreneurship. The Small Business & Entrepreneurship Council's *Small Business Survival Index 2010* gives Alabama a 7th place ranking; just Florida ranked higher in the Southeast. Factors negatively impacting small businesses include high sales, gross receipts, and excise taxes; crime rates; and a relatively large ratio of state and local government employees per 100 residents. Thus, while Alabama is doing many things right to nurture existing businesses and attract new ones, there are specific policy and taxation issues that should be evaluated if we are to optimally grow our economy.

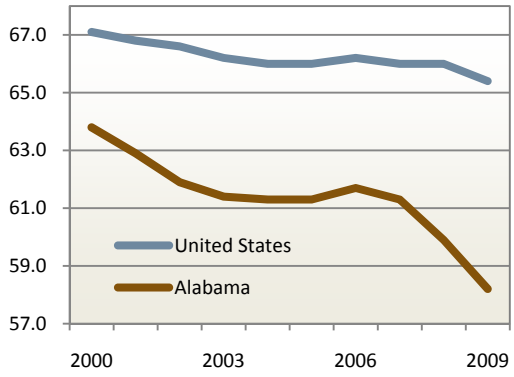
Workforce

Labor force participation well below average

Alabama's labor force participation rate was one of the lowest in the nation in 2009, at 58.2 percent. It fell from 63.8 percent in 2000, a drop of 5.6 percentage points that was greater than the 1.7 percentage point decrease in the participation rate for the entire United States. The drop in Alabama's labor force participation rate was accompanied by a 1.9 percent reduction in the state's labor force during the same time period.

In 2009, 13.8 percent of Alabama's population was age 65 and over, compared to 12.9 percent for the nation as a whole. Despite this, the 65 and over age group comprised only 4.0 percent of Alabama workers, compared to 4.4 percent of U.S. workers. Also, 31.5 percent of Alabama households receive Social Security payments, compared to 27.1 percent of U.S. households; individuals in these households are usually unwilling or unable to participate in the labor force.

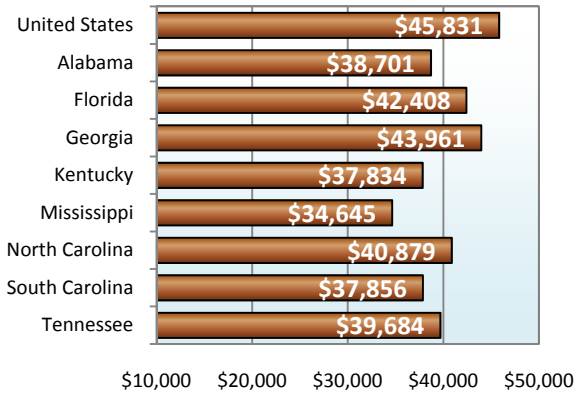
Labor Force Participation Rate, 2000-2009
(percent of population age 16+)



Underemployment affects Alabama's economy

The state's underemployment rate, as a percentage of employed workers, was 24.3 percent in 2009. As a percentage of total labor force and including unemployed, Alabama's effective underemployment rate was 30.9 percent. While studies have indicated that underemployment positively affects the labor force participation rate by driving more workers into the labor force to supplement household income, this relationship does not appear to hold for Alabama as a whole. Instead, the relatively high proportion of retirees and people unable to work reduces the supply of available workers, which in turn may be holding underemployment down somewhat. However, Alabama still has a fairly high underemployment rate, probably mainly the result of the state's relatively low education levels. Decreasing underemployment would likely increase productivity in Alabama, which is well below the U.S. average and trails most southeastern states; the state's high underemployment may be pushing average wages downward as well. Average annual wages in Alabama in 2009 amounted to $38,701, which is 84.4 percent of the U.S. average and ranked 5th in the Southeast.

Average Annual Wage, 2009
(current dollars)



Significantly, 62.3 percent of underemployed workers in Alabama cite a lack of job opportunities in their area as a reason for being underemployed. Despite studies of the United States as a whole showing higher underemployment in nonmetropolitan areas, Jefferson and Mobile Counties have higher underemployment rates than the state average. This is also despite their high concentrations of jobs relative to the size of their labor forces. These factors suggest a kind of spatial mismatch (a geographic separation of jobs and workers) in these counties, and possibly others. Spatial mismatch relating to low-skill and low-income populations is well documented, and low-income individuals also account for a higher percentage of underemployed. Indeed, research indicates that willingness to retrain and relocate geographically seems to be instrumental in avoiding underemployment. More educated and higher-income workers are likely more willing and able to do so than others.

Therefore, reducing underemployment will depend partly on bringing lower-income workers closer to jobs or otherwise lowering their search costs. Providing housing opportunities for all income levels throughout metro areas and increasing investments in transportation systems, particularly by improving public transit service, may help to reduce underemployment. Alabama's high underemployment rate also suggests a lack of skilled workers in some industries, and therefore labor market outcomes can be improved by increasing the number of college graduates in specific fields of study and creating new, dynamic workforce training programs.

Educational attainment will impact what kind of jobs Alabamians can get

Alabama's educational attainment is low compared to the nation as a whole; to command high-demand and high-earning jobs, training and postsecondary education is necessary. The state is working to meet those needs through educational and workforce initiatives. The State Workforce Planning Council (SWPC) is investing in the relationship between workforce development and economic development. This strategic plan involves creating an environment that values the prosperity of an individual through successful employment, and the prosperity of the employer through retention of skilled employees.

The 2008 to 2018 occupational projections indicate that future jobs will require some postsecondary education and training at the minimum. Job ads are increasingly stating a requirement of at least a high school diploma or GED, and will continue to rise. In addition, positions requiring some postsecondary education are expected to grow faster than average.

Partnerships and programs across the state are being built and reinforced to provide opportunities for Alabama's workforce and its industries

Many of these challenges are being addressed by Alabama's workforce programs. Alabama Industrial Development Training (AIDT), ranked first among workforce training programs, offers free services to recruit and train the state's workforce to support existing and new industry. When AIDT job-specific training is completed, the applicants are recommended to targeted businesses for employment.

Some of AIDT's focus has been spent on its partnership with Calhoun Community College and the Alabama Robotics Technology Park, which has attracted worldwide partners to produce robotics technology and trainers at the Robotics Manufacturing Training Center in Decatur. AIDT is also in the midst of supporting its new Maritime Training Center in Mobile. Steel and aluminum welding classes there are certified by the National Center for Construction Education and Research, and Austal USA is encouraging the coordinated training with a recent 800 hires, and an expansion of 2,000 workers over the next few years.

AIDT is leading a new program called Entertainment Media Production & Crew (EMPACT) which will offer worker training in entertainment and media production. The aim is to further develop the state's film industry. AIDT is also creating a program to support small businesses in the state, moving away from the reputation of offering training solely to manufacturing, with their Extended Training (ExTra) program.

The Alabama Technology Network (ATN) is another effective system that local manufacturers can take advantage of for industrial maintenance training, environmental health and safety training, lean manufacturing training, and quality services training, among many other services. This is possible through a partnership between the Alabama Community College System, The University of Alabama System, Auburn University, and the Economic Development Partnership of Alabama.

The Governor's Office of Workforce Development is a state program that provides customized training for new and expanding businesses to streamline the state's workforce development. Direct links to the workforce needs of business and industry are determined at the local level through the establishment of ten Regional Workforce Development Councils. These efforts are meeting local need for training and offering a cost effective solution for potential employees and employers.

2009

Labor Force

2,112,566

***Un**employed*

212,418

10.1%

***Under**employed*

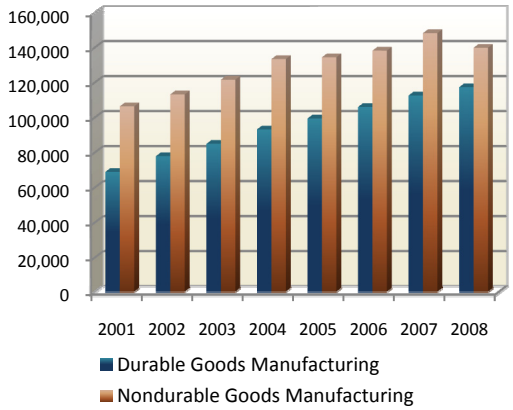
471,488

24.3%

Industries

Traditional industries

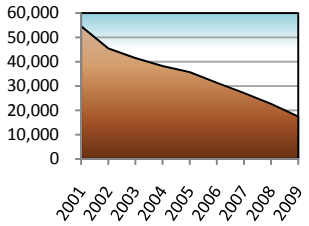
Output per Full-time Employee (millions of 2005 chained dollars)



Many of Alabama's traditional industries, including textile and primary metal manufacturing, as well as forestry and logging, have been on the decline in terms of employment. Traditional manufacturing sectors have suffered, as mass production operations in the later stages of the product life-cycle have sought out lower-cost labor in other countries. In addition, some manufacturing and natural resource sectors have sought to increase productivity through increased use of technology in production, which has, in turn, led to fewer jobs.

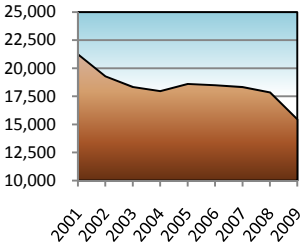
Some manufacturing activity has remained and will likely continue to survive, particularly for products that are more specialized and utilize technology to a greater extent. These industries now tend to require fewer, but more highly-skilled, workers.

Total Textiles Employment



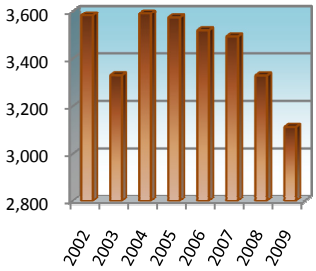
The textile industry is a traditional industry in Alabama that has seen significant job losses in the past several years. It is a labor-intensive industry that is particularly vulnerable to import competition from lower-wage locales. Textile industry employment is expected to continue to significantly decline in Alabama and the nation as a whole, as U.S. based companies further invest in technology or move operations elsewhere.

Primary Metals Manufacturing Employment



Another traditional manufacturing sector, primary metals, has also seen job losses. Employment in steel manufacturing, an important component of primary metals manufacturing, is expected to decline over the next decade, although not to the extent that will be seen in the textile industry. Demand for such materials as steel will continue to vary, and could be negatively influenced by such factors as economic downturns and increasing production in other countries (particularly China).

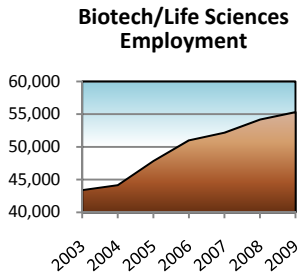
Crop Production Employment



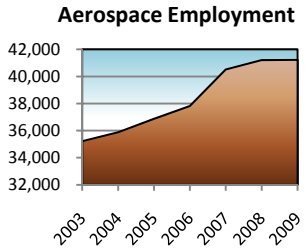
Alabama's largest sectors in agriculture in terms of value produced are poultry and eggs; cattle; and nursery, greenhouse, floriculture, and sod. The agriculture industry has continued to consolidate and utilize technology, reducing the need for labor and, therefore, total jobs. However, according to the Bureau of Labor Statistics, the agriculture industry is expected to see little or no employment change over the next decade. Therefore, the agriculture industry will likely remain a modest but significant part of the state's economy, despite continuing challenges.

Source for employment projections: Bureau of Labor Statistics Occupational Outlook Handbook (www.bls.gov/oco), 2008.

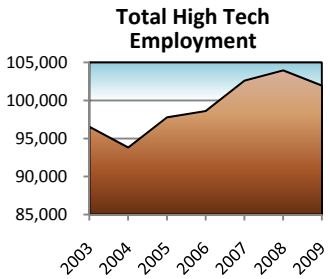
Emerging Industries



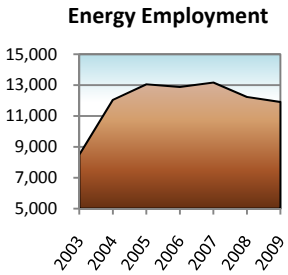
The state has significant university programs in biotechnology and life sciences as well as two large private research organizations (Southern Research Institute and the HudsonAlpha Institute). These larger research organizations can help provide research support (such as clinical trials) and even capital in some cases to smaller companies, creating potential growth in the state's smaller companies in the years to come. In addition, employment in Alabama in biotech and life sciences has grown significantly throughout the decade. Biological science employment for the nation as a whole is expected to continue to increase over the next decade, driven by growth in the biotechnology industry.



The aerospace industry in Alabama has grown in both manufacturing and research and development sectors over the past several years. The state as a whole continues to devote efforts to recruiting U.S. as well as foreign aerospace companies. The recently formed Aerospace Alliance with Florida, Mississippi, and Louisiana illustrates the significant presence the industry has in the region, and suggests that it will remain important for years to come.



High-tech industry in Alabama has continued to develop along with the rest of the nation throughout the decade. While Huntsville is by far the largest center for several high-tech manufacturing and service industries, some high-tech manufacturing sectors have flourished in other parts of the state as well. These manufacturing industries will rely on continually improving transportation and freight movement to other markets throughout the nation and the world. Huntsville is the state's largest international air freight gateway in terms of value, and due to this and the concentration of high-tech services, it will likely remain the state's high-tech center overall. Nearby metros and smaller towns will have the opportunity to continue to grow existing high-tech industry and attract new high-tech firms, most likely in manufacturing.



Employment in energy-related sectors has increased in Alabama since 2003, and totaled about 12,000 in 2009. This figure is a measure of employment in power generation and transmission and manufacturing and services directly related to it; it does not include resource extraction sectors, such as coal mining. Alabama's abundance of raw materials, particularly coal, and large amounts of productive forests and agricultural land (which can be used for biomass), give the state the opportunity to continue to grow this industry, as the federal government and larger utilities shift towards renewable energy production. Biomass processing and conversion are sectors that will be increasingly needed. In addition, biomass conversion and biohydrogen production are two emerging sectors that some of the state's universities have existing research capacity in. As a leader in total energy production among states, Alabama may also grow existing energy production sectors that are researching ways to make themselves cleaner and more efficient, such as coal.

Clusters

What is a cluster?

A cluster is a geographic concentration of interconnected companies and institutions in a particular field. Clusters involve companies that are laterally linked by certain skills of workers, inputs, or technologies. They may also include governmental and other institutions that provide training, education, information, research, and technical support. A cluster allows for improved access to highly skilled employees and specialized suppliers and producers, and competitive, close supplier relationships. It also allows for complementarities in providing goods and services to customers, and better access to public institutions and infrastructure. Finally, clusters make it easier to innovate by facilitating the exchange of information and ideas, increasing motivation to compete, and allowing companies the flexibility to act quickly and rapidly. This flexibility comes from companies' improved access to specialized labor markets and deep relationships with suppliers.

Clusters can also be described as being characterized by seven key factors, sometimes referred to as "micro-foundations." These are knowledge spillovers, labor market pools, supplier specialization, entrepreneurship, path dependence and lock-in, local culture, and local demand. However, not all of these micro-foundations will be factors in all clusters. A key feature of the theory of industry clusters is that they organize around groupings of small to medium size firms, which are able to leverage the scale of the cluster itself while keeping the small size needed to maintain maximum flexibility.

Identifying clusters

The cluster analysis for this study included analysis of location quotients for employment in the top 50 industries for each metro area in the state, as well as for the sum of all areas not within a metro area. The location quotient is the ratio of the percentage of local or regional employment in an industry to the percentage of national employment in that industry. In general, a location quotient equal to or above 1.2 can be interpreted to mean that the region has a significant concentration of employment in the industry.

A policy consideration is the level of geography at which industry clusters may exist. This study focuses on metropolitan areas in the state for multiple reasons. Some micro-foundations of clustering that the theory is based on are very localized in nature, including knowledge spillovers and labor market pooling in particular. Therefore, many industries are unlikely to cluster at a statewide level and will instead favor concentrating in certain metro areas. Furthermore, existence of clusters in most industries has been found to be negatively correlated with the rurality of a county, and employment in general tends to concentrate in metropolitan areas. These factors make creation and implementation of cluster-based policies most likely to be successful at the metropolitan level.

Much of state unlikely to be competitive in knowledge-intensive industry

In developed economies, regions that are home to control functions and innovative activities will likely be more prosperous. Due to the marked localization of corporate headquarters and research and development establishments, focusing on the state's existing clusters is likely the best way to possibly build these operations from the ground up.

Most of the state's metros, particularly its smaller metros, have employment concentrations in multiple manufacturing industries, such as primary metals, wood products, and transportation equipment, to name a few. These industries tend to be labor intensive but not always well paying or highly productive in terms of output per worker, as seen in the table. Rather, knowledge-intensive and some high-tech industries tend to produce the most per worker.

Clusters based on or heavily utilizing shared knowledge or knowledge spillovers appear to be few throughout Alabama. Most existing industry clusters in the state's metro areas are likely based on other linkages, such as shared labor pools (particularly in some specialized manufacturing industries), backward and forward linkages to suppliers and consumers, or proximity to raw

materials (in industries such as wood products manufacturing).

It is clear that Alabama as a whole is not currently in a position to effectively compete globally for knowledge-intensive industry, though. Human capital in the state, as measured by percentage of adults with at least a bachelor's degree, is relatively low. The 2009 American Community Survey indicated that 22.0 percent of Alabama residents age 25 and over had at least a bachelor's degree, compared to 27.9 percent for the U.S. as a whole. In the long term, most metro areas in Alabama will likely need to improve their human capital to compete more effectively in knowledge-intensive industries. Huntsville, with its high percentage of highly skilled scientists and engineers, and Birmingham-Hoover are exceptions to this and are currently competitive in some knowledge-intensive and professional service industries.

Each metro is competitive in certain highly productive industries

Regardless, each of the state's metro areas is well positioned to continue to compete in some highly productive industries or industries that have seen significant innovation in recent years, as measured by output and increase in output per worker, respectively. These most commonly include such industries as electrical equipment, appliance and component manufacturing, paper manufacturing, wood manufacturing, and chemical manufacturing, in which several of the state's metro areas have employment concentrations. Some other highly productive or innovative industries have concentrations in certain metro areas as well. These include water transportation in Mobile, computer systems design and related services in Huntsville, and telecommunications and credit intermediation and related activities in Birmingham.

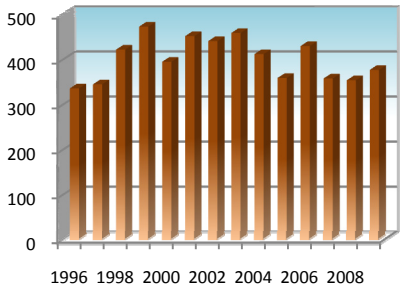
Output per Worker for Selected Industries

Value Added (millions of chained 2005 dollars)	1998	2006	2007	2008	% change 1998-2008
Wood products	53,653	59,632	70,787	80,636	50.3%
Nonmetallic mineral products	85,261	79,448	81,663	82,706	-3.0%
Primary metals	94,476	101,605	98,720	93,120	-1.4%
Fabricated metal products	71,247	82,802	85,725	84,064	18.0%
Machinery	79,154	100,223	102,494	104,438	31.9%
Computer and electronic products	21,399	174,040	197,833	221,586	935.5%
Electrical equipment, appliances, and components	61,491	104,867	101,661	111,311	81.0%
Motor vehicles, bodies and trailers, and parts	70,297	114,224	122,597	128,742	83.1%
Furniture and related products	50,789	65,889	61,287	60,745	19.6%
Paper products	94,427	119,714	118,848	117,863	24.8%
Chemical products	165,813	236,297	258,050	218,995	32.1%
Federal Reserve banks, credit intermediation, and related activities	135,145	171,051	169,569	171,681	27.0%
Water transportation	144,796	252,136	310,639	338,484	133.8%
Truck transportation	73,193	89,486	92,086	93,874	28.3%
Securities, commodity contracts, and investments	111,559	262,107	216,411	190,134	70.4%
Broadcasting and telecommunications	131,434	257,016	268,463	279,277	112.5%
Information and data processing services	84,153	202,556	236,380	251,721	199.1%
Publishing industries (includes software)	109,781	150,810	160,506	164,828	50.1%
Computer systems design and related services	86,011	117,951	122,201	121,970	41.8%

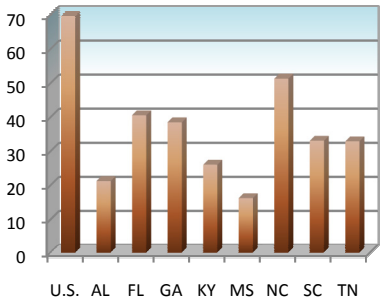
Source: Bureau of Economic Analysis.

