Report:

COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY
VOLUME I: TARGET INDUSTRY IDENTIFICATION & ANALYSIS

AngelouEconomics
technology-based economic development

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Presented to:

ATLANTA UNIVERSITY CORRIDOR VISION TEAM

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Comprehensive Economic Development Strategy

Volume I
Target Industry Identification & Analysis

TABLE OF CONTENTS

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SUMMARY

In this first volume of the Comprehensive Economic Development Strategy (CEDS), the *Target Industry Identification and Analysis*, AE will take a deeper look at the existing industries in the region, identify the target industries that should become the focus of the Atlanta University Corridor's attraction efforts, determine the specific niche areas within each industry that are a particularly strong fit for the AUC, and provide detailed profiles of the final selected industries.

The development of competitive industry clusters is one of the key generators of regional wealth. A cluster develops when businesses in interrelated industries choose to locate in close proximity to take advantage of a region's inherent advantages. These businesses then become interdependent on each other, enhance their operating environments, and ultimately become more competitive on the global landscape.

When this happens, these companies become the leaders in their field. They become more profitable, grow faster, and pay higher wages. Except for a few clusters in historically low paying industries, the Atlanta University Corridor has few other strong primary clusters. The area is not a leader in any industry.

The *Target Industry Identification and Analysis* identifies seven target industry clusters in which the Atlanta University Corridor can devote resources and energy to become a leading destination and to drive future economic growth:

1. **Aviation and Defense**
2. **Software**
3. **Food Processing**
4. **Life Sciences**
5. **Advanced Manufacturing**
6. **Business and Financial Services**
7. **Creative Industries**

As detailed in the first report in this process, the *Atlanta University Corridor Assessment*, the AUC Corridor has a variety of strengths it can build on to attract and grow new industries.

- The Atlanta University Center has a well-educated and skilled population in the form of the students, alumni, faculty, and staff of the six Historically Black Colleges and Universities, a group whose skills and potential earning power can help stimulate the economy of the study area.
- The research capabilities of the schools in the Atlanta University Center, particularly those in the Morehouse School of Medicine but also the research currently conducted by AUC faculty in a number of areas, present a unique opportunity to leverage existing research facilities in order to foster private development.
- The area has relatively low land costs, especially considering its central city location.

- The study area's central location in the Atlanta area, which has strong sectors in some of the target industries recommended for the AUC Corridor, including aviation, software, business and financial services, and creative industries. The presence of these industries in the Atlanta region in general highlights the region's attractiveness to those industries, and makes the location of additional businesses in the area more likely.

- The study area is very close to the nation's busiest airport, Hartsfield International.

- The area has a large potential labor force.

- The area has reliable utilities, an important consideration when making site selection decisions.

The area also will have to address some challenges to effectively build its economy and attract target industries.

- AUC schools need to increase their research capabilities and the schools' commitment to supporting faculty research, as well as develop a process for technology transfer that will allow the transformation of research into marketable products and services.

- The 40-census tract study area needs to focus on improving the basic infrastructure in the area, including streets, water and wastewater systems, and electric distribution system, so that all systems can support increased demand.

- All entities in the area dedicated to educating and training the current and future workforce – the six HBCU's in the Atlanta University Center, other colleges and universities in the Atlanta area, public school systems in the Atlanta area, and private and nonprofit workforce development providers – will need to step up efforts to educate and train the workforce that will be needed to fill jobs in the target industries.

- The quality of life in the study area will need to improve to make the area more attractive to both businesses and their workers.

- The colleges and universities in the AUC will need to take the lead in improving the neighborhoods around its campuses, both to improve the quality of life in those neighborhoods and also to help generate economic activity.

The second and final volume of the CEDS, the ***Recommendations Report***, will include recommendations that help prepare AUC to retain, attract, and grow businesses in these seven target industries. It will also include other recommendations necessary to build and maintain a healthy business climate (such as building an entrepreneurial support system), a skilled workforce and an effective workforce development system, a healthy quality of life, adequate sites and infrastructure, and an effective economic development and marketing effort.

TARGET INDUSTRY SELECTION PROCESS

AngelouEconomics employs a combination of quantitative and qualitative analysis in selecting the best target industries for a community. The process is guided by the following four questions:

1. **What clusters currently exist locally, and are they growing?** Immediate and obvious candidates for targets are those that are experiencing growth within the community or surrounding communities. As part of the cluster analysis, AngelouEconomics **calculates location quotients for each industry**, which calculates the concentration of an industry in a local area compared to the industry's concentration across the country. Industries that have a large presence but lack growth suggest that the region is losing its competitiveness in this industry. While the industry may be a candidate to target for a retention effort, a long-term decline calls for a close look at transitional opportunities into new industries that create jobs (e.g. textile workers transitioning into food processing).

2. **Are existing or emerging local clusters in industries that are growing nationally or undergoing geographic dislocation?** For those local clusters that have potential, are they growing nationally as well? While some industries are experiencing high growth rates, most U.S. industries are modest or stagnant in their growth. However, the dislocation of industries from one part of the country to another has been a long-standing opportunity for recruitment. Many industries undergo restructuring in order to be more competitive, or simply suffer a high rate of startup and failure.

3. **Are there local assets that give specific industries a competitive edge?** Communities are as unique as people. Each one has strengths that companies can leverage to create competitive advantages. These strengths can include such things as workforce skills, tax structure, infrastructure, and market proximity. Likewise, many companies have specific infrastructure and workforce minimum requirements, and understanding whether the region can meet those requirements is crucial. For example, if the region lacks water and wastewater capacity or has overly stringent environmental regulations, then the community could be ruled out for food processing and semiconductor manufacturing. Understanding the needs of target companies is essential to recruiting them.

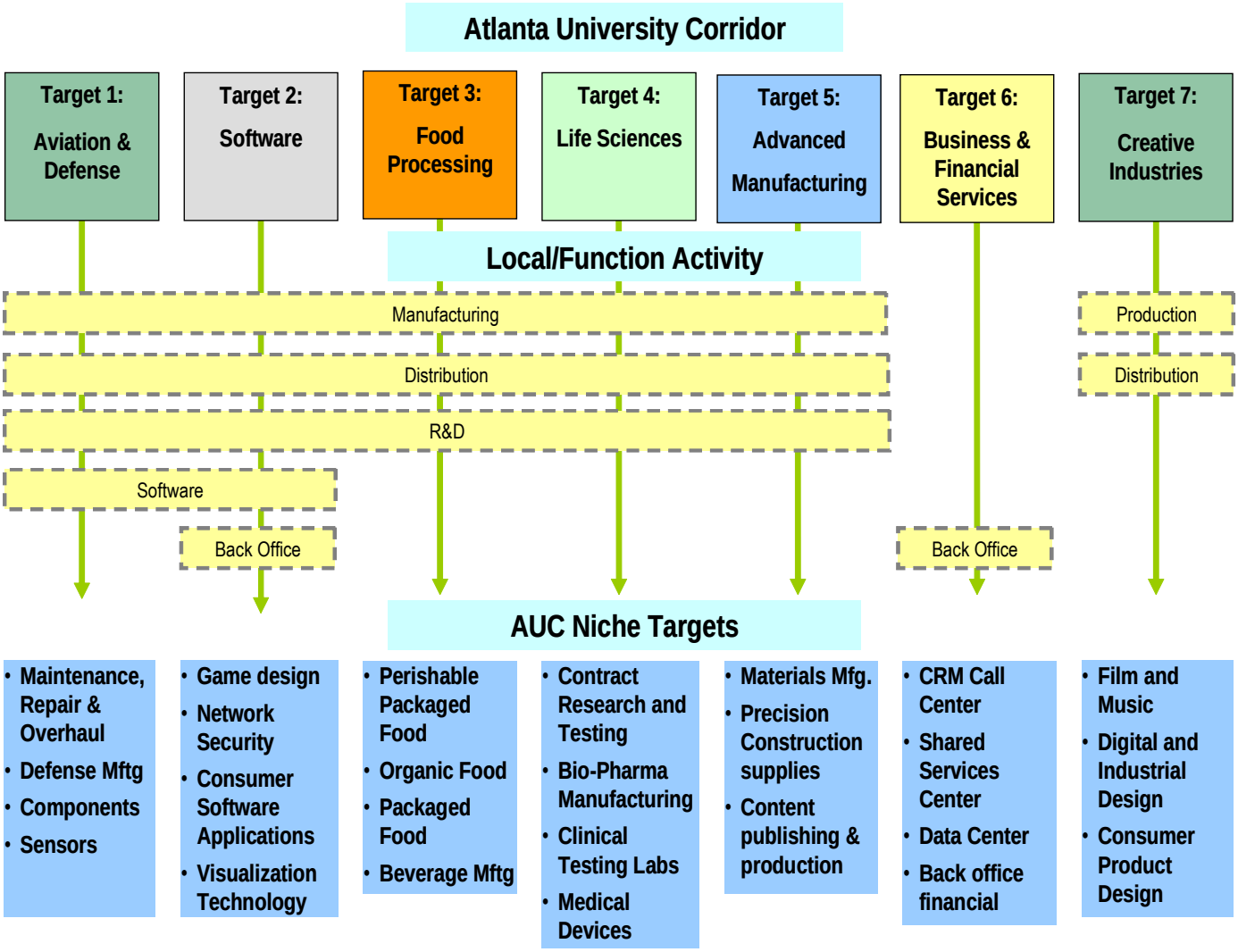
4. **Does the industry match community goals?** The most important criterion is often whether or not the industry matches the stated economic goals of the community. Some communities may want to avoid manufacturing businesses, or businesses that don't pay high enough wages. Sometimes lack of available land requires a more precise list of targets. Communities wanting to maintain a small-town appeal, for example, may target homegrown "soft" industries. Others wanting to transition into a more urban, metropolitan setting may focus more on larger office users. Industries that can survive locally will struggle to succeed without the backing of the populace and its elected officials. An aggressive marketing campaign and solid commitment by government to support a target can often overcome specific deficiencies or cost disadvantages.

The target industry selection process is detailed in the appendix of this report.

TARGET INDUSTRY RECOMMENDATIONS

Based on our analysis, AngelouEconomics recommends the following final list of seven target industry clusters for the Atlanta University Corridor.

AE recommends that the Atlanta University Corridor pursue these target industries and their niche sectors for new investment as well as internal growth and expansion to drive job creation and economic growth for the region.



WHY TARGET THESE INDUSTRIES?

Why Aviation and Defense?

- ✓ Civilian carriers and cargo companies are outsourcing their maintenance and repair
- ✓ Revenues for MRO organizations are expected to rise
- ✓ Proximity to the airport and Fort McPherson
- ✓ Strong wages with limited university education required
- ✓ Over 50% of the DoD budget goes to outside vendors
- ✓ $231 billion contracted for last year
- ✓ Opportunities for universities, small businesses, and minority owned businesses
- ✓ Rapidly growing industry with high average wages

Why Software?

- ✓ The industry is conducive to start up companies and attracts young professionals
- ✓ The market for software is large, expanding, and uniquely structured
- ✓ Software development will have a low infrastructure impact as facilities require small amounts of water and land, and produce limited air emissions and wastewater
- ✓ Opportunity to recruit from nearby software clusters such as San Jose / Seattle / Portland
- ✓ High average wage
- ✓ These firms are attracted to high quality of life areas with ample outdoor recreation opportunities

Why Food Processing?

- ✓ Transitioning industry, relocating to lower cost areas near population growth
- ✓ Location sensitive, needs access to end user
- ✓ Convergence with life sciences and Bio-Agriculture research
- ✓ AUC has a strong food processing cluster

Why Life Sciences?

- ✓ 1.2 million employed including pharmaceutical and medical device sectors
- ✓ 200,000 employed in biotech research
- ✓ Employment will triple to 600,000 by 2012
- ✓ Average annual wage = $68,000
- ✓ The aging American population will drive long term growth
- ✓ An increasingly competitive target
- ✓ Growing R&D occurring at Morehouse School of Medicine

Why Advanced Manufacturing?

- ✓ Provides a cross-section of employment opportunities for the region's workforce – from highly educated university engineering and science graduates, to trained technical workers and skilled high school students
- ✓ Pays above average wages
- ✓ Companies in this industry require large capital equipment expenditures, which will provide a boost to the local tax base
- ✓ Specific niches are selected in the manufacturing sectors that are adding jobs
- ✓ We have identified target niche sectors that are performing well nationally, are not easily off shored, and can be attracted from high cost locations
- ✓ Medical device manufacturing is closely regulated, research intensive, and firms have comfortable operating margins
    - ✓ The industry is located in high cost locations such as California and Massachusetts
    - ✓ FDA regulations and continued productivity improvements ensures expansion of high value add manufacturing in the U.S.
    - ✓ The medical device industry will benefit as the health care industry continues to expand

Why Business and Financial Services?

- ✓ Opportunity to create a recognizable Business Brand – regions with strong financial services presences are known as business hubs
- ✓ High growth, high wage industry
- ✓ Location trends highlight movement away from large metropolitan areas to midsize metropolitan areas
- ✓ Opportunities for recent graduates and young professionals
- ✓ Ideal recruitment industry to further develop a high wage professional services cluster
- ✓ Strong Accounting & Finance degree programs at local universities

Why Creative Industries?

- ✓ Quality of life in Atlanta is conducive to young creative workers
- ✓ Not easily off shored and high average wage
- ✓ Growing presence of film and music industry in Atlanta
- ✓ Strong support and interest among AUC residents

WHICH TARGET INDUSTRIES SHOULD AUC DEVELOP FIRST?

Although the AUC can ultimately prove successful in fostering all seven identified target industries, current limitations in areas such as workforce skills and infrastructural assets will likely impede immediate attraction of some of these industries. As such, AUC should first focus on those industries that either build upon the area's existing strengths or can be initiated without substantial infrastructural assets.

Industries for immediate targeting include the following:

- **Food processing**: As the industry already has a significant presence in the area, existing infrastructure has proven capable of meeting the demands of the food processing firms. Furthermore, food processors largely require a well-trained blue-collar workforce that can be trained relatively quickly. While the AUC should work towards increasing the skill-set capacity of residents, such efforts will undoubtedly take many years. Given the area's current limited level of educational attainment, the food processing industry offers the greatest chance of success in providing economic opportunity to current area residents.

- **Business and financial services**: Some jobs in this industry do not require high levels of education or skill and therefore could provide jobs for area residents more quickly. Much like other target industries, however, the educational attainment of area residents must be raised if AUC is to attract higher value operations. Regardless of the skill set demanded by business and financial services firms, infrastructural needs will likely be similar. Back office operations will require adequate office space for their operations. Much like educational attainment, AUC must develop a long-term strategy to ensure that there is adequate office inventory for potential business and financial services firms.

- **Creative industries**: Fortunately, businesses in this industry already have a significant presence in the Atlanta region, primarily in areas such as music and film. Furthermore, evolving changes in areas such as technology and workforce demands have produced rather unique financial realities that potentially favor areas such as AUC. In short, the importance of macro-level geographic decisions has lessened in favor of micro-level concerns over location.

  The transition of significant amounts of content to digital form has fueled a significant democratization of the creative industry. While cities such as New York and Los Angeles continue to host a proportionally large number of creative firms, they now longer dominate the industry as they once did. Few companies personify this trend better than CNN, further underscoring Atlanta's capacity to produce global content (*see insert*).

Today, a substantial share of Atlanta's independent film and video companies are located in Midtown Atlanta. The primary advantages of such a location include proximity to other firms as well as their own employees. As the AUC enjoys a similarly central location, it must forcefully promote the area to potential employers and workers as a creative destination. AUC must also highlight the fact that area colleges and universities annually produce scores of individuals with the necessary with education and skills to provide valuable services within creative industries.

Although the above industries offer the best short-term chances for success, other industries can provide longer-term economic impacts for the community. Industry sectors such as aviation & defense and advanced manufacturing are often accompanied by additional non-basic industries such as logistics & distribution firms and material suppliers. While these high-impact industries will require sustained recruitment efforts, their potential yield to the community in the form of higher wages and greater employment justifies their inclusion in the plan.
The following **long-term target industries** will need to be developed over a longer period of time so the area can better prepare for them.

- **Aviation and defense**: These industries generally need workers with higher skill levels, such as engineers and draftsmen. The industries also require programs from trade and technical schools to prepare some workers. As the AUC does not currently have the workforce capabilities to adequately service the aviation and defense industry, increasing the relevant skill sets of residents and students alike must be a top priority. If AUC can provide the necessary workers for the aviation and defense industry, the area should begin to benefit from its remarkably fortuitous location. Atlanta's Hartsfield-Jackson Airport, the busiest commercial airport in the world, is located just 30 miles south of Dobbins Air Reserve Base, the world's largest multi-service reserve training base. The AUC is located directly in between these two facilities, giving it immediate proximity to extensive commercial and defense-related aviation industries. If AUC is to exploit its physical advantages, however, the area's educational deficiencies must be addressed.

- **Software**: Software businesses require computer programmers, computer engineers, and technicians who are well trained. While a current examination of the AUC area's workforce does not reveal a particularly strong immediate capacity to attract software firms, a strategic utilization of local and neighboring assets could prove transformative. Although many AUC residents do not possess the necessary skills to work in the software industry, the presence of multiple colleges and universities provides ample training opportunities. Furthermore, few places in the country enjoy proximity to such notable technology-oriented research universities such as Georgia Tech. By strengthening ties to adjacent institutions while simultaneously directing local resources towards workforce advancement, AUC can promote itself as the ideal destination for regional software enterprises in the years ahead.

- **Life sciences**: This industry requires medical research and development and wet lab space, which is present to some extent at the Morehouse School of Medicine. The highly skilled workforce needed by Life Sciences firms will also be more difficult to provide than for those industries targeted for immediate attention.

In areas such as food processing and the creative industries, AUC possesses immediate advantages that it can leverage for short-term gains as it develops the necessary assets for long-term growth. In contrast, successful recruitment of the life sciences will require sustained investment in both hard and soft assets before the area's potential can be realized. Unlike the creative industries, many life sciences firms require highly specialized facilities that can often be accommodated only through substantial capital expenditures. Additionally, such ventures typically require staffing by a highly educated corps of researchers.

Academic research funding remains the most practical route available to the AUC in securing both hard infrastructure and fostering a life sciences workforce. By further establishing themselves as primary research institutes, the colleges and universities that comprise AUC can invest in specialized facilities and personnel, the two most important elements to the life science industry.

- **Advanced manufacturing**: This industry requires a well-trained, highly skilled workforce and excellent research and development capacity, particularly for start-up companies. Currently, AUC can provide neither attraction to advanced manufacturing firms. More than any other target industry, success in advanced manufacturing will depend on successes in other industries. Thriving advanced manufacturing industries are often the result of local research. If AUC can establish itself as an advantageous location for life science research, for example, it will be well positioned to then manufacture locally developed intellectual property.

THE PARADOXICAL VALUE OF GEOGRAPHY IN THE AGE OF CREATIVE TECHNOLOGY

Upon its initial broadcast in 1980, Turner Broadcasting's CNN channel forever changed news coverage in America. Traditionally, news networks expanded beyond major metropolitan areas such as New York only through the establishment of affiliates throughout the country that could transmit content via airwaves. Although this business model eventually yielded national news networks, the process took decades to achieve. In contrast, newcomer CNN relied on satellites and cable transmission to establish immediate global coverage.

At the time of CNN's founding, Atlanta could hardly be considered a global city, further underscoring the decline of geographic constraints on content. Although Atlanta would prove to be the fastest growing metropolitan area over the next two decades, nearly all the growth occurred outside the city limits. During this era, downtown Atlanta hemorrhaged jobs as companies departed for the neighboring suburbs. CNN and Turner Broadcasting, however, not only remained downtown, but also continued to expand within the city.

