

FORWARD CHARLESTON



Targeted Economic Development and Marketing Strategy

Automotive Cluster Analysis

April 2005



Target Industry 3: Automotive

Industry Overview

The automotive industry's primary functions are to design, manufacture, and distribute transportation vehicles. Automotive suppliers provide engine parts, electrical systems, seats, and chassis components to auto assembly plants.

The automotive industry in the United States has over 1.3 million direct employees and is responsible for over \$240 billion in wages. Annual sales of automotive suppliers now top \$800 billion. Auto sales have surpassed 16 million new vehicles thanks to low interest rate financing and record rebates on new purchases. Domestic growth for the industry is projected to remain modest, closely following population growth levels.

However, the industry is expected to show continued growth in the southeastern U.S. with the migration of domestic automotive factories from the Midwest toward Southern states. The South is attractive due to lower prevailing wages, low unionization rates, and more affordable tracts of land.

The shift to the South is expected to continue, not just from automotive companies in the U.S., but also from foreign companies wishing to establish a beachhead presence in the U.S. market. To mitigate currency risks and bypass U.S. tariffs of up to 25%, foreign companies such as Honda, Toyota, Nissan, BMW, Mercedes, and Hyundai have also constructed factories in the U.S. A prime example of this trend is the location of the BMW facility in Spartanburg Co. in the early nineties, which greatly enhanced the presence of the automotive industry in the state of South Carolina.

Despite slowing employment caused by increased productivity and streamlined operations, industry expansion has continued throughout the economic downturn. In 2003, the transportation equipment sector again recorded the most facility expansions in the United States. This expansion activity is largely occurring in the southeastern U.S. Evidence of a continuation of the trend towards Southern states is clear from the number of facility expansions announced for existing southern auto plants including Honda in Alabama,

Automotive Mfg & Supplies

NAICS Definition

- 32622 Rubber & Plastic hoses and belting
- 332 Fabricated Metals
- 3336 Engine and Turbine manufacturing
- 333924 Truck, Tractor, Trailer machinery mfg
- 3361 Motor Vehicle Mfg
- 3362 Motor Vehicle body and Trailer Mfg
- 3363 Motor Vehicle Parts Mfg

Industry Employment

- 1.3 Million employed - US

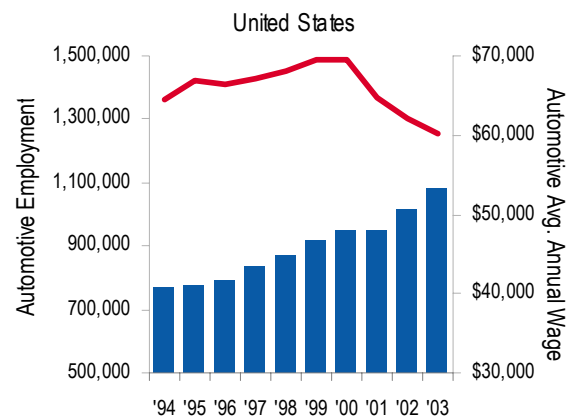
Wage Rates

- \$53,200 annual wage in the US

Location Criteria

- Proximity to customer base
- Proximity to good technical training institutions
- Large affordable tracts of land
- Low cost business climate
- Low labor unionization rate
- Good affordable power supply