Any cluster-based economic development strategy the state chooses to pursue should focus on assisting and promoting existing clusters rather than creating new ones. It should also take steps to increase innovation within clusters, particularly shown to be fragile in the long term if they are not sufficiently dynamic. It should further focus on what Harvard professor Michael Porter refers to as traded industries, as opposed to local industries. Traded industries sell goods across regions and often to other countries, while local industries provide goods and services within the region and usually have employment levels that are directly proportional to the region's population. Examples of local industries include retail, most forms of construction, and the majority of service industries. Traded industries are more innovative and productive, and drive more growth in wages.

Patents in Alabama by Year, 1996-2009



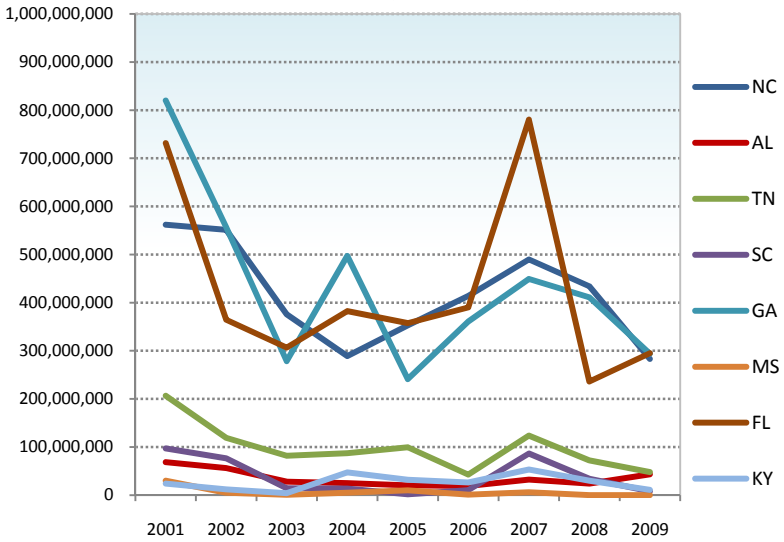
Average Patents per 100,000 Workers 1996-2009



Alabama's metros not significant centers of innovation

Metros that export at a high rate do not follow a particular sectoral pattern, according to a 2010 Brookings Institution study. Thus, their prominent industries in terms of export dollars and export-related employment vary. This indicates that Alabama's existing industry clusters can be leveraged to increase the state's exports. The same study, as well as a number of other studies, show that export oriented metro areas are more innovative, as measured by patent production. However, because production and innovation in an industry often do not co-locate, the state cannot simply pursue innovative industries, but must increase and encourage innovation itself. The low number of patents in the state indicates that it lags behind the Southeast and the nation in innovation (see graphs). Alabama's companies also receive relatively little venture capital, further showing that innovation, as well as startup growth in general, are low compared to the rest of the Southeast and the nation.

Total Venture Capital Funding by State



Because of this association between exports and innovation, the state should look to a self-perpetuating strategy of increasing performance in both exports and innovation. Alabama has increased its exports in recent years and is about average among southeastern states in terms of value of exports per worker. However, the state's overall wages and levels of human capital are relatively low, which limits Alabama's innovation capabilities. Therefore, the primary short-term objective for the state's industries should be to tap more fully into export markets. While initiatives intended to directly stimulate innovation should be pursued as well, increasing the export orientation

of Alabama's metro areas will probably be more effective in encouraging innovation. It is believed that initiatives by government or other organizations are needed for clusters to effectively establish global connections, which would increase their viability and encourage growth. This is one way various levels of government could support emerging and existing clusters while trying to directly increase exports. In the long term, policies at the state level should also be focused on increasing human capital and the number of highly educated workers, which are crucial to innovation in any industry.

Further study of clusters

A full qualitative study of the inner workings and linkages of clusters in Alabama was beyond the scope and resources of this report. Therefore, further analysis of existing clusters will likely be needed at the level of each metropolitan area. Employment numbers corresponding to more refined industry cluster definitions could be gathered (where this study has not already done so), and linkages within each cluster should be studied through a qualitative, interview-based process. Further study of clusters should answer the following questions:

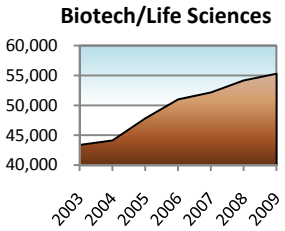
- What is the existing and potential role of educational institutions in providing labor and research and development for the industry?
- Which, if any, of its needs for labor are not being met?
- What are its key suppliers and where are they located (i.e., how is the supply/value chain structured within the industry)?
- Who are its key customers and where are they located, and how do they interact with them to keep up with demand?
- Is innovation and entrepreneurship common in the industry, and how has the institutional and/or social culture helped or hindered entrepreneurs?
- Finally, how does the cluster interact with businesses and customers outside the region and across the world, if at all?

Individual clusters

Data for four individual clusters—biotechnology and life sciences, aerospace, transportation and logistics, and automotive—was obtained and analyzed for each metro area. These industries were selected based on their visibility within the state and levels of productivity, which have the potential to increase wages for workers throughout the state. Location quotients in each industry for each metro area and Baldwin County are shown in the following table.

Employment Concentrations in Target Clusters

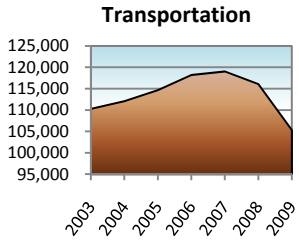
	Location Quotients			
Metro area	**Biotech and life sciences**	**Aerospace**	**Transportation and logistics**	**Automotive**
Anniston-Oxford	0.666	0.763	1.162	3.075
Auburn-Opelika	0.454	0.493	0.580	2.023
Baldwin County	0.655	0.877	0.975	0.046
Birmingham-Hoover	0.858	0.631	1.360	0.961
Dothan	0.586	0.370	1.320	0.205
Decatur	0.478	0.488	1.363	0.332
Florence-Muscle Shoals	0.544	0.165	1.206	0.585
Gadsden	0.707	0.153	0.908	0.745
Huntsville	1.191	3.814	0.613	2.419
Mobile	0.571	1.142	1.441	0.160
Montgomery	0.437	0.426	0.896	4.836
Tuscaloosa	0.771	0.356	0.750	9.216



Biotechnology/Life Sciences Cluster

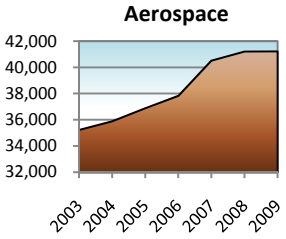
The biotechnology and life sciences industry employed about 55,316 workers in Alabama in 2009. Huntsville is the only metro area in Alabama with a higher concentration of biotechnology and life sciences employment than the nation as a whole, with Birmingham being about average for the nation. These two metro areas have the most significant biotech clusters; however, the industry appears to have a presence in several of the state's metro areas, and statewide industry organizations currently exist as well. A significant amount of funded research in this industry is conducted in Birmingham in particular, at the University of Alabama at Birmingham (UAB) and private organizations such as the Southern Research Institute. The HudsonAlpha Institute in Huntsville has significant research programs as well. A challenge and an opportunity for the biotech/life sciences industry is effectively connecting research institutions in Birmingham (which focus primarily on medical and pharmaceutical research) with those in Huntsville (which have significant programs in biotechnology).

It is believed that biotechnology is fundamentally different from other high-tech industry clusters in that it is more steeped in basic research, giving science a more central role, as opposed to access to capital and other factors. Several of Alabama's universities, particularly UAB, The University of Alabama (UA), the University of South Alabama, and Auburn University, are home to significant research in fields related to biotechnology and life sciences. Therefore, the state could most effectively encourage growth of this cluster by supporting research at these universities, through research grants and increased funding for faculty and researchers in these fields. There are several companies in the state that commercialize research in biotechnology and life sciences, and statewide industry organizations, including the Biotechnology Association of Alabama, must help ensure that researchers stay connected with these companies. Public investments such as the Innovation Depot at UAB can help new companies form and grow from existing research and expertise, strengthening the cluster and increasing the industry's impact over time.



Transportation and Logistics Cluster

Alabama has a large and diverse manufacturing base and a wealth of raw materials. These products are often processed or sold in markets outside the state. Therefore, the state may choose to encourage growth of clusters in transportation and logistics. This industry employed about 105,295 workers in Alabama in 2009. Metros with high concentrations in transportation and logistics include Anniston-Oxford, Birmingham, Decatur, Dothan, Florence-Muscle Shoals, and Mobile. Therefore, there appears to be a relatively large base this cluster can build on. New developments include a planned Norfolk Southern intermodal rail facility in Jefferson County (scheduled to open in early 2012). The state can support this cluster by allocating funding for researchers in logistics and operations management at its universities, particularly UA and Auburn. These researchers could work closely with transportation and logistics companies in the state to improve efficiency and create new methods and processes for moving materials that could be applied in Alabama and elsewhere. The state should also include planning for freight movement in state transportation planning.

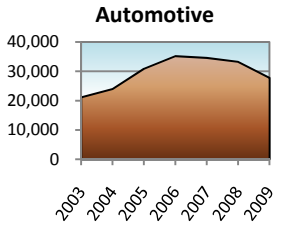


Aerospace Cluster

A number of the aerospace industry's major players have a presence in Alabama. These include Boeing, Computer Sciences Corp., EADS North America, GKN Aerospace, Lockheed Martin, Northrop Grumman, SAIC, and U.S. Helicopter. Many other smaller, Alabama-based companies in the aerospace industry exist as well. Industries within the aerospace cluster include space and defense; aviation; and maintenance, repair, and overhaul (MRO).

According to the cluster definition used for this study, the aerospace industry employed 41,229 workers in Alabama in 2009, for 2.3 percent of the nonfarm workforce, making the state a leader among southeastern states. Two metros in the state, Huntsville and Mobile, have high concentrations of employment in the aerospace industry. The space and defense industry in Alabama is concentrated in Huntsville, largely due to the presence of Redstone Arsenal, which has been a catalyst for creation of private-sector aerospace jobs. A high percentage of Huntsville's aerospace employment is in engineering and research and development, making it a likely center of innovation, particularly through locally-based government contractors. Aviation and MRO operations are more diffused across the state's metros, with Huntsville and Mobile having the highest number. Mobile remains competitive for new developments in the aerospace industry. An example is its selection by EADS North America as the production site for a new refueling tanker aircraft, should they win the contract from the U.S. Department of Defense.

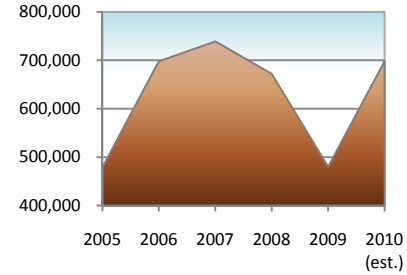
The state should encourage and fund institutions that facilitate knowledge transfer and spillovers and entrepreneurship among businesses in this industry. It should also strengthen connections between aerospace firms and the state's universities, to allow for the industry's input and involvement in key programs in engineering and science, and to improve its access to highly skilled graduates of these universities.



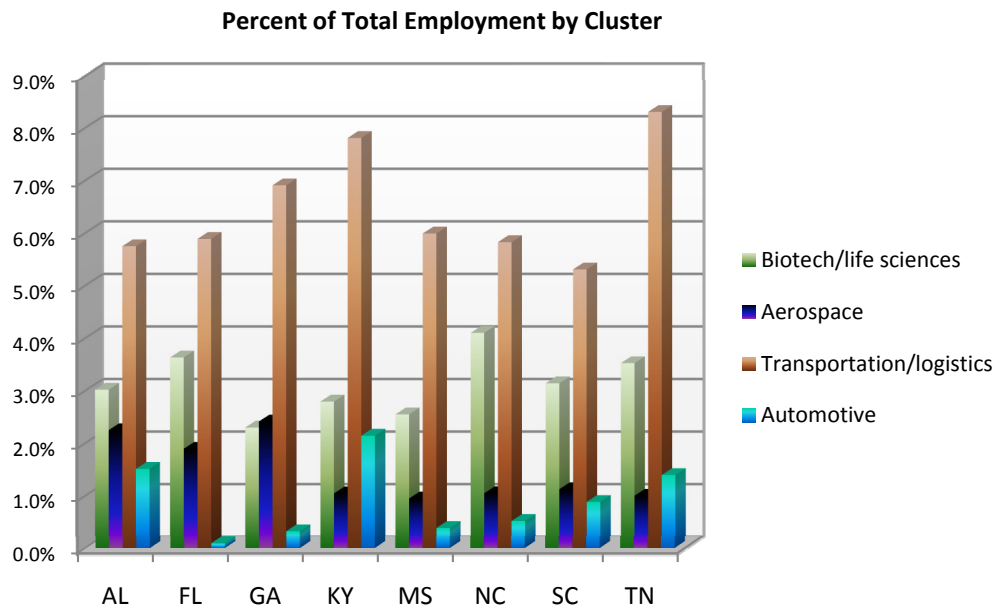
Automotive Cluster

The automotive industry has grown significantly in Alabama over the past decade, and is spread across large and small metros as well as smaller rural counties. This has been and continues to be possible due to the wide range of products and core competencies applicable to companies within this cluster, a range that is too wide to utilize any set of specialized services or particular set of labor skills that might be present only in larger metro areas. This analysis essentially shows the concentration of final producers of automobiles and their first-tier suppliers.

The automotive industry in Alabama employed 27,751 workers in 2009, and is anchored by three final producers, Mercedes-Benz in Tuscaloosa County, Honda in Talladega County, and Hyundai in Montgomery County. In addition, Toyota and Navistar Diesel have dedicated engine plants in Madison County. Some 57 percent of suppliers in the industry reported that all of their business was automotive-related in 2007. The Alabama Automotive Manufacturers Association connects these suppliers and final producers throughout the state. These factors have helped make the automotive cluster a strong one. Furthermore, the flexibility afforded the state's final producers of automobiles through use of technology and through their supplier networks has allowed these companies to maintain operations in Alabama and emerge from the recession rapidly. Automotive production in Alabama is rebounding in 2010 after falling from 2007 to 2009. Estimated production of more than 711,000 vehicles in 2010 is up 52 percent from 2009. This has been due to increasing demand as well as improved and more efficient production processes.



The branch-plant nature of many automotive firms in Alabama, particularly the larger ones, may hinder innovation in the industry within the state. In addition, the disparate nature of the automotive industry and its suppliers, as well as the dispersed nature of the industry itself throughout the Southeast, make metropolitan-level investments in it difficult. However, as long as these anchors remain in Alabama and other final producers, such as Kia in West Point, Ga., remain nearby, the state of



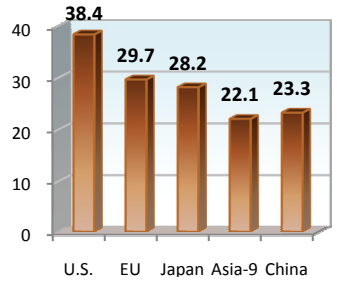
Alabama can continue to encourage the industry's growth. It can do this by supporting training programs in various manufacturing areas through the state's system of community colleges, and ensuring that incentives for automobile manufacturing remain in line with those of other southeastern states.

Future of clusters

In terms of employment concentration, Alabama is most competitive among southeastern states in the aerospace and automotive industries. Its employment share in biotech/life sciences is average among neighboring states, but the state trails most of the Southeast in transportation and logistics employment. Despite this, there are clear opportunities to grow each of these industries through carefully targeted public investments.

Innovation

Value-Added of Knowledge-Intensive and High-Tech Industries as Percent of Region/Country's GDP, 2007



Defining innovation

The global nature of business challenges every nation and region to become increasingly competitive in knowledge-intensive industries. The foundation of this competition is innovation—the creation, development, and commercialization of ideas. In this business context, successful innovation generates economic value and helps a firm or a region gain competitive advantage in a product and/or service. The U.S. economy receives more benefit from knowledge-intensive and high-tech industries than other key nations or groups of nations. In 2007 value added by these industries amounted to 38.4 percent of U.S. GDP, compared to 29.7 percent of GDP in the European Union (EU).

The nature of innovation itself is always evolving. With technology now enabling rapid interchange of information almost anywhere, global competition has accelerated. The Council on Competitiveness found that innovation is now more rapid, multidisciplinary, and collaborative. It is also more democratic, involving not just researchers, but workers and customers as well, and can originate from anywhere in the world.

"In a global economy, U.S. regions can no longer primarily compete based on their natural resource endowment, low cost labor, or tax incentives. Instead, regional prosperity depends on a region's capacity to support innovative firms, institutions, and people."

Council on Competitiveness, *Measuring Regional Innovation*

Innovation is key to regional prosperity

Policies help define the support for innovation at a national or state level. But the innovation activities are themselves generally focused at a regional or metropolitan area level, where they draw on synergies from the local workforce, businesses, universities, and governments. Capacity for innovation depends on the assets, networks, and economic culture of a region. Innovation can be the impetus for improving the quality of life in an area by raising average wages as a result of competitive advantages from cost-saving technology improvements or from the introduction of new or differentiated products or services.

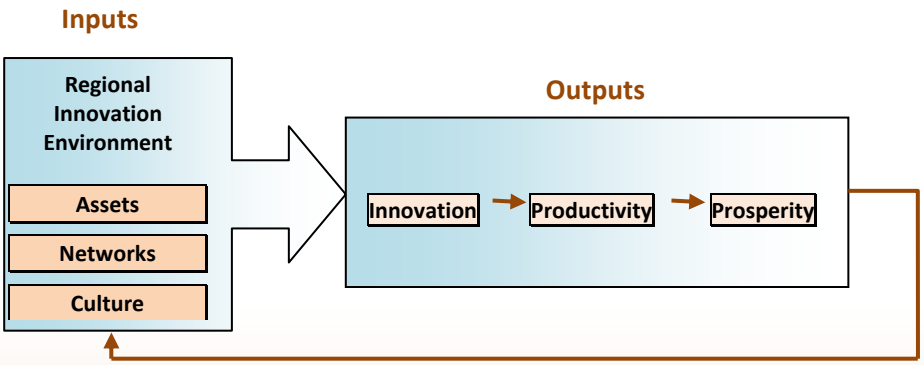
United States leads in innovation

The United States remains the world leader in innovation, with an average score of 5.7 out of a possible 7 on the latest Innovation Index that comprises one pillar of the 2010-2011 *Global Competitiveness Index* compiled by the World Economic Forum. Despite this top ranking among the 139 countries analyzed, the nation is in first place on just one of seven innovation indicators—university-industry collaboration on research and development (R&D). The lowest ranks were 6th for capacity for innovation (Germany was 1st) and for company spending on R&D (Sweden was the leader).