The ongoing construction of the company's midtown facilities only underscores Turner Broadcasting's commitment to the City of Atlanta. Importantly, Turner Broadcasting's strategy has little to do with any notions such as civic commitment but instead on sound business considerations. While ventures such as CNN proved that technological advances could allow content to be transmitted from anywhere in the world, such progress could not overcome the emerging lifestyle preferences of workers nor the continued decentralization of the industry.

During its early years, Turner Broadcasting was able to grow though acquisitions of existing media libraries. By purchasing content wholesale, the company was able to create new television stations via inexpensive distribution channels such as cable television. As the company matured, however, it began creating original content. Many of these new ventures, such as the Cartoon Network, were heavily reliant on creative and often independent labor.

Initially, the Cartoon Network initially aired previously purchased animated content. In an attempt to lure older views, however, the network soon began creating original material solely aimed at adults. The strategy required the labors of new workers such as writers, animators, and editors. Much like Turner Broadcasting as a whole, the Cartoon Network was increasingly competing for talent with companies based in more historically recognized creative centers such as New York.

Although Atlanta is widely recognized as a poster child of urban sprawl, Turner Broadcasting's urban location within the city helped it compete for young, creative professionals with urban inclinations. As cities throughout America pursued a diminishing pool of educated, young workers, in 2000 the City of Atlanta posted its first population gain in 30 years. The population increase proved that that attracting creative types could prove economic advancement.

In addition to increasing its ability to lure talented workers to the city, Turner's location within the city also facilitated a more decentralized workforce. With the declining cost of technology, personnel cost became an increasingly large percentage of content creation. In much the same way as the Hollywood studio system had collapsed during the 1950s, television networks during were increasingly sourcing work to area firms that could provide services more efficiently. As a result, studios such as the Cartoon Network began to hire outside contractors to perform a large share of content creation rather than risk a bloated workforce. Such lower costs, however, only worked in situations that enjoyed proximity to relevant industry clusters. An editor might no longer be housed in a neighboring cubicle, but they still needed to be easily reached. An urban environment proved essential in meeting the demands of companies such as Turner Broadcasting.

HOW TO APPROACH THE SELECTED TARGET INDUSTRIES

Within each of the seven final target industries, this report identifies "niche targets." Niche targets are sectors AngelouEconomics believes the Atlanta University Corridor is uniquely positioned to attract and, therefore, should receive most of its attention and resources.

However, AE does not recommend that niche sectors be specifically referred to as the region's final "targets." Clearly, this would yield too many target names, and the synergies between them would be lost. Grouping niche sectors under the main heading "targets" can yield many positive results overall. Fewer, broader target headings will:

- Allow the community to band together around groups that they understand intuitively (e.g. "Medical Research" vs. "Contract Research & Testing").
- Allow local leaders to maintain a list that can be supported by all economic development organizations, while specific responsibilities will be spread out.
- Allow more visionary marketing campaigns to be created.
- Allow leaders to prioritize the target list better.
- Allow each main target to receive equal treatment. While the tactics used to develop each target industry will be customized to the nature of that industry, each should receive equal emphasis from economic development efforts.

EACH TARGET IS PROFILED IN DETAIL IN THE FOLLOWING PAGES.

We include the following information for each target industry:

- A description of the industry
- An overview of industry trends
- A description of the location criteria for the industry:
  - Economic Conditions
  - Market / Geography
  - Structural Assets
  - Research and Development
  - Workforce
- Occupational and Skill Set Analysis
- Industry Strength Analysis
- Niche sectors of each industry that the Atlanta University Corridor has the greatest ability to support
- A ranking of the strongest metropolitan areas for each cluster

Aviation Industry Overview

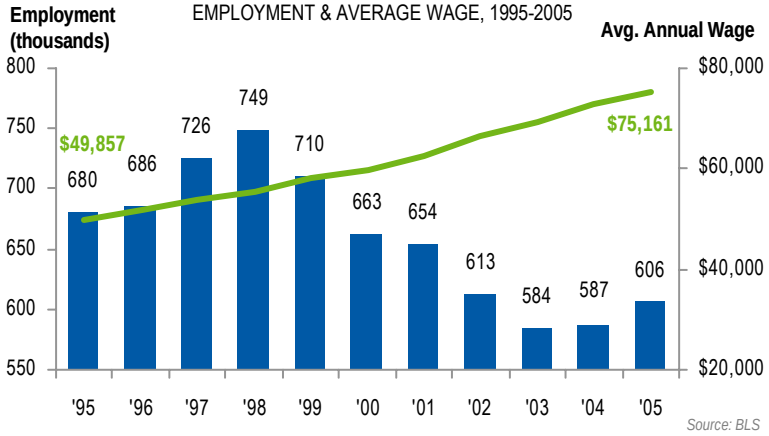
AVIATION & AEROSPACE	
NAICS Description	
3364	Aerospace Product and Parts Mftg
336411	Aircraft Mftg
336412	Aircraft Engine and Engine Parts Mftg
336413	Other Aircraft Parts and Auxiliary Equipment Mftg
336414	Guided Missile (GM) and Space Vehicle Mftg
336415	Space Vehicle Propulsion, Propulsion Unit Parts Mftg
336419	Other GM and SVP and Auxiliary Equipment Mftg
334511	Search, Navigation, Guid., Aeronautical, Instrument Mftg
481	Air Transportation
4881	Support Activities for Air Transportation
U.S. Industry Employment	
606,000	
Average Wage	
$75,161	
Location Criteria	
Educated Workforce	
Research Institutions	
High Tech Cluster	
Access to Capital	

Aviation is a broad industry that consists of civilian and military aircraft, space vehicles, and missiles, air transportation services and is sometimes referred to as aerospace. Aircraft suppliers provide parts and machinery for aircraft assembly and maintenance. These parts include engines, interior components, avionics, and aircraft hardware such as landing gear. Suppliers are important for both the assembly and maintenance of aircraft. The aerospace industry's customers include the military, commercial airlines, and general aviation.

The industry has suffered in recent years due to falling orders for new aircraft, but growth has returned in 2005 and is expected to continue into 2006. Aerospace industry employment fell every year from 1998 to 2003. In 2003 alone, the industry shed over 30,000 jobs to end the year with 584,000 employees, but added just over 20,000 jobs in 2005. Sales experienced a healthy rebound in 2005, adding 9% to close the year at $170 billion, according to the Aerospace Industries Association (AIA). The government is the largest customer segment of the aerospace industry (about 60% of all sales), and increased sales to the Pentagon are offsetting declines in the commercial aircraft market.

Civilian aircraft sales fell sharply following September 11, 2001. Pent up demand and a growing economy will lift civil aircraft sales over the next several years. Military aircraft was the fastest growing segment in terms of sales, from 2003 to 2005, adding 24%.

AVIATION & AEROSPACE



The aerospace industry offers some of the highest salaries in the manufacturing sector. According to the U.S. Bureau of Labor Statistics, aerospace products and parts manufacturing workers earned an average annual salary of $73,000 in 2004, an increase of 46% since 1995. The leading geographic centers for aircraft and parts manufacturing in the U.S. are Washington, California, Kansas, Texas, and Connecticut.

Defense Industry Overview

The defense industry includes a wide-ranging group of individual industries targeting the same market, the Department of Defense (DoD), and its foreign equivalents. The DoD buys everything from desks to aircraft carriers, but due to its purchasing power, it also drives product development.

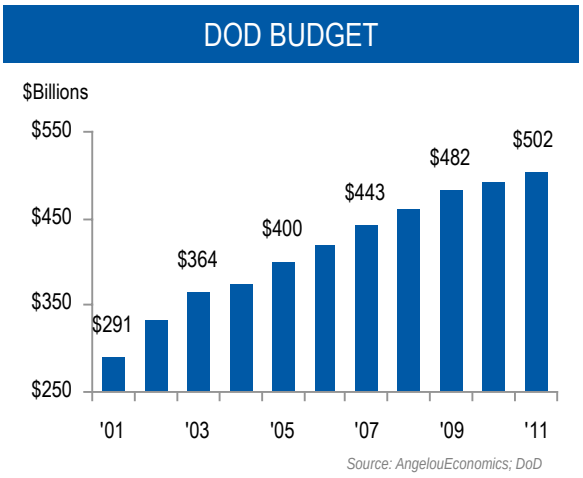
The U.S. security market is broad and includes market segments such as surveillance and monitoring, access control, biometrics, computer security, fire/burglar alarms, and home automation, just to name a few.

Defense Industry Trends

The events of September 11th continue to produce the most significant changes in military and foreign policies since the end of the Cold War. President Bush's new strategic doctrine for the U.S., first revealed in June 2002 and formalized in a National Security Strategy (NSS) document published three months later, signaled an end to the Cold War doctrine of deterrence because it failed to prevent terrorist attacks. Instead, the Administration outlined a doctrine based on pre-emptive action against rogue states believed to be harboring terrorists, most notably Al-Qaeda, or developing weapons of mass destruction (WMD). Eliminating the threat posed by WMD in the hands of regimes opposed to the U.S. is a clear priority for the Bush administration.

These changes place the U.S. on almost permanent war footing. The new realities of the "war on terrorism" mean that the post-Cold War military strategy, which demanded that the U.S. be able to fight two regional wars at the same time, has been jettisoned. Keeping wars quick and focused on well-defined goals is not possible when an organization such as Al-Qaeda is estimated to have cells in as many as 60 countries. Further revision of military doctrine is likely to be seen in the immediate aftermath of the Iraq campaign in which U.S. forces were successful beyond expectations. Force transformation will continue apace in order to develop increasingly flexible force structures designed to counter emerging threats such as terrorism and WMD.

U.S. defense spending continues to rise with continuing military action abroad and an acceleration of planned research and procurement. The White House budget request for 2006 includes $419 billion for the Department of Defense (DoD), which does not include an additional $100 billion to pay for the wars in Iraq and Afghanistan or approximately $20 billion in nuclear weapons work performed by the Department of Energy.



The 2006 budget represents a staggering $128 billion increase in funding from the 2001 budget, a 44% increase. Defense spending growth will continue through at least 2011 when the DoD budget is expected to reach $502 billion. From 2001 to 2011 the 6% annual growth rate for DoD budgets represents nearly twice the growth rate of the overall economy.

The Administration's 2006 defense budget represents a continuation of the previously established priorities. Growth remains solid and, for the most part, changes to the prior budget plan are minimal. The budget does include $30 billion in cuts to major programs, including, as expected, the F/A-22 Raptor stealth multi-role fighter aircraft, Virginia-

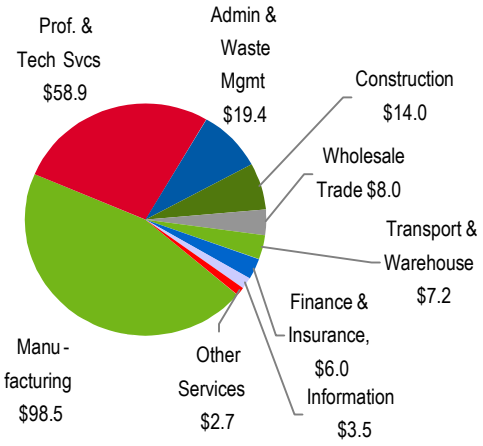
class nuclear-powered attack submarine, and C-130J tactical transport aircraft. However, most of the funding cuts are in future years' budgets and could be changed or reversed.

The Defense Department spends over half its budget with outside private sector contractors, $230 billion last year. The DoD contracts with outside vendors for a wide variety of goods and services, with weapons procurement only accounting for 40%. DoD is a heavy purchaser of manufactured goods, purchasing nearly $100 billion worth in 2004. Spending in this industry is dominated by large-scale weapon platforms, but the DoD spent over $100 million on 19 of the 20 manufacturing sub-sectors, including everything from textiles to furniture.

Professional, scientific, and technical services are the second largest recipients of DoD contracting, with $59 billion spent in 2004. Research and development in engineering and life sciences account for 40% of total spending and engineering services account for another 40%.

DEFENSE PROCUREMENT TODAY

DOD PROCUREMENT SPENDING BREAKDOWN, 2004



INDUSTRY REQUIREMENTS

Structural Assets

Aircraft and aircraft parts manufacturers are typically medium to large-scale operations requiring a sizable tract of land. Aircraft assemblers desire proximity to a large, international airport. Manufacturers seek locations with favorable weather. Air traffic congestion can also be a major detriment to testing and getting product in and out the door. A land buffer or a limit to residential growth nearby helps prevent public complaints of noise that could threaten future operations. Facilities range in size from several hundred thousand square feet to the millions. Any facility will require ample access to electricity, natural gas, water, and wastewater. An excellent transportation system including both interstate and rail access, in addition to a commercial airport, will also be required. Port access sometimes is required to ship large subassemblies such as wings.

Cost of Doing Business

Aircraft parts manufacturing companies are large-scale, low-margin operations whose profitability is greatly influenced by recurring costs. They are large users of electricity and natural gas and pay large amounts of property taxes. Any location decision will be heavily influenced by tax rates, utility costs, and prevailing wage rates. Due to the number and diversity of employees, these operations are fiercely sought after and command large amounts of incentives. Typical incentives are similar to the automotive industry and have included tax abatements, tax credits, worker-training grants, and infrastructure improvements.

Research & Development

R&D activity in the aircraft manufacturing industry abounds, though it generally focuses on product development rather than later-staged manufacturing processes. Major funding sources for underlying aerospace technologies come from the Department of Defense and NASA. The majority of industry research is conducted in-house at private research and design facilities.

Economic Conditions

A sizable aircraft industry depends on demand driven by final manufacturers like Boeing and Northrop Grumman. Technical and trade schools are needed to educate and train workers.

Workforce

Semi-skilled and skilled workers are required for aircraft parts manufacturing, including many engineers and drafters. Mechanics and aircraft technicians will be needed for any maintenance facility. Skilled machinists are required to make parts that are not mass-produced. As with automotive suppliers, an aircraft manufacturing facility will desire both a four-year engineering university, as well as a good technical college. Technical colleges should provide a strong aviation program with courses in airframe and power plant technology.

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

Our analysis of the data allows us to determine the skill set of Atlanta's workforce, and the wage and education requirements for each occupation. The following chart provides Atlanta's employment per 10,000 workers for each occupation, while comparing it to the U.S. This allows us to determine the strengths and weaknesses of Atlanta's occupational makeup. Once these gaps are identified, the region can work to improve the weaknesses or leverage the strengths in its existing workforce.

Occupation and Skill Set Analysis

Key Occupations in the Aviation and Defense Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
Commercial pilots	1.9	1.5	$65,560	$67,910	17%	Postsecondary vocational award
Engineering technicians, except drafters, all other	6.0	3.3	$52,400	$48,070	12%	Associate degree
Baggage porters and bellhops	3.9	2.3	$20,870	$23,290	14%	Short-term o-t-j training
Materials engineers	1.6	--	$71,390	$59,220	12%	Bachelor's degree
Industrial engineers	14.7	13.3	$68,500	$67,970	16%	Bachelor's degree
Mechanical engineers	16.9	8.0	$70,000	$67,220	11%	Bachelor's degree
Drafters, all other	1.6	0.9	$45,420	$39,930	14%	Postsecondary vocational award
Electro-mechanical technicians	1.2	0.5	$45,670	$35,770	10%	Associate degree
Lathe and turning machine tool setters, operators, and tenders, metal and plastic	5.5	1.1	$32,750	$27,340	-9%	Moderate-term o-t-j training
Painters, transportation equipment	4.0	3.4	$37,720	$41,670	14%	Long-term o-t-j training
Milling and planing machine setters, operators, and tenders, metal and plastic	2.2	1.2	$32,120	$26,370	-5%	Moderate-term o-t-j training
Industrial engineering technicians	5.6	5.3	$49,220	--	10%	Associate degree
Engineering managers	14.4	18.5	$105,470	$90,700	13%	Bachelor's or higher degree, + work exp.
Engineers, all other	11.7	7.0	$77,570	$61,380	15%	Bachelor's degree
Machinists	28.3	13.8	$35,350	$37,170	4%	Long-term o-t-j training
Grinding and polishing workers, hand	3.4	1.3	$25,010	$23,430	-9%	Moderate-term o-t-j training
Computer-controlled machine tool operators, metal and plastic	10.5	3.0	$32,060	$31,740	-1%	Moderate-term o-t-j training
Electrical and electronics repairers, commercial and industrial equipment	5.3	9.9	$44,350	$39,620	10%	Postsecondary vocational award
Purchasing agents, except wholesale, retail, and farm products	20.5	19.5	$52,560	$50,040	8%	Work experience in a related occupation
Material moving workers, all other	4.1	2.1	$32,550	$32,490	-5%	Moderate-term o-t-j training
Numerical tool and process control programmers	1.4	0.8	$43,990	$42,300	-1%	Long-term o-t-j training
Tool and die makers	7.6	3.0	$44,940	$43,760	-3%	Long-term o-t-j training
Industrial production managers	11.8	10.6	$81,960	$84,870	1%	Work experience in a related occupation
Grinding, polishing, and buffing machine tool operators	7.8	3.2	$29,600	$28,820	-10%	Moderate-term o-t-j training
Multiple machine tool setters, operators, and tenders, metal and plastic	7.5	3.1	$31,550	$28,570	0%	Moderate-term o-t-j training
Electromechanical equipment assemblers	4.4	1.0	$28,520	$26,000	-14%	Short-term o-t-j training
Inspectors, testers, sorters, samplers, and weighers	38.8	29.5	$32,250	$30,890	-3%	Moderate-term o-t-j training
Production, planning, and expediting clerks	22.1	30.3	$38,920	$38,680	8%	Short-term o-t-j training
Structural metal fabricators and fitters	7.2	4.2	$31,390	$28,730	3%	Moderate-term o-t-j training
Maintenance workers, machinery	6.4	3.8	$35,270	$35,260	3%	Short-term o-t-j training
Sheet metal workers	13.4	13.8	$39,570	$36,110	12%	Long-term o-t-j training
Operations research analysts	4.0	7.0	$65,940	$62,750	8%	Master's degree
Health and safety engineers, except mining safety engineers and inspectors	1.9	2.8	$67,240	$66,780	13%	Bachelor's degree
Mechanical engineering technicians	3.6	1.4	$46,520	$46,650	12%	Associate degree
Management analysts	33.8	45.5	$75,000	$76,540	20%	Bachelor's or higher degree, + work exp.
Mechanical drafters	5.7	2.0	$45,490	$42,200	5%	Postsecondary vocational award
Computer specialists, all other	9.0	--	$63,190	$64,120	19%	Associate degree
Electrical and electronics drafters	2.3	2.2	$48,410	$48,360	1%	Postsecondary vocational award
Human resources, training, and labor relations specialists, all other	13.2	8.7	$50,480	$56,220	24%	Bachelor's degree
Forging machine setters, operators, and tenders, metal and plastic	2.6	1.9	$30,220	$24,570	-5%	Moderate-term o-t-j training
Technical writers	3.5	3.0	$57,720	$56,150	23%	Bachelor's degree
Occupational health and safety specialists	2.7	1.2	$55,800	$57,380	12%	Bachelor's degree
Purchasing managers	5.3	8.3	$81,440	$79,700	7%	Bachelor's or higher degree, + work exp.
Occupational health and safety technicians	0.7	0.2	$46,120	$36,610	17%	Postsecondary vocational award

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

Our analysis of the data allows us to determine the strength of each of the micro-industries that make up the industry cluster in the Atlanta MSA, which provides a better understanding of the relative strength or weakness of the cluster. The following chart displays Atlanta's number of establishments, employment, and cluster concentration for each industry sub-sector within Aviation and Defense. A value of '1' indicates that the cluster in the Atlanta MSA is as concentrated as it is throughout the United States; a value of less than '1' indicates that the cluster is not as concentrated as it is throughout the United States; and a value of greater than '1' indicates that the cluster is more concentrated in the Atlanta MSA than it is throughout the United States. So for example, the Air Transportation industry, with a cluster value of 4.21, is more than 4 times as strong in the Atlanta MSA as it is throughout the United States.