Automotive Industry, 1994 - 2003



Source: AngelouEconomics;BLS

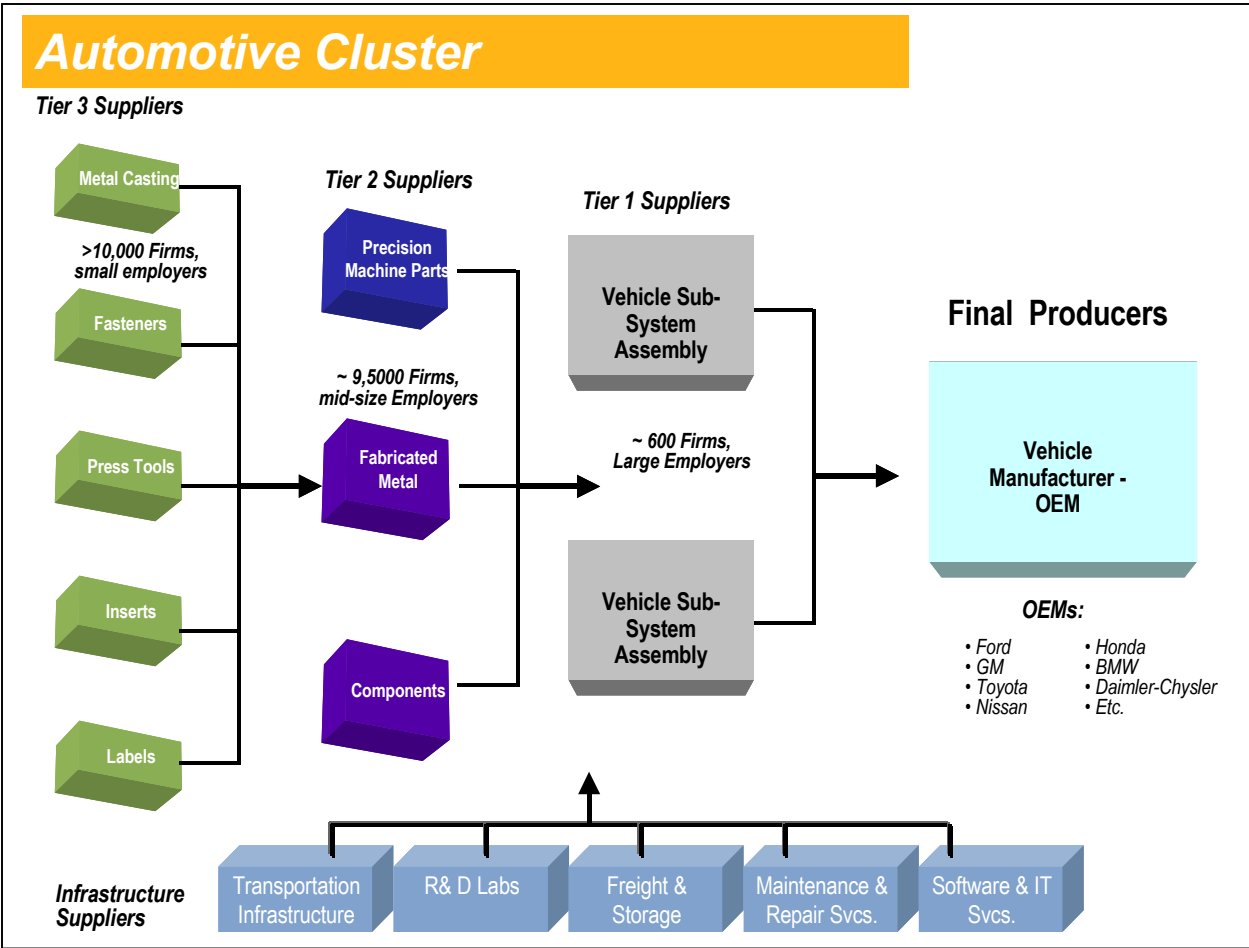
Nissan in Mississippi, and BMW in South Carolina.

The automotive industry can best be described as a multi-tiered supply chain. Each function along the chain provides more specific value-added activities. The manufacturing process ends with final production (assembly) at major OEM facilities. These OEMs are what are most commonly known by the public, e.g. BMW, Toyota, Ford, GM. Increasingly, these OEMs are requiring that their immediate suppliers, Tier 1 companies provide them with final sub-system modules that can be joined with other modules for quick assembly into a finished automobile.

Top 5 Industry Activity:			
2003	New	Expansion	Total
Transportation Equipment	138	272	410
Pharmaceuticals	121	179	300
Food Processing	89	180	269
Plastics	88	150	238
Fabricated Metal	67	131	198

Source: Conway Inc.

The industry map below provides detail into the automotive industry:



Industry Requirements

Economic Conditions. Due to high quality standards and the use of just-in-time supply chain techniques, automotive firms require a high degree of trust with their partner assembly companies. Outsourcing has become common due to its ability to reduce wage expenses, lower costs from pensions, and provide added flexibility to meet changing market conditions.