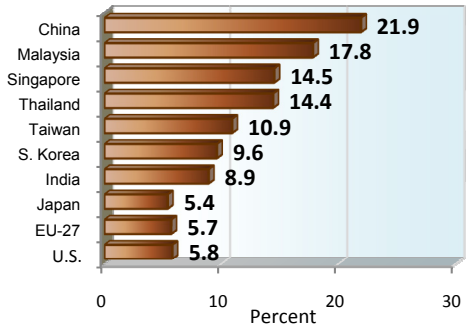
U.S. dominates in R&D spending, but other nations increasing faster

Although the United States is a leader in research and development expenditures, relatively moderate growth in spending is helping other countries catch up. While the nation's R&D spending grew at an average annual rate of 5.8 percent from 1996 to 2007, China increased its R&D investment an average of 21.9 percent annually. North America claimed the dominant share of worldwide R&D expenditures in 2007, with 36 percent of the total, down from 40 percent in 1996. Over the same period, investment in R&D across Asia and the Pacific rose from 24 to 30 percent of the global total.

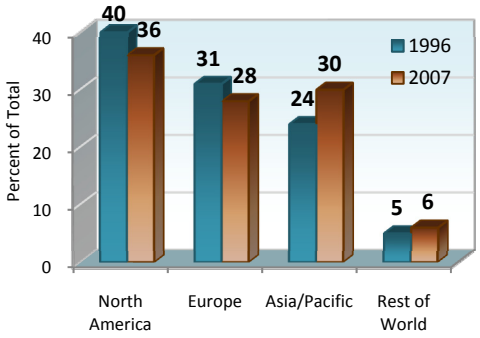
Regional Innovation Environment Inputs and Outputs



Average Annual Growth of R&D Expenditures, 1996-2007



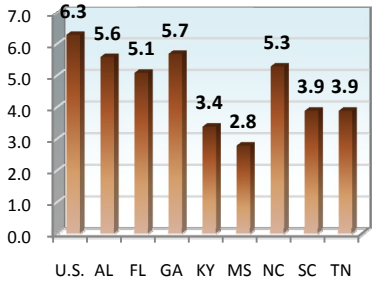
Location of Worldwide R&D Expenditures



Federal stimulus boosting R&D

Battelle/*R&D Magazine* analysis and forecasts show that while U.S. R&D investment fell to $389.2 billion in 2009, it is likely to reach almost $402 billion in 2010, for a current dollar increase of 3.3 percent (1.7 percent in real dollars). Research and development funding of $18.4 billion provided by the American Recovery and Reinvestment Act of 2009 is contributing to the rebound. These stimulus awards, which largely benefit academic researchers through National Science Foundation (NSF) and National Institutes of Health (NIH) funding, will be disbursed through FY2012. In addition, the American Competitiveness Initiative established a priority for boosting direct federal investment in basic research. Federal funding as a share of all R&D dollars is expected to reach 28 percent in 2010. Corporate investment should contribute about 65 percent of total research and development funds. In terms of research performance, about 70 percent is in industry, 14.5 percent in academia, and 7.0 percent directly by the Federal government.

High Tech Share of Total Employment, 2009



Alabama's growing technology sector fosters innovation

Growing strengths in technology sectors, including life sciences, aerospace, information technology, and advanced manufacturing are heading the state in the direction of success in the global innovation economy. Almost 102,000 Alabamians worked in high tech in 2009, for a 5.6 percent share of total nonagricultural employment that is below the U.S. share of 6.3 percent, but higher than all other southeastern states except Georgia at 5.7 percent. Alabama's technology industry employment grew from 96,535 in 2003 to 101,952 in 2009, a 5.6 percent increase.

About 71 percent of the state's high tech jobs are in service industries, including the information sector; engineering, computer systems, and scientific research companies; and medical and diagnostic labs. The other 29 percent of high tech workers are employed with manufacturers making products including pharmaceuticals, computer and communications equipment, aerospace products and parts, and medical equipment. Alabama's ability to grant economic development incentives for "white collar" jobs could be instrumental in boosting the state's technology sector.

Tech concentrations and growth are focused in Alabama's metro areas. Emphases include life sciences and aerospace in Huntsville; life sciences and information technology in Birmingham-Hoover; information technology in Montgomery; and life sciences, aerospace, and marine technology in Mobile. The defense industry is a major contributor to the state's technology growth, particularly with the relocation of the Missile Defense Agency and other federal agencies to Huntsville's Redstone Arsenal as a result of BRAC, and with the concurrent expansion of related private contractors.

Federal contracts support tech jobs and R&D

Contracts awarded by federal government agencies during FY2010 for work performed in Alabama totaled $7.847 billion. The Department of Defense was the major source of funding, with $6.064 billion in expenditures including $3.461 billion to the Army and $1.434 billion for the Missile Defense Agency. NASA was in second place, awarding contracts worth $903 million. Federal contracts drive an important part of the state's innovation economy; the top four products and services sold were all in the technical services, research, and development arena. The Boeing Company was the top contract recipient in FY2010, followed by L-3 Communications, Austal USA, SAIC, and JVYS. Federal contract awards in FY2009 were 2.5 times the 2000 total, boosted by stimulus funding; the amount obligated dipped 29 percent in FY2010.

One third of the $11.082 billion in federal contract dollars that flowed into Alabama in FY2009 was specifically designated for research and development. That share of the total was above the U.S average of 27.3 percent and far higher than any other southeastern state. Alabama's $3.73 billion in federal contracts for R&D dwarfed the amounts awarded to other regional states. The top five federally-funded R&D products or services contracted for in Alabama were all in the defense and space arenas, assuring that the well-paying jobs and innovation they support cannot be outsourced.

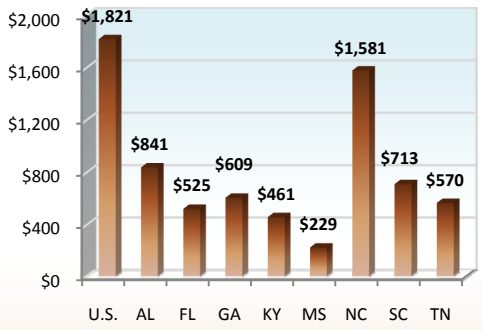
Federal Contract Spending for R&D, FY2009
(millions of current dollars)

	Total Contracts	R&D Contracts	R&D Share of Total
U.S.	$539,100	$147,100	27.3
AL	11,082	3,730	33.7
FL	16,854	879	5.2
GA	10,843	299	2.8
KY	7,620	24	0.3
MS	5,121	125	2.4
NC	5,447	424	7.8
SC	10,166	78	0.8
TN	8,384	509	6.1

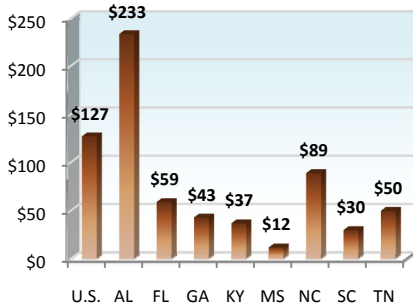
Industry R&D dollars are an important component

Alabama businesses spent an estimated $1.771 billion on research and development in 2007, almost 54 percent of the state's R&D total. This equates to $841 for each employed worker in the state, just 46.2 percent of the U.S. average of $1,821, but almost 22 percent higher than the southeast average. We ranked second, behind North Carolina's $1,581, on industry R&D investment per worker. Small businesses are an important source of research and innovation. The state's firms have done well in securing Small Business Innovation Research (SBIR) grants. SBIR funding in Alabama averaged $233 per $1 million of GDP over the 2006 to 2008 period. This is well above the national average of $127 and much higher than any other southeastern state.

Business R&D Spending per Worker, 2007
(current dollars)



SBIR Funding per $1 million GDP
2006-2008 Annual Average
(current dollars)



University R&D, industry collaboration significant

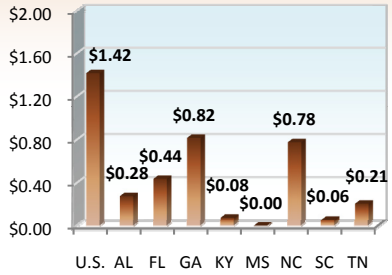
Alabama's universities received about $708 million in research funding in 2008, with two-thirds of the money coming from the federal government. Institutional funds made up about 24 percent of the total. The federal share likely grew in 2009 as stimulus funding channeled mainly to NSF, NIH, and the Department of Energy went largely to university research. Alabama's NSF awards rose 73 percent to $64 million in 2009, while NIH grants climbed 35 percent to about $341 million. Most NIH funding went to UAB, although The University of Alabama, Auburn, the University of South Alabama, Tuskegee University, Southern Research Institute, and the HudsonAlpha Institute received sizeable grants. The state's research universities are increasingly forging direct partnerships with aerospace, automotive, and other firms as well as serving targeted industry sectors through specialized research centers.

Business incubators actively nurture innovation; venture capital and patents lag

A number of business incubators scattered across the state provide an entrepreneurial environment for start-up firms. The largest include Birmingham's Innovation Depot, Huntsville's Biztech, Mobile's Business Innovation Center, and the Montgomery Area Small Business Incubator.

While Alabama has a strong foundation in innovation clusters and resources, it has not done as well commercializing the knowledge and products developed in the state. At $0.28 per $1,000 of Alabama GDP in 2009, venture capital funding was improving, but fell short of the nation's figure of

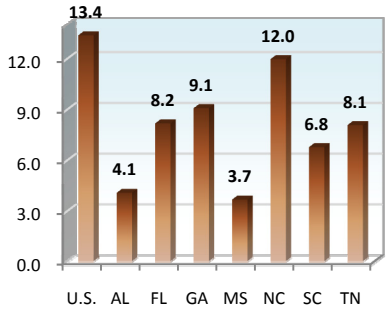
Venture Capital Spending per $1,000 GDP, 2009



$1.42 to rank 4th among the eight southeastern states.

Patent productivity amounted to 4.1 per 1,000 science and engineering workers in 2008—near the bottom of the southeastern states and less than a third of the U.S. average of 13.4. However, patent trends are encouraging, with an annual record of over 618 patents issued in 2010.

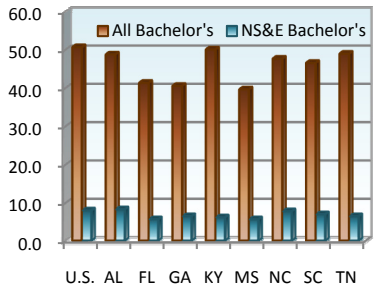
Patents per 1,000 Science and Engineering Workers, 2008



Technological talent fundamental to innovation

While the United States awarded the most doctoral degrees in natural sciences and engineering (NS&E) among a selected peer group of countries during 2006, China was catching up. Alabama has done well in the southeastern region at educating students in natural sciences and engineering. The state conferred 11,035 degrees in physical, computer, agricultural, biological, earth, atmospheric, and ocean sciences; math; and engineering in 2008, around 20 percent of all degrees. South Carolina was the leader in the Southeast, with 15,089 NS&E degrees, while Kentucky was second at 12,641. Alabama ranked 4th in NS&E degrees, right behind Tennessee.

Degrees in Natural Sciences and Engineering, 2007
(per 1,000 residents 18 to 24 years old)



Doctoral Degrees in Natural Sciences and Engineering, 2006	
United States	22,320
Citizen	10,230
Foreign	10,920
Germany	8,920
China	20,920
United Kingdom	7,660
Japan	7,150
South Korea	3,470
India	7,540
Note: India number is for 2005.	

College availability relative to population is good in Alabama, although a number of spots are occupied by out-of-state students. The state's higher education institutions conferred 48.8 bachelor's degrees in all fields per 1,000 residents aged 18 to below just Kentucky and Tennessee in the Southeast. We did better than the nation on NS&E degrees—the rate of 8.4 per 1,000 residents 18 to 24 is above the U.S. rate of 8.1 and the highest in the region. And we were second behind North Carolina with 10.2 science and engineering graduate students per 1,000 Alabamians 25 to 34 years old.

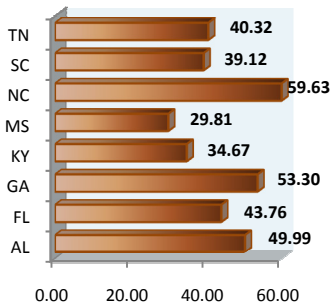
page

Thus, we have the educational resources to provide the talent needed in the innovation economy. Job creation that will retain students educated in NS&E in the state, as well as alignment of programs with the needs of existing jobs will lead to growth in Alabama's innovation potential.

Milken Institute's Technology and Science Index confirms potential

Alabama came in 29th among the 50 states with a score of 49.99 on the *2008 State Technology and Science Index*, calculated by the Milken Institute. Massachusetts scored highest at 82.61. The index gauges each state's technology and science assets and assesses its ability to leverage those assets to generate economic growth that will be sustainable. Alabama's ranking rose significantly since the previous ranking of 36 on the 2004 index, indicating that overall the state is moving in the right direction of being competitive in the global economy. In the southeastern region, just North Carolina and Georgia scored higher.

2008 State Technology and Science Index

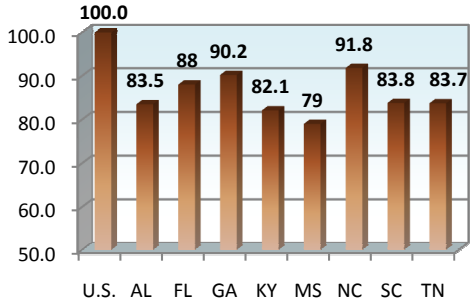


Among the five major components that go into calculating the overall Technology and Science Index, Alabama was strongest on its technology concentration and dynamism and weakest on risk capital and entrepreneurial infrastructure. Thus, while the study found that the state is relatively effective in growing its technology sector, it does not do nearly as well at having capable entrepreneurs

Alabama's Technology and Science Index		Rank
Total	49.99	29
Human capital investment	42.48	37
Research & development inputs	52.00	27
Risk capital & entrepreneurial infrastructure	40.73	43
Technology & science work force	57.75	26
Technology concentration & dynamism	57.00	25

capable entrepreneurs and available risk capital to turn research into commercially viable products and services. Alabama ranks near the middle among the states on having concentrations of skilled technical and science workers and on attracting federal, industry, and/or academic funding for research. But we ranked just 37th for investment in our human capital in terms of educational attainment, spending, achievement, and science and engineering degree production, although the science and engineering subcomponent did somewhat better.

Innovation Index, 2009



Innovation Index identifies economic weaknesses

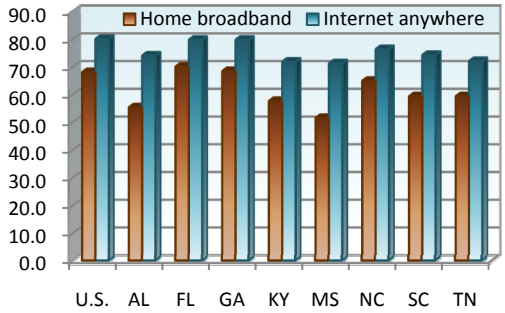
The *Innovation Index*, developed for the Economic Development Administration, looks at factors that measure a region or state's capacity and success in today's global, knowledge-based economy. Alabama's score of 83.5 on the 2009 index ranks 41st and just 6th among the southeastern states. In the Southeast, North Carolina's score of 91.8 is the highest and ranks 22nd among the 50 states, while Georgia's 90.2 is 25th; however, 15 states scored above the U.S. average value of 100.

Among the four sub-indexes, Alabama fared best on economic well-being, with a score of 101.1 indicating that the state is providing an environment with a generally improving quality of life. The state was second in the Southeast with a human capital index of 86.3, based on educational attainment and high-tech employment. Weakness in venture capital investment, broadband access, and private R&D investment contributed to an economic dynamics score of 78.2 that ranked 7th among the eight southeastern states. A lack of patent activity was a factor in Alabama's productivity and employment sub-index score of 73.3, 5th in the region.

Internet access important component of innovation

Improvements in Internet connectivity, particularly via broadband, are an investment in human capital that will help Alabama be more competitive in the innovation economy. Alabama and most south-eastern states lag the nation in connecting residents to the Internet. Overall, 74.2 percent of Alabama households were able to access the Internet from some location in 2010, compared to 80.2 percent of U.S. households. In 2010 only Florida and Georgia had more households with broadband access at home than the nation's 68.2 percent; Alabama ranked 48th with 55.5 percent. The state's urban broadband availability is slightly better—60.6 percent of urban households were on broadband versus 49.3 percent of rural households. ConnectingALABAMA is working to increase broadband availability in the state.

Households with Internet Access, 2010
(percent)



Alabama is striving to improve its competitiveness

Our state has a considerable foundation in the technology-based industries that drive innovation. But to continue to improve our role in the global economy through innovation, we need to accelerate commercialization of knowledge and products developed in the state, expand research and development by our universities and companies, and attract venture capital. The *Alabama Science and Technology Roadmap*, completed in late 2009 for the Alabama Research Alliance, details the assets, networks, and culture that power Alabama's innovation economy and identifies areas for improvement.

Globalization

United States world's largest economy

With current dollar GDP totaling $14.151 trillion in 2009, the United States is by far the world's largest economy. Measuring output in terms of U.S. dollars, second place Japan produced $5.068 trillion in goods and services during the year, while China was third at $4.985 trillion. Other top nations included Germany in fourth place, followed in order by France, the United Kingdom, Italy, Brazil, Spain, Canada, India, and the Russian Federation. The recent recession resulted in real GDP declines in most of these large economies during 2009 that were worse than the U.S. loss of 2.1 percent. However, several saw sizeable gains during the year, including an 8.7 percent increase in China's output of goods and services and a 7.4 percent gain in India. Brazil's economy contracted a modest 0.2 percent in 2009.

Where in the world is Alabama?

Alabama's 2009 current dollar GDP of $169.9 billion places the size of the state's economy between 44th ranked Singapore ($182.2 billion in output) and 45th ranked Nigeria (2009 GDP $168.8 billion), according to data from the International Monetary Fund. This standing attests to the importance of the Alabama economy in a global context as well as to the dominance of the United States on the world economic scene. The state's GDP fell an estimated 2.1 percent during 2009, about the same as the nation as a whole, but a larger drop than the world average of -0.8 percent.

Nation is slipping in global competitiveness

The United States stands in fourth place on the 2010 Global Competitiveness Index issued by the World Economic Forum (WEF). Switzerland ranks as the world's most competitive nation, a position it took over from the United States in 2009. Sweden is second and Singapore third on the 2010 index. Among large, developing economies, China leads at 27th. Chile is the highest ranked Latin American country at 30. Competitiveness, defined as "the set of institutions, policies and factors that determine the level of productivity of a country," is analyzed in terms of 12 pillars that comprise basic requirements, efficiency enhancers, and innovation and sophistication factors.

U.S. Global Competitive Index 2010 Rankings

GCI total (out of 139 countries)	4
Institutions	40
Infrastructure	15
Macroeconomic environment	87
Health and primary education	42
Higher education and training	9
Goods market efficiency	26
Labor market efficiency	4
Financial market development	31
Technological readiness	17
Market size	1
Business sophistication	8
Innovation	1

Innovation and market size are the U.S.'s strong points, earning first place among the 139 world nations ranked on competitiveness. Labor market efficiency and business sophistication are also in the top 10. Perception of the U.S. macroeconomic environment was the sharpest negative, with government debt and the overall economic outlook contributing to a ranking of 87th on that measure. Business owners surveyed for the index cited access to financing, inefficient government bureaucracy, and tax rates and regulations as the biggest negatives for business.