- Relative to the U.S., the region has an extremely healthy Air Transportation industry
- Most of the major sub-sectors are strong, including Support Activities for Air Transportation and Maintenance
- The aviation services cluster is expanding in the region and growing at a rapid rate nationally
- Information for several of the clusters is not disclosed due to privacy regulations

Atlanta MSA Industry Strengh Analysis: Aviation and Defense

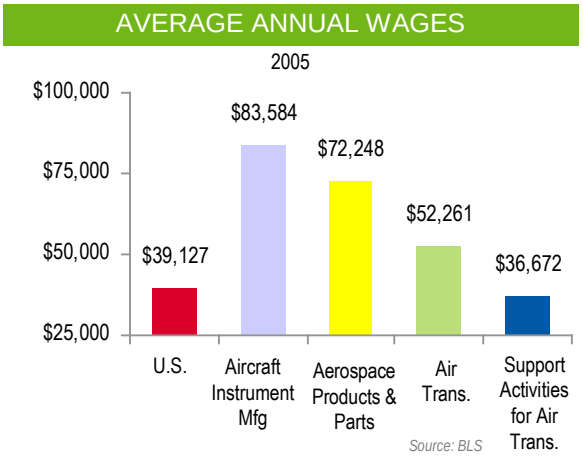
NAICS	Description	Establishments	Employees	Cluster
336412	Aircraft Engine and Engine Parts Manufacturing	3	250	0.18
336413	Other Aircraft Parts and Auxillary Equipment Manufacturing	8	86	0.06
481	Air Transportation	94	37458	4.21
481112	Scheduled Freight Air Transportation	11	316	1.48
4881	Support Activities for Air Transportation	92	2658	1.09
488190	Aircraft Maintenance and Repair	73	1619	1.21

**Not all industries are included due to Non-disclosure requirements.*

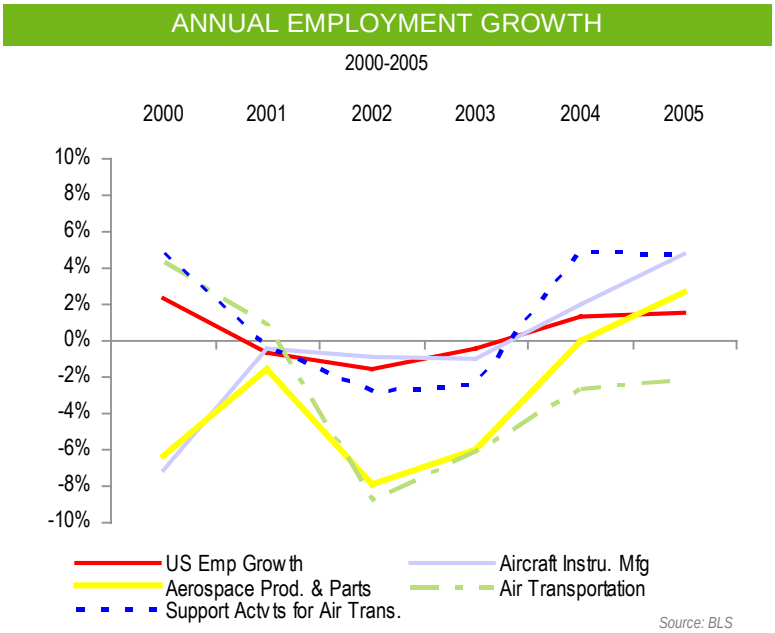
AVIATION AND DEFENSE NICHE SECTORS

Aircraft Maintenance, Repair, Overhaul (MRO)

The global MRO business is showing signs of strengthening. Airlines are slowly adding capacity as maintenance providers seek strategic partnerships with carriers and original equipment manufacturers to position themselves for long-term viability. According to an MRO forecast recently compiled by BACK Aviation Solutions Inc, and Strand Associates Inc., during the next five years the value of the commercial jet transport MRO market will increase nearly 13% to $41 billion from $37 billion this year. During the next 10 years, the two MRO consulting companies project an overall growth of more than 32%, or about 2.9% annually for the period.



Intense competition among aircraft manufacturers will continue to reduce aircraft prices and profit margins into the near future. This will cause aircraft manufacturers to allocate more resources towards securing aftermarket business. Aircraft companies are also looking to reduce operating risks and capital expenditures. These two industry goals are forcing aircraft manufacturers to adopt principles from the automobile leasing market. In the near future, aircraft manufacturers will begin to bundle maintenance burden with aircraft purchase or lease. This will eliminate the need for aircraft operators to invest in or carry spare parts and inventory. Despite an overall positive outlook for this niche sector, some challenges still exist with efficient material handling and customs clearance, competition from China and SE Asia, dependence on parent airlines, and antiquated IT systems.



Defense Manufacturing

Defense manufacturing is not as clear cut as other targets, focusing on the end-user rather than the producer. As the DoD transitions to more mobile operations, the need for new products expands. The Pentagon is ordering fewer military specific tanks, ships, and aircraft, instead choosing to focus on small scale solutions to tackle specific problems. New defense manufacturing facilities will produce

deployable Unmanned Aerial Vehicles (UAVs), advanced communications equipment, and nanotech heavy uniforms. The industry is increasingly concerned about operating costs and liability issues. The Atlanta University Corridor would be a good fit for this niche target due to the military base presence, the availability of highly trained ex-military personnel that are looking to enter the private sector, and the presence of related companies.

Component Manufacturing

Component manufacturers manufacture input parts or raw materials to higher tier or OEM aircraft manufacturers. Like the automotive industry, these component manufacturers prefer to be in close proximity to the final manufacturing facility they supply.

Sensors

The U.S. government is demanding new biological detection agents and sensors to detect and protect against chemical and terrorist attacks. A main thrust of the 2005 budget earmarked security advances in the nation's ports and borders. The 2005 DHS budget allocates $5.3 billion for the Bureau of Customs and Border Protection. Included in this amount is: $126 million for the Container Security Initiative; $80 million for radiation portal monitors and other detection technology at both land and sea ports; and $64.2 million for sensor and surveillance technology.

Additionally, sensors have a multitude of private sector uses. Biosensors are devices that utilize enzymes or antibodies to detect chemical compounds, usually by electrical, thermal or optical signals. Some of the most common uses include: glucose monitoring in diabetes patients, remote sensing of airborne bacteria, detection of pathogens, and determining levels of toxic substances before and after bioremediation. The blood glucose biosensor has enjoyed the most commercial success and is acting as a market driver, fueling development of associated sensor applications.

TARGET MARKETS

The Atlanta University Corridor will find the most success in targeting companies from specific markets such as Seattle, Boston, Connecticut, and Los Angeles– all higher cost locations with large clusters of aviation and aerospace employment.

METRO RANKING: AEROSPACE MANUFACTURING

MSA	Employment	Cluster
Seattle-Tacoma-Bellevue, WA	60,115	**11.34**
Fort Walton Beach-Crestview-Destin, FL	2,092	**7.93**
Huntsville, AL	3,229	**5.54**
Palm Bay-Melbourne-Titusville, FL	2,663	**3.96**
Dallas-Fort Worth-Arlington, TX	34,397	**3.70**
Los Angeles-Long Beach-Santa Ana, CA	50,989	**2.64**
Cincinnati-Middletown, OH-KY-IN	8,455	**2.41**
Indianapolis, IN	4,985	**1.72**
New Haven-Milford, CT	2,156	**1.70**
Boston-Cambridge-Quincy, MA-NH	10,826	**1.33**

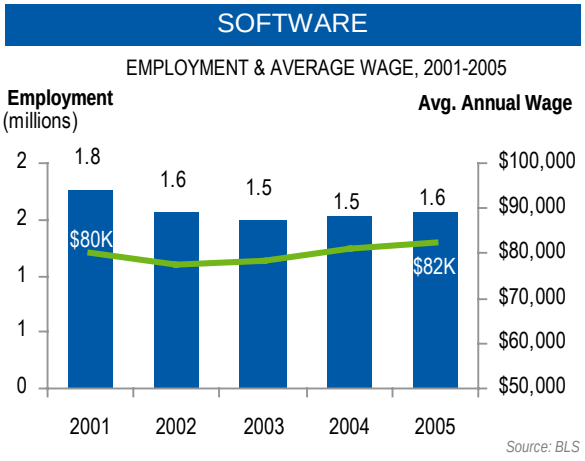
Source: Bureau of Labor Statistics

Industry Overview

SOFTWARE	
NAICS	
5112	Software Publishers
5161	Internet Publishing and Broadcasting
5181	Internet Service Providers and Web Search Portals
5415	Computer Systems Design and Related Services
Employment	
1.6 Million Employed - U.S. 2005	
Wage Rates	
$82,600 Average Annual Wage - U.S. 2005	
Location Criteria	
Educated Workforce	
Quality of Life Conducive to Young Professionals	
Affordable and Reliable Utilities	
Quality Office Space	

Software firms have worldwide revenues in excess of $200 billion and account for over 2 million jobs worldwide. The U.S. software industry is experiencing positive growth after several difficult years following the "dot com" bust. Employment and average wages increased in 2005 to 1.6 million and $82,600 respectively. Approximately half of revenue in the industry comes from software applications, development tools, with infrastructure software splitting the remaining market. Due to the low start-up costs associated with a software firm, many small companies exist, but still face a challenge to remain profitable as the growth of the revenue pool is not keeping pace with the growth of new firms. These smaller firms are particularly vulnerable to changes in the market, as they are generally very specialized within specific niche sectors. Larger firms supply a broad array of software solutions across a variety of industries, allowing them more insulation against shifts in the market. The industry is quickly maturing and many analysts forecast consolidation of these firms. Microsoft and IBM account for acquisitions of over $1 billion and Oracle acquired Peoplesoft through an 18-month hostile bid for $10.3 billion in January of 2005.

Potential areas of growth are in compliance software, open source software, security software, virus protection software, anti-spam software, and business intelligence software. There are several factors driving this growth. The recent corporate scandals and terrorist attacks, which had devastating effects on the financial markets, are forcing companies to adhere to stricter government regulations. These regulations require companies to implement software that provides immediate disclosure of events relevant to financial performance, maintain accurate records of electronic communication, and effectively detect any illegal activity.



Other major trends in the software industry include outsourcing programming duties to low cost regions, which mimics other mature industries, and the "open source" movement. China, India, and Russia have low cost computer scientists, ensuring further investment in these regions. The "open source" movement has gained momentum behind the Linux operating system. Open source refers to the practice of allowing free access to the building blocks of a computer program, which in turn multiplies the number of programmers who can work on building solutions around that program.

Industry Requirements

Economic Conditions

Software companies seek communities with a well-educated and creative workforce. Software employees are highly mobile and quality of life is especially important to attracting and retaining experienced technical workers especially during periods of growth.

Software and Internet companies' primary costs are computer and networking equipment, and employee salaries. The Internet makes software distribution very cheap and efficient so transportation costs are not an issue. Software firms pay high wages, employ highly skilled workers, and are extremely low impact operations that are highly coveted by communities.

Market/Geography

Software firms are located in nearly every city in the United States. Major centers for the software and Internet industry are Seattle, San Jose, Washington D.C., Boston, Austin, New York, Raleigh, and Boulder.

Structural Assets

Along with affordable office space, software firms require reliable utility service at low rates. Many industry firms will require access to a SONET ring and numerous T-1 lines. Software companies will also require high-end office space.

Research & Development

Due to the relatively low cost of computers, computer science development can occur nearly anywhere. Many significant developments are produced by hobbyists and entrepreneurs as well as by universities and corporations. Due to the large amount of proprietary information involved, software firms keep all R&D in house. Microsoft, for example, has never revealed the source code for its Windows operating system effectively suppressing any outside research.

Workforce

Software companies require computer scientists, computer engineers, and technicians. Software firms' need for well-trained workers will drive them to areas where they can meet recruitment needs.

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

Our analysis of the data allows us to determine the skill set of Atlanta's workforce, and the wage and education requirements for each occupation. The following chart provides Atlanta's employment per 10,000 workers for each occupation, while comparing it to the U.S. This allows us to determine the strengths and weaknesses of Atlanta's occupational makeup. Once these gaps are identified, the region can work to improve the weaknesses or leverage the strengths in its existing workforce.

Occupation and Skill Set Analysis

Key Occupations in the Software Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
Computer software engineers, applications	35.0	49.7	$79,540	$72,360	48%	Bachelor's degree
Computer and information scientists, research	2.0	1.1	$94,030	$63,230	26%	Doctoral degree
Computer programmers	29.9	42.7	$67,400	$77,340	2%	Bachelor's degree
Multi-media artists and animators	1.8	1.7	$57,270	$48,480	14%	Bachelor's degree
Technical writers	3.5	3.0	$57,720	$56,150	23%	Bachelor's degree
Computer support specialists	38.4	72.4	$43,380	$43,470	23%	Associate degree
Network systems and data communications analysts	14.2	32.8	$64,970	$66,280	55%	Bachelor's degree
Computer systems analysts	37.8	60.3	$70,430	$72,300	31%	Bachelor's degree
Computer and information systems managers	19.9	36.0	$102,360	$101,440	26%	Bachelor's or higher degree, + work exp.
Network and computer systems administrators	20.7	26.8	$63,210	$61,240	38%	Bachelor's degree
Database administrators	7.6	10.5	$65,590	$66,100	38%	Bachelor's degree
Computer hardware engineers	6.0	2.9	$87,170	$77,390	10%	Bachelor's degree
Computer specialists, all other	9.0	--	$63,190	$64,120	19%	Associate degree
Operations research analysts	4.0	7.0	$65,940	$62,750	8%	Master's degree
Sales engineers	5.4	6.4	$79,370	$75,210	14%	Bachelor's degree
Marketing managers	12.8	27.9	$101,990	$90,260	21%	Bachelor's or higher degree, + work exp.
Sales reps, wholesale and mftg, technical and scientific products	29.2	58.5	$68,940	$84,040	14%	Moderate-term o-t-j training
Market research analysts	15.0	13.0	$64,370	$58,730	20%	Bachelor's degree
Computer operators	9.9	16.1	$33,580	$37,520	-33%	Moderate-term o-t-j training
Management analysts	33.8	45.5	$75,000	$76,540	20%	Bachelor's or higher degree, + work exp.
Sales representatives, services, all other	33.7	29.0	$54,230	$53,520	19%	Moderate-term o-t-j training
Cartographers and photogrammetrists	0.9	1.0	$51,340	$49,890	15%	Bachelor's degree
Computer, automated teller, and office machine repairers	10.6	11.1	$37,640	$37,960	4%	Postsecondary vocational award
Editors	7.4	5.7	$51,750	$49,750	15%	Bachelor's degree
Advertising and promotions managers	3.2	6.5	$81,250	$84,930	20%	Bachelor's or higher degree, + work exp.
Sales managers	24.4	59.7	$98,510	$104,920	20%	Bachelor's or higher degree, + work exp.
Writers and authors	3.3	3.2	$53,850	$55,300	18%	Bachelor's degree
Telecommunications equipment installers and repairers, except line installers	15.2	15.5	$49,330	$47,390	-5%	Long-term o-t-j training
Training and development managers	2.2	5.4	$80,180	$82,400	26%	Bachelor's or higher degree, + work exp.
Engineering managers	14.4	18.5	$105,470	$90,700	13%	Bachelor's or higher degree, + work exp.
Training and development specialists	15.9	22.0	$49,060	$55,530	21%	Bachelor's degree
Telephone operators	2.2	3.8	$31,030	$34,340	-36%	Short-term o-t-j training
Art directors	2.3	2.3	$73,790	$78,730	12%	Bachelor's or higher degree, + work exp.
Human resources managers, all other	4.4	7.6	$89,950	$89,100	16%	Bachelor's or higher degree, + work exp.
Chief executives	24.7	54.9	$139,810	$162,740	15%	Bachelor's or higher degree, + work exp.
Compensation and benefits managers	3.9	5.7	$76,300	$78,530	21%	Bachelor's or higher degree, + work exp.
Graphic designers	13.7	12.0	$42,530	$43,740	15%	Bachelor's degree
Employment, recruitment, and placement specialists	13.9	--	$48,470	$61,350	30%	Bachelor's degree
Data entry keyers	22.8	28.5	$24,910	$26,760	-1%	Moderate-term o-t-j training
Electronics engineers, except computer	10.0	12.6	$79,990	$72,460	10%	Bachelor's degree
Financial analysts	13.9	20.8	$73,130	$72,960	17%	Bachelor's degree
Administrative services managers	18.4	29.9	$69,540	$67,240	17%	Bachelor's or higher degree, + work exp.
Electrical and electronic engineering technicians	12.7	22.6	$48,710	$46,860	10%	Associate degree
Electrical engineers	11.1	11.7	$76,060	$73,880	12%	Bachelor's degree

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

Our analysis of the data allows us to determine the presence in Atlanta of the micro-industries that make up the industry cluster, which provides a better understanding of the relative strength or weakness of the cluster in the Atlanta MSA. The following chart displays Atlanta's number of establishments, employment, and cluster concentration for each industry sub-sector within Software. A value of '1' indicates that the cluster in the Atlanta MSA is as concentrated as it is throughout the United States; a value of less than '1' indicates that the cluster is not as concentrated as it is throughout the United States; and a value of greater than '1' indicates that the cluster is more concentrated in the Atlanta MSA than it is throughout the United States. So for example, Software Publishers, with a cluster of 2.48, is almost 2.5 times as concentrated in the Atlanta MSA as it is throughout the United States.

- Relative to the U.S., the region has an extremely healthy Software Industry
- Most of the major sub-sectors are strong including Programming, Computer Systems Design, and ISPs
- The software cluster is projected to grow at a rapid rate nationally over the next ten years
- Information for several of the clusters is not disclosed due to privacy regulations

Atlanta MSA Industry Strengh Analysis: Software

NAICS	Description	Establishments	Employees	Cluster
5112	Software Publishers	234	10127	2.48
5161	Internet Publishing and Broadcasting	68	575	1.13
5181	Internet Service Providers and Web Search Portals	155	3388	1.66
518111	Internet Service Providers	138	3342	1.84
518112	Web Search Portals	17	45	0.20
5415	Computer Systems Design and Related Services	4406	30081	1.52
541511	Custom Computer Programming Services	1928	15149	1.73
541512	Computer Systems Design Services	1690	10112	1.23
541513	Computer Facilities Management Services	68	1542	1.62
541519	Other Computer Related Services	720	3279	1.78

**Not all industries are included due to Non-disclosure requirements.*

Atlanta University Corridor's Assets

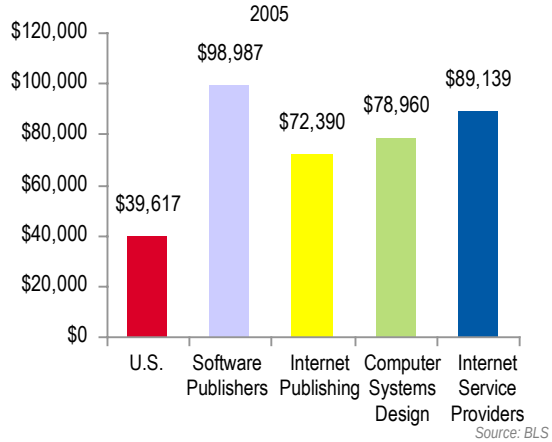
Although educational attainment throughout the 40 census tracts that make up the study area is relatively low, the area does have the highly educated student population, faculty, and staff at the six Historically Black Colleges and Universities in the Atlanta University Center. Furthermore, software companies, especially start-ups, require little in the way of infrastructure investment outside of office space and reliable, high-speed Internet connections. Fortunately, Atlanta features a remarkably robust fiber optic system. Furthermore, last year *Forbes* named Atlanta as the country's "most wired" city. If the AUC is to successfully recruit and promote a local software industry, however, the area must develop additional, high-quality office space.