Because of their large impact on the communities in which they locate, auto firms and their suppliers have become adept at negotiating large incentive packages. Since these plants use large tracts of land, make significant capital investments, and are large employers, tax systems can affect plants greatly. Auto manufacturers tend to look for areas with low property tax rates and sizable income tax credits. Many recent auto projects have also received significant workforce training credits in addition to sizable tax incentives. Few industries receive more financial incentives.

Structural Assets. Automotive companies will be concerned about an area’s recurring cost structure more than many other industries. Auto manufacturers use large amounts of electricity, natural gas, and water and need affordable and reliable supplies of each. Rail is often a key requirement for large component facilities. Access to an international port for import and export is a large plus.

Increasingly, automotive firms are proponents of just-in time manufacturing. These firms prefer that suppliers locate along major highways within 300 miles and easy access of the main assembly plant, but not so close as to compete for the same workers. Traffic bottlenecks at roads and airports can have a detrimental impact on OEMs. As of late, the industry has been gravitating towards more rural areas in the South where wages are lower, unions are less prevalent, and growth is occurring.

The Facility Requirements for a Mid-tier Automotive Manufacturer:

Automotive Supplier (Tier 2)		
Typical Requirements		
	Input	Details
Activity	Auto Supply Mftg	Tier 2
Size	100,000 - 200,000 sf	1 story building, tall ceilings
Acres	15-50 acres	w/ separate entrance for trucks and employees
Employees	100-200 employees	10% Admin (\$40k), 90% production (\$12/hr) 3 shifts / 7 days per week
Water	up to 170,000 gallons / day	
Wastewater	up to 155,000 gallons / day	does not need to be treated
Electricity	1000-2000 kw Demand 1.4-1.8 mil kwh per month	dual substations, possibly on separate grids
Natural Gas	4,000 - 6,000 mcf / month	
Telecom	T-1 minimum	
Investment (\$) (for a typical U.S. facility)		
Building/Land	\$5-10 million	
Equipment	\$15-20 million	
Other	5-10 miles of Interstate Rail is a plus, but not required Within 60 miles of commercial airport, 250 miles of port	

Source: AngelouEconomics

Workforce. Automotive suppliers require semi-skilled and skilled labor, preferably available at average to below average wages. A vast array of operators, machinists, welders, managers, and support staff are necessary to run an efficient factory. After production workers, engineering accounts for the largest share of positions in the automotive industry. These jobs are primarily mechanical and industrial engineers that design the manufacturing equipment, coordinate processes, and maintain quality control.

Suppliers' needs for technical employees forces them to look at communities that offer both close access to a four-year engineering university and technical schools for production workers.

Automotive Occupations

SOC Code	Occupation	Industry Employment	% of Cluster Employment	10-year Growth Forecast	Relative Growth Level	% Jobs Requiring Bachelor's
11-0000	Management occupations	39610	3.48%	12.1%	–	
13-0000	Business and financial operation	26910	2.36%	21.3%	–	
17-0000	Architecture and engineering	60710	5.33%	8.6%	–	
43-0000	Office and administrative support	57210	5.02%	6.8%	–	
51-0000	Production occupations	723260	63.48%	3.2%	–	
51-1011	First-line managers of prod. workers	35160	3.09%	9.5%	L	12%
51-2022	Electrical and electronic equipment assemblers	12050	1.06%	-18.3%	VL	6%
51-2031	Engine and other machine assemblers	12270	1.08%	-1.9%	VL	4%
51-2092	Team assemblers	184250	16.17%	-1.6%	VL	5%
51-4011	Computer-controlled machine tool operators	14260	1.25%	9.3%	L	5%
51-4031	Cutting, punching, and press mach. operators	33520	2.94%	6.8%	VL	2%
51-4041	Machinists	20250	1.78%	8.2%	VL	4%
51-4072	Molding, coremaking, and casting machining	13410	1.18%	8.9%	L	3%
51-4081	Multiple machine tool setters, and operators	22330	1.96%	8.3%	VL	3%
51-4111	Tool and die makers	17960	1.58%	0.4%	VL	5%
51-4121	Welders, cutters, solderers, and brazers	39880	3.50%	17%	H	2%
51-4122	Welding, soldering, and brazing, etc.	11880	1.04%	0.9%	VL	2%
51-9061	Inspectors, testers, sorters, and weighers	25610	2.25%	4.7%	VL	13%