Innovation key to economic strength

Global economic success is closely tied to a culture of innovation, fueled by research and development spending and drawing on strong collaboration between academia and business. Quality math and science education, beginning in K-12, is essential to developing the workforce to pursue these efforts. The WEF ranks the United States just 48th on the quality of its math and science education. 2009 stimulus funding has helped implement education measures put forth in the America COMPETES Act of 2007. But we remain challenged to increase the percentage of adults with college degrees, and, in particular, with college degrees in natural sciences and engineering. Community colleges can also be key players in linking education offerings with business needs through targeted technical training.

Trade important driver of world economy

Total world trade expanded fourfold between 1990 and 2008. Over the same period, trade between

developing countries grew more than 10 times, with the result that 37 percent of global trade is now among these nations—a marked changed from their previous dependence on developed nations as trade partners. While the 33 countries in the Organisation for Economic Co-operation and Development (OECD) comprise the most affluent group, there are now 65 nations in the converging group that is catching up in terms of economic well-being, with GDP growth per capita more than double that of the OECD group. The number of poor and struggling countries has been about halved since 2000. These changes present challenges for countries like the United States to compete with lower price products and wages on the basis of innovation, education, flexibility, and cooperation; at the same time they offer opportunities to serve an emerging middle class.

U.S. exports recovering after recession

The nation's exports fell 14.6 percent to $1.571 trillion in 2009 as the global recession dampened world trade. Imports dropped a larger 23.3 percent, however, to $1.946 trillion, cutting the U.S. trade deficit from about $699 billion in 2008 to around $375 billion for 2009. Both have been rebounding in 2010; $1.352 billion in total exports for the first nine months of the year is 17.5 percent above the same period in 2009. Imports rose 21.9 percent, however, and the trade deficit for the first three quarters of 2010 increased 40 percent compared to the same period a year ago.

While the United States imports more goods than it exports, we historically have a positive trade balance with respect to services. Services exports of $407.6 billion through September amounted to 30.1 percent of the nation's exports, with an excess of exports over imports of $112.9 billion for the period. The largest category of services exports is other private services (46.5 percent), including financial, professional, and business services. Other major categories include travel and royalties and license fees.

Increasing exports a national priority

President Obama set an ambitious goal in 2010 of doubling U.S. exports over the next five years in order to provide quality growth and jobs here at home. Competing globally through exporting encourages companies to become more efficient and/or more innovative, increasing productivity and wages to the extent that workers in firms that export earn over 15 percent more than similar workers at firms that do not export. It also allows for more specialized product lines, due to the larger scale of available markets. Exports supported about 10.3 million U.S. jobs and almost 13 percent of GDP in 2008. The National Export Initiative, launched in March 2010 and aimed particularly at small and mid-sized firms, seeks to help businesses have the resources they need to compete internationally, with fewer trade barriers and more help in trade promotion.

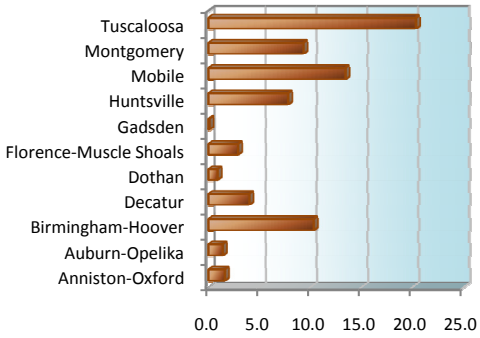
95%

of world customers live outside U.S.

U.S. metros produce most exports

Metropolitan areas produced 84 percent of the goods and services exported in 2008, according to a recent study by the Brookings Institute. In fact, the 100 largest U.S. metros, home to 65 percent of the population, produced around 64 percent of all exports, including 62 percent of manufactured products and 75 percent of services sent abroad. The study's detailed analysis includes Birmingham-Hoover, Alabama's only metro in the top 100 in terms of population. Birmingham-Hoover fell into the middle 20 metros in export strength, with 2008 exports totaling $4.29 billion and the largest export industry being primary metals.

Metro Area Share of Alabama Goods Exports, 2008
(percent)



Note: Tuscaloosa export share is for first half of 2009.

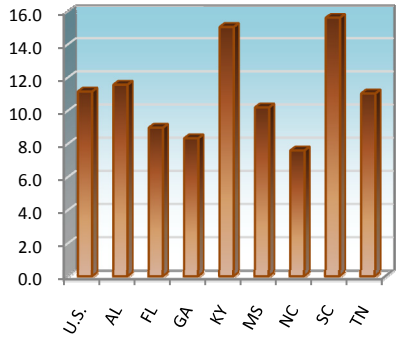
For large and small metros alike, a successful strategy for economic development and job growth should include encouraging export growth. While governments can improve the export environment through trade and currency policies, each metro area can work on building its export strengths and on promoting and moving its products and services into the international marketplace. Census Bureau

data show that all 11 Alabama metros exported in 2008, with the largest shares of the state total accounted for by Tuscaloosa (20.3 percent in 2009), Mobile (13.4 percent), Birmingham-Hoover (10.3 percent), Montgomery (9.3 percent), and Huntsville (7.8 percent).

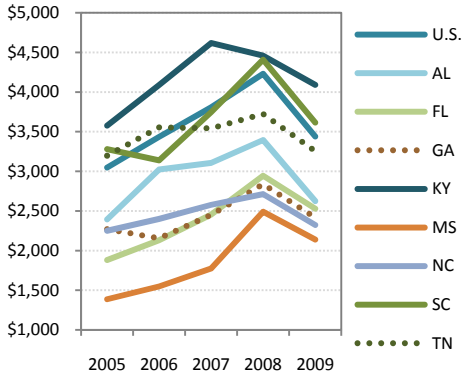
After strong gains, recession hit Alabama exports hard

Buoyed by strong growth in auto manufacturing, Alabama merchandise exports rose 46.0 percent between 2005 and 2008. That was the third highest increase among the southeastern states, behind Florida with a gain of 62.2 percent and Mississippi's 82.1 percent growth. Looking at exports as a percent of GDP, Alabama's 11.6 percent share in 2008 was above the U.S. average of 11.2 percent and ranked 3rd in the Southeast.

Merchandise Exports as Share of GDP
(percent)



Merchandise Exports Per Capita



The 2008 state total of $15.9 billion amounted to $3,395 in exports for every Alabama resident—below the U.S. average of $4,230, but ranking 4th in the Southeast. Over 20 percent of the state's manufacturing employment and 8.4 percent of all private sector employment during 2008 was in export-supported jobs.

However, the state's export dependence on autos and chemicals made it vulnerable in the recession; transportation exports declined 29 percent from 2008 to 2009, while exports of chemicals slid almost 37 percent. Total Alabama exports fell 22.2 percent in 2009, the worst drop in the region and above the U.S. merchandise export decline of 18.1 percent. Exports began to rebound in 2010; $11.2 billion in goods sent abroad for the first nine months of the year was over 90 percent of the 2009 annual total. Shipments of chemicals and minerals and ores were already higher than for all of the previous year. While the United States and the seven other southeastern states saw a negative trade balance, with imports higher than exports during this period, Alabama was about even.

Transportation equipment top state export

Transportation equipment dominates Alabama's exports; shipments totaling $3.67 billion during the first three quarters of 2010 amounted to 32.7 percent of the total. In the Southeast, transportation equipment is also the lead category for Georgia, Kentucky, South Carolina, and Tennessee, but only Kentucky has a heavier dependency at 35.4 percent.

Chemicals were one of the top three export commodities for all eight states in the southeastern region in 2010. But, at 11.6 percent of the total, shipments of minerals and ores (largely coal) comprise a much larger percentage of the total for Alabama than for other states in the region.

Trade in Goods
January-September 2010
(millions of dollars)

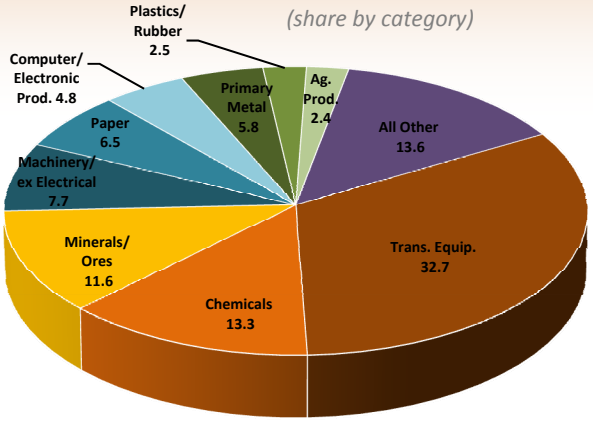
	Exports	Imports
U.S.	930,422	1,406,423
AL	11,204	11,204
FL	40,266	40,969
GA	20,793	43,843
KY	14,226	22,840
MS	5,881	12,111
NC	18,484	31,833
SC	15,003	18,764
TN	19,026	35,370

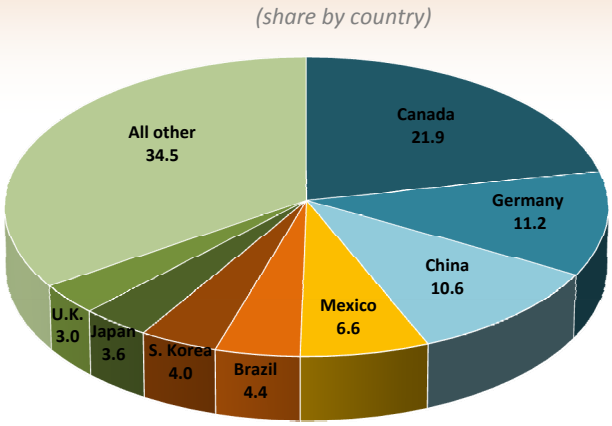
Note: Exports are by state of origin; for non-manufactured goods, this is usually port of export. Imports are by state of destination.

Canada, Germany, China top destinations

Alabama shipped over $11.2 billion in products to 177 countries during the first nine months of 2010. Canada is our largest trade partner, receiving almost 22 percent of the state's merchandise exports. With motor vehicle exports picking up in 2010, Germany regained the spot it had ceded to China in 2009 as the second ranked export destination. Transportation equipment amounted to over 60 percent of our exports to Canada and Germany through September 2010, while minerals and ores accounted for two-thirds of shipments to Brazil. Among our largest trading partners, China received the highest dollar value of agricultural

Alabama Merchandise Exports, January – September 2010





products in 2010 and South Korea the most nonelectrical machinery. Exports to Russia, which are volatile and highly dependent on trade agreements concerning agricultural products, fell sharply from 2009 to 2010.

New generation markets targets for export growth

With GDP in an increasing number of developing nations growing more rapidly than in the OECD countries, global prospects are expanding markedly. A successful strategy for boosting export opportunities should include a focus on these emerging markets; in particular, the large converging economies of China, India, and Brazil. China and Brazil are already among Alabama's top ten export destinations; shipments to these three countries totaled $1.38 billion in 2009, up 67 percent compared to 2005. India and Russia were targeted with Alabama trade missions during 2010, while a visit from a Chinese trade delegation late in 2010 resulted in an agreement to explore business opportunities of mutual benefit. In addition, the state held a series of seminars on Doing Business in Brazil in 2010.

Services important export sector

Although most trade data at the state level reports imports and exports of goods only, services are an important part of the trade equation and a potential source of export growth. A study for the Coalition of Service Industries identified $4.1 billion in Alabama services exports in 2005. This was on par with South Carolina and above Kentucky and Mississippi. The state exports business, professional, and technical services; financial services; and royalties or license fees. Services export also count income from foreign tourism and from foreign students studying at our colleges and universities.

Alabama initiatives boost exports

The Export Alabama Alliance (EAA) networks state and local trade agencies under the umbrella of the Alabama Development Office in a public-private partnership to provide the state's businesses with the assistance needed to successfully export the goods and services they produce. Functions of the Alliance include education, active development of export markets, research, and assistance with financing and trade regulations. EAA estimates that every $1 billion in exports generates about 15,000 Alabama jobs. This work is paying off—during the first five years of the Export Alabama Initiative, launched in 2004, the state's exports grew 76 percent. Today more than 2,800 Alabama companies export; most are small and midsize firms. Exports support more than 230,000 Alabama workers, with the demands of global competition boosting productivity and innovation in the state.

Infrastructure development is helping grow the state's global presence. According to the U.S. Army Corps of Engineers, in 2008 the Port of Mobile became the 9th largest U.S. seaport in terms of cargo volume. Recent investment by the Alabama State Port Authority, including the $300 million Mobile Container Terminal, $100 million Pinto Island Terminal, an $85 million expansion of the McDuffie coal terminal, and a $27 million rail ferry terminal provide the facilities needed for continued cargo growth. The Port is positioned to take advantage of growing markets in Central and South America

Top Alabama Exports to Major Trading Partners
January-September 2010

Total Exports ($11,204 mil)
Transportation equipment ($3,666 mil)
Chemicals ($1,492 mil)
Minerals & ores ($1,080 mil)
Machinery, except electrical ($748 mil)
Paper ($639 mil)

Canada ($2,453 mil)
Transportation equipment ($1,501 mil)
Primary metal manufactures ($131 mil)
Computer & electronic prod. ($128 mil)
Plastics & rubber products ($121 mil)
Chemicals ($118 mil)

Germany ($1,257 mil)
Transportation equipment ($865 mil)
Minerals & ores ($174 mil)
Computer & electronic products ($52 mil)
Chemicals ($42 mil)
Paper ($21 mil)

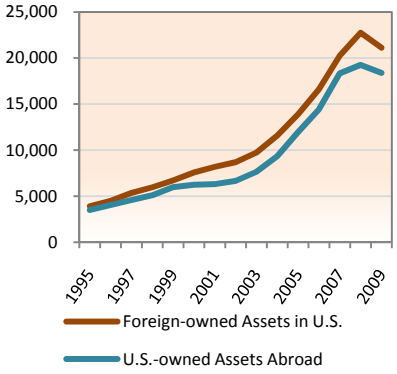
China ($1,182 mil)
Chemicals ($414 mil)
Transportation equipment ($278 mil)
Agricultural products ($194 mil)
Machinery, except electrical ($103 mil)
Paper ($54 mil)

Mexico ($743 mil)
Transportation equipment ($215 mil)
Paper ($111 mil)
Primary metal manufactures ($94 mil)
Machinery, except electrical ($82 mil)
Chemicals ($67 mil)

Brazil ($489 mil)
Minerals & ores ($325 mil)
Chemicals ($89 mil)
Transportation equipment ($24 mil)
Machinery, except electrical ($16 mil)
Primary metal manufactures ($10 mil)

South Korea ($451 mil)
Machinery, except electrical ($150 mil)
Chemicals ($131 mil)
Minerals & ores ($40 mil)
Waste & scrap ($34 mil)
Paper ($30 mil)

U.S. International Investment Position
(billions of dollars)

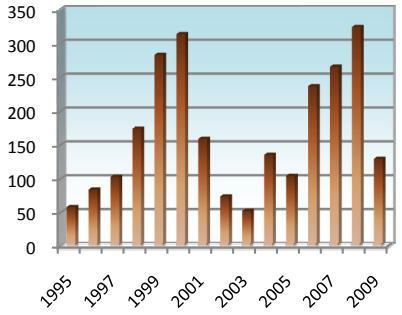


and the widening of the Panama Canal, slated for completion in 2014. Highway, waterway, and rail networks allow convenient multimodal access to the Port of Mobile from most areas of the state. International cargo services at the Huntsville International Airport, part of the inland Port of Huntsville, continue to expand.

Foreign direct investment key segment of economy

Outlays by foreign direct investors to acquire or establish U.S. businesses make a significant contribution to the U.S. economy. These investments are a positive in terms of job creation and export generation, in particular. The *Invest in America* initiative, launched in 2007, marked an increased emphasis and dedication of resources to recruiting international investment. After peaking in 2000, new foreign direct investment (FDI) plummeted following the recession of 2001. A strong recovery brought new FDI outlays to $324.6 billion in 2008, up 22 percent from 2007. In contrast, new investment abroad by U.S. parent firms declined 16 percent to $330.5 billion from 2007 to 2008. New FDI fell sharply in the throes of the global recession during 2009, with inflows down 60 percent and outflows of investment from the U.S. to other nations off 25 percent.

Outlays for New Investment in the U.S. by Foreign Direct Investors, 1995-2009
(billions of dollars)



In terms of cumulative foreign direct investment, the total stock of FDI in the United States in 2008 amounted to around $22.7 trillion, equal to about 16 percent of U.S. GDP. The United Kingdom held the largest share of U.S. assets, followed by Japan, the Netherlands, Canada, Germany, Switzerland, and France. U.S.-owned assets abroad totaled $19.2 trillion in the same year. The value of foreign-owned assets in the United States fell 7.1 percent in 2009, while U.S. assets abroad declined by 4.5 percent.

Alabama's economy growing from foreign investment

Since 1993 when Mercedes-Benz U.S. International laid down roots in Alabama, foreign direct investment has played a major role in economic growth and job creation. Mercedes launched M-Class production in 1997 and has now invested more than $1 billion in plants and equipment, with employment of around 3,000. The addition of North American C-Class production in 2014 will boost employment back to about 4,000 and bring in additional supplier firms. Growth of the state's automotive sector has been primarily driven by foreign investment. Honda Manufacturing of Alabama started up production at its Lincoln plant late in 2001; capital investment now totals $1.27 billion and employment around 4,500. Hyundai Motor Manufacturing followed in 2005 with capital spending of $1.4 billion creating about 3,000 jobs. Toyota Motor Manufacturing Alabama launched its Huntsville dedicated engine plant in 2003 and, after expansion, has invested $490 million and created almost 1,000 jobs. A significant percentage of the many auto suppliers that have located in the state have parents abroad.

Auto manufacturing is not the only Alabama industry that has benefitted from FDI. Primary metal manufacturing attracted the largest investment in the state this past decade, with ThyssenKrupp Steel and Stainless USA spending $4.65 billion on plants near Mobile that began operation in 2010 and will hire around 2,700. Other steel industry developments include investment by Swedish subsidiary SSAB in Mobile, an upcoming Canadian pipe plant in Clarke County, and Korean steelmaker Posco's new steel cutting facility in Bessemer. The state's chemicals industry, its second largest export sector, depends heavily on foreign investment and has seen a number of expansions and upgrades in recent years.

Alabama's paper industry grew with the opening of Swedish subsidiary SCA Tissue North America in the Shoals area in 2004; investment has surpassed $385 million and employment stands at around 500. However, rail car producer National Alabama, originally an offshoot of Canada's National Industries, is now owned by the Retirement System of Alabama (RSA), with the economic downturn delaying production at the facility that was completed in 2008. And some foreign operations, including Dothan's Sony Electronics media plant, have fallen victim to changing markets.

Positive experiences of foreign investors breed more success

As international investment has grown, communities have developed programs targeted at the cultural needs of employees of these companies and their families. Examples include Tuscaloosa's German Supplementary School and the Montgomery Chamber of Commerce's Korean Saturday School and full-time Korean relocation coordinator. The positive experiences of existing firms, both in terms of workforce quality and training and quality of life have led to expansions and new business attraction. The decision by Hyundai Heavy Industries to locate its first U.S. facility in the Montgomery area was helped by the existing Korean business presence; the $90 million plant will employ around 500 and begin production of large power transformers in 2012. Alabama should continue this successful business model of building on regional assets for FDI and assist all areas of the state in its implementation.

International investors diverse, growing

While 2009 was a poor year for foreign direct investment nationally and globally, Alabama did well, attracting $1.5 billion in new investment that will create about 4,700 jobs. Countries investing new money in the state included Canada, the United Kingdom, China, South Korea, Japan, France, and Israel.