Niche Targets

Game Design

The global video game market recorded revenues of $28 billion in 2005, which are forecast to increase to $42 billion by 2010. The industry is high growth and high margin, and clusters around the people who can design these games. Game design firms are similar in appearance and site selection characteristics to the design industry overall, with capable employees being paramount. Large clusters exist in San Francisco, Seattle, Los Angeles, Shanghai, and Austin. The industry is not cost sensitive, and small groups of designers can operate successfully as part of a large organization or as an independent freelance operation.

AVERAGE ANNUAL WAGES



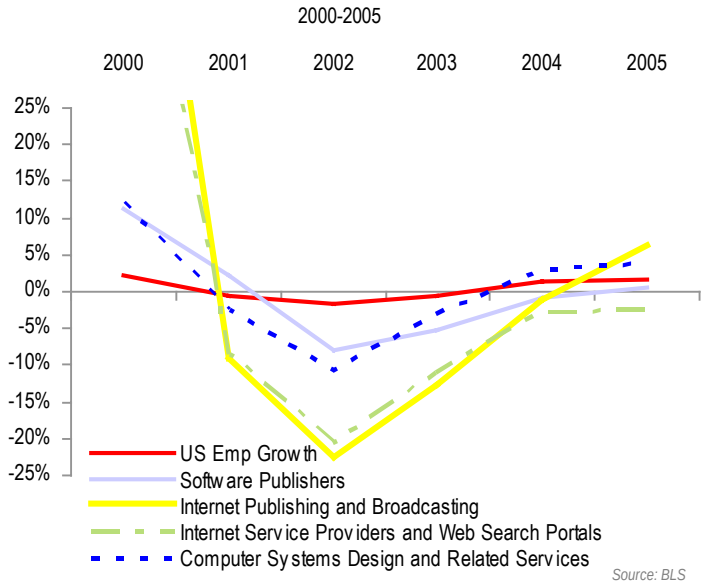
Source: BLS

Network Security

The need for increased computer and network security in both the private and public sector is drving growth in the software industry. Computer crime and security affects virtually every business and person in the modern world. March 2004 figures from mi2g, a technology security firm, show that the NetSky virus alone caused between $35.8 billion and $43.8 billion in damages worldwide. Such viruses not only wreck the computers they infect, but also clog email systems around the globe.

In the interest of national security, the Department of Homland Security (DHS) is promoting the research and development of software and technology that will protect information systems and databases, therby adding additional fuel to a growing network security industry. The emphasis on nework and data security is in combating terrorism, safe guarding senisitive information, and maintaining econimic stability. The DHS is focusing on revolutionary improvements to current capabilities as well as the development of new, innovative capabilities, which will drive demand in the network security market.

ANNUAL EMPLOYMENT GROWTH



Source: BLS

Consumer Software Applications

The consumer software market is focused on small end users, individuals, and small businesses. Firms in this market design off the shelf products, opposed to the custom programs designed for large corporations. Products include accounting software, anti-virus programs, organizational tools, web-based applications, and educational

courses. Development costs and barriers to entry are much lower in this segment of the software industry, with much of the core underlying software architecture available to the developer. The developer is less focused on software engineering, and more on design and ease of use. Firms require less advanced software expertise than the software industry overall, making the industry an excellent target for small to mid-size communities.

Visualization Technology

The practice of information analytics and visualization involves using computer software tools to assist in interpreting and analyzing vast amounts of data. Often referred to simply as visual analytics, it is defined as being the science of analytical reasoning facilitated by interactive visual interfaces. Visual analytics is used primarily to synthesize information, and derive insight from massive, dynamic, ambiguous, and often conflicting data. Some of the industry goals for visual analytics are to detect the expected and discover the unexpected, to provide timely, defensible, and understandable assessments, and to communicate assessments effectively for action.

Visual analytics has many realized and unrealized uses, but primarily it is being used for biology and national security purposes. Government agencies such as the CIA and NSA use visual analytics continuously in the interest of national security. Visual analytics is believed to be an integral part in our nation's fight against terrorism. Government agencies, including the Department of Homeland Security (DHS), rely heavily on the research and development of software for visual analytics.

Target Markets

The nature of software development is more mobile than other industries. Therefore, companies can easily move low value work overseas or to lower cost U.S. locations. Therefore, work that remains in the United States requires a well-skilled workforce in an efficient environment. Atlanta is well poised to be a low cost alternative for software companies in very high cost California metropolitan areas that are looking to lower costs on high value work.

METRO RANKING: SOFTWARE

MSA	Employment	Cluster
Boulder, CO	6,101	**21.97**
Seattle-Tacoma-Bellevue, WA	38,032	**13.36**
Provo-Orem, UT	3,028	**10.80**
San Jose-Sunnyvale-Santa Clara, CA	8,431	**5.05**
Austin-Round Rock, TX	5,266	**4.73**
San Francisco-Oakland-Fremont, CA	17,057	**4.70**
Ann Arbor, MI	1,279	**4.52**
Corvallis, OR	242	**4.27**
Santa Cruz-Watsonville, CA	702	**4.09**
Eugene-Springfield, OR	1,032	**4.05**

Source: Bureau of Labor Statistics

Industry Overview

The food processing industry includes establishments that manufacture or process food and beverages as well as related products such as chewing gum, manufactured ice, and vegetable and animal fats and oils. The food processing industry is the link between the agricultural and retail sectors. Raw fruits, vegetables, grains, meats, and dairy products are processed in the plants and then sold to retailers or wholesalers, who then pass these finished products along to the consumer.

FOOD & BEVERAGE MFTG.

NAICS Definition

311 Food Manufacturing

3121 Beverage Manufacturing

Employment

1.64 million employed - U.S. 2005

Wage Rates

$36,300 Average Annual Wage - U.S. 2005

Location Criteria

Transportation Infrastructure

Low Cost of Doing Business

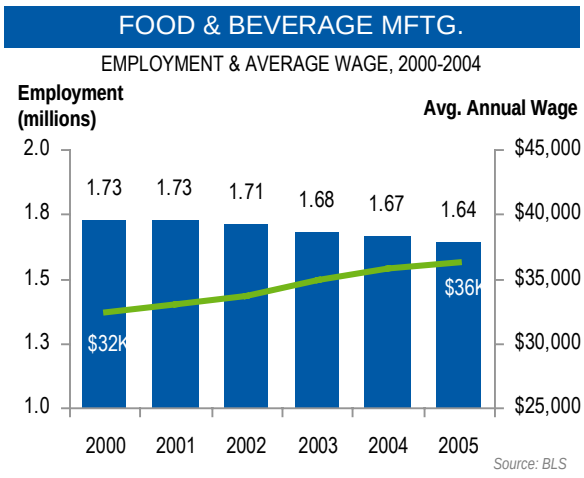
Agriculture Presence

Large Nearby Market

Production and distribution of food and beverages account for over one-sixth of the nation's industrial output. The largest concentration of food processing employment in the U.S. is in meat production, employing 30% of the total workforce. Bakery goods and preserved fruits production employ an additional 25 percent.

Industry revenue growth slowed considerably during the economic downturn and in order to maintain profitability firms slashed payrolls. Employment fell 5.2% from 2000 to 2005, and the job losses continue albeit at a much slower pace.

Demand for food products is expected to grow as niches such as specialty foods, ethnic foods, and pre-packaged foods make their way to the dinner table more frequently. New plants are more automated, transforming a traditionally labor intensive industry to a more automated one. Jobs will be lost but will be offset by an increase in higher skilled, higher wage jobs.



Employment is expected to stabilize as two-thirds of companies surveyed by Food Processing Magazine expect to increase hiring this year. While the food processing industry will continue to experience growth as the U.S. population expands, changes in preferences and technologies will affect the shape of the industry.

Hispanic, Asian and other ethnic foods should provide growth opportunities for food producers, as the U.S. Hispanic population is expected to increase to 43 million by 2010 and ethnic foods are gaining widespread acceptance. Nationally, tortilla sales have grown steadily by just under 10% a year and reached $6 billion in 200. Tortillas account for one third of the market for all types of bread almost matching white bread. Wrap sandwiches are an example of the cross over of ethnic foods to the mainstream.

Pastas, prepared foods, sauces, and seasonings are other high growth segments.

Health foods are gaining ground, as new food products such as Nutraceuticals blend herbs and natural compounds to treat ailments such as high cholesterol. According to the GAO, Americans spend over $16 billion per year on functional foods or under 4% of total annual expenditures on foods eaten at home, slightly more than expenditures on dietary supplements ($15 billion) and over twice as much as expenditures on organic foods ($8 billion).

Technology is increasingly important to the food industry. Traceability systems provide efficient ways to produce, assemble, warehouse, and distribute products. Examples include electronic coding systems and radio-frequency identification systems, which help streamline distribution. New tagging technologies will soon be able to ensure that products are untampered, delivered on time, and temperature-maintained throughout distribution.

Efficient distribution of food products has grown in importance, as more food is being manufactured far from where it is ultimately consumed. In 2004, American companies spent over $1.8 trillion on supply-related activities, including the movement, storage, and control of products. Food processors typically face thin profit margins so cutting costs throughout the supply chain is important.

Industry Requirements

Economic Conditions

Food processing is a very low margin industry and profits are being squeezed from many directions, so area costs are very important. Much of the industry is migrating from high cost areas in the Northeast to the Midwest and South to increase profitability. In addition to wage rates, local tax structures, cost of real estate, cost of natural gas, and cost of electricity will be top concerns.

Market/Geography

For food processing companies, their customers are households and location is important. Access to regional distribution networks, agricultural inputs, and a large population base is important. Packaged food producers are less constrained by geography.

Structural

Infrastructure is extremely important to food processors. The industry requires well maintained, un-congested roads, rail access, and airport and port facilities are desired. There should also be ample water and wastewater capacity, as many industry firms will require extremely large amounts of water to meet FDA requirements for facility cleanliness.

Research and Development

Local research capabilities generally do not affect established food producers. Some new entrants can create foods or use agricultural products that rely on university research.

Workforce

Labor is a large component of the cost of production, and food producers generally seek locations with a low cost workforce. Food processors require a well-trained blue-collar workforce with small amounts of degreed engineers and food scientists.

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

Our analysis of the data allows us to determine the skill set of Atlanta's workforce, and the wage and education requirements for each occupation. The following chart provides Atlanta's employment per 10,000 workers for each occupation, while comparing it to the U.S. This allows us to determine the strengths and weaknesses of Atlanta's occupational makeup. Once these gaps are identified, the region can work to improve the weaknesses or leverage the strengths in its existing workforce.

Occupation and Skill Set Analysis

Key Occupations in the Food Processing Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
Food batchmakers	6.9	5.1	$24,140	$24,460	8%	Short-term o-t-j training
Bakers	11.1	10.0	$23,150	$22,100	15%	Long-term o-t-j training
Packaging and filling machine operators and tenders	30.4	34.8	$24,840	$24,170	2%	Short-term o-t-j training
Separating, filtering, precipitating, and still machine operators	3.2	1.4	$35,680	$46,320	2%	Moderate-term o-t-j training
Mixing and blending machine setters, operators, and tenders	9.9	10.7	$30,200	$26,710	2%	Moderate-term o-t-j training
Crushing, grinding, and polishing machine setters, operators, and tenders	3.2	1.8	$28,900	$26,730	1%	Moderate-term o-t-j training
Helpers--production workers	40.6	30.2	$21,730	$22,380	8%	Short-term o-t-j training
Cutting and slicing machine setters, operators, and tenders	6.0	5.8	$29,210	$30,290	-3%	Moderate-term o-t-j training
Butchers and meat cutters	9.9	12.3	$27,810	$23,130	8%	Long-term o-t-j training
Farmworkers, farm and ranch animals	3.8	1.5	$19,890	$21,100	1%	Short-term o-t-j training
Purchasing agents and buyers, farm products	1.0	0.6	$52,970	$46,550	7%	Work experience in a related occupation
Industrial machinery mechanics	18.0	12.9	$41,060	$41,910	0%	Long-term o-t-j training
Conveyor operators and tenders	3.8	2.4	$27,530	$26,730	8%	Short-term o-t-j training
Machine feeders and offbearers	11.2	7.6	$23,730	$26,450	-18%	Short-term o-t-j training
Extruding, forming, pressing machine operators	6.2	5.1	$29,420	$29,090	-2%	Moderate-term o-t-j training
Maintenance workers, machinery	6.4	3.8	$35,270	$35,260	3%	Short-term o-t-j training
Packers and packagers, hand	64.5	80.8	$18,990	$18,600	10%	Short-term o-t-j training
Coin, vending, and amusement machine servicers and repairers	3.0	1.7	$29,340	$29,960	2%	Moderate-term o-t-j training
First-line supervisors/managers of production and operating workers	52.2	42.7	$49,210	$47,830	3%	Work experience in a related occupation
Production workers, all other	22.7	13.2	$28,070	$34,710	-1%	Moderate-term o-t-j training
Industrial truck and tractor operators	48.1	76.8	$28,830	$27,430	8%	Short-term o-t-j training
Industrial production managers	11.8	10.6	$81,960	$84,870	1%	Work experience in a related occupation
Weighers, measurers, checkers, and samplers, recordkeeping	6.1	7.2	$27,030	$28,150	-11%	Short-term o-t-j training
Driver/sales workers	30.7	39.5	$23,800	$19,170	14%	Short-term o-t-j training
Cleaners of vehicles and equipment	25.6	28.1	$19,720	$19,970	8%	Short-term o-t-j training
Inspectors, testers, sorters, samplers, and weighers	38.8	29.5	$32,250	$30,890	-3%	Moderate-term o-t-j training
First-line supervisors/managers of helpers, laborers, and material movers, hand	13.5	14.8	$41,210	$40,430	8%	Work experience in a related occupation
Transportation, storage, and distribution managers	6.5	12.6	$75,130	$70,870	13%	Work experience in a related occupation
Stationary engineers and boiler operators	3.3	1.4	$45,640	$46,110	3%	Long-term o-t-j training
Maintenance and repair workers, general	100.4	89.3	$32,650	$32,130	15%	Moderate-term o-t-j training
Merchandise displayers and window trimmers	4.9	4.3	$25,170	$24,020	10%	Moderate-term o-t-j training
Cutters and trimmers, hand	2.2	2.7	$24,070	$26,230	2%	Short-term o-t-j training
Laborers and freight, stock, and material movers, hand	181.4	201.3	$22,460	$22,430	10%	Short-term o-t-j training
Painting, coating, and decorating workers	2.1	1.4	$25,280	$25,420	8%	Short-term o-t-j training
Shipping, receiving, and traffic clerks	58.3	61.3	$26,620	$26,350	4%	Short-term o-t-j training
Furnace, kiln, oven, drier, and kettle operators and tenders	2.2	1.7	$31,940	$29,230	-4%	Moderate-term o-t-j training
Demonstrators and product promoters	6.6	12.9	$24,570	$24,920	16%	Moderate-term o-t-j training
Occupational health and safety technicians	0.7	0.2	$46,120	$36,610	17%	Postsecondary vocational award
First-line managers of transportation machine and vehicle operators	17.0	19.4	$51,230	$54,610	15%	Work experience in a related occupation
Electric motor, power tool, and related repairers	1.5	--	$34,880	$26,450	4%	Postsecondary vocational award
Production, planning, and expediting clerks	22.1	30.3	$38,920	$38,680	8%	Short-term o-t-j training
Milling and planing machine setters, operators, and tenders, metal and plastic	2.2	1.2	$32,120	$26,370	-5%	Moderate-term o-t-j training
Human resources assistants, except payroll and timekeeping	12.4	11.3	$33,790	$33,170	17%	Short-term o-t-j training
First-line supervisors/managers of mechanics, installers, and repairers	35.0	48.8	$54,390	$52,460	12%	Work experience in a related occupation

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

Our analysis of the data allows us to determine presence in Atlanta of the micro-industries that make up the industry cluster, which provides a better understanding of the relative strength or weakness of the cluster in the Atlanta MSA. The following chart displays Atlanta's number of establishments, employment, and cluster concentration for each industry sub-sector within Food Processing. A value of '1' indicates that the cluster in the Atlanta MSA is as concentrated as it is throughout the United States; a value of less than '1' indicates that the cluster is not as concentrated as it is throughout the United States; and a value of greater than '1' indicates that the cluster is more concentrated in the Atlanta MSA than it is throughout the United States. So for example, Frozen Cakes, Pies, and other Pastries Manufacturing, with a cluster of 4.34, is more than four times as concentrated in the Atlanta MSA than it is throughout the United States.

- Relative to the U.S., the region has a weak Food Processing Industry
- Some major sub-sectors are Perishable Foods, Tortilla Manufacturing, and Poultry Processing
- The Food Processing cluster is projected to grow at a steady rate, in line with the national population growth
- Information for several of the clusters is not disclosed due to privacy regulations

Atlanta MSA Industry Strengh Analysis: Food Processing

NAICS	Description	Establishments	Employees	Cluster
311	Food Manufacturing	268	22890	0.89
3112	Grain and Oilseed Milling	9	472	0.45
311330	Confectionery Manufacturing from Purchased Chocolate	4	15	0.02
311340	Nonchocolate Confectionery Manufacturing	4	49	0.13
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	8	897	0.29
3115	Dairy Product Manufacturing	7	444	0.19
3116	Animal Slaughtering and Processing	38	7692	0.88
311612	Meat Processed from Carcasses	14	1678	0.87
311615	Poultry Processing	12	5731	1.40
3118	Bakeries and Tortilla Manufacturing	134	5240	1.07
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	4	763	4.34
311830	Tortilla Manufacturing	6	700	2.47
311920	Coffee and Tea Manufacturing	5	284	1.22
311991	Perishable Prepared Food Manufacturing	11	1117	2.28
312	Beverage and Tobacco Product Manufacturing	44	1872	0.56
312111	Soft Drink Manufacturing	6	769	0.57
312112	Bottled Water Manufacturing	15	102	0.37

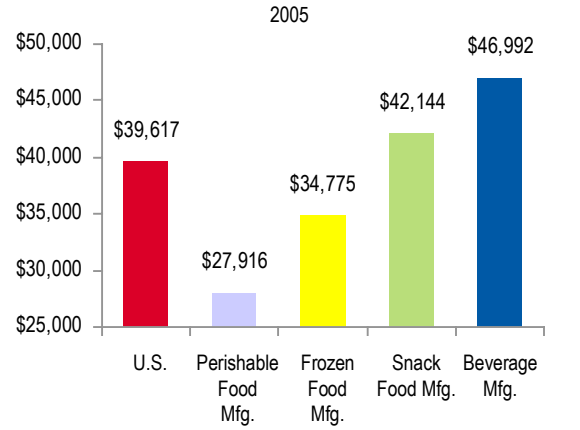
**Not all industries are included due to Non-disclosure requirements.*

Final Niche Targets

Perishable Food Products

This niche consists of companies involved in the manufacturing of various perishable, prepared food products, such as salads, sandwiches, prepared meals, fresh pizza, pasta, and peeled or cut vegetables. This segment of food processing is high growth but has fairly low overall wages. Operations typically have minimal environmental impact. Perishables are the highest growing segment of food processing and growth rates are forecast to slow only minimally.