Source: BLS; AngelouEconomics

Research & Development. Research and development in the automotive industry requires the coordination of mechanical, electrical, and material engineers. Automotive suppliers are also active in supply chain management. Automotive companies spend over \$18 billion on research and development. Due to the broad nature of inputs, research that affects the automotive industry is conducted by all level of firms and research institutions. Support for manufacturing process improvement is valuable to firms, but most research is conducted at headquarters offices.

Charleston's Assets and Constraints in Automotive

Assets.

- **Central location along South Atlantic Coast provides easy access to many major metros.**
- **Location relative to the BMW facility in the state.** Much of BMW's imports supplies and raw materials as well as their final product exports funnel through the Port of Charleston. This presents a good opportunity to attract intermediate suppliers to the BMW facility in the Charleston 3-County Region. With the advances made in logistics and distribution and the push toward just-in-time delivery, suppliers need to be located within 6 hours of the OEM they serve. Charleston's three-hour distance to Spartanburg gives it an ideal proximity to the BMW facility.
- **Low cost manufacturing environment.** Charleston enjoys a low cost business environment including low labor costs, low utility costs, and low labor unionization. The importance of low cost operating environments for automotive manufacturers is evidenced in their constant migration from higher cost locations in the Upper Midwest to the southeastern United States.
- **An established cluster in the automotive industry.** While not the highest in the country, the Charleston region has a strong cluster in the automotive industry. The region's automotive location quotient is 1.41, and there are currently over 5,000 people employed in the automotive industry locally. This is impressive given the lack of a large automotive OEM in the region. The region has also experienced growth in its industrial machinery cluster, which provides equipment for heavy manufacturing industries such as automotive.
- **An abundant labor force with a good work ethic and positive attitude.** The business leaders that provided input in focus groups and interviews were all impressed with the "can do" mentality of the local workforce. These leaders also commented on the abundance of labor available.
- **The Center for Accelerated Technology Training is a clear asset to the region.** CATT has had a positive impact on meeting the training needs of the automotive industry in Charleston. Again, employers commented on their ability to take an active role in the training provided to their workers without having to actually provide the training. CATT is a good asset for recruiting companies to the region that may be concerned about the quality of the workforce. By giving these new companies access to a CATT program, they can guide their own workforce training needs.

Constraints.

- **The region needs continued improvement in the quality of its K-12 education.** Employers in the automotive industry require semi-skilled and skilled production labor. Often, they can provide the necessary training in-house, but they must be able to start with a workforce that has at least a basic high school education. Charleston is lagging the rest of the U.S. in this minimum education level.
- **Increase the number of skilled technicians.** Although the training assets are in place with the Trident Technical College, employers complained that there were far too few skilled technicians available. The 3-County Region should expand its Career Pathways program into automotive to increase awareness and skills training for high school age students.

Final Niche Targets

1. Major International Automotive OEM with no current presence in the U.S. such as Audi, Volvo, and Volkswagen

Definition: Final manufacturer (OEM) of finished automobiles.

Why a fit? The Charleston region has a low cost manufacturing climate that makes it an attractive location for automotive OEM companies. In addition, though, Charleston has the cultural and lifestyle amenities that many other Southeast locations do not have. These are qualities that are highly valued by European companies.

Type of Target: *Recruitment*

Organization responsible: *Charleston Regional Development Alliance*

Timeline: *Immediate (6-12 months)*

2. Major Automotive OEM to manufacture clean diesel, or hybrid automobiles

Definition: Final manufacturer (OEM) of finished automobiles that operate on clean diesel technology or hybrid gasoline/electric technology.