Alabama was home to more than 360 foreign-based businesses from over 30 nations in 2010. Gross book value of FDI in property, plants, and equipment exceeds $22 billion. More than 70 percent of this investment is in the state's manufacturing industry and over 19 percent is in wholesale trade. Countries with the largest number of plants or operations in the state include Japan (62), Germany (58), Canada and South Korea (52 each), the United Kingdom (30), and France (22). That number is growing as the economy, and the auto industry in particular, continues to rebound from the recession. Looking at corporate facility projects during the year ending in July 2010, *Site Selection* found 10 of Alabama's top 16 in terms of investment were from affiliates of companies domiciled abroad.

In 2007, the latest year for which data were available, majority-owned U.S. affiliates of foreign companies employed 80,500 Alabamians, amounting to 5.1 percent of private sector workers and higher than the national average of 4.8 percent. Of this total, 43,000 worked in manufacturing, 9,100 in wholesale trade, and 3,200 in professional, scientific, and technical services. Japanese firms held the largest employment share at 17.6 percent, followed by Germany (13.5 percent), and the United Kingdom (12.9 percent). Both the German and Japanese presences are more concentrated in the Southeast than in the United States as a whole, with the automotive industry playing a major role in this emphasis.

Competition for foreign investment and exports will intensify

Intense competition for foreign direct investment will necessitate continuing efforts to raise the state's international profile through offices abroad, trade missions, and other promotional efforts. Nurturing existing clusters will be a significant part of this emphasis. Facilitating exports through enhanced infrastructure and assistance to businesses of all sizes is another. Foreign direct investment and exports are closely linked; our largest manufacturing industries in terms of FDI are also our largest exporters of goods.

Countries with the largest number of plants or operations in Alabama

Japan – 62

Germany – 58

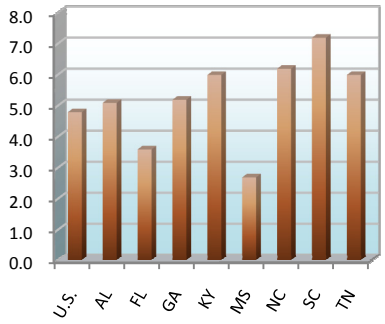
Canada – 52

South Korea – 52

United Kingdom – 30

France – 22

Employment in Foreign-Owned Firms, 2007
(percent of private employment)



Transportation

Interstate highways
903
miles

3,935
lane miles

Railroads
3,759
miles

Class I railroads
2,684
miles

Navigable Waterways
1,300
miles

Road travel and commuting

Alabama has a total of 199,093 lane-miles of roadway throughout the state. Interstate highways account for 3,935 of these lane-miles. All of the state's metro areas, except for Dothan and Florence-Muscle Shoals, have direct access to interstate highways.

The state is about average among southeastern states in commute times for its workers, as indicated by percent of workers commuting more than 20 minutes and more than 40 minutes to work. However, vehicle miles traveled (VMT) per capita in Alabama is among the highest in the Southeast and in the nation. Both of these factors affect quality of life, as commute times are a direct indicator of time spent driving instead of on other activities, and vehicle miles traveled is an indicator of distance from routine activities and feasibility of other modes of transportation, such as walking and bicycling.

Vehicle miles traveled in particular is heavily influenced by land use patterns, which can only change significantly over long periods of time. However, VMT per capita for the state increased 3.1 percent between 2000 and 2005. This may indicate that current development patterns and regulations need significant changes to reduce sprawl and create better accessibility to jobs and activities. This would likely improve air quality and possibly reduce congestion.

Rails and ports

Alabama is served by 3,759 miles of railroad, 2,684 of which are Class I railroads. Class I railroads are operated by the nation's largest rail lines and provide better connectivity to other markets since these companies' lines generally extend further. This network of rails provides good access for businesses throughout the state to national and global markets.

The Port of Mobile, operated by the Alabama State Port Authority, also provides good access for the state's businesses to national and global markets. The port handled 22.4 million tons of shipments in 2009, and has 4 million square feet of warehouse and open yard at its facility. It was ranked 25th among U.S. ports in container traffic in 2009, and 62nd among all U.S. ports in overall value for international shipments. However, it is dwarfed by larger ports on the East and West Coast, and is smaller than such nearby ports as New Orleans. The port is served by five railroads and 75 trucking companies. There are also 11 inland dock sites throughout the state along the Tennessee River, the Tennessee-Tombigbee Waterway, the Alabama River, and the Chattahoochee River.

Norfolk Southern is planning to construct a $112 million intermodal rail hub in McCalla, located in Jefferson County. This hub is scheduled to open in 2012, and recently received a $200 million federal grant, which it will share with another facility in Memphis, Tennessee, to help fund construction. The Birmingham-Jefferson County area has existing rail and road linkages to the port at Mobile and to large air cargo hubs in Memphis and Atlanta. Its proximity to these areas and relative lack of congestion make

State Vehicle Miles Traveled and Commuting Data

	Total VMT (in millions)	VMT per capita	U.S. rank (per capita VMT)	Percent commuting more than 20 min	Percent commuting more than 40 min
AL	59,661	13,090	47	53.9	15.7
FL	201,531	11,328	34	60.8	19.4
GA	113,509	12,511	46	59.7	22.4
KY	47,466	11,373	35	50.1	13.6
MS	42,186	14,442	49	51.2	15.3
NC	101,268	11,662	39	53.2	14.8
SC	49,434	11,618	38	53.3	14.7
TN	70,814	11,876	41	55.3	15.6

State Travel Characteristics (millions of VMT)

	Rural		Urban		Lane-Miles	
	Annual VMT	Percent Trucks	Annual VMT	Percent Trucks	Rural	Urban
AL	29,409	12.1%	30,252	6.6%	151,993	47,100
FL	36,887	14.4%	164,644	7.9%	83,353	180,734
GA	41,682	14.7%	71,827	7.9%	166,046	82,091
KY	27,321	16.5%	20,145	9.9%	135,023	27,033
MS	24,594	14.5%	17,592	9.9%	130,578	23,310
NC	38,319	11.4%	62,949	8.4%	146,306	70,631
SC	24,471	11.9%	24,963	7.3%	102,511	36,818
TN	29,220	15.6%	41,594	7.5%	141,812	48,946

the Birmingham area an ideal location for these types of transportation and logistics functions.

The largest freight airport (in terms of export/import shipment value and overall landed weight) in the state is Huntsville International. The other major cargo airports in the state are Birmingham-Shuttlesworth and Mobile Downtown, which in 2008 had about 49 and 54 percent of Huntsville's total landed weight, respectively. Air freight service at Huntsville is utilized heavily by the large number of specialized and light manufacturers, such as computer and electronics manufacturers, in the Huntsville-Decatur area and nearby counties. Many of these companies likely have a higher export orientation than most companies throughout the state. Notably, Huntsville International Airport does not have direct rail access to Birmingham or the Port of Mobile. Particularly in light of the new intermodal rail hub planned for Birmingham, connections to these shipping centers may help already-thriving manufacturing and cargo operations in north Alabama continue to grow.

Future transportation investments

The state's abundance of raw materials makes facilities and infrastructure for air, rail, and water transportation crucial. They are necessary to get finished goods that are processed in Alabama to outside markets and other materials to outside production or processing sites. Alabama has a relatively low reliance on truck traffic compared to other Southeastern states, and these non-roadway facilities will need to continue to grow to ensure they remain a viable option for moving bulky materials and to help prevent congestion, which would limit the state's competitiveness. The 2010 ALDOT freight study has modeled predicted commodity flows on major roadways through 2035. This can provide insight into where and in which transportation modes to target investment (e.g. ones that will provide alternatives for certain commodities that may account for a high percentage of congestion on certain roads) to efficiently prevent and reduce congestion throughout the state. Reducing congestion will also improve air quality, preserving the natural environment and providing health benefits for residents, particularly in urban areas.

The state should continue to build on its already extensive rail network, given the rail industry's increasing focus on moving consumer goods, especially through intermodal hubs. This will make consumer goods easier to ship to and from Alabama, in turn opening up new markets and new opportunities for businesses. It should also seek to directly increase access to export markets for each of the state's metros through specifically targeted investments in certain transportation modes. These will depend on each metro's industry strengths and its proximity to the Port of Mobile or to air freight operations at Huntsville, Memphis, or Atlanta.

Cargo Airports in Alabama and the Southeast

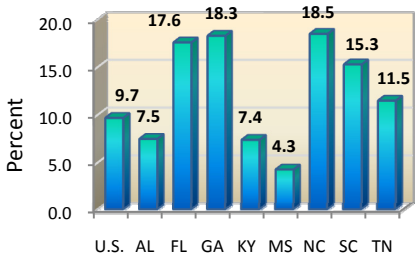
Airport Name	2009 Landed Weight (lbs.)	2008 Landed Weight (lbs.)	U.S. Rank
Memphis International	18,928,729,202	19,500,093,674	1
Hartsfield - Jackson Atlanta International	2,555,242,350	2,334,922,810	12
Huntsville International-Carl T Jones Field	305,771,057	380,384,289	71
Mobile Downtown	202,088,280	207,397,440	88
Birmingham-Shuttlesworth International	133,824,660	186,962,977	103

Population

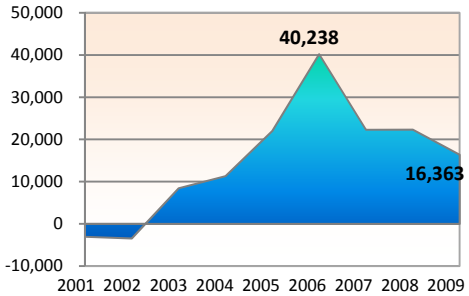
Alabama's population is growing moderately

The 2010 Census shows that Alabama was home to 4,779,736 people on April 1, for 332,636 new residents since 2000. The state's 7.5 percent population increase since 2000 was moderate compared to a U.S. gain of 9.7 percent and the southeastern states average of 14.7 percent. North Carolina led with an 18.5 percent increase during the decade, while Mississippi's population grew just 4.3 percent. Through 2009, Alabama saw population gains of around 138,500 from natural increase (births minus deaths) and an estimated 136,450 due to net migration.

Population Growth, 2000-2010



Alabama Population Change from Net Migration



More people are moving in than out

Migration gradually increased during the decade as the state's economy recovered from the 2001 recession. Movement of people into Alabama, both from other states and abroad, peaked from 2005 to 2006; net migration of 40,238 resulted in a population increase of 1.3 percent that bettered the U.S. gain of 1.2 percent for the year. Hurricane Katrina contributed to Alabama's population growth in 2005, with net influxes of at least 5,750 Louisiana and 3,775 Mississippi residents during the year. While net migration slowed to about 22,300 in 2007 and 2008 and to around 16,400 as the recession sharply cut into employment in 2009, annual population growth was still much stronger than in the pre-2005 years.

There is considerable exchange of residents between Alabama and the seven other states in the southeastern region. IRS migration data from tax return address changes between 2007 and 2008 shows that the largest movements both into and out of Alabama were with our neighbors—Florida, Georgia, Tennessee, and Mississippi—and with Texas. In that one year, we saw a net migration gain of almost 4,700 new residents from Florida, 2,060 from Georgia, 800 Mississippians, and 330 former Tennessee dwellers. The relative strength of Alabama's auto industry was likely a factor in the net gain of 1,420 residents moving in from Michigan and 570 from Ohio in 2007 to 2008 alone. Migration trends for the two years following Katrina suggest that many who relocated to Alabama stayed here or at least did not return to their former Louisiana or Mississippi homes.

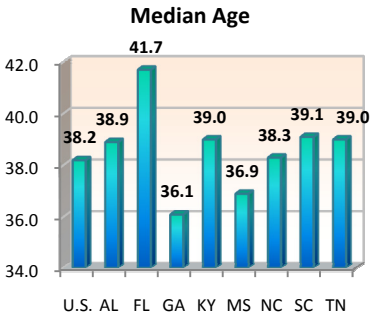
Since 2006, people moving in have had a positive impact on income in the state—the difference in IRS-recorded average adjusted gross income for in- minus out-movers was $1,063 in 2006-2007 and $713 for 2007-2008. BRAC moves to Huntsville's Redstone Arsenal are a positive influence as they bring in high-salary jobs from Maryland and Virginia—both states saw net migration to Alabama over the last several years, with income differentials upwards of $9,000.

We import college students, but gain only a small number of college-educated

Data from the National Center for Education Statistics show that Alabama had 30,616 freshmen enrolled in degree granting institutions in 2008, including 2,884 going out-of-state. But the state's colleges and universities enrolled 9,056 freshmen from outside Alabama, for a net inmigration of 6,172 students. Alabama ranked sixth among the 50 states on this number, behind only North Carolina in the Southeast, as well as Pennsylvania, Indiana, Massachusetts, and Arizona.

However, American Community Survey data for 2005 through 2007 show net migration into the state of just an estimated 1,109 people aged 22 to 39 with a Bachelor's degree or higher and an additional 1,164 with an Associate's degree. For the eight southeastern states, only Mississippi saw net outmigration in these two categories over the three years. Among states of similar size, Alabama lagged Kentucky by about 900 in the Bachelor's or higher category, and was well below South Carolina's net gain of over 7,260.

Our population is a little older



At 38.9 years, Alabama's 2009 median age is slightly above the southeastern median of 38.6 and the nation's 38.2 years. In the Southeast though, the state ranks fourth—Florida has the oldest population with a median age of 41.7, while Georgia is the youngest at 36.1 years. Compared to both the nation and the southeast, Alabama's 2009 population estimates showed a slightly lower percentage of residents aged 25 to 44 and a larger share in the 45 to 64 age range—a difference that has future implications for the state's workforce as retirements loom.

The state is not uniformly old—university centers, most counties with populations of 75,000 or more, and almost all majority black counties had 2009 median ages younger than the state's 38.9 years. Most of the 33 of Alabama's 67 counties with older median ages were predominately white and often relatively small, reflecting an older age distribution and aging in place of the state's white population and, in some instances, an influx of retirees.

Diversity is increasing slightly

In 2009 Alabama had an estimated 3,340,085 white residents (70.9 percent of the total) and 1,240,739 black or African American citizens (26.3 percent); this compares to shares of 71.1 and 26.0 percent in 2000, respectively. In the Southeast, Mississippi, Georgia, and South Carolina all had higher black population percentages. The state's Asian population saw the largest percentage increase over the nine years, but still totaled just 49,031. Estimates have residents of Hispanic origin (who can be of any race) doubling to around 152,500 in 2009 and amounting to 3.2 percent of Alabama's population.

Urban centers expand, while many smaller rural counties dwindle

The 28 counties in the state's 11 metropolitan areas were home to an estimated 3,369,132 residents in 2009, 71.6 percent of the total population. Another 18.3 percent resided in 15 counties that comprise 13 micropolitan areas, with just over 10 percent of the population living in the remaining 24 counties. While both metro and micro areas have seen moderate growth since 2000, most of these small, rural counties are shrinking—only four posted even modest population gains this decade and overall population declined 4.8 percent.

Population by Race and Hispanic Origin, 2009
(percent of total)

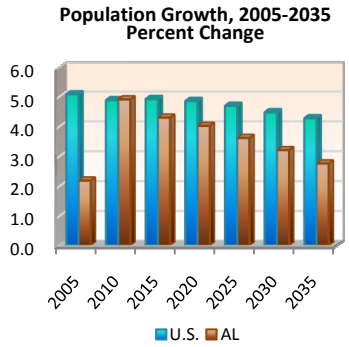
	White	Black	Hispanic Origin
U.S.	79.6	12.9	15.8
AL	70.9	26.3	3.2
FL	79.4	16.1	21.5
GA	65.0	30.2	8.3
KY	89.6	7.9	2.7
MS	60.5	37.2	2.5
NC	73.7	21.6	7.7
SC	68.9	28.2	4.5
TN	80.2	16.8	4.2
SE	73.5	23.0	6.8

Alabama Estimated Population Change by Area

	2009 Population	Change, 2000-2009 Number	Change, 2000-2009 Percent
Alabama	4,708,708	261,326	5.9
Metro areas	3,369,132	235,497	7.5
Micro areas	861,093	50,003	6.2
Other	478,483	-24,174	-4.8

Growth slowing with an aging population

Estimates indicate that Alabama's population growth was much stronger between 2005 and 2010 than in the first half of the decade. The rate of population growth will naturally slow after 2010 due to aging; the first of the baby boom generation turned 65 at the start of 2011. While 13.8 percent of the state's population was aged 65 and over in 2009, that percentage will rise to a projected 17.2 percent in 2020 and to 21.0 percent in 2030.



Population gains are expected to be lower for the state than the nation through 2035, according to projections by the Center for Business and Economic Research. To bolster population growth, the state will need to create attractive job opportunities that will encourage retention and inmigration of young, working age adults. This will also be important to fill jobs vacated as the state's older workers retire.

Education

In the wake of the world's recent economic recession, the educational capacity of the United States continues to decline. The 2010-2011 *Global Competitiveness Index* of the World Economic Forum Report shows that the United States dropped to the number four ranking since the 2008-2009 report. Switzerland, Sweden, and Singapore are the top three leading countries. The nation is also ranked 25th of 30 industrialized nations in mathematics literacy, and 35th in postsecondary degrees at the typical age of graduation, according to an international student assessment, and the Organisation for Economic Co-operation and Development.

Alabama Educational Attainment, 2009

	Percent of Population 25+	Rank in U.S.
Total Population 25 and Older		
Less than 9th Grade	6.0%	16
9th to 12th grade, no diploma	11.9%	2
High School Graduate (incl. equiv.)	31.0%	19
Some College, No Degree	22.0%	26
Associate Degree	7.0%	38
Bachelor's Degree	14.4%	46
Graduate or Professional Degree	7.7%	41
Total Receiving a High School Diploma or More	82.1%	47
Total Completing a Bachelor's or More	22.0%	45

The state's level of educational attainment is about the same as it was in 2000

As of the 2009 American Community Survey, Alabama ranked 16th among the states for the population 25 and older with less than a 9th grade education (6.0 percent), and was second on residents with only some 9th to 12th grade without receiving a diploma (11.9 percent). As their terminal level of education, 31 percent of the state's residents were high school graduates, and 22 percent had some college with no degree, which are both similar to the national averages of 29.5 percent and 22.0 percent, respectively. Only 7.0 percent of state's 25 year old and older population had earned an associate's degree, ranking Alabama 38th in the country. Another area in need of improvement is the 14.4 percent who have earned bachelor's degrees, which is well below than the nation's 17.4 percent and ranks Alabama 46th among the states. The share of population 25 and older that has earned a high school degree or more totaled 82.1 percent in 2009, compared to the national average of 86.9 percent, ranking Alabama 47th. The 22.0 percent of the state's population 25 and older with a bachelor's degree or higher was less than the national average of 27.9 percent, ranking Alabama 46th.

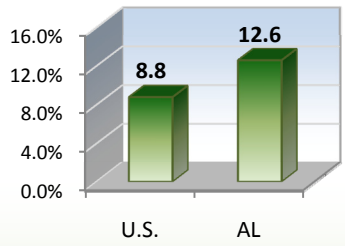
We need to start the preparations for higher education earlier

For the United States to regain and maintain its status as the leader in the global economy, an educational system focused on producing a targeted and prepared workforce is vital. The National Conference of State Legislators has defined a policy guide that gives ten recommendations by which to measure the efforts and challenges for each state. "American education is the nation's greatest strength and most powerful force for advancing the common good. To return America to its place as the leader of the global economy through educational attainment, the commission has put forth a 10-part recommendation aimed at strengthening the educational pipeline throughout a student's trajectory from preschool to college completion."