AVERAGE ANNUAL WAGES



Source: BLS

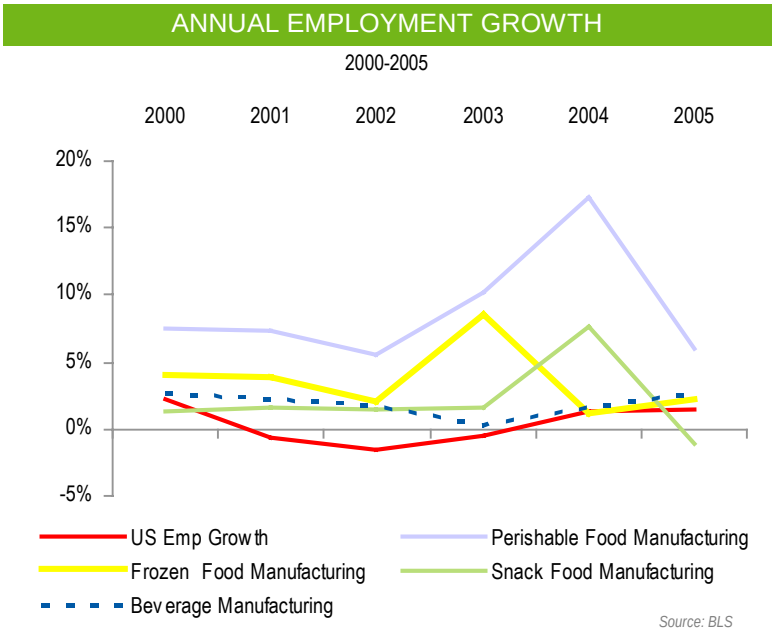
Organic Food Processing

Organic food production is based on a system of farming that maintains and replenishes soil fertility without the use of toxic and persistent pesticides and fertilizers. Organic foods are typically processed without artificial ingredients, preservatives, or irradiation to maintain the integrity of the food. Organic food products maintain the highest operating margins in the food processing industry. Companies are very concerned with image, and operate accordingly. Firms pay high wages and are good corporate citizens and the industry is expanding at 20% annually.

Packaged Food Products

Packaged food products are products that are sold through retail establishments in a consumption ready fashion. A wide array of snack foods is included in this industry. Similar to other segments of food processing we recommend targeting, packaged food products, as growth trends and wage rates are good. The industry is transitioning away from high cost operating areas and locating in the South and West in large numbers.

ANNUAL EMPLOYMENT GROWTH



Source: BLS

Beverage Production

This industry is made up of companies that produce, market, and bottle alcoholic and nonalcoholic beverages, carbonated drinks, juices, energy/sports drinks, water, coffee, and tea. While employment growth trends for this industry are negative, manufacturing productivity increases are to blame, not industry fortunes. The market for bottled beverages of all types is expanding rapidly. New facility announcements account for a large percentage of overall food processing projects. New or

expanding beverage production operations accounted for 54% of new food processing announcements in Virginia in 2004.

Agbioproducts

Food Production now uses biotechnology to modify agricultural feedstocks to be more productive. This could be an enhancement of crop productivity, resistance to disease, or a genetic modification for added human health benefits. Nutraceuticals is the use of food or agricultural inputs to provide health and medical benefits, including the prevention and treatment of disease. The agricultural and industrial bioscience markets comprise nearly 20% of total biotechnology employment.

Industry Overview

The Life Sciences industry includes the designers and manufacturers of medical products, providers of medical services, and institutions involved with medical and biological research. The industry applies the knowledge of molecular, cellular, and genetic processes to real world products and services. It deals with scientific work related to genetic engineering for humans, animals and agriculture, environmental work, genetic data mining, and firms involved in the neurosciences and genome work.

LIFE SCIENCES

NAICS

5417	Scientific Research and Development Svcs
6215	Medical and Diagnostic Laboratories
621512	Diagnostic Imaging Centers
3254	Pharmaceutical and Medicine Manufacturing
325411	Medicinal and Botanical Manufacturing
325413	In-Vitro Diagnostic Substance Manufacturing
325414	Biological Product Manufacturing

Employment

1.1 Million Employed - U.S. 2005

Wage Rates

$77,000 Average Annual Wage - U.S. 2005

Location Criteria

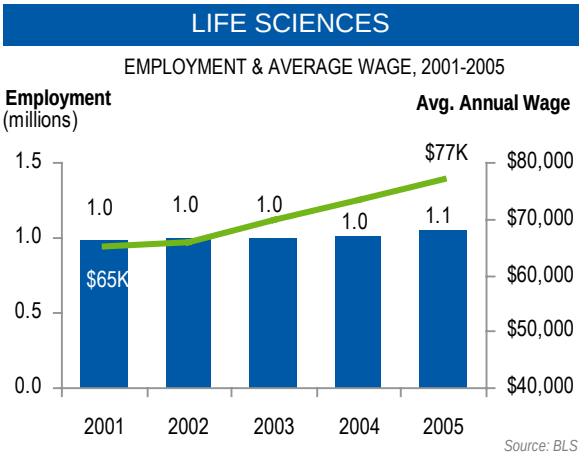
- Well Trained and Educated Workforce
- Access to Venture Capital
- University Research Presence
- Quality Affordable Lab Space

In its strictest definition, the Life Sciences industry includes companies involved in processes that require biological inputs, such as biopharmaceuticals, biological products, gene and protein therapy, tissue engineering, genetically modified crops, etc. However, it is common to expand the definition of the cluster to include related businesses in medical devices, pharmaceutical manufacturing, and medical services. Even though these large industries do not necessarily utilize biological inputs (medical devices are closely associated with electronic manufacturing, and the pharmaceutical industry largely uses chemical inputs, not biological), they both serve the same end market, human health. The Life Sciences industry is comprised of a wide array of industry sectors that cut across a range of functions.

The Life Sciences industry is most heavily established in Boston, San Francisco, Minneapolis, Madison, Seattle, Raleigh-Durham, Baltimore, Philadelphia, and Washington D.C.

Using this broader definition, the biosciences serve three primary end markets: Human Health / Medical, Agricultural, and Industrial. Applications, devices, and therapeutics are supplied to these industries through a range of functions including *manufacturing, testing services,* and *research and development.*

Despite a recent dip, the biosciences industry has experienced tremendous growth over the past ten years. Employment in the cluster has expanded by nearly 130,000 jobs from 1995-2005. Average wages in the cluster have increased at an even more explosive rate. The average annual wage in the biosciences cluster grew by 85% since 1995 to $77,000 currently. Growth in this cluster is projected to continue. National employment projections indicate that this cluster will grow at a 13% higher rate than the average rate of employment across all industry sectors. The general aging of the U.S. population, coupled with



higher disposable incomes are increasing the demand for life enhancing products.

Because of these impressive growth projections and high average wages, competition for bioscience firms will be fierce, as many major metropolitan areas include it among their list of target industries. The Brookings Institute reports that out of 77 local and 36 state economic development agencies surveyed, 83% list biotechnology as one of their top two target industries. Biotech and health services, however, will likely experience growth in a broad cross-section of markets. There are opportunities for those communities that target specific bioscience niches and prepare themselves appropriately. Successful communities will be those that excel in research and are able connect that research with the business community to turn it into marketable products.

Industry Requirements

Economic Conditions

Life Sciences firms (other than health services) usually have long and expensive research and development cycles that may prolong revenues for years. Due to large barriers to entry, a firm's success is highly dependent on entrepreneurial networks and long-term venture capital. Industry firms, especially emerging ones, have faced more competition for capital in recent years. Time to market is critical. Marketable results generally take between 5 and 12 years. Many companies face enormous risks as they often are highly dependant upon a single drug or product that could fail or be tied up in a lengthy regulatory approval process.

Market/Geography

Life sciences firms seek locations in highly vibrant and well-educated communities. Firms also desire a growing young professional population that is large enough to support workforce needs in a growing industry. Life sciences companies also desire an amount of diversity in the community as many of the industry's employees are from minority groups.

Structural Assets

Life sciences firms have specific, but feasible infrastructure needs, including available "wet lab" space and reliable utilities. For the most part, life sciences firms are capital-intensive operations, and the majority of capital investment will be tied up in equipment.

More important are the financial needs of the industry. For example, biotechnology is a market segment in its infancy, and it is still relatively small even after a decade of substantial growth. Today, less than 50 industry companies have over 1,000 employees, and none rank among the top 25 employers in even the largest life sciences metropolitan areas. Biotechnology firms need an established venture capital base that is familiar with the industry. Less than one out of every 1,000 life sciences related patents produce a successful commercial innovation, and even when they do, it can take more than a decade to come to market. Therefore, life sciences firms need financial backers that understand the industry and have long-term funds available for investment. Many of the industry's largest firms, including industry leader Amgen, were initially funded with venture capital.

Research & Development

All of the largest life sciences metropolitan areas in the U.S. have both a large research university and research hospital.
Thus, it is important to have medical research capabilities in the area. Small life sciences firms benefit greatly from research hospitals and other large research institutions. The small firms are able to use lab space and

instrumentation they might not be able to afford otherwise, license technology, and gain invaluable intelligence from industry peers.

Workforce

Attracting and retaining a quality workforce is more important in high tech fields such as life sciences. Workers tend to be highly mobile; they are willing to venture into a community, but they are also easily swayed away. In an industry with high turnover, people tend to seek communities with numerous employment options. The typical bioscience firm has fewer than 50 employees, and most are very well educated. Life sciences firms employ many PhDs and will require an area research university with graduate life-sciences programs. The most concentrated occupational groups in the Life Sciences industry are those pertaining to life and physical science. Nearly all of these occupations require at least a bachelor's degree, and many require at least a PhD.

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

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Occupation and Skill Set Analysis

Key Occupations in the Life Sciences Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
Biochemists and biophysicists	1.4	0.4	$75,320	$92,490	21%	Doctoral degree
Social science research assistants	1.3	1.2	$35,960	$40,620	17%	Associate degree
Microbiologists	1.2	2.3	$63,360	$67,090	17%	Doctoral degree
Medical scientists, except epidemiologists	5.7	1.8	$69,140	$84,450	34%	Doctoral degree
Physicists	1.2	0.2	$91,480	$90,060	7%	Doctoral degree
Chemists	5.9	5.7	$63,470	$56,490	7%	Bachelor's degree
Biological technicians	5.1	1.5	$36,480	$31,560	17%	Associate degree
Biomedical engineers	0.9	0.3	$75,380	$62,780	31%	Bachelor's degree
Physical scientists, all other	1.8	--	$84,380	$51,060	15%	Bachelor's degree
Chemical engineers	2.1	2.2	$79,230	$69,980	11%	Bachelor's degree
Statisticians	1.3	1.2	$66,130	$66,240	5%	Master's degree
Chemical technicians	4.6	3.6	$40,120	$32,520	4%	Associate degree
Atmospheric and space scientists	0.5	0.2	$73,020	$79,480	17%	Bachelor's degree
Medical and clinical laboratory technicians	10.9	12.3	$33,170	$33,730	25%	Associate degree
Epidemiologists	0.3	--	$56,340	$55,340	26%	Master's degree
Life scientists, all other	1.0	--	$64,570	$53,900	21%	Bachelor's degree
Medical and clinical laboratory technologists	11.9	12.2	$48,600	$47,180	21%	Bachelor's degree
Separating, filtering, precipitating, and still machine operators	3.2	1.4	$35,680	$46,320	2%	Moderate-term o-t-j training
Computer and information scientists, research	2.0	1.1	$94,030	$63,230	26%	Doctoral degree
Life, physical, and social science technicians, all other	4.9	10.5	$45,180	$53,450	20%	Associate degree
Biological scientists, all other	2.0	2.4	$63,670	$55,730	17%	Bachelor's degree
Zoologists and wildlife biologists	1.3	0.6	$55,280	$47,070	13%	Bachelor's degree
Soil and plant scientists	0.8	0.8	$58,040	$60,930	14%	Bachelor's degree
Economists	1.0	0.9	$80,900	$83,480	6%	Master's degree
Social scientists and related workers, all other	2.4	3.4	$65,040	$65,680	12%	Master's degree
Mechanical engineering technicians	3.6	1.4	$46,520	$46,650	12%	Associate degree
Healthcare support workers, all other	14.1	11.0	$27,150	$36,140	21%	Short-term o-t-j training
Diagnostic medical sonographers	3.3	2.5	$55,430	$51,910	35%	Associate degree
Materials engineers	1.6	0.4	$71,390	$59,220	12%	Bachelor's degree
Radiologic technologists and technicians	14.2	10.9	$47,010	$45,310	23%	Associate degree
Computer specialists, all other	9.0	--	$63,190	$64,120	19%	Associate degree
Environmental engineering technicians	1.5	1.3	$41,940	$34,300	24%	Associate degree
Electro-mechanical technicians	1.2	0.5	$45,670	$35,770	10%	Associate degree
Couriers and messengers	8.2	9.3	$22,460	$21,790	-9%	Short-term o-t-j training
Engineering technicians, except drafters, all other	6.0	3.3	$52,400	$48,070	12%	Associate degree
Engineers, all other	11.7	7.0	$77,570	$61,380	15%	Bachelor's degree
Electronics engineers, except computer	10.0	12.6	$79,990	$72,460	10%	Bachelor's degree
Mixing and blending machine setters, operators, and tenders	9.9	10.7	$30,200	$26,710	2%	Moderate-term o-t-j training
Environmental engineers	3.8	3.6	$70,720	$65,810	30%	Bachelor's degree
Packaging and filling machine operators and tenders	30.4	34.8	$24,840	$24,170	2%	Short-term o-t-j training
Industrial engineers	14.7	13.3	$68,500	$67,970	16%	Bachelor's degree
Industrial engineering technicians	5.6	5.3	$49,220	$49,650	10%	Associate degree
Mechanical engineers	16.9	8.0	$70,000	$67,220	11%	Bachelor's degree
Chemical plant and system operators	4.5	2.6	$46,900	$41,160	-18%	Long-term o-t-j training

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

Our analysis of the data allows us to determine the presence in Atlanta of the micro-industries that make up the industry cluster, which provides a better understanding of the relative strength or weakness of the cluster in the Atlanta MSA. The following chart displays Atlanta's number of establishments, employment, and cluster concentration for each industry sub-sector within Life Sciences. For example, a value of '1' indicates that the cluster in the Atlanta MSA is as concentrated as it is throughout the United States; a value of less than '1' indicates that the cluster is not as concentrated as it is throughout the United States; and a value of greater than '1' indicates that the cluster is more concentrated in the Atlanta MSA than it is throughout the United States. So for example, Medical Laboratories, with a cluster of 1.03, is 3 percent more concentrated in the Atlanta MSA than it is throughout the United States.

- Relative to the U.S., the region has a weak Life Sciences Industry
- Several of the major sub-sectors are strong including Medical and Diagnostic Laboratories and Imaging Centers
- The Life Sciences cluster is projected to experience strong growth as the U.S. population continues to age which will drive demand for newer and more effective drugs
- Information for several of the clusters is not disclosed due to privacy regulations

Atlanta MSA Industry Strengh Analysis: Life Sciences

NAICS	Description	Establishments	Employees	Cluster
3254	Pharmaceutical and Medicine Manufacturing	23	1264	0.25
325412	Pharmaceutical Preparation Manufacturing	16	929	0.24
5417	Scientific Research and Development Services	197	2174	0.23
541710	Research and Development in the Physical, Engineering, and Life Sciences	169	2014	0.24
6215	Medical and Diagnostic Laboratories	194	3375	1.03
621511	Medical Laboratories	119	2397	1.03
621512	Diagnostic Imaging Centers	75	978	1.03

**Not all industries are included due to Non-disclosure requirements.*

Atlanta University Corridor Assets

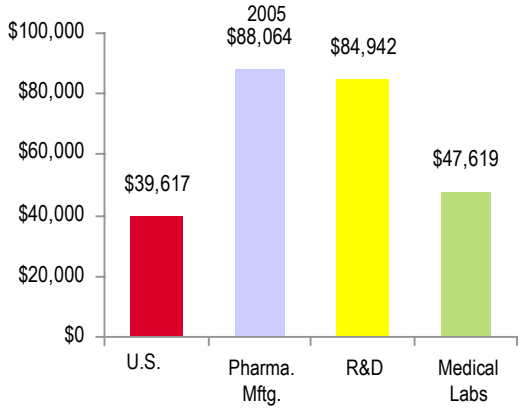
Any economic development strategy that includes a focus on the life sciences must take full advantage of existing assets within the Atlanta University Corridor. In particular, the Morehouse School of Medicine presents a unique opportunity to leverage existing research facilities in order to foster private development. Specifically, research entities such as the Biomedical Technology Service Laboratory and the Image Analysis Facility can provide specialized training for tomorrow's medical services entrepreneurs. Additionally, the Atlanta University Corridor's proximity to other area health facilities such as Grady Hospital could make it an ideal location for outpatient services. The following niche sectors represent some of the Atlanta University Corridor's most promising life science targets.

Niche Targets

Contract Research and Testing

A contract research organization (CRO) specializes in performing clinical and laboratory research services, as well as product development for client companies that have ownership of the process, product, or patent. The services performed by these organizations span the entire range of possible research areas. A clinical testing organization, similar to a CRO, provides outsourced support to other biopharmaceutical companies, typically drug developers. The clinical testing organization can handle all or just certain stages in the clinical trial process that is mandated by the FDA for drug approval. This requires identifying and screening test subjects, performing testing in accordance with FDA procedures, and certification of results.

AVERAGE ANNUAL WAGES

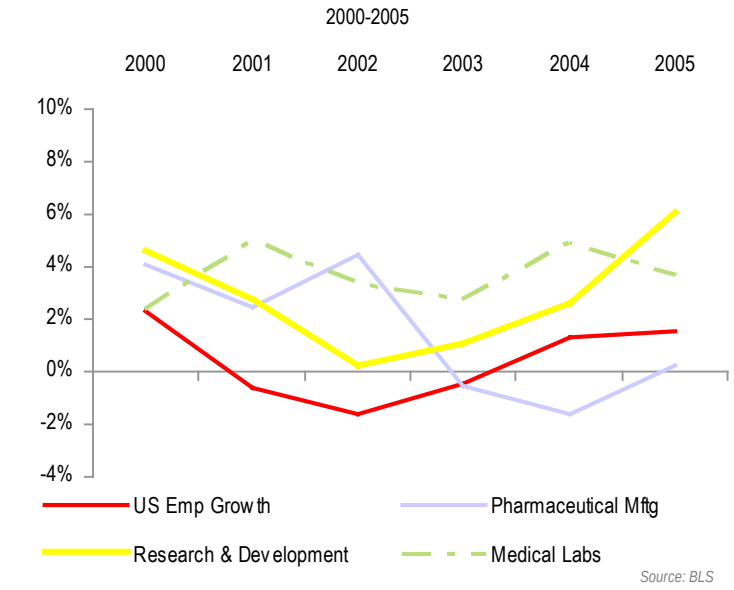


Source: BLS

Bio-Pharmaceutical Manufacturing

Biopharmaceutical manufacturing organizations provide outsourced manufacturing services to drug makers to scale up the production of drugs or biopharmaceuticals. Many drug discovery bioscience companies are small and do not have the financial means to support capital-intensive manufacturing equipment. For these companies, the ability to outsource production is critical. As such, the industry is increasingly concerned about operating costs and liability issues. Facility location trends indicate movement outside major metropolitan areas but still maintaining access. Operations are also subject to intense federal scrutiny and federal inspections. While generic manufacturing has moved offshore, the risks are considered too high for many advanced drug therapies.

ANNUAL EMPLOYMENT GROWTH



Source: BLS

Clinical Testing Labs

These laboratories are testing focused with a light research component. They typically operate near medical universities and large health care systems. The industry is growing and expanding to new markets. Testing laboratories are generally low environmental impact operations, but can use moderate amounts of water and wastewater relative to their size. Parking requirements can result in significant impervious cover. The medical testing industry will continue to expand with the overall health care market.

Medical Devices Manufacturing

Medical device firms design and manufacture surgical and diagnostic equipment for the healthcare field. Products range from CT Scan machines to operating instruments. As with most life sciences fields, medical device manufacturing is closely regulated, research intensive, and has comfortable operating margins. The industry is located in high-cost locations such as California and Massachusetts.

Target Markets

Attracting markets that are research and testing intensive requires large workspace, a skilled labor force, and low-cost areas to work in Atlanta should look to attract companies currently located in the San Diego and San Jose areas.

Pharmaceuticals manufacturing firms are clustered in the Northeast in New York and Connecticut and the Raleigh-Durham area. Due to increased competition, these companies will soon look for low cost alternatives.