Why a fit? The clean diesel and hybrid automobile niche areas are expected to be major growth sectors in the next 5-10 years. The Charleston region can leverage the presence of Bosch, which is a major supplier of clean diesel automotive products. In addition, Clemson University is performing research on various clean engine technologies, such as hydrogen fuel cells and hybrid electric. This research can be leveraged to attract a new manufacturer.

Type of Target: *Recruitment*

Organization responsible: *Charleston Regional Development Alliance*

Timeline: *Intermediate (1-3 years)*

3. Mid-tier Automotive Parts Suppliers

1. *Forged, precision machine shops*
2. *Fabricated metal parts suppliers*
3. *Component manufacturers*

Definition: These are 2nd and 3rd tier parts supplier companies for the automotive industry.

Why a fit? In focus groups and interviews with local businessmen in the automotive industry, these niche companies were identified as lacking in the Charleston region. According to the input received, there is currently a demand for these types of companies in the Charleston region. Many

automotive companies currently located in the region have to buy these parts from outside the area. These companies could be attracted to Charleston by both external marketing and/or could grow from within through entrepreneurship.

Type of Target:	<i>Recruitment / Expansion & Entrepreneurship</i>
Organization responsible:	<i>Charleston Regional Development Alliance</i> <i>Three Counties and Chambers of Commerce for expansion of companies present in the region and entrepreneurship efforts</i>
Timeline:	<i>Intermediate (1-3 years)</i>

Automotive Specific Recommendations

1. *Develop regional land use and transportation plan to expand roadways.*

Like the aircraft manufacturing industry, one of the automotive industry's top site selection requirements is good transportation access and easy access to customers and suppliers. For the region to have a solid transportation infrastructure, there must be a regional land use and transportation plan in place. Please refer to the land use and transportation plan recommendations under the Aircraft specific recommendations.

2. *Support legislation to make Port cost competitive.*

Again, as with the Aircraft industry, the automotive cluster depends on a strong and competitive international port. Please refer to the discussion in the Aircraft recommendations section on strategies to ensure the Port remains competitive.

3. *Target European automakers without U.S. presence - e.g., Audi, Volvo, Volkswagen.*

Charleston is an attractive location for European companies due to similar cultural and lifestyle amenities plus easy port access, and shorter flying times to European destinations due to location on the East Coast.

- Conduct a major marketing mission to Europe to talk with automotive manufacturers; this trip could also be used to market the region as an ideal location for aircraft manufacturing.
- Choose one to two targeted automotive industry conferences that are attended by major European OEM automotive companies.

4. *Increase the technical skills available in the region so that automotive employers have a qualified workforce from which to draw.*

Nationally, the demand for vocational training and technical skills is increasing. Locally, there are students graduating from high schools that are interested in advancing their education, but require remedial coursework in order to perform in college or technical training programs. Combined, these two scenarios illustrate the importance of supporting programs that bridge the gap between high school and higher education. Availability of technical skills is an important site selection requirement of all of Charleston's target industries.

Trident Technical College's new Complex for Industrial and Economic Development will have the capacity to enroll 400-500 students in a one-of-a-kind remedial learning center. The center will help students bridge the gap between high school and college, providing a technology rich and hands-on learning environment.

Consider developing more vocational magnet schools in the region. The area's only magnet school focused on vocational skills development, the Garrett Academy of Technology in North Charleston gives students an applied learning environment that keeps them engaged. Nearly 70% of Garrett graduates go on to college and the school earned an "excellent" rating on the 2004 state report card.

Enhance support for the College & Career Pathways program. The College & Career Pathways program, instituted by the Education Foundation in North Charleston High School, is an alternative high school program established for students entering the 10th grade who are at risk of dropping out. It allows students to earn dual high school and community college credits, and even technical certifications. It also provides

opportunities for students to be exposed to the workplace in their chosen career path helping students connect school to the “real world” and gain valuable job skills. This successful program is now being introduced in five other area high schools (Stall, Stratford, Summerville, Wando and West Ashley) utilizing a grant from the U.S. Department of Education.

A similar type of program is Middle Colleges, which are increasing in popularity across the U.S. The Bill and Melinda Gates Foundation is an active funder of the Middle College program across the country. (See <http://www.gatesfoundation.org> for information about grants and a description of best practices.)