Alabama's First Class pre-K program has been rated one of the best in the country over the past four years; federal programs are available statewide

These programs are important for the state because they focus on readying children for academic success, which positions them for college readiness. Compared to the United States' 3.6 percent of 3 year-olds and 24 percent of 4 year-olds enrolled in state-funded pre-K programs in 2009, most of the southeastern region has a lesser percentage. Alabama had one of the lowest percentages in the region, with no 3 year-olds, and only 4.0 percent of 4 year-olds receiving state-funded early education. Compared to the U.S.'s 8.8 percent of 3 and 4 year-olds in Head Start Programs, most of the Southeast has greater percentages than the national average, including Alabama's 12.6 percent.

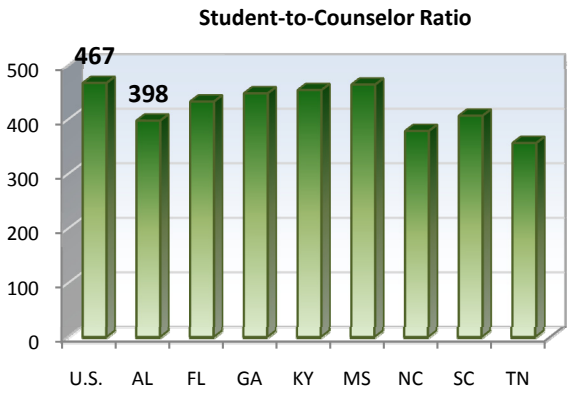
3- and 4-Year-Olds Enrolled in Head Start Programs



Though enrollment is still low, Alabama pre-K programs are growing, and for good reason. In 2010, along with the previous 3 years, the

national Institute for Early Education Research rated Alabama and North Carolina as the leaders in pre-K quality standards, meeting all 10 benchmarks. First Class is the acclaimed program run through Alabama's Department of Children's Affairs and is offered across 65 counties for free or at a low cost. While national reports show the average amount of funding declining throughout the country from $4,790 to $4,134 per child in the 2008-2009 fiscal year, Alabama's spending increased by over $500 per child to $5,134 in 2009. Since 2005, the program has seen a $15 million increase, while expanding enrollment from under 1,000 to 3,870 students in 2010.

Compared to the U.S. average of 467, the entire southeast region has a lower, better average student-to-counselor ratio. Alabama has one of the lowest ratios with 398 students per counselor.



Graduation rates need improvement

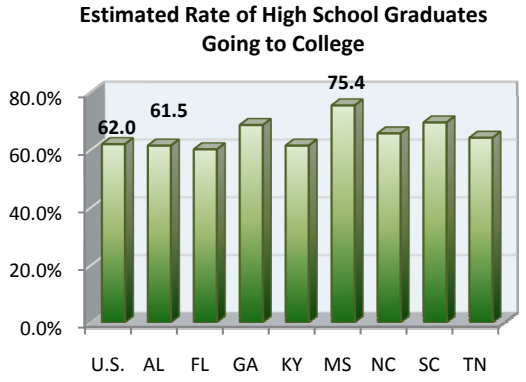
The average graduation rate for public high school students in the U.S. is 73.4 percent, which is approximately 6 percent greater than the southeast region's average of 67.0 percent. In 2009 Alabama had an even lower graduation rate than the region at 66.2 percent. Dropout rates for public school students in grades 9-12 are also a way of assessing a state's educational capacity. Almost four percent of the nation's students drop out of public secondary schools. The southeast region's average is only slightly less at 3.5 percent, while Alabama's is far less at 2.5 percent.

The K-12 education system should align with international standards and college admission expectations

Almost 35 percent of public high schools in the U.S. offer Advanced Placement (AP) or International Baccalaureate (IB) courses in the four core subject areas. The southeast region's average is even higher than the U.S. average with 42.2 percent of schools offering these options. Of the southeastern states, Alabama has the lowest involvement with 20.1 percent of schools participating. However, Alabama has shown major improvement in the total number of students taking AP tests, minority participation, and overall performance on AP exams. From 2006 to 2010 the number of students that took the AP exam increased 125.3 percent, and 79.2 percent of those tested earned passing grades. Just in the last year the number of students taking AP exams has increased 18.1 percent, almost double the nationwide 9.5 percent increase. Alabama was one of six states that received funding through the national Governors Association to offer AP courses to minority and low-income students.

The number of students taking AP exams increased 18.1 percent in 2009, almost double the nationwide 9.5 percent.

The number of IB diplomas awarded in Alabama has also been climbing since the program was authorized in 1991, but in the last 5 years the number of IB exams taken has more than doubled. In 2010, 17 IB world schools were being operated within the state's public school system. Forty percent of these schools are in Decatur with the remaining spread across the state in Auburn, Birmingham, Daphne, Fairhope, Hoover, Huntsville, Mobile, and Tuscaloosa.



Good teachers who can work in their field should be cultivated

This is further qualified by defining the states which have Professional Development Standards; the U.S. average is 80.4 percent, with the entire southeast region included. Another facet of cultivating good teachers is whether states finance professional development and require districts and/or schools to set aside time for professional development. The U.S. averages are 47.0 percent and 31.3, respectively, and most of the Southeast employs these practices, including Alabama. Alabama does not utilize a requirement for districts to align professional development with local priorities, though most of the region and 58 percent of the nation does. Alabama is aligned with the majority of the country and region in not requiring parental notification of out-of-field teachers, or capping the number of out-of-field teachers.

Alabama is attracting out-of-state students and retaining over half of college grads

Alabama hovers just below the national averages when examining the four-year colleges with applications online (U.S.–80.9 percent, AL–78.8 percent) and that accept applications online (U.S.–73.4 percent, AL–72.7 percent). This is also very similar to the region's averages. The whole region has numbers close to the national average when taking into account the estimated rate of high school graduates going to college, which is 62.0 percent for the nation, and 61.5 percent for Alabama. The average estimated rate of high school graduates staying in their home state to go to college across the region (58.2 percent) is noticeably higher than the national 50.1 percent. Alabama retains 55.4 percent of those graduating high school and going to college. The state with the highest numbers in the country for these last two measures is Mississippi, with 75.4 percent of those graduating from high school attending college, and 69.3 percent staying in the state to pursue a degree.

Alabama is working toward keeping college affordable by reigning in cost increases using available aid and resources and maintaining state government funding for higher education

An integral part of building an educated workforce is providing more need-based grant aid while simplifying and making the financial aid process more transparent, even for those families with children still in middle school.

Across the country from 2008 to 2009, the average fiscal support for higher education and per capita state fiscal support for higher education decreased over two percent. The southeast region averaged increases of 2.6 percent and 1.5 percent, respectively, but there are states with notable increases (NC 18.5 percent; TN 12.5 percent). Alabama remains close to the national average with overall support decreasing 0.9 percent and per capita funding down 1.5 percent.

We need more students to complete their post-secondary degrees

When all student demographics are taken into consideration (full-time status, Associate Degree-seeking, Bachelor's Degree-seeking, race, and ethnicity), the southeast region consistently falls short in reaching even the U.S. average. The three-year graduation rate of associate degree seeking students across the nation is 27.8 percent, while Alabama's rate is 19.8 percent. The six-year graduation rate for bachelor's degree-seeking students in the nation is 56.1 percent, while Alabama can claim only 46.6 percent.

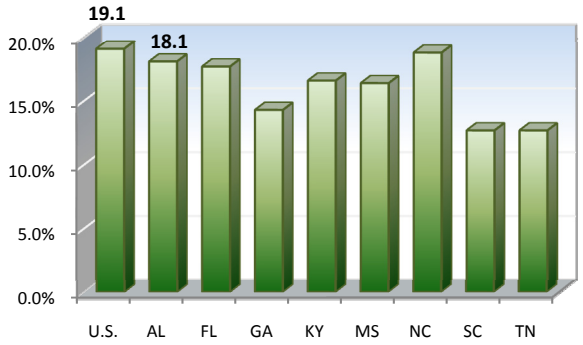
Alabama residents are taking advantage of adult education programs

Across the board, Alabamians over 25 years old are taking advantage of the opportunities offered for postsecondary advancement, keeping similar percentages to the national averages. Though Alabama has a greater percentage than the national averages of adults with less than a high school diploma (14.7 percent), only a high school diploma with no college experience, and adults with some college experience but did not earn a degree (22.7 percent), the numbers of adults who are working towards postsecondary degrees, or pursuing technical education and accreditation are on par with the nation's averages.

The state's public universities are building an educated workforce

As of 2009, Alabama counted 14 4-year public institutions, 26 2-year public institutions, and 17 nonprofit independent institutions. In Fall 2009, there were 248,990 students enrolled at Alabama

25- to 39-Year-Olds with Only a High School Diploma Enrolled in Postsecondary Education



public institutions. Of those students, 163,998 held full time status, and 84,992 were part time. This total includes both the undergraduate level (216,858 students) as well as the graduate level (32,132 students). The top five states that students pursuing higher education in Alabama claim as their origin are Alabama, Georgia, Florida, Mississippi, and Tennessee. The top four counties within Alabama that provide students to Alabama public institutions are Jefferson, Madison, Mobile, and Montgomery.

Among the 58,196 juniors and seniors enrolled in 4-year institutions in Fall 2009, the leading majors were Business Administration, Nursing, Elementary Education, Biology/Biological Sciences, and Accounting. For graduate and first professional students, the major areas of study were Business Administration, Nursing, Guidance Counseling, Elementary Education, and Secondary Education and Teaching. From 2008 to 2009, Alabama had the third highest costs for tuition, room, and board in the southeast region, but these were still considerably less than the rest of the nation, on average. The most recent data, from 2008 to 2009, for Associate degrees earned at Alabama 2-year public institutions reveals that the top five majors were General Studies, Nursing, Liberal Arts, Administrative Assistant, and Computer & Information Sciences.

Alabama had 13 public universities that received major funding from the National Science Foundation (NSF) in 2009. The funding amounts ranged from just under $100,000 to over $47.3 million. The three leading universities in the state receiving research-related monies from NSF were The University of Alabama at Birmingham ($47,368,522), Auburn University ($43,222,306), and The University of Alabama ($41,016,489).

Multiple universities also received funding from the National Institutes of Health (NIH). The University of Alabama at Birmingham was by far the leader in NIH earned funding with $198,394,981 in 2009.

Community colleges provide the skills needed by a technical workforce

Since President Truman called for the expansion of the community college network after World War II, they have become the largest part of our higher education system. To meet the demands that have come with technological change, community colleges have a unique flexibility to adapt to the ever-changing and specialized nature of technical jobs.

Alabama has adopted progressive actions to address the gap between education and the workforce. Investment in career technical education (CTE) allows the state's schools to partner with, attract, and retain international companies. This strategy provides secure and high-paying jobs for Alabama residents, and the targeted and prepared workforce that industry seeks. Examples of this are seen particularly clearly at the community college level. Alabama has billed itself, along with neighboring Mississippi and Louisiana, as a "corridor for aerospace companies." Community colleges throughout the state support that strategy by including technical programs such as Welding, Avionics Technology, Aviation Maintenance, and Aerospace Technology. Other targeted industry technical programs include Diesel Technology, Automotive Technology, Auto Service Toyota T-Ten, and Upholstery Automotive.

In 2009 Alabama had

14

4-year public institutions

26

2-year public institutions

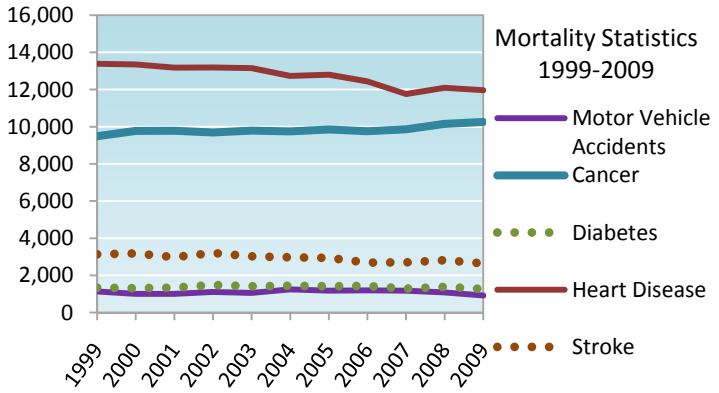
17

Nonprofit independent institutions

Health

We have the means to care for our citizens

To support the healthy economy and healthy environment in Alabama's future, we also need to pay close attention to the health of the people in our state. Having unhealthy citizens has a twofold negative effect, as more money is spent on getting our people back into working condition and revenue is lost because they are unable to contribute to production while they are unwell and recovering. To have healthy citizens, we must know what the greatest threats to our citizens' health are, and how we should combat them to cultivate a state that defends a healthy life from birth through a graceful old age.

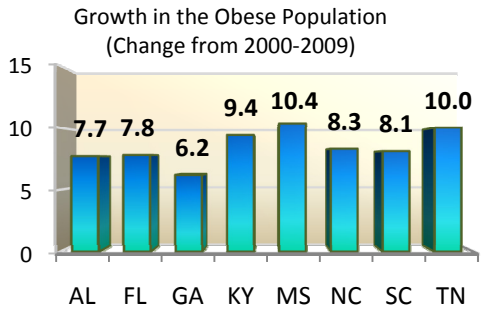


The 5 leading killers of Alabamians are heart disease, cancer, stroke, lung disease, and accidents

Over 332,000 Alabamians have died from these causes over the last decade, with an additional 175,344 deaths from a number of other causes. Different age groups face unique leading causes of death. The past decade shows that the leading cause of death for those under 15 is diseases of early infancy. For both the ages of 15 to 24 and 25 to 44 years old, most died from accidents. For 45 to 64 years olds, cancer is the leading killer, with heart diseases closely following. The scenario swaps for those older than 65, showing heart disease as the leader with cancer close behind. Over the past decade, the number of deaths caused by each of these major killers has been slowly declining, with the exception of deaths from cancer. Heart disease has receded considerably from its previous annual rates of over 13,300 to below 12,000 in 2009.

One area of great concern is Alabama's infant mortality rate

At 9.5 per 1,000 births in 2009, Alabama's infant mortality rate is one of the highest in the nation. In the same year, 10.6 percent of all live births were in the category of low birth weights (LBW) or below 2,500 grams. Seventy percent of the infant deaths were LBW infants. Other factors contributing to the state's infant mortality rate are the number of teen and unintended pregnancies, and most importantly, the health status of mothers (including high rates of smoking), and availability of health insurance.



Possibly the most serious threat to our people's health is the growing obesity epidemic

An astounding 31.6 percent of our population was obese in 2009, up 7.7 percentage points from over 22 percent in 1999. While Alabama's rate of increase was the second lowest in the southeast region, we still had the third highest percentage of obese residents, at just under one third of our population. Only Mississippi and Tennessee reported higher percentages.

In a real way, obesity is increasing healthcare costs, accounting for approximately 9.1 percent of all medical costs. About half of these expenses were paid for by Medicaid and Medicare, and include direct costs like preventative, diagnostic and treatment services, but do not take into account indirect costs like income lost from decreased productivity, restricted activity, and absenteeism. Creating an awareness of the economic impact of obesity across the state is a critical goal for Alabama's policymakers.

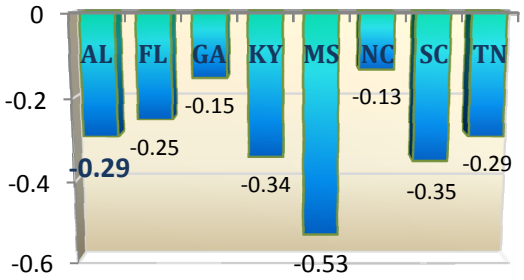
Alabama has a leading institution in the University of Alabama Hospital at Birmingham (UAB Hospital)

Though Alabama has issues to address, we have the means to deal with them. In 2010, six of UAB Hospital's programs were ranked in the top 25 nationwide by *U.S. News & World Report*. These were rheumatology (11th), kidney disorders (13th), gynecology (17th), geriatrics (24th), and pulmonary (24th).

The question is, can Alabamians afford the care that they need?

Approximately 30 percent of people under the age of 65 in Alabama went without insurance for all or part of 2007 through 2008. The majority (73.6 percent) of uninsured Alabamians are members of working families. To age with dignity, Alabamians must be able to afford and gain access to affordable health care options.

Fatalities per 100 million Vehicle miles driven
(Change from 2005 to 2008)



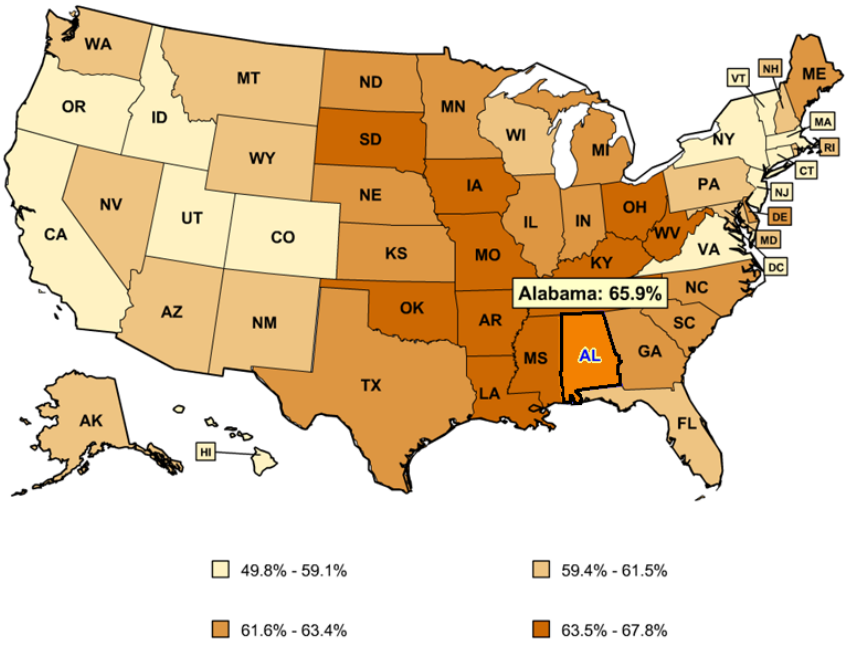
Alabama is becoming a safer place to live with less violence and fewer accidents

We have fewer violent crimes, or offenses against a person(s) with a high risk of injury or death to the victim. Across the state Alabama's violent crime rate has fallen dramatically this decade, from 496 to 425 crimes for every 100,000 residents in the period from 2000 to 2006. This was much lower than the U.S. 2006 average of 474, ranking Alabama 23rd in the nation.
In the southeast region Alabama ranked 2nd lowest for violent crimes. The state ranks vastly better than the rest of the region when compared nationwide. Three of the states in the Southeast ranked in the top 5 in the nation for violent crimes committed.

We are becoming safer drivers

Traffic fatalities measured 1.63 per 100 million vehicle miles traveled in 2008 and this has fallen steadily since 2005. Both the total number and the rates of traffic fatalities have dropped considerably. This is an area where Alabama is showing great improvement, along with the rest of the region. However, as travel distance and time to work rise in Alabama, these numbers could increase, and require the close attention of state and regional planners.