METRO RANKING: LIFE SCIENCES R&D

MSA	Employment	Cluster
Idaho Falls, ID	3,052	**14.21**
Albuquerque, NM	11,794	**8.18**
Boulder, CO	5,032	**7.84**
Durham, NC	7,498	**7.38**
Trenton-Ewing, NJ	4,960	**6.35**
Ann Arbor, MI	3,991	**6.10**
Albany-Schenectady-Troy, NY	9,154	**5.71**
San Diego-Carlsbad-San Marcos, CA	23,985	**4.53**
San Jose-Sunnyvale-Santa Clara, CA	17,353	**4.49**
Washington-Arlington-Alexandria, DC-VA-MD-WV	44,115	**4.08**

Source: Bureau of Labor Statistics

METRO RANKING: PHARMACEUTICAL MANUFACTURING

MSA	Employment	Cluster
Durham, NC	7,318	**13.65**
Vallejo-Fairfield, CA	1,737	**6.45**
New Haven-Milford, CT	3,082	**3.72**
Boulder, CO	1,240	**3.66**
Raleigh-Cary, NC	3,414	**3.63**
Holland-Grand Haven, MI	830	**3.19**
Gainesville, GA	479	**3.16**
New York-Northern New Jersey-Long Island, NY-NJ-PA	52,713	**2.96**
Bridgeport-Stamford-Norwalk, CT	2,327	**2.41**
Trenton-Ewing, NJ	923	**2.24**

Source: Bureau of Labor Statistics

Industry Overview

Advanced Manufacturing is a broad term with various interpretations. Advanced manufacturing is generally a high-technology industry, but is not always comparable with "high-tech manufacturing." The distinction is this: in advanced manufacturing, the emphasis is weighted more on the high-tech processes used in production, rather than on the final output of high-tech products. Some of its major industry sectors include: computer equipment, electronics, auto assembly, aerospace, biotech, machinery, pharmaceuticals, and medical equipment and instruments. Other niche sectors that are linked to advanced manufacturing include automation and manufacturing technology; chemicals and advanced materials; computer and telecommunications hardware; electronics and components; engineering, environmental testing and measurement; and photonics, optics, and lasers.

ADVANCED MANUFACTURING

NAICS

3231	Printing and Related Support Activities
3341	Computer and Peripheral Equipment Mftg
3342	Communications Equipment Manufacturing
3343	Audio and Video Equipment Manufacturing
3344	Semiconductor Manufacturing
3345	Navigational, Electromedical, and Control Mftg
3391	Medical Equipment Manufacturing

Employment

2.5 Million Employed - U.S. 2005

Wage Rates

$60,800 Average Annual Wage - U.S. 2005

Location Criteria

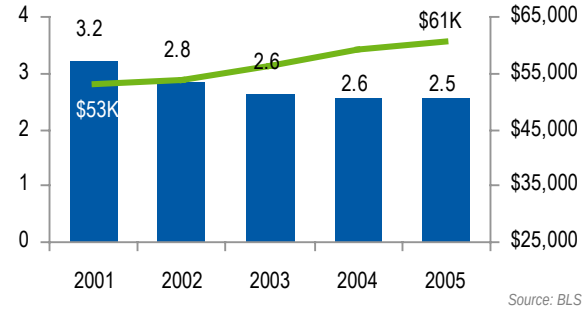
Well Trained and Educated Workforce
Low Cost of Labor
Reliable and Affordable Utilities
Access to Highways and Airports

Fundamentally, advanced manufacturing involves the implementation of innovative and revolutionary manufacturing techniques, while using highly automated manufacturing equipment that combines the very latest advancements in information technology, semiconductors, advanced materials, and new and more efficient organizational manufacturing processes. For example, accuracy and speed have remarkably improved due to computer numeric controls that have been installed to oversee the machining, forming, cutting, and molding phases of the manufacturing process. As a result, the use of highly automated machines and robots are being used for welding, painting, and material handling applications. Computer-aided Design (CAD), Computer-integrated Manufacturing (CIM), and optical monitoring are just a few of the processes that have revolutionized the industry, each improving quality control, lowering costs, reducing development timelines, and creating precision-oriented assembly. Despite the fluctuations in employment for the industry, average wages for advanced manufacturing have proved more resilient in variable economic environments.

The advanced manufacturing industry was born from the ever-intensifying movement towards heightened global competitiveness and the battle for market share. With added countries opting for liberal international trade standards, advanced manufacturing processes are continuously becoming highly sophisticated and refined. Other major factors influencing the rapid pace of change in the industry are the increased demands for improved customer service, diversity of product offerings, improved product quality, quicker time-to-market new product development cycles, and increased corporate profit margins.

ADVANCED MANUFACTURING

EMPLOYMENT & AVERAGE WAGE, 2001-2005



Source: BLS

Industry Requirements

Economic Conditions

Economic requirements include the overall characteristics of regions that support the business model of an industry, including location, size, demographics, and lifestyle. Major relocations often occur so a company can be closer to customers or positioned in a high growth area with the right image and demographics for its business. For example, automotive suppliers locate near major automotive assembly plants to reduce transport time. Some manufacturers, such as Toyota, are making investments in states (Texas) where they desire greater market share.

Costs of Doing Business

In addition to labor costs, manufacturers pay close attention to their cost of doing business, as tax environments and cost of capital affect thin profit margins. Each industry has different cost structures and subsequent site selection priorities. Taxes play an important part in the site selection process for manufactures. Low property taxes are attractive to manufacturers requiring capital investments and large tracts of land. Consumer electronics firms, for which sales are a big part of operations, look for a combination of both low property and local sales tax rates. States without a sales tax are beginning to win more and more consumer goods projects.

Structural Assets

Structural assets include utilities, highways, airports, telecommunications, and site availability. Regions with low electricity costs draw power-hungry manufacturers such as plastics and automotive producers. Other requirements for manufacturers often include large tracts of land, excellent transportation infrastructure, available utilities, and reasonable environmental regulations. Any large assembler, such as an auto plant, requires highway access and separate rail lines.

Research and Development

R&D is especially important for newer manufacturing industries, as seen by the location decisions of the semiconductor and biotechnology industry. For traditional industries, R&D is largely about maintaining dominance in an industry. For example, while automotive manufacturers are dispersing around the country, Michigan remains competitive by investing heavily in manufacturing research and keeping research headquarters for major companies. The state ranks second, after California, nationally in total R&D spending and fourth, after California, Texas, and New York, in the number of high tech workers. The University of Michigan, which leads all other public schools in R&D spending, devotes twenty-five percent of federal grants towards manufacturing.

Workforce

Workforce needs vary among industries and companies. Manufacturers relying on low-skilled labor often operate in rural areas where they can find affordable workers and generous incentives. Manufacturers requiring large amounts of skilled workers often experience difficulty attracting and retaining qualified talent. Many of these jobs require some college and specialized skills and experience. Companies have to compete for talent and are willing to pay higher wages for these workers. Local workforce development programs and community colleges play an important role in helping companies find and develop the skilled workers they require. Availability of a skilled workforce is often the number one site selection criteria.

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

Our analysis of the data allows us to determine the skill set of Atlanta's workforce, and the wage and education requirements for each occupation. The following chart provides Atlanta's employment per 10,000 workers for each occupation, while comparing it to the U.S. This allows us to determine the strengths and weaknesses of Atlanta's occupational makeup. Once these gaps are identified, the region can work to improve the weaknesses or leverage the strengths in its existing workforce.

Occupation and Skill Set Analysis

Key Occupations in the Advanced Manufacturing Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
Electrical and electronic equipment assemblers	15.9	10.9	$27,150	$26,910	-6%	Short-term o-t-j training
Prepress technicians and workers	5.5	4.8	$34,380	$37,050	-8%	Postsecondary vocational award
Printing machine operators	14.8	18.6	$32,470	$31,710	3%	Moderate-term o-t-j training
Electro-mechanical technicians	1.2	0.5	$45,670	$35,770	10%	Associate degree
Electromechanical equipment assemblers	4.4	1.0	$28,520	$26,000	-14%	Short-term o-t-j training
Computer hardware engineers	6.0	2.9	$87,170	$77,390	10%	Bachelor's degree
Electrical and electronic engineering technicians	12.7	22.6	$48,710	$46,860	10%	Associate degree
Electrical engineers	11.1	11.7	$76,060	$73,880	12%	Bachelor's degree
Electronics engineers, except computer	10.0	12.6	$79,990	$72,460	10%	Bachelor's degree
Industrial engineering technicians	5.6	5.3	$49,220	$49,650	10%	Associate degree
Mechanical engineering technicians	3.6	1.4	$46,520	$46,650	12%	Associate degree
Electrical and electronics drafters	2.3	2.2	$48,410	$48,360	1%	Postsecondary vocational award
Materials engineers	1.6	0.4	$71,390	$59,220	12%	Bachelor's degree
Industrial engineers	14.7	13.3	$68,500	$67,970	16%	Bachelor's degree
Biomedical engineers	0.9	0.3	$75,380	$62,780	31%	Bachelor's degree
Engineering managers	14.4	18.5	$105,470	$90,700	13%	Bachelor's or higher degree, + work exp.
Industrial production managers	11.8	10.6	$81,960	$84,870	1%	Work experience in a related occupation
Cutting and slicing machine setters, operators, and tenders	6.0	5.8	$29,210	$30,290	-3%	Moderate-term o-t-j training
Electrical and electronics repairers, commercial and industrial equipment	5.3	9.9	$44,350	$39,620	10%	Postsecondary vocational award
Engineers, all other	11.7	7.0	$77,570	$61,380	15%	Bachelor's degree
Machine feeders and offbearers	11.2	7.6	$23,730	$26,450	-18%	Short-term o-t-j training
Mechanical engineers	16.9	8.0	$70,000	$67,220	11%	Bachelor's degree
Sales engineers	5.4	6.4	$79,370	$75,210	14%	Bachelor's degree
Inspectors, testers, sorters, samplers, and weighers	38.8	29.5	$32,250	$30,890	-3%	Moderate-term o-t-j training
First-line supervisors/managers of production and operating workers	52.2	42.7	$49,210	$47,830	3%	Work experience in a related occupation
Team assemblers	95.3	76.0	$26,000	$24,950	7%	Moderate-term o-t-j training
Technical writers	3.5	3.0	$57,720	$56,150	23%	Bachelor's degree
Purchasing agents, except wholesale, retail, and farm products	20.5	19.5	$52,560	$50,040	8%	Work experience in a related occupation
Computer-controlled machine tool operators, metal and plastic	10.5	3.0	$32,060	$31,740	-1%	Moderate-term o-t-j training
Production, planning, and expediting clerks	22.1	30.3	$38,920	$38,680	8%	Short-term o-t-j training
Computer software engineers, applications	35.0	49.7	$79,540	$72,360	48%	Bachelor's degree
Cementing and gluing machine operators and tenders	2.0	3.7	$25,900	$25,020	2%	Moderate-term o-t-j training
Multiple machine tool setters, operators, and tenders, metal and plastic	7.5	3.1	$31,550	$28,570	0%	Moderate-term o-t-j training
Graphic designers	13.7	12.0	$42,530	$43,740	15%	Bachelor's degree
Marketing managers	12.8	27.9	$101,990	$90,260	21%	Bachelor's or higher degree, + work exp.
Extruding and drawing machine setters, operators, and tenders, metal and plastic	6.7	5.4	$28,790	$31,240	-21%	Moderate-term o-t-j training
Molding, coremaking, and casting machine setters, operators	12.1	11.4	$26,680	$27,250	-9%	Moderate-term o-t-j training
Engineering technicians, except drafters, all other	6.0	3.3	$52,400	$48,070	12%	Associate degree
Machinists	28.3	13.8	$35,350	$37,170	4%	Long-term o-t-j training
Production workers, all other	22.7	13.2	$28,070	$34,710	-1%	Moderate-term o-t-j training
Mechanical drafters	5.7	2.0	$45,490	$42,200	5%	Postsecondary vocational award
Sales representatives technical and scientific products	29.2	58.5	$68,940	$84,040	14%	Moderate-term o-t-j training
Cutting, punching, and press machine setters, operators	20.4	14.7	$27,310	$27,060	-17%	Moderate-term o-t-j training
Tool and die makers	7.6	3.0	$44,940	$43,760	-3%	Long-term o-t-j training

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

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- Relative to the U.S., the region has a weak Advance Manufacturing Industry
- Only a handful of the major sub-sectors are strong including Printing Activities, Communications Equipment Manufacturing, and Ophthalmic Goods Manufacturing
- Advanced Manufacturing is expected to grow relative to traditional manufacturing because the goods are generally needed in a shorter period of time or require high end manufacturing processes, making offshoring more difficult
- Information for several of the clusters is not disclosed due to privacy regulations

Atlanta MSA Industry Strengh Analysis: Advanced Manufacturing

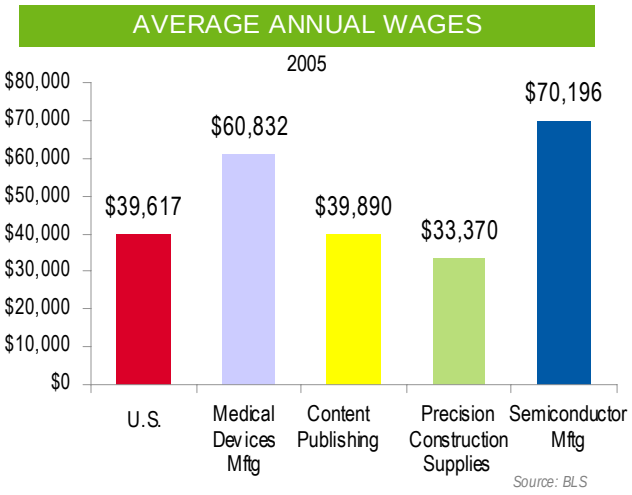
NAICS	Description	Establishments	Employees	Cluster
3231	Printing and Related Support Activities	796	13260	1.16
3341	Computer and Peripheral Equipment Manufacturing	25	1616	0.44
3342	Communications Equipment Manufacturing	35	2645	1.05
3344	Semiconductor and Other Electronic Component Manufacturing	37	2173	0.28
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	71	2667	0.36
3353	Electrical Equipment Manufacturing	37	2359	0.89
3359	Other Electrical Equipment and Component Manufacturing	37	1917	0.81
3391	Medical Equipment and Supplies Manufacturing	219	4343	0.83
339112	Surgical and Medical Instrument Manufacturing	6	850	0.47
339113	Surgical Appliance and Supplies Manufacturing	26	893	0.60
339115	Ophthalmic Goods Manufacturing	19	1639	2.96
339116	Dental Laboratories	158	880	1.03

**Not all industries are included due to Non-disclosure requirements.*

Niche Targets

Materials Manufacturing

At the forefront of this field are firms dealing in nanotech products and processes. This industry is extremely practical; most products are developed with a use in mind. These targets combine R&D with real world manufacturing processes and support industries such as tool and die makers.

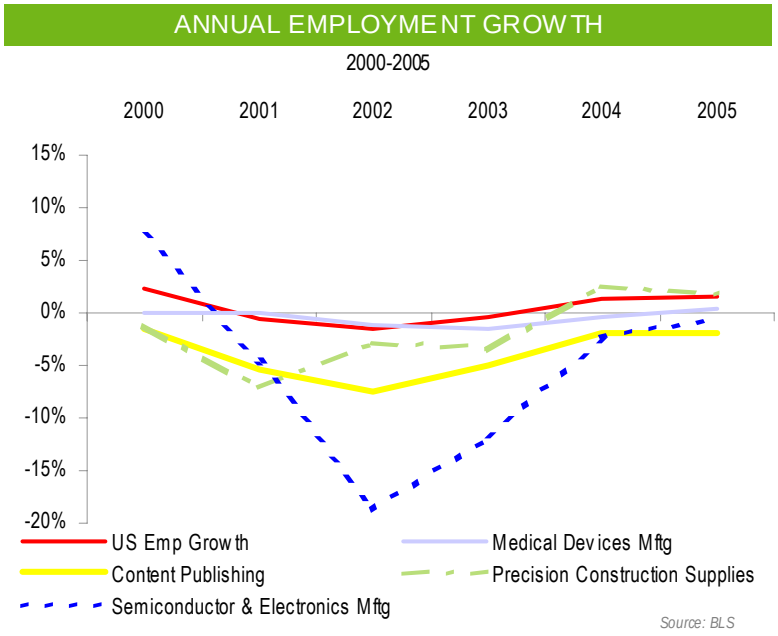


Materials range from exotic to commonplace, though all have familiar uses. Shape-memory alloys, for example, have the ability to remember a predetermined shape, returning back to that shape after repeatedly being bent. Commercial applications for such an odd sounding concept are being found in robotics, biomedical implants, and perhaps the more familiar use, eye glass frames.

More familiar materials include cement and plastics. World consumption of concrete is more than 2.5 tons per person per year. Plastics manufacturing operations become a prime target for economic development efforts due to their strong growth and ability to complement virtually every other industry. Plastic manufacturers often refer to themselves as contract manufacturers due to their ability to supply specialized products to such varied customers as automobile manufacturers, soft drink bottlers, and hospitals.

Precision Construction Supplies

Precision construction supplies includes high value add segments of the construction products market. The focus of this niche market is on those products that require advanced design, significant handwork and customization, and a high level of detail. Products include custom wood working, such as cabinets and doors, flooring, and similar aesthetic improvements to a home. The construction supply market is tied to the housing market, and both have prospered in recent years. As both the volumes and value of residential construction has increased, the construction supply market has performed very well. This industry is subject to competition from offshore markets, but not to the same degree as other manufacturing. The custom nature



of this industry precludes large scale manufacturing, and removes the cost advantage of many offshore locations. The industry is tied to the local and regional home market, and any slowdown will adversely affect industry firms.

Content Publishing & Production

Content publishing and production includes manufacturing magazines, books, and newspapers. The industry is mature but still experiencing solid growth and dislocation within the United States. The publishing market continues to grow, and transportation costs prohibit the bulk of this industry from relocating offshore. The majority of products within this industry are time sensitive, and the cost of transportation outweighs any labor cost advantages from overseas locations. Historically, the industry was located in the Northeast and Midwest United States, but population growth trends and cost advantages are now enticing firms to locate in the South and West. Dallas, Oklahoma City, Atlanta, and some communities in Virginia have all successfully recruited this industry.

Target Markets

Being a more cost conscious industry, advanced manufacturing has already established itself in low-cost areas. Of course, an alternative is always available. Companies that are experiencing low profits or corporate restructuring are more likely to relocate facilities to lower-cost areas. Companies located on the west and east coasts will find the Atlanta area attractive given its proximity to other major metropolitan areas, and the economic environment.

METRO RANKING: MEDICAL DEVICES MANUFACTURING

MSA	Employment	Cluster
Bloomington, IN	3,065	**20.36**
Santa Rosa-Petaluma, CA	2,557	**5.70**
Reading, PA	1,647	**4.18**
Santa Barbara-Santa Maria-Goleta, CA	1,709	**4.13**
Scranton--Wilkes-Barre, PA	2,339	**3.87**
St. Cloud, MN	797	**3.56**
New Haven-Milford, CT	3,075	**3.53**
San Juan-Caguas-Guaynabo, PR	4,838	**3.06**
Minneapolis-St. Paul-Bloomington, MN-WI	12,404	**3.03**
Racine, WI	530	**2.88**

Source: Bureau of Labor Statistics

METRO RANKING: CONTENT PUBLISHING

MSA	Employment	Cluster
Oshkosh-Neenah, WI	2,653	**5.77**
Lancaster, PA	6,009	**4.84**
Dalton, GA	1,668	**4.07**
La Crosse, WI-MN	1,371	**3.74**
Clarksville, TN-KY	1,361	**3.64**
Green Bay, WI	3,014	**3.46**
York-Hanover, PA	3,021	**3.34**
Kingsport-Bristol-Bristol, TN-VA	1,900	**3.10**
Milwaukee-Waukesha-West Allis, WI	13,151	**3.01**
Ann Arbor, MI	2,348	**2.96**

Source: Bureau of Labor Statistics

Industry Overview

BUSINESS & FINANICIAL SERVICES	
NAICS	
5182	Data Processing, Hosting
522	Credit Intermediation and Related Activities
523	Securities, Commodity Contracts
524	Insurance Carriers and Related Activities
525	Funds, Trusts, and Other Financial Vehicles
5412	Accounting, Tax Preparation
5611	Office Administrative Services
5612	Facilities Support Services
5613	Employment Services
56142	Call Centers
Employment	
15 Million Employed - U.S. 2005	
Wage Rates	
$57,500 Average Annual Wage - U.S. 2005	
Location Criteria	
Educated Workforce	
Reasonable Utility Rates	
Quality Office Space	

The business and financial services industry is comprised of back-office support operations including call centers, processing facilities, and data processing and storage. The market's fastest-growing segments are back office support for the financial services industry; third party data support services, and outsourced information technology operations.