Develop stronger programs for retaining retired military personnel. Offer technical training and career transition programs that help them apply military skills to private sector applications. The Low Country Manufacturing Center is a good model.

Automotive Benchmarks

1. Jackson, MS.

Jackson is home to a strong cluster in the automotive industry due to the presence of the Nissan manufacturing facility. The Jackson region, much like many other areas in the southeastern U.S., offers an optimal cost climate for automotive manufacturers. This is evident not just in the location decision by Nissan, but also in the recent announcement that it is expanding its operations with a \$500 million capital investment that will create over 1,000 additional jobs.

The lead economic development organization serving the Jackson, MS region is the **MetroJackson Economic Development Alliance (MEDA)**, www.metroeda.com

MISSISSIPPI
MEDAM
MetroJackson Economic Development Alliance

Location & Transportation
Business & Labor
Demographics
Quality of Life
Available Property
Incentives & Other Data
Affiliate Links
What's New
Contact Us
Spotlight: Automotive

Nissan operates a \$930 million manufacturing plant in Metro Jackson, Mississippi

From our point of view, the South looks a whole lot closer. With the best roads in the South, excellent toll and air access, and industry-leading telecommunications, Metro Jackson, Mississippi, is in the center of it all.

So Why Locate Here, You Ask?
Metro Jackson is a regional healthcare center, the major retail and wholesale trade destination for central Mississippi, and a distribution center for the mid-South. Metro Jackson is also advantageously located within a 700-mile automotive corridor that produces six automotive plants. But these are only some of the reasons why companies are choosing to locate in Metro Jackson. [MORE](#)

So What Data are Available, You Ask?
The most current data on community characteristics, population, housing, income, taxes, education, transportation, labor force, economic trends, and industry development are available for Metro Jackson. Access the information necessary to make an informed decision about doing business in Metro Jackson. [MORE](#)

So What is MEDA, You Ask?
MEDA is a regional alliance of seven entities committed to promoting Metro Jackson and the benefits of doing business in the Metro Jackson area. MEDA would like the opportunity to acquaint you with Metro Jackson and show you what it has to offer.

Overview of E.D. Activities

The Metro Chamber of Commerce is Jackson, Mississippi's leader for both economic development and community development. The Chamber is the fiscal agent, host location, and prospect clearinghouse for the MEDA. Established in 1994, the MEDA is the region's marketing arm and facilitates companies moving into or expanding in the region. In addition, MEDA works in tandem with other economic development groups, governmental entities, and private concerns to provide companies interested in Metro Jackson with the information and assistance they need.

MEDA is composed of seven partner entities including the City of Jackson, Entergy Mississippi, Inc., Hinds County Economic Development District, Jackson Municipal Airport Authority, Madison County Economic Development Authority, MetroJackson Chamber of Commerce, and Rankin First Economic Development Authority.

Between December 2003 and October 2004, the four counties comprising the Metro Jackson region recruited eight new manufacturing facilities and 330 new jobs, with a resulting investment of around \$20 million. Sixty-one existing manufacturers expanded within the region, creating 980 jobs and an estimated \$44.6 million in investment. During the same period, 206 non-manufacturing businesses either expanded or relocated to the region.

Automotive Initiatives

The automotive sector is Metro Jackson's primary target. With the new \$930 million Nissan manufacturing facility and seven tier-one suppliers, the region has quickly developed a powerful cluster within this sector. The region touts its availability of large parcels of land, high energy capacity, access to suppliers and markets, low cost environment, and excellent roadways as its top selling points for the industry.

State incentives also make Mississippi an attractive location for manufacturers. Frequently cited incentives include industrial revenue bonds, rural economic development income tax credits, the "Advantage Jobs" program, job tax credits, sales and use tax exemptions, and in-state and free port tax exemptions.