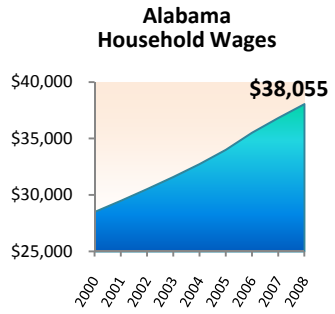
Percent of Population that is Overweight or Obese

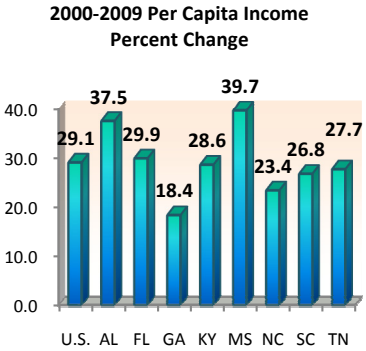


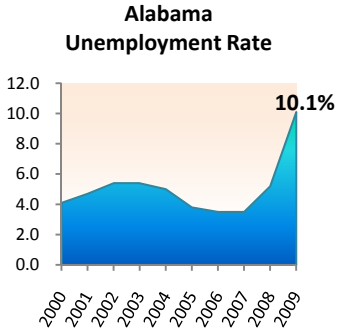
An adult who has a BMI* between 25 and 29.9 is considered overweight
An adult who has a BMI* of 30 or higher is considered obese

***BMI** correlates with body fat amount but does not directly measure body fat. Some people, such as athletes may have a BMI that identifies them as overweight even though they do not have excess body fat

Quality of Life







Household wages have steadily increased

The definitive characteristic of productive growth is that it provides higher paying jobs. Since 2000, Alabama's average household wage has increased by almost $10,000, from $28,496 to $38,055 in 2008. In the Southeast, the average per capita income percent change from 2000 to 2009 was 28.5, and the U.S. average was 29.1. Alabama's income growth was well above that at 37.5 percent, which was the second highest in the region. However, job losses in the recent recession caused a dramatic increase in the state's unemployment rate after 2007. From the lows of 3.5 percent in 2006 and 2007, unemployment soared to 10.1 percent in 2009.

Alabama's poverty rate is falling, but our youth are our poorest

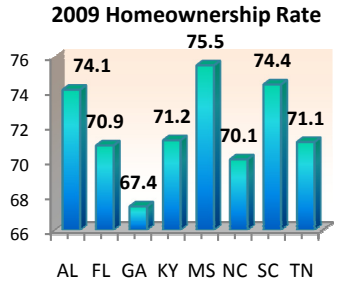
Another indicator of a healthy economy is a low and/or decreasing poverty rate. Alabama's poverty rate for families has been consistently higher throughout the past decade than the southeast region's average, and well above the U.S. average. However, as of 2008, Alabama's poverty rate had been falling, though inconsistently, since 2003.

12 %
of Alabama families lived in poverty in 2008

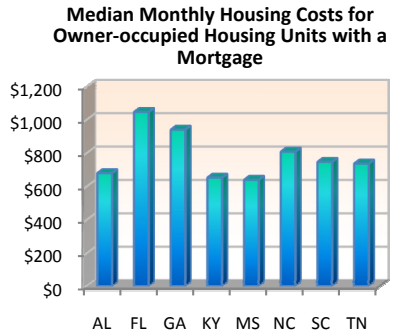
An important aspect of poverty as an indicator is the demographics describing that poverty rate. A high rate of children under 18 in poverty can indicate problems that will impact school districts and the future quality of the workforce, as well as social services and healthcare costs. This is an area of high concern in Alabama, where poverty rates for children, at 21.1 percent in 2008, are well above the national average of 17.0 percent. Alabama's poverty rates are typical of, but usually hovering above, the average poverty rates of the Southeast.

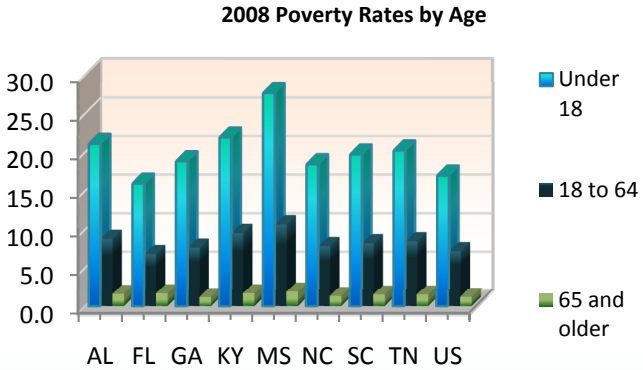
Housing is affordable

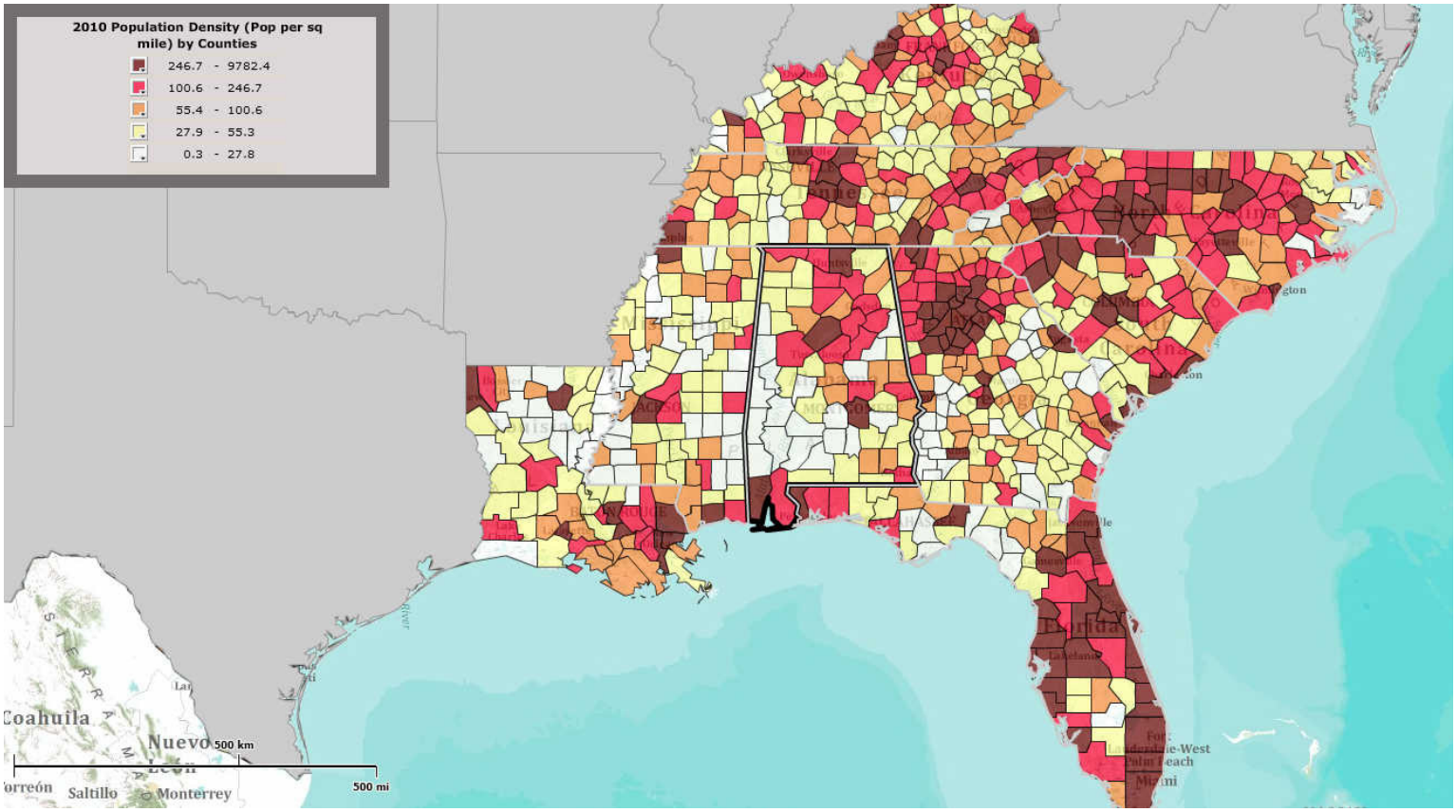
Alabama had a total of 1,883,367 households in 2009; 1,367,638 owners occupied their homes, and 515,729 were renting. Alabama ranked ninth, among all states with a homeownership rate of 74.1 percent. This was coupled, though, with a high homeowner vacancy rate of 3 percent.



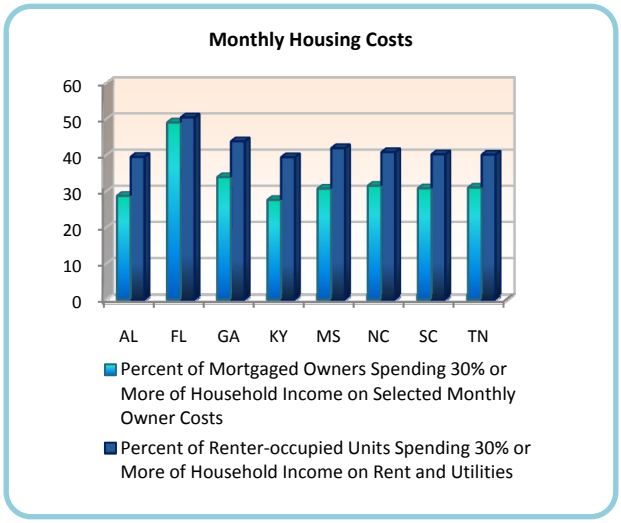
Median monthly housing costs for owner-occupied housing units were among the lowest at $681. Alabama also has one of the lowest rates of owners spending 30 percent or more of household income on selected monthly owner costs, ranking 38th among the states, and a corresponding ranking of 37th for percent of renter-occupied units spending 30 percent or more of income on rent and utilities. This measurement shows us how affordable housing costs are in the state. Households whose monthly







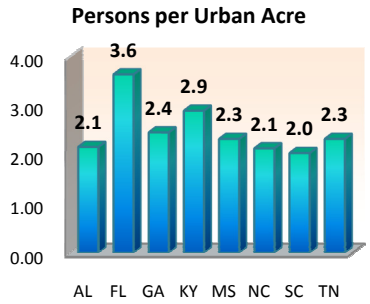
costs exceed 30 percent are considered at risk of not being able to cover other living expenses. Having a range of housing to accommodate the needs of a varied labor force is an important aspect of quality growth.



Alabama's growth pattern is sprawling

One of the leading tenets of sustainable, quality growth hinges on the idea of creating a sense of community and developing in ways that encourage citizen participation and interaction. In essence, the goal of growing a sustainable community is the creation of a place to live, work, and play. For the brick and mortar community, this is proven to be most effective when the urbanized areas are densely populated and incorporate mixed use areas, as well as parks and recreational areas established and maintained for public use.

An aspect of sustainable development that is growing in importance around the country is the ability to be connected with the local and global community via affordable high-speed Internet. This brings with it access to information, quality education, and job opportunities, along with vital services.



Across the nation, according to the 2000 Census, population density was about 80 persons per square mile. As of 2010, Alabama's population density was just 13 people higher than that, with 93.3 residents per square mile, the second lowest in the Southeast. In an urban context, Alabama had a higher density, with 2.1 persons per urban acre, but was still one of the lowest of the southeast region. The 2000 Census definitions had Alabama's population slightly more urban than rural with 55 percent of residents living inside urbanized areas or urban clusters, and 45 percent living in rural areas.

Rural Development

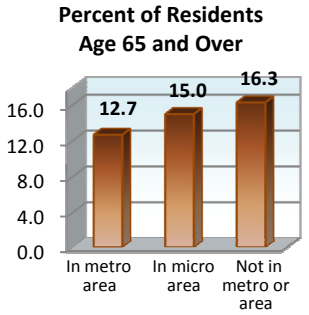
Because the state of Alabama's opportunities and challenges vary from place to place, development and policy should not be the same everywhere. The contrast between the state's urban and rural areas is a key focus with many implications for policy.

Geographic area	Mean travel time to work	Percent working outside county of residence
Alabama	23.8	26.7
In metro or micro area	23.7	25.8
In metro area	23.5	24.3
In principal city	19.5	12.1
Not in principal city	25.9	31.7
In micro area	24.3	31.7
In principal city	20.4	25.6
Not in principal city	26.1	34.4
Not in metro or micro area	25.2	35.9

Demographics and mobility

The percentage of residents age 65 and over is higher for micropolitan areas and rural counties (not in a micro or metro area) in general. Jobs have tended to concentrate in metro areas, resulting in a lower percentage of working age residents in smaller cities and rural areas. Travel times to work are slightly longer in micropolitan and rural areas than in metro areas, and this effect is more pronounced for residents living outside principal cities. Commutes are usually a significantly greater distance for rural residents, as indicated by the percentage working outside their county of residence.

Poverty rates are higher for micro areas and rural areas than for metro areas as well. These factors indicate significant needs for services in Alabama's smaller cities and rural areas. Transportation and access to social services are issues that may be more pronounced in rural areas, particularly for residents age 65 and over. Overall mobility as well as safety for drivers and pedestrians are threats to rural economies and the quality of life in these areas. Another important quality of life issue that rural areas tend to lag in is internet access. Studies show that rural residents are less likely to have or utilize broadband internet. Increasing broadband access can contribute to quality of life through improved access to educational resources and increased upward mobility for rural residents.



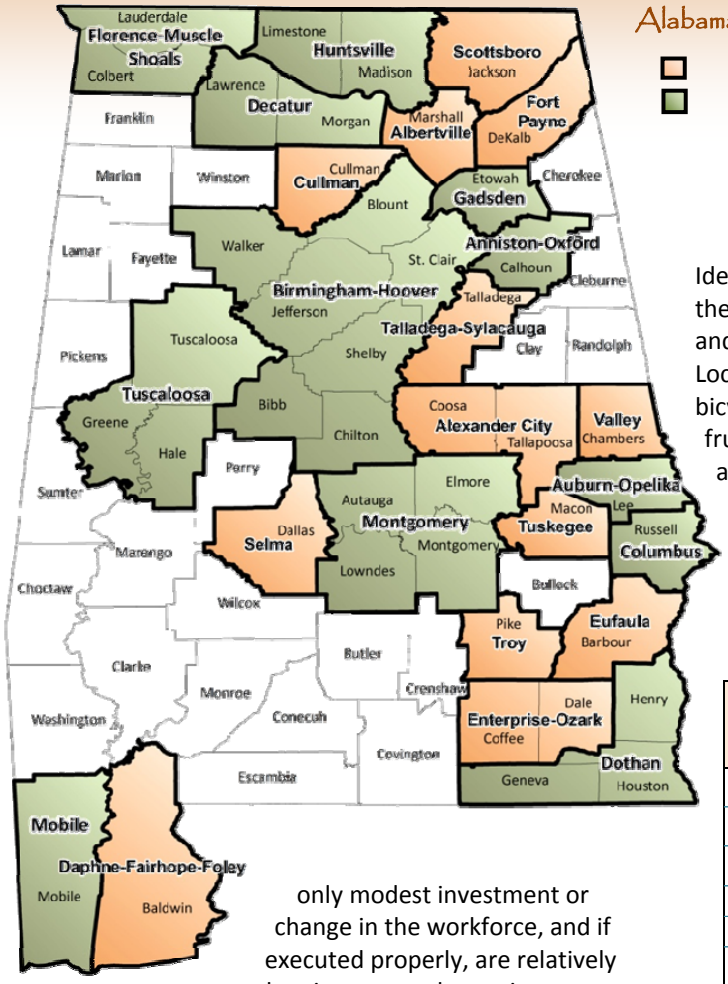
Urban and rural economies

The economies of smaller cities and rural areas tend to differ from those of larger metro areas as well. Nonmetropolitan counties have higher percentages of their workforce employed in manufacturing, and lower percentages in professional industries. Professional service industries thrive in larger urban centers due to agglomeration and urbanization economies, and to their access to a large, specialized labor force. Manufacturing, meanwhile, has tended to migrate to smaller towns and rural areas, in part seeking lower-cost locations in the absence of any specific requirements for labor. State and local governments have played a role in this migration by enhancing transportation infrastructure, making these places more accessible, and by giving incentives and tax breaks. There are serious questions about the economic sustainability of this path, though, especially given the overall decline of manufacturing employment in recent years. Some research contends that strategies for rural development should not aim to further modernize these areas or go for significant growth in population or employment.

A more sustainable path for rural development is through increasing agriculture and food production through reorganized, shorter supply chains, serving nearby markets. This strategy bypasses global food chains, which tend to marginalize these areas, limiting direct access to customers and inhibiting their ability to change as needed. This strategy will reduce production of traditional cash crops, such as cotton, and increase production of a wide variety of fruits, vegetables and herbs, which currently account for less than 2 percent of the state's agricultural revenues. This will increase the long-term viability of agricultural production in Alabama, which is vital to rural economies. Agriculture utilizes available land in rural areas and, if done sustainably, helps to preserve the natural environment.

Some rural areas have turned to ecotourism as a way to sustain their economies. Some examples exist in Alabama, including the Agri-Tourism Trail, which markets additional retail, recreational, and educational activities at agricultural sites. These activities generate additional income for owners and for rural areas in general. Such initiatives could be beneficial in many parts of Alabama, as they require

Alabama Metro- and Micropolitan Areas



only modest investment or change in the workforce, and if executed properly, are relatively low-impact on the environment. They preserve land for future uses, such as agriculture, and in doing so, preserve quality of life. Thus, ecotourism can form part of a broader conservation strategy for rural areas.

Examples include trails for recreation or cultural or heritage education. Heritage trails can link key historical or cultural sites in a region. The Selma to Montgomery National Historic Trail is an example. It connects key historical sites relating to the civil rights movement in Selma and Montgomery with historical markers in between and an interpretive center in Lowndes County along the route.

Recreational trails can be constructed for walking, hiking, bicycling, birding, horseback riding, or some combination of these. An example is the Chief Ladiga Trail in east central Alabama, which is a walking and bicycle trail converted from a former railroad. It covers 33 miles in Alabama, and connects to the Silver Comet Trail in Georgia, which continues on to Atlanta. Alabama has multiple birding trails as well, including the North Alabama, Black Belt, and Alabama Coastal birding trails.

Identification of specific opportunities and sites for these facilities will rely heavily on local knowledge and involvement at the county or regional level. Local support of and involvement in the ALDOT bicycle plan will help bring some of these facilities to fruition, and help minimize adverse impacts on rural areas. This will be possible through trail connections to urban areas, which would reduce the automobile traffic impact of these developments on rural areas somewhat, and through local knowledge of environmental priorities and vulnerabilities.

Geographic area	Percent of workers in manufacturing industry	Percent in professional and related occupations	Percent age 16 to 64 in labor force
Alabama	15.1	19.2	70.5
In metro or micro area	14.2	19.6	71.1
In metro area	13.0	20.4	71.6
In principal city	11.3	22.7	71.4
Not in principal city	13.9	19.0	71.7
In micro area	19.6	16.2	69.1
In principal city	18.5	19.9	70.3
Not in principal city	20.0	14.5	68.5
Not in metro or micro area	23.2	15.5	65.3

In addition, new federal initiatives and standards for renewable energy production are increasing opportunities for development of biomass in rural areas. Alabama has a significant amount of productive forested and agricultural land, which can help give rise to key advancements in this sector, including biomass processing and research facilities. The state's rural areas are good candidates for many of these developments, given their proximity to necessary raw materials and the significant presence of the forest industry, resulting in availability of a range of differentiated forest products. Also, many power generating facilities are already located in Alabama's rural areas, possibly resulting in opportunities for conferring biomass and fuels currently used at these plants or for their use as demonstration facilities. Existing lines of research in biomass at the state's major universities should continue to be funded, and existing relationships between these universities and energy producers, such as Alabama Power, should be utilized in advancing biomass research and development.