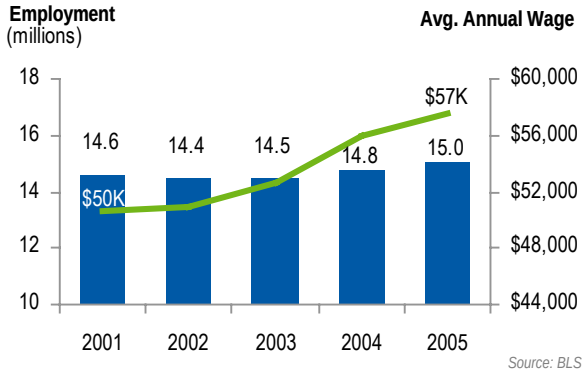
Support staff in the business and financial services industry performs a variety of corporate functions including finance and accounting, application processing, and technical support. Low cost locations, with low tax structures and attractive regulatory environments, have been successful in recruiting these firms, while some states have become welcoming to the credit card processing and call center industries, in part, by passing targeted legislation.

Although the domestic call center industry struggled in 2004 and continued to struggle in 2005, **financial services and Customer Relationship Management (CRM) call centers have been a bright spot.** Many call centers have closed as companies outsource or merge their call center services. Companies increasingly are outsourcing their call center services to offshore entities in countries with large English-speaking populations. India is the most popular destination for call center outsourcing. Strong competition for call centers also comes from Canada, South Africa, Costa Rica, and the Philippines. The recent creation of the National Do Not Call List is a clear threat to the outbound call center industry as fewer sales calls can be placed from within the United States. Financial service and CRM call centers have been less affected by these changes than the overall call center industry. They have a higher value add and need to have a closer connection with their end consumers. Thus, they have moved operations overseas with much more caution.

The data processing and storage sector is comprised of computer programming services, data processing, and information retrieval services. Demand for these services is driven by efficiencies derived through computer automation, which is expected to continue to increase, or in the case of the gaming industry, through entertainment value.

BUSINESS & FINANCIAL SERVICES

EMPLOYMENT & AVERAGE WAGE, 2001-2005



Source: BLS

Industry Requirements

Economic Conditions

Industry firms desire locations where competition for labor is low and class 'A' office space and large campus tracts are available. Stability is a key goal for companies in weighing relocation options. Turnover is common among industry support staff. Major expenses for the industry include employee training and establishing communications infrastructure. Firms within the industry tend to receive job based incentive packages including new job tax credits and community run training programs. Because their cost of telecom is typically high, it is important that real estate and utility costs are competitive.

Market/Geography

Business and financial services organizations require low recurring costs, reliable utilities, and available office space. They often look to midsize metropolitan and suburban communities when relocating. Although not necessary, a central time zone location will allow inbound service from both coasts and short flights to the entire U.S.

Structural Assets

Business and financial services and back-office operations serve as hubs for many other vital functions. Therefore, it is essential that power, telecom, and other Internet Service Provider (ISP) services be reliable and affordable. These operations are light users of utilities, with the exception of power, making these businesses good for communities where other industries are excluded by water and wastewater constraints. Airport access is also vital for managers and executives in back-office operations.

Research & Development

Business and financial back-office services firms have minimal needs for R&D institutions nearby but rely on local universities to train and deliver a well-educated workforce. The presence of a strong community college system will also be important to provide a skilled workforce in the middle segments of the occupational spectrum. Some local software research can help firms stay competitive and allows smaller local firms to stay connected to the trends in the industry.

Workforce

Business and financial services require a wide range of worker demographics. Data processing centers need a high percentage of college-educated employees with specific IT industry skills, while lower end business services occupations require minimal educational attainment. Financial service support centers require workers with high school diplomas and employees with some specialized accounting knowledge. Many mutual funds and brokerage call centers require college degrees and specific industry certifications.

Many companies seeking to lower their costs through back office services and business support services look to areas with high underemployment rates among younger demographics. Competitive wage rates are also very important.

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

Our analysis of the data allows us to determine the skill set of Atlanta's workforce, and the wage and education requirements for each occupation. The following chart provides Atlanta's employment per 10,000 workers for each occupation, while comparing it to the U.S. This allows us to determine the strengths and weaknesses of Atlanta's occupational makeup. Once these gaps are identified, the region can work to improve the weaknesses or leverage the strengths in its existing workforce.

Occupation and Skill Set Analysis (cont.)

Key Occupations in the Business and Financial Services Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
New accounts clerks	6.3	6.2	$28,460	$27,700	2%	Work experience in a related occupation
Brokerage clerks	5.4	5.1	$38,140	$28,690	7%	Moderate-term o-t-j training
Insurance underwriters	7.6	12.5	$56,480	$59,610	8%	Bachelor's degree
Insurance claims and policy processing clerks	18.4	24.0	$31,700	$35,510	5%	Moderate-term o-t-j training
Securities, commodities, and financial services sales agents	19.3	13.1	$87,990	$95,820	12%	Bachelor's degree
Claims adjusters, examiners, and investigators	18.0	16.2	$49,210	$50,130	15%	Long-term o-t-j training
Insurance sales agents	23.0	16.6	$56,960	$56,860	7%	Bachelor's degree
Tellers	46.0	44.0	$22,020	$23,050	7%	Short-term o-t-j training
Legal secretaries	20.3	17.1	$39,070	$42,260	17%	Postsecondary vocational award
Insurance appraisers, auto damage	1.0	0.9	$48,740	$45,830	17%	Long-term o-t-j training
Loan interviewers and clerks	17.8	17.7	$31,880	$30,790	-1%	Short-term o-t-j training
Tax preparers	4.5	3.6	$31,000	$29,670	11%	Moderate-term o-t-j training
Personal financial advisors	8.3	5.9	$82,970	$65,280	26%	Bachelor's degree
Loan officers	25.5	31.2	$59,350	$56,340	8%	Bachelor's degree
Paralegals and legal assistants	16.7	24.1	$43,510	$43,390	30%	Associate degree
Correspondence clerks	1.4	2.6	$30,180	$34,770	-7%	Short-term o-t-j training
Credit analysts	4.7	7.8	$58,110	$47,310	4%	Bachelor's degree
Loan counselors	2.2	3.3	$43,370	$50,620	18%	Bachelor's degree
Lawyers	40.6	45.1	$110,520	$105,280	15%	First professional degree
Title examiners, abstractors, and searchers	5.0	2.0	$40,070	$50,370	1%	Moderate-term o-t-j training
Construction and related workers, all other	4.9	1.8	$32,230	$40,810	28%	Moderate-term o-t-j training
Office machine operators, except computer	6.7	6.0	$25,460	$23,350	-22%	Short-term o-t-j training
Credit authorizers, checkers, and clerks	5.0	6.5	$30,990	$32,080	-41%	Short-term o-t-j training
Telemarketers	30.8	36.3	$23,500	$24,850	-10%	Short-term o-t-j training
Mail clerks and mail machine operators, except postal service	11.4	14.2	$24,120	$25,950	-37%	Short-term o-t-j training
Bill and account collectors	33.1	62.0	$29,860	$29,370	21%	Short-term o-t-j training
Financial examiners	1.7	2.6	$68,090	$68,070	9%	Bachelor's degree
Proofreaders and copy markers	1.4	3.8	$27,660	$25,290	2%	Short-term o-t-j training
Law clerks	3.1	6.0	$36,980	$28,310	8%	Bachelor's degree
Financial analysts	13.9	20.8	$73,130	$72,960	17%	Bachelor's degree
Data entry keyers	22.8	28.5	$24,910	$26,760	-1%	Moderate-term o-t-j training
Financial managers	36.2	57.6	$96,620	$91,890	15%	Bachelor's or higher degree, + work exp.
Financial specialists, all other	9.4	6.9	$57,130	$53,180	14%	Bachelor's degree
File clerks	17.6	15.6	$22,840	$21,420	-36%	Short-term o-t-j training
Accountants and auditors	80.7	73.1	$58,020	$53,810	22%	Bachelor's degree
Training and development managers	2.2	5.4	$80,180	$82,400	26%	Bachelor's or higher degree, + work exp.
Customer service representatives	158.7	259.2	$29,680	$29,180	23%	Moderate-term o-t-j training
Computer operators	9.9	16.1	$33,580	$37,520	-33%	Moderate-term o-t-j training
Art directors	2.3	2.3	$73,790	$78,730	12%	Bachelor's or higher degree, + work exp.
Employment, recruitment, and placement specialists	13.9	--	$48,470	$61,350	30%	Bachelor's degree
Advertising and promotions managers	3.2	6.5	$81,250	$84,930	20%	Bachelor's or higher degree, + work exp.
Demonstrators and product promoters	6.6	12.9	$24,570	$24,920	16%	Moderate-term o-t-j training
Marketing managers	12.8	27.9	$101,990	$90,260	21%	Bachelor's or higher degree, + work exp.
Word processors and typists	11.8	6.5	$30,140	$29,370	-15%	Moderate-term o-t-j training

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

Our analysis of the data allows us to determine the presence in Atlanta of the micro-industries that make up the industry cluster, which provides a better understanding of the relative strength or weakness of the cluster in the Atlanta MSA. The following chart displays Atlanta's number of establishments, employment, and cluster concentration for each industry sub-sector within Business and Financial Services. A value of '1' indicates that the cluster in the Atlanta MSA is as concentrated as it is throughout the United States; a value of less than '1' indicates that the cluster is not as concentrated as it is throughout the United States; and a value of greater than '1' indicates that the cluster is more concentrated in the Atlanta MSA than it is throughout the United States. So for example, Data Processing and Hosting, with a cluster of 2.21, is over 2 times as concentrated in the Atlanta MSA as it is throughout the United States.

- Relative to the U.S., the region has a strong Business and Financial Services Industry
- Most of the of the major sub-sectors are strong including Data Processing, Brokerages, Office Administrative Services, and Business Support Services
- As the nation continues to shift away from a traditional manufacturing industry to a service based industry, Business and Financial Services will continue to grow at the local and national levels
- Information for several of the clusters is not disclosed due to privacy regulations

Atlanta MSA Industry Strengh Analysis: Business and Financial Services

NAICS	Description	Establishments	Employees	Cluster
5182	Data Processing, Hosting, and Related Services	278	10149	2.21
5221	Depository Credit Intermediation	1678	27664	0.91
5222	Nondepository Credit Intermediation	1397	16749	1.28
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	1155	10012	0.75
5231	Securities and Commodity Contracts Intermediation and Brokerage	472	5840	0.70
524	Insurance Carriers and Related Activities	3288	40277	1.09
5241	Insurance Carriers	762	19278	0.87
5242	Agencies, Brokerages, and Other Insurance Related Activities	2526	20999	1.42
5259	Other Investment Pools and Funds	55	721	1.08
5411	Legal Services	3136	22506	1.12
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2247	18103	1.27
5418	Advertising and Related Services	1185	10052	1.35
5611	Office Administrative Services	644	8963	1.59
5613	Employment Services	2293	86244	1.46
5614	Business Support Services	918	16763	1.29

**Not all industries are included due to Non-disclosure requirements.*

Atlanta University Corridor Assets

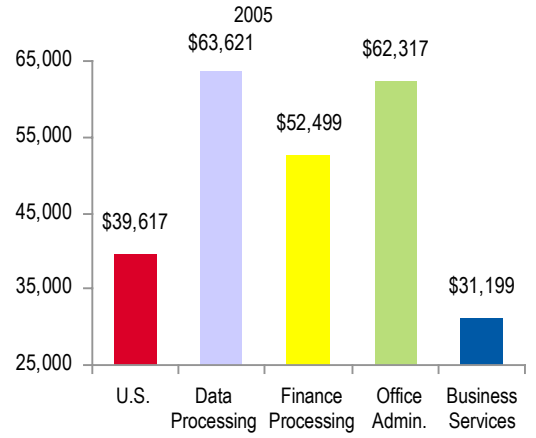
The Atlanta University Corridor features relatively low land costs (especially considering its central city location), proximity to the nation's busiest airport, a large potential labor force, and reliable utilities. Additionally, Atlanta's strong existing business and financial services sector highlights the region's attractiveness to industry. Although the hard infrastructural requirements of the business and financial services sector are modest, the Atlanta University Corridor must address its current lack of adequate office space. If the area is to prove triumphant in its efforts to foster a local business and financial services sector, additional class-A office space must be developed.

Niche Targets

Shared Services Center

These facilities are generally large scale corporate operations including a wide variety of integrated back-office operations. They typically include redundant large data centers for regional or headquarter operations, a high value add call center component typically entailing customer relationship management, advanced technical support, high dollar value sales, small to medium processing operations, and small to medium programming operations. These corporate campuses have excellent wages and long term prospects. Atlanta a more attractive tax and business cost climate than large northeastern metropolitan areas, which will help it to compete. An integrated services center provides high visibility as well, as these handle strategic corporate functions.

AVERAGE ANNUAL WAGES

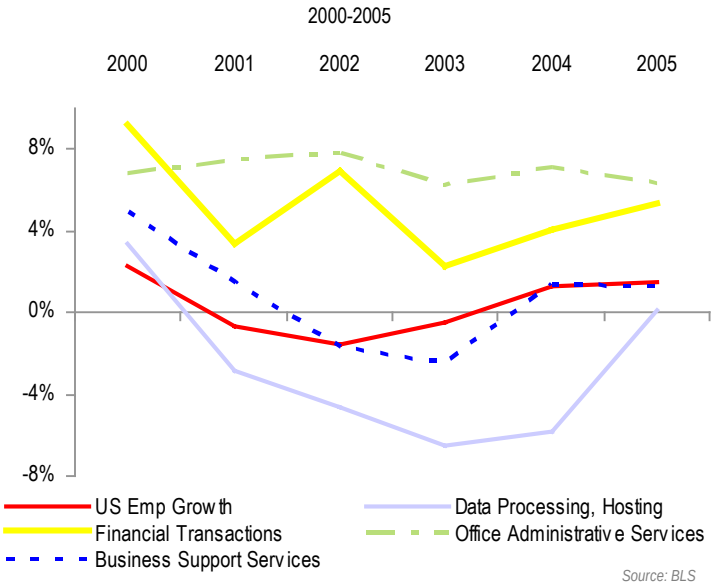


Source: BLS

Data Centers

Data centers are operations that provide digital information storage for customers and corporate parents. They are composed of clusters of computers and network switching gear that allows efficient and highly reliable transfer of data. Data centers are high value operations, pay excellent wages, and are very low impact. Atlanta meets most of the rigorous requirements of the industry; site selection for data centers is more technical than most projects. These facilities are increasing in importance and many are developed with small software development operations.

ANNUAL EMPLOYMENT GROWTH



Source: BLS

Data centers are low environmental impact facilities. Air emissions, water consumption, and wastewater discharge are low. Facilities will not require much land and impervious cover should be limited. Electricity usage will be high as will security requirements.

CRM Call Centers

Strong competition for call centers is coming from offshore locales and is stunting domestic growth in the overall industry. However, call centers focused on customer relationship management (CRM), advanced technical support, or high dollar value sales are less affected by these changes and continue to locate new facilities in the U.S. These facilities are not subject to the same level of competitive pressure as low value-add call center operations. CRM is considered vital for high margin clients, and companies are concerned about potentially upsetting profitable relationships to save money. College-educated staff, many with further levels of certification typically staff CRM Call Centers. Cost savings realized from off shoring are inadequate given potential risks involved.

Back Office Financial

Support staff in the business and financial services industry performs a variety of record-keeping duties. They track revenues coming into and leaving organizations as well as provide customer support. They provide payroll, procurement, and auditing services for their clients. The growing financial services and health care industries will require increasing levels of back-office support. Both industries will continue to move these support functions off-site or even outsource the operations to third party vendors. Citicorp recently announced the relocation of its core back-office support operations from Lower Manhattan to New Jersey. The fact that some back-office operations still exist in high cost areas such as New York and California illustrates the potential for lower-cost mid-size communities to recruit these facilities.

METRO RANKING: FINANCIAL SERVICES

MSA	Employment	Cluster
Charlotte-Gastonia-Concord, NC-SC	55,326	**1.57**
New York-Northern New Jersey-Long Island, NY-NJ-PA	553,278	**1.53**
Columbus, OH	57,242	**1.44**
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	174,548	**1.42**
Minneapolis-St. Paul-Bloomington, MN-WI	108,624	**1.37**
Phoenix-Mesa-Scottsdale, AZ	102,535	**1.33**
Boston-Cambridge-Quincy, MA-NH	143,244	**1.32**
Tampa-St. Petersburg-Clearwater, FL	71,820	**1.30**
San Francisco-Oakland-Fremont, CA	115,375	**1.29**
Cleveland-Elyria-Mentor, OH	61,372	**1.26**

Employment of at least 50,000 *Source: Bureau of Labor Statistics*

METRO RANKING: BUSINESS SERVICES

MSA	Employment	Cluster
Sarasota-Bradenton-Venice, FL	45,693	**2.66**
Tampa-St. Petersburg-Clearwater, FL	157,486	**2.21**
Phoenix-Mesa-Scottsdale, AZ	163,790	**1.64**
Memphis, TN-MS-AR	47,297	**1.34**
Honolulu, HI	30,805	**1.33**
Orlando, FL	74,974	**1.33**
Tucson, AZ	25,177	**1.32**
Atlanta, GA	170,157	**1.31**
Grand Rapids-Wyoming, MI	30,179	**1.29**
Miami-Fort Lauderdale-Miami Beach, FL	166,513	**1.28**

Employment of at least 25,000 *Source: Bureau of Labor Statistics*

Target Markets

The business and financial services sector is currently starting the migration to low cost areas. As noted in the introduction, the lower cost areas have successfully been able to leverage the low working and living cost outside major cities to attract these businesses. There remains a large congregation of companies located in the Northeast (See Metropolitan Ranking: Financial Services employment). These companies will soon be forced to move to lower cost areas and may consider locations such as Atlanta.

Industry Overview

The creative industry cluster is a compilation of industry sectors that utilize creatively skilled talent. Businesses in these industries tend to cluster together not because of supplier advantages or value chain synergies. Rather, these firms choose locations that will provide a high quality of life and an environment in which creative individuals can flourish.

Considering that, the ultimate "target" is not necessarily the creative industries, but rather the people that constitute those industries. Atlanta provides an ideal setting to attract creative individuals. The region is also home to an established cluster of creative businesses in the arts, architecture, historic preservation, film, and music.

More and more communities are targeting the fast growing and high paying targets of digital media content creation, graphic design, and film visual media production, as a niche sector, to differentiate from the norm. Creative communities are generally made up of wealthy, young, ambitious, and culturally diverse people. This demographic population and image creates positive brand recognition for a community and makes the community a more desirable place for other target industries.

According to the Bureau of Labor Statistics, nationally, creative and design occupations are expected to grow by 21% to 35% over the next ten years. Design applications tied to software will be the fastest growing segment, as software engineers in any industry will be the quickest growing career option in the country.

CREATIVE

NAICS Definition

5112	Software Publishers
512	Motion Picture and Spound Recording Industries
516	Internet Publishing and Broadcasting
323	Printing & Support Activities
511	Publishing
5413	Architectural, Engineering, & Related Svcs
5414	Specialized Design Services
5418	Advertising & Related Services
541430	Graphic Design

Employment

3.8 Million Employed - U.S. 2005

Wage Rates

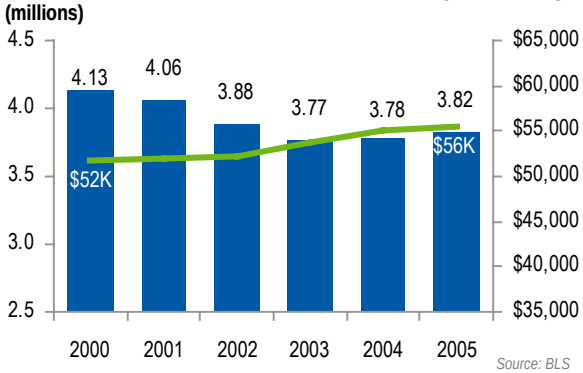
$55,600 Average Annual Wage - U.S. 2005

Location Criteria

Large pool of skilled designers
Technical design training programs
Cultural & lifestyle amenities important
Quality office space

CREATIVE

EMPLOYMENT & AVERAGE WAGE, 2000-2005



Source: BLS

Industry Requirements

Economic Conditions

Design firms tend to be small in size, consisting mainly of high-skilled workers and few support staff. Roughly one third of all designers are self-employed. Thus, the entrepreneurial network of a community is vital to the success of local design firms.

Structural Assets

The infrastructure needs of creative firms are not as critical as those in other industries. Typically, these firms need access to telecommunication and electricity services, but cost and reliability concerns are not as crucial. These firms prefer to locate in Class "A" office space generally located in central, downtown, and vibrant locations.

Research & Development

While generally not overly reliant on R&D, the technically focused niches in this cluster do require product development and customization. Additionally, the industrial and commercial design segments require research and an involved product development process.

Workforce

The creative cluster comprises a broad range of occupational categories, from computer-aided design, software development, and architecture, to graphic design and marketing. The workforce spans such varied industries as motion pictures and industrial machinery. These jobs generally require advanced training using design software and artistic techniques.

Architects: Plan and design structures, such as private residences, office buildings, theaters, factories, and other structural property. (BLS SOC definition)

Graphic Designers: Design or create graphics to meet specific commercial or promotional needs, such as packaging, displays, or logos. May use a variety of mediums to achieve artistic or decorative effects.

Multi-media Artists: Create special effects, animation, or other visual images using film, video, computers, or other electronic tools and media for use in products or creations, such as computer games, movies, music videos, and commercials. (BLS SOC definition)

Commercial & Industrial Designers: Develop and design manufactured products, such as cars, home appliances, and children's toys. Combine artistic talent with research and product use, marketing, and materials to create the most functional and appealing product design. (BLS SOC definition)

Occupation and Skill Set Analysis

Building a cluster requires not only recruiting high impact companies, but also ensuring that the community has an adequate supply of skilled workers to support the industry. When evaluating a potential site, companies will inventory the skill sets and wage costs of the available workforce and compare them to alternative sites. Analyzing Atlanta's occupational makeup will indicate whether AUC is prepared to recruit this target industry. **More importantly, this analysis will guide economic developers as well as workforce development and education providers on the critical skills workers in the region need to acquire, either by training existing workers or recruiting skilled workers to the area.** The chart on the next page outlines occupations that are most prevalent in the Target Industry and therefore are essential to the health of a strong cluster.

Our analysis of the data allows us to determine the skill set of Atlanta's workforce, and the wage and education requirements for each occupation. The following chart provides Atlanta's employment per 10,000 workers for each occupation, while comparing it to the U.S. This allows us to determine the strengths and weaknesses of Atlanta's occupational makeup. Once these gaps are identified, the region can work to improve the weaknesses or leverage the strengths in its existing workforce.

Occupation and Skill Set Analysis

Key Occupations in the Creative Industry						
Occupation	Employees Per 10K Local Workers		Median Wage		Occupational Information	
Title	US	Altanta	US	Altanta	U.S. Growth	Education
Motion picture projectionists	0.8	--	$19,340	$17,990	-10%	Short-term o-t-j training
Film and video editors	1.2	0.7	$54,730	$44,820	19%	Bachelor's degree
Entertainers and performers, sports and related workers, all other	5.3	--	--	--	21%	Long-term o-t-j training
Multi-media artists and animators	1.8	1.7	$57,270	$48,480	14%	Bachelor's degree
Art directors	2.3	2.3	$73,790	$78,730	12%	Bachelor's or higher degree, + work exp.
Camera operators, television, video, and motion picture	1.7	2.9	$46,040	--	14%	Moderate-term o-t-j training
Advertising sales agents	11.8	14.9	$50,400	$52,820	16%	Moderate-term o-t-j training
Interior designers	3.8	10.8	$47,010	$44,000	16%	Associate degree
Producers and directors	4.5	4.8	$68,970	$52,190	17%	Bachelor's or higher degree, + work exp.
Graphic designers	13.7	12.0	$42,530	$43,740	15%	Bachelor's degree
Advertising and promotions managers	3.2	6.5	$81,250	$84,930	20%	Bachelor's or higher degree, + work exp.
Writers and authors	3.3	3.2	$53,850	$55,300	18%	Bachelor's degree
Audio and video equipment technicians	3.1	4.7	$36,350	$37,650	18%	Long-term o-t-j training
Demonstrators and product promoters	6.6	12.9	$24,570	$24,920	16%	Moderate-term o-t-j training
Media and communication equipment workers, all other	1.3	1.2	$51,610	$40,130	17%	Moderate-term o-t-j training
Public relations specialists	14.7	7.0	$51,080	$49,640	23%	Bachelor's degree
Fine artists, including painters, sculptors, and illustrators	0.8	0.8	$46,670	$35,950	10%	Long-term o-t-j training
Commercial and industrial designers	2.4	1.4	$56,780	$57,490	11%	Bachelor's degree
Public relations managers	3.4	3.9	$85,820	$79,020	22%	Bachelor's or higher degree, + work exp.
Broadcast technicians	2.4	--	$35,350	$40,870	10%	Associate degree
Desktop publishers	2.3	2.5	$34,770	$31,730	23%	Postsecondary vocational award
Editors	7.4	5.7	$51,750	$49,750	15%	Bachelor's degree
Technical writers	3.5	3.0	$57,720	$56,150	23%	Bachelor's degree
Marketing managers	12.8	27.9	$101,990	$90,260	21%	Bachelor's or higher degree, + work exp.
Production, planning, and expediting clerks	22.1	30.3	$38,920	$38,680	8%	Short-term o-t-j training
Market research analysts	15.0	13.0	$64,370	$58,730	20%	Bachelor's degree
Computer programmers	29.9	42.7	$67,400	$77,340	2%	Bachelor's degree
Purchasing agents, except wholesale, retail, and farm products	20.5	19.5	$52,560	$50,040	8%	Work experience in a related occupation
Network and computer systems administrators	20.7	26.8	$63,210	$61,240	38%	Bachelor's degree
Computer and information systems managers	19.9	36.0	$102,360	$101,440	26%	Bachelor's or higher degree, + work exp.
Sales managers	24.4	59.7	$98,510	$104,920	20%	Bachelor's or higher degree, + work exp.
Painting, coating, and decorating workers	2.1	1.4	$25,280	$25,420	8%	Short-term o-t-j training
Office machine operators, except computer	6.7	6.0	$25,460	$23,350	-22%	Short-term o-t-j training
Training and development managers	2.2	5.4	$80,180	$82,400	26%	Bachelor's or higher degree, + work exp.
Executive secretaries and administrative assistants	110.7	131.0	$37,810	$37,140	12%	Moderate-term o-t-j training
Photographers	4.5	3.8	$31,410	$25,940	12%	Long-term o-t-j training
Computer operators	9.9	16.1	$33,580	$37,520	-33%	Moderate-term o-t-j training
Managers, all other	26.1	41.6	$83,530	$90,080	8%	Work experience in a related occupation
Administrative services managers	18.4	29.9	$69,540	$67,240	17%	Bachelor's or higher degree, + work exp.
Drafters, all other	1.6	0.9	$45,420	$39,930	14%	Postsecondary vocational award
Financial managers	36.2	57.6	$96,620	$91,890	15%	Bachelor's or higher degree, + work exp.
Tailors, dressmakers, and custom sewers	2.3	0.5	$24,530	$27,810	0%	Long-term o-t-j training
Compensation and benefits managers	3.9	5.7	$76,300	$78,530	21%	Bachelor's or higher degree, + work exp.
Public address system and other announcers	0.6	0.9	$31,160	$28,150	4%	Long-term o-t-j training

o-t-j = on the job

Atlanta's Industry Strengths

The presence of local firms provides an excellent indicator of industry strength at the local level and is also important in planning for the further development of the industry. Understanding the specific strengths of the broader cluster is important in determining recruitment targets. Areas of strength (those with high company representation) can be leveraged in the recruitment process, and strategies can be developed for bolstering the cluster in weak areas.

Our analysis of the data allows us to determine the presence in Atlanta of the micro-industries that make up the industry cluster, which provides a better understanding of the relative strength or weakness of the cluster in the Atlanta MSA. The following chart displays Atlanta's number of establishments, employment, and cluster concentration for each industry sub-sector within Creative Industries. A value of '1' indicates that the cluster in the Atlanta MSA is as concentrated as it is throughout the United States; a value of less than '1' indicates that the cluster is not as concentrated as it is throughout the United States; and a value of greater than '1' indicates that the cluster is more concentrated in the Atlanta MSA than it is throughout the United States. So for example, Record Production, with a cluster of 2.76, is almost 3 times as concentrated in the Atlanta MSA as it is throughout the United States.

- Relative to the U.S., the region has a very strong Creative Industry
- Atlanta excels in many of the major sub-sectors including Sound Recording, Software Publishers, Marketing, and Advertising
- The Creative Industry will continue to grow as the nation continues to shift away from a traditional manufacturing industry to a service based industry

Atlanta MSA Industry Strengh Analysis: Creative

NAICS	Description	Establishments	Employees	Cluster
323	Printing & Support Activities	796	13260	1.16
511	Publishing	608	23414	1.49
5112	Software Publishers	234	10127	2.48
512	Motion Picture and Spound Recording Industries	459	4162	0.63
5121	Motion Picture and Video Industries	341	3671	0.59
512110	Motion Picture and Video Production	233	1133	0.34
512191	Teleproduction and Other Postproduction Services	27	144	0.57
5122	Sound Recording Industries	118	491	1.32
512210	Record Production	13	113	2.76
512240	Sound Recording Studios	65	175	1.40
512290	Other Sound Recording Industries	12	54	0.85
516	Internet Publishing and Broadcasting	68	575	1.13
5413	Architectural, Engineering, & Related Svcs	2513	25880	1.19
541310	Architectural Services	485	4243	1.33
541330	Engineering Services	1388	17557	1.29
541340	Drafting Services	71	185	1.08
5414	Specialized Design Services	1009	3189	1.51
541410	Interior Design Services	393	1108	1.80
541420	Industrial Design Services	19	32	0.19
541430	Graphic Design	552	1599	1.40
541613	Marketing Consulting Services	812	3689	2.01
5418	Advertising & Related Services	1185	10052	1.35
541810	Advertising Agencies	432	4213	1.45
541840	Media Representatives	105	1047	1.94

**Not all industries are included due to Non-disclosure requirements.*

Atlanta University Corridor's Assets

The infrastructural requirements of most Creative Industries are minimal. Architects, graphic designers, and a host of other Creative Industry personnel often work for small firms or independently. As such, Creative Industry personnel often eschew contemporary office parks in favor of more "authentic" boutique offices or work/live spaces that combine housing and work areas. Developments such as the Studioplex Lofts in Atlanta's Old Fourth Ward and the recent emergence of nearby Castleberry Hill as a premier arts district demonstrate the ability of formerly depressed central city neighborhoods to become centers of creative enterprise. There is little reason why some of the Atlanta University Corridor's historic commercial areas could not be transformed into similarly successful cultural districts, thus becoming home to some of the following creative niche sectors.

Niche Targets

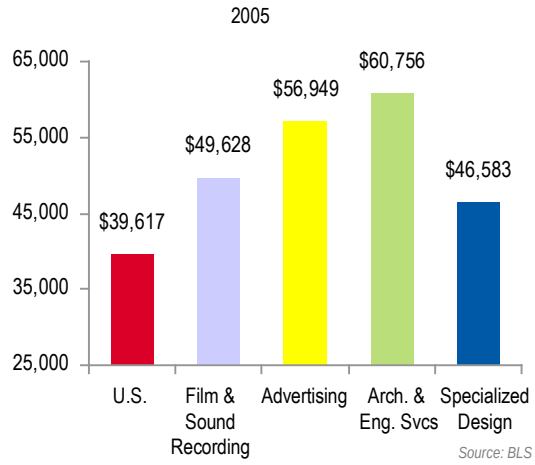
Film and Music

Traditionally, both the music and film industry have been dominated by large production companies and record labels. In recent years, however, advancements in technology combined with the atomization of both industries has helped foster independent production companies.

For example, independent companies have historically produced most shows on television for later distribution by television broadcasting networks. Geographical constraints typically required that these small production houses remain close to their corporate clients. With the rise of digital technology, however, production companies are now limited only by the availability of a high-speed Internet connection. As a consequence of these changes, more production facilities are locating outside the media centers of New York and Las Vegas.

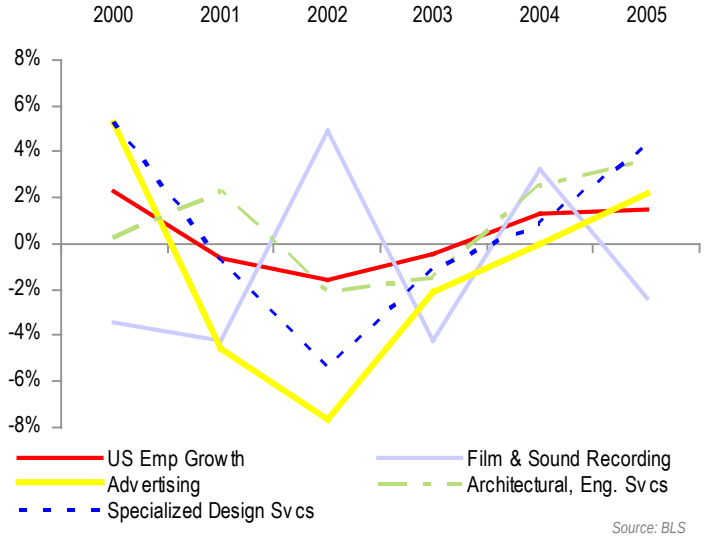
Additionally, fragmentation of music and television audiences has favored smaller, flexible media companies. Fortunately, new technologies have considerably lowered the cost of production, making sound and film equipment more affordable to a wide range of artists. The rise of alternative distribution channels has only increased the opportunities for smaller firms.

AVERAGE ANNUAL WAGES



Source: BLS

ANNUAL EMPLOYMENT GROWTH



Source: BLS

Design

Digital Design is the complex combination of computers, visual media, and the art world. This target is largely driven by the skills of the workforce. The workforce is largely mobile and usually is attracted to an emerging cluster in their desired area of expertise. With both artistic and commercial appeal, occupations can be found in a broad spectrum of industries.

Most people are familiar with occupations such as computer animation and graphic design, though many overlook the more industrial applications. Commercial and industrial designers develop and design manufacturing products, from cars to biomedical lab equipment to missiles. Growing a design cluster in the Atlanta University Corridor could have spin-off impacts in some of the region's more traditional industries. Designers in the Corridor can begin to work with the other target clusters in the life sciences, advanced manufacturing, and aircraft industries.

Consumer Product Design

As more of our day-to-day activities involve consumer products, designers keep these products efficient and user-friendly. Designers improve products through aesthetics, usability, production processes, and choice of materials.

INDUSTRY LOCATION ANALYSIS BACKGROUND

Traditionally, the growth of economies has been described in terms of a region's "basic" or "primary" industries. These industries typically export their goods or services outside the region, thereby supporting local industries such as retail, housing construction, and personal services through payroll and local purchases. Primary industries reflect an injection of outside money into the community and have a high economic impact. A typical primary business may create two additional jobs in the local economy for every one job at its facility. For this reason, communities across the country compete to recruit and retain these high-impact, primary businesses.

Manufacturing is a good example of a primary industry, as most customers are found throughout the U.S. and abroad. With the manufacturing industry in decline and business increasingly global, many more industries are "primary" in their make-up. Distribution centers may serve a multi-state region, back office operations may serve a company's global network of employees, and custom software companies can build Internet applications to serve businesses anywhere in the world. Federal installations such as Army bases or federal research labs are clear examples of how government can be classified as a primary industry. High wage jobs are usually found at national or global companies that are enjoying growth.

While businesses have become more global in nature, rapid gains in technology, telecommunications, and markets continue to alter the location requirements of many companies. Often the speed of business drives corporate location decisions. The competition for top talent is now viewed to be the most important component of a successful company. Today's business environment requires that a community continue to upgrade the technological capabilities of its businesses while expanding the skills of its available workforce. Innovation and change are now the baselines for success.

Because of the increasingly stringent requirements in today's economy, businesses in many industries now prefer to locate in similar geographical regions. These businesses in similar primary industries tend to form clusters, which are highly integrated groups of businesses with strong vertical and horizontal linkages. **Clusters form among businesses that share similar markets, labor, technology, and processes.**

The Use of Cluster Analysis in Economic Development

Historically, clusters agglomerated in specific regions of the U.S. due to natural advantages (e.g. natural resources and climate), cost factors (e.g. distance to market, labor costs), and existing transportation infrastructure. **Today, companies are increasingly drawn to regions that can meet their workforce requirements.** Universities and public sector institutions such as education and training facilities are now major drivers of regional economies. Clusters often mature when businesses expand their relationships with existing supplier firms in a region. An established industry cluster contains a mix of primary, supplier, and support firms and thus drives the co-location of a well-diversified "critical mass" of **production, labor, and information.**

By locating in close proximity, these elements are more enhanced than they would be if only a single business existed in a region. The presence of an inventory of supporting assets enables businesses within an industry cluster to be **more competitive than a firm operating alone**. This enhanced competitive position allows the cluster, and the region in which the cluster is located, to be **more productive and generate higher levels of output**. Increased regional output, in turn, drives **growth in regional employment, wage, and income levels**. Because of the direct correlation between the presence of an industry cluster and enhanced competitiveness, companies across the nation seek out locations that have strong cluster concentrations. The business attraction effect, coupled with the ability of

industry clusters to generate regional wealth, are primary reasons why cluster analysis is widely used in economic development strategic planning.

Approaching target industry selection from a cluster perspective also helps to align a region's external marketing and internal product improvement initiatives. Generally, the needs and marketing messaging appropriate for one business in a specific cluster will resonate with all businesses in that cluster. Because of this, marketing efforts can be more focused on specific target audiences and the unique needs of the clusters that support those audiences.

In the same way, communities can also have a focused approach to improving their regional assets (the region's "product") to better serve targeted clusters. As with marketing efforts, companies in the same cluster have similar location requirements, whether it's a uniquely skilled workforce, mandatory access to capital, a strong transportation system, local R&D assets, etc. Once these unique needs are determined for the cluster, the region can work on building and enhancing these specific assets locally. **For example, to cultivate a medical research and device manufacturing cluster, the universities in the corridor would have to collaborate with local economic development officials and the private sector to identify specific assets and implement technology commercialization or workforce training programs geared to the needs of emerging medical technology companies.** Instead of focusing on general education and workforce training, these institutions can specifically target programs that will cater to the region's final list of target industries.

A Note on Site Selection

"Site selection" is a broad term that describes a company's process of selecting a city for a new office or a relocating division. This process involves executives from several divisions within the company (such as Operations Executives, Human