2. **Birmingham, AL.**

Birmingham is the largest metro area sandwiched between two major automotive OEMs in Alabama. Birmingham lies just west of Vance, AL, which is home to the Mercedes auto manufacturing plant, and just east of Lincoln, AL, which is home to the Honda manufacturing facility. Instead of benchmarking Charleston against one of these smaller communities, Birmingham was selected as the closest major metro area. Like the Jackson region, these areas in Alabama have been successful not just in attracting major automotive OEMs, but also in enticing them to expand operations. Honda has recently announced that it will double vehicle production in its Lincoln facility, adding 2,000 new jobs while making a \$425 million capital investment. Mercedes has also announced plans to double its capacity at its Vance facility, although exact increased job and capital investment numbers are unknown.



The lead economic development organization in the Birmingham region is the **Birmingham Metropolitan Development Board**, www.mdb.org.

Overview of E.D. Activities

Founded in 1971, the Metropolitan Development Board (MDB) restricts its activities to new business recruitment. It sells Birmingham, Alabama to site selectors, corporate real estate executives and anyone seeking information about the metro emphasizing its excellent school system, large concentration of universities and colleges, and outstanding quality of life. The MDB cooperates on other economic development initiatives with organizations in the community such as:

- Birmingham Regional Chamber of Commerce—primary source of economic, business and demographic information in Birmingham
- The Chamber's Existing Business Team (EBT!)—primary provider of assistance for the retention and expansion of existing businesses
- TechBirmingham—primary supporter and coordinator of start-up, attraction, retention, and expansion of technology-based businesses, investments, and jobs
- Operation New Birmingham—primary leader of commercial and residential development in the downtown area

MDB is a private, non-profit organization of 11 staff members currently targeting six major industries:

- Headquarters and Administrative Support Office Operations
- Financial Services
- Biotechnology
- Automotive Parts Manufacturing and Distribution
- Machinery and Fabricated Metals
- Distribution Centers

Automotive Initiatives

Among the Birmingham Metropolitan Development Board's major initiatives is the founding of the Alabama Automotive Corridor Alliance. The positioning of Alabama's three automotive manufacturing facilities (Honda Manufacturing of Alabama, Mercedes-Benz U.S. International, and Hyundai Motor Manufacturing of Alabama) establishes Birmingham as the official hub of the nation's fastest growing automotive corridor. Automotive suppliers and distribution centers continue to pour into the region.

Benchmark Data Comparison:

Automotive Benchmarks	Charleston MSA	Jackson, MS	Birmingham, AL
Total Population, 2004	578,667	457,427	946,208
Total Population, 2000	548,986	440,800	921,106
Total Population, 1990	506,837	395,394	840,141
Population Growth:			
1990 - 2004	14.2%	15.7%	12.6%
2000 - 2004	5.4%	3.8%	2.7%
Total Civilian Labor Force 16+	316,795	226,578	465,118
Unemployment rate	4.5%	6.2%	5.5%
Average Wage 2003	\$31,186	\$31,050	\$34,670
Average Wage 2001	\$28,887	\$29,813	\$34,519
Wage growth: '01-'03	8.0%	4.1%	0.4%
Gross Metro Product(GMP)-\$Bn	\$17.0	\$15.8	\$35.0
Growth in GMP, '00-'03	12.3%	12.0%	10.0%
Median Age	35	34	37
% Age 25-44	30.0%	29.1%	28.7%
% without HS diploma	18.8%	19.0%	19.6%
% with bachelor's degree or higher	24.9%	27.8%	24.6%
Median Household Income	\$42,708	\$42,222	\$42,660
Average Cost of Living	98.4	93.1	96.5
Average Rent	\$722	\$694	\$650
Average Home Price	\$233,846	\$214,816	\$206,856
Total R&D State Rank*	29	39	27
Venture Capital Funds, '00-'04 (\$M)	\$17.8	\$58.0	\$135.1
Top Personal Income Tax Rate	7.00	5.00	3.25
Top Corporate Tax Rate	5.00	5.00	4.23
Property Tax Rate	2.96	2.55	1.29
Sales, Gross Rec., Excise Tax	2.88	4.39	3.71
Workers Compensation rate	1.82	2.21	2.96
Unemployment Tax rate	1.42	1.42	1.65

* Total R&D funds from Industry, Academia, and Federal Government; Source: NSF