Natural Environment

Total land area
52,423
Square miles

State or federally protected land
1,318,504
Acres

Timberland
22,700,000
Acres

Stream and river channel
77,242
Miles

Coastal wetlands
27,600
Acres

Coastline
60
Miles

Freshwater wetlands
36
Million acres

Alabama has a varied landscape

Alabama is made up of three main physiographic regions. In the northeast of the state is the Appalachian Highlands Region, which includes the Piedmont Upland, a plateau that slopes from the north (where elevations commonly exceed 1,000 feet above sea level) to the south, where its contact with the East Gulf Coastal Plain section commonly occurs at about 500 feet; the Alabama Valley and Ridge, an area of numerous zigzagging ridges separated by deep steep-sided valleys in the west and the broad valley of the Coosa River; and the Cumberland Plateau, relatively flat uplands formed on Pennsylvanian sandstone and cut by three major valleys in northeast-southwest-trending, breached anticlines.

In the northwest of the state, the interior is characterized by the Highland Rim, two east-west valleys that formed in easily eroded limestone, and a low ridge between them that developed on more resistant sandstone.

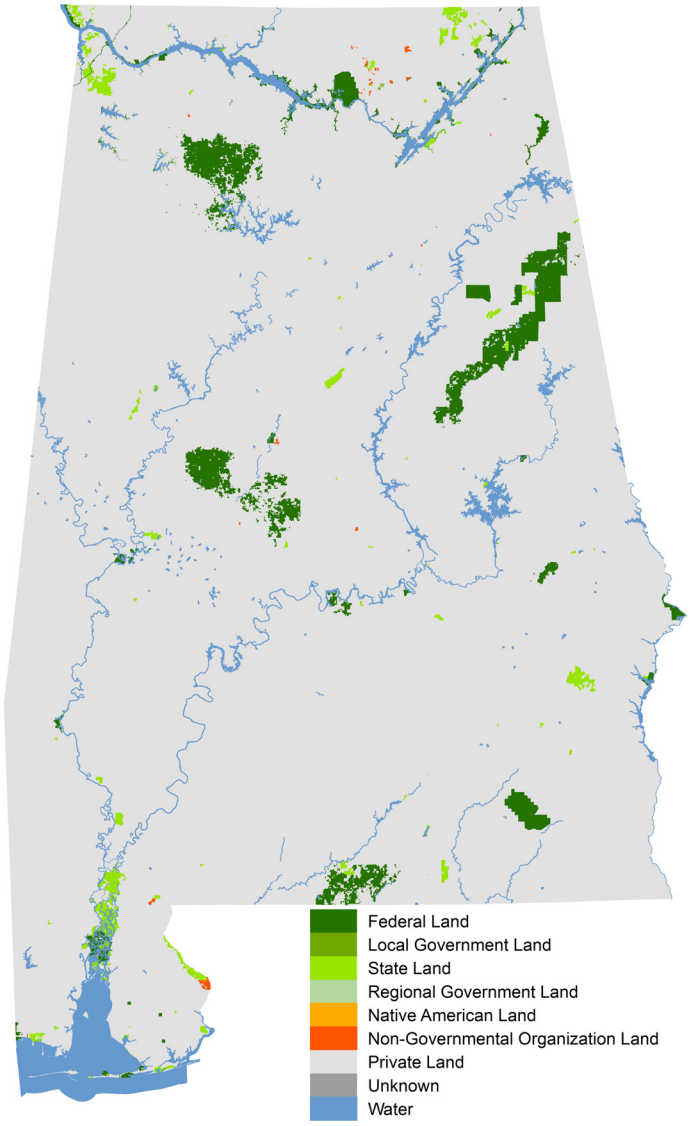
The balance of the state lies in the East Gulf Coastal Plain, which extends from the Northwest corner of Alabama to the middle of the eastern border and encompasses all lands that lay southwest of the highlands.

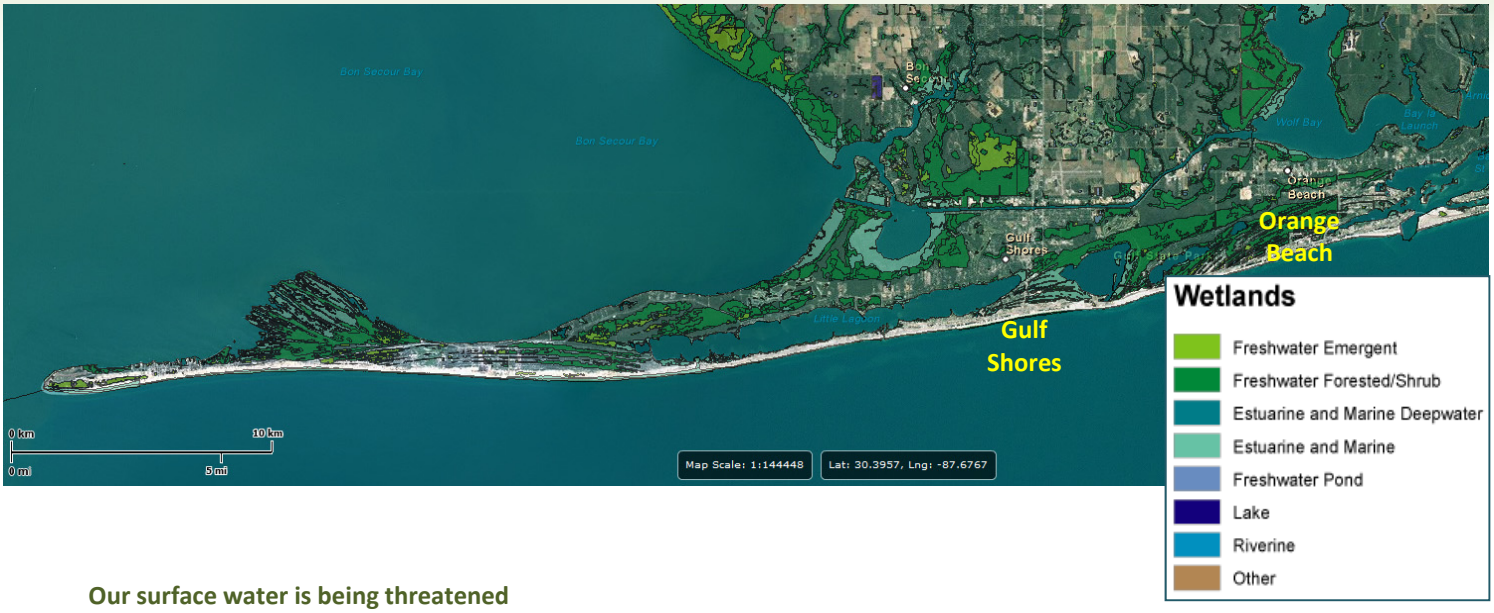
Our natural resources are being conserved and preserved

The state of Alabama has a total area of 52,423 square miles. Of those, 50,744 square miles are land area, and 1,673 square miles are covered by water. Including state parks, national forests, national wildlife refuges, state-owned wildlife management areas, Forever Wild land, and military bases (both federal and state ownership), there are 1,318,504 acres of state or federally protected land.

Alabama boasts 22,700,000 acres of timberland, accounting for 70 percent of its total land area, ranking the state third among the 48 contiguous states for most timberland acreage. For the period from 2000 to 2005, hardwood growth exceeded hardwood removals by 36.1 percent; in this same period, pine growth exceeded pine removals by 20.3 percent.

Alabama's Publicly Owned Lands



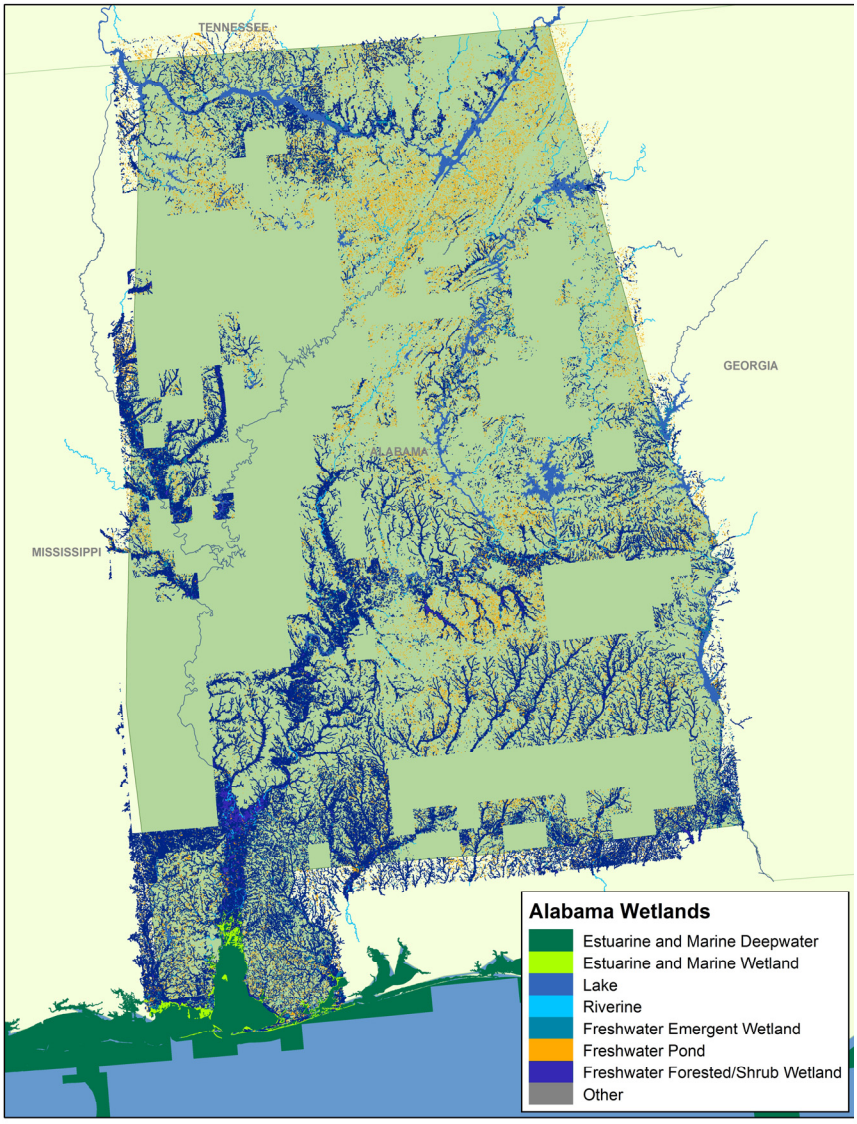


Our surface water is being threatened

With approximately 20 percent of fresh water in the nation passing through Alabama's amazing amount of lakes, streams, rivers, bogs, and bays, the state has been called the Aquatic State. These areas hold some of the greatest biodiversity on the continent. Though human action is not the only source of wetland loss, it is one of the greatest potential threats, and most of Alabama's wetlands are unprotected from development. Defending this whole system, one of Alabama's greatest assets, is critical to maintain our beautiful natural spaces.

Several Alabama counties have a very high percentage of surface waters with impaired or threatened uses. Over 55 percent of Mobile, 46 percent of Franklin, 39 percent of Marion, and 27 percent of Sumter County's waters are threatened or impaired. The average amount of water across all 67 counties that was threatened or impaired in 2009 was close to 10 percent. This was before the Deepwater Horizon oil spill in the Gulf of Mexico.

The EPA has responded to this recent crisis by monitoring water quality, air quality, sediment contamination, and waste management. Though there is still oil present on some beaches and in wetlands and marsh areas, the most recent water samples in both Gulf Shores and Orange Beach show no chemical content that would threaten human health. However, the economic impacts of this man-made disaster are still being felt by Alabamians. To guard our way of life, we have to ensure the



safety of our people and their livelihoods through responsible protection of the resources on which Alabama depends.

Alabama's air quality has been improving throughout this decade

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

Fine particle pollution or $PM_{2.5}$ describes particulate matter that is 2.5 micrometers in diameter and smaller than 1/30th the diameter of a human hair. It can be emitted directly or formed secondarily in the atmosphere. Health studies have shown a significant association between exposure to fine particles and premature death from heart or lung disease. Fine particles can aggravate heart and lung diseases and have been linked to effects such as: cardiovascular symptoms, cardiac arrhythmias, heart attacks, respiratory symptoms, asthma attacks, and bronchitis.

EPA issued the fine particle standards in 1997 after evaluating hundreds of health studies and conducting an extensive peer review process. The 1997 annual standard was established as a level of 15 micrograms per cubic meter, based on the 3-year average of annual mean $PM_{2.5}$ concentrations.

The majority of Alabama metropolitan areas stay under the 15 microgram per cubic meter measure, for the 3-year annual mean. Phenix City was over that measure for the 2004-2006 mean, and both Gadsden and Phenix City were measured over that amount for the 2005-2007 mean, but both have now reduced those amounts. Jefferson County, however, was in a delinquent status in most of its area's monitoring stations for both the 2004-2006, and 2005-2007 terms. For the 2007-2009 term, all but the NBHM monitoring location in Jefferson County measured under the 15 m/cm allowance.

Air Quality - PM2.5 Annual Data for 2004 - 2009

	3 Yr Averages			
	2007-2009	2006-2008	2005-2007	2004-2006
Ashland	11.0	12.3	13.3	13.2
Bay Road	9.4	10.3	11.1	11.5
Brewton		13.2	13.4	13.2
Chick-Hwy 43				
Chick-Iroquois	10.4	11.4	12.3	12.5
Childersburg	12.6	13.7	14.4	14.3
Crossville	11.7	13.1	14.0	14.0
Decatur				
Decatur*	11.9	13.0	13.7	13.0
Dothan				
Dothan**	11.2	12.3	13.2	
Fairhope	9.7	10.5	11.1	11.4
Gadsden	12.8	14.2	15.2	14.7
Huntsville	12.1	13.2	14.0	13.7
Montgomery 1&2	12.1	13.5	14.4	14.2
Muscle Shoals	11.3	12.4	13.1	12.5
Pelham	12.1	13.5	14.6	14.3
Phenix City 1&2	13.3	14.8	15.7	15.8
Sumter				
Tuscaloosa	11.7	12.9	13.8	13.3
Walker Co.	12.2	13.5	14.3	13.7
Corner	12.0	13.6	14.9	14.5
Hoover	12.5	14.2	15.4	15.1
Leeds	13.3	15.0	16.2	15.6
McAdory	12.8	14.5	15.9	15.5
Pinson	12.3	13.8	14.9	14.3
Providence	11.5	12.8	14.1	13.5
NBHM	15.3	17.6	18.9	18.6
Wylam	14.3	16.5	17.7	17.3
NBHM-Wylam	14.6	16.8	18.3	17.9

Jefferson County Monitors

Where do we go from here?

implications for policy formation

Alabama Economy

Continue to pursue industry diversification as the best strategy to create a resilient and sustainable economy.

Provide an efficient government environment for business, with optimal tax policies, reasonable regulations, and streamlined procedures. Raise awareness of programs that can assist both new and existing businesses.

Recognizing the connections between education, quality of life, and economic development, we need to raise all aspects to the next level in order to improve our competitiveness in the global economy.

Workforce

Create a greater awareness of the professional opportunities within the state's key and dynamic industry clusters.

Enhance the relationship between our educational institutions and businesses. Promote internships, apprenticeships, and job shadowing.

Support sustained partnerships between industry and education in statewide policies and priorities.

Encourage co-location of workers and jobs through provision of adequate housing for all income levels. This may involve increasing state funding for affordable housing in targeted areas or creating model affordable housing ordinances for municipalities to use.

Clusters/Emerging Industries

Outline specific, significant roles for local and regional entities (e.g., regional councils, chambers of commerce, and economic development agencies) in determining target industries and planning for cluster development.

Conduct interviews with leaders in target industries to determine linkages to suppliers, customers, capital, and innovative capacity, and complete needs assessments for these industries based on this information.

Increase innovation in emerging industries, including energy, by increasing research with the potential for commercialization in these fields at Alabama's major universities.

Give priority to state economic development policies that support existing businesses headquartered in Alabama and help to increase their export orientation.

Innovation

Encourage growth of existing technology-oriented research and education programs at the regional and metro area level with an emphasis on university/industry collaboration.

Empower the Alabama Research Alliance as a vehicle for evaluating projects, providing seed funding, and/or helping secure funding from government and industry sources.

Increase research capacity in innovative industries, such as biotechnology, through funding positions for experienced researchers and further investing in facilities and programs at Alabama's major universities and, in particular, at universities already having a significant presence in target fields.

Increase entrepreneurship by targeting skilled labor in significant industries in Alabama (such as defense), connecting them to research and funding resources, and to each other.

Enhance our capacity for innovation by expanding broadband access to the Internet across the state.

Globalization

Promote economic development and job creation by encouraging export growth. Initiatives building on existing and emerging export strengths should be carried out at the metro level, in particular.

Coordinate and publicize export assistance available at the state, regional, and metro levels from governments, universities, and public/private alliances. Improve the visibility of export assistance for small and midsize firms across the state.

Continue to raise the state's profile internationally through offices abroad, trade and recruiting visits, and other promotional efforts. Increase focus on diversifying products exported and increasing exports to developing markets.

Continue the successful business model of building on regional assets for foreign direct investment, providing

a trained workforce and a quality of life that recognizes the cultural needs of employees and families who are relocating.

Transportation

Continue devoting significant resources to non-roadway travel, including air, rail, and water transportation.

Optimize vehicle miles traveled (VMT) per capita by:

- Further integrating land use planning and transportation decisions on a regional scale, including planning for highway, transit, and pedestrian movement.
- Removing barriers to dense development throughout metro areas and barriers to infill development in inner cities.

Closely monitor congestion and air quality in densely populated areas, and devote state resources to ensuring local development patterns as well as transportation investments support improvement, where necessary, on these measures.

Link metro areas with outside markets and international freight gateways (especially Memphis and Atlanta). Linkages should be prioritized based on local industry needs, existing and potential markets served, and modal type of nearby freight gateways (i.e. air, rail, water).

Population

Encourage retention and inmigration of young, working age adults by creating attractive job opportunities. Local governments can encourage this by providing a welcoming environment for both businesses and individuals that includes access to quality education, services, and necessities. This will ensure that jobs are filled as older workers retire.

Maintain quality of life for older residents through a statewide initiative, coordinated at the regional level, addressing the transportation, healthcare, and activity needs of these citizens. Policies should target residents 65 and over, and should pay particular attention to the 85 and over age group, which will grow rapidly over the next two decades.

Education

To attain the status of leadership in the global economy, an educational system focused on producing a targeted and prepared workforce is vital. This is possible with a strong focus on the education pipeline from preschool through higher education.

Health

Alabama's future depends on maintaining the vigor of its citizens. To sustain our people's wellbeing, we must identify the greatest threats to our citizens' health and combat them to cultivate a state that defends a healthy life from birth to a graceful old age.

The state must secure each citizen's right to create a healthy existence for themselves through the opportunity to earn a fair wage and the availability of affordable healthcare.

Quality of Life

A responsible, social, and efficient way of life should be encouraged through the re-urbanization of our cities, the protection of affordable housing, and the support of small, downtown businesses—the ideal economic hubs of our communities.

Rural Development

Increase initiatives for environmental and cultural protection and enhancement, including agricultural land conservation, in rural areas.

Create framework for engagement of local communities in creating and managing these initiatives, in order to identify and utilize local knowledge and priorities.

Collaborate with local communities on ecotourism opportunities through existing state projects, such as the ALDOT statewide bicycle plan.

Create programs directly connecting farmers with local distributors or markets to increase long-term viability of agriculture in rural areas.

Environment

The state's natural environment is abundant in natural wealth and resources. To guard our way of life, the safety of our people and their livelihoods must be ensured through responsible protection of the resources on which Alabama depends.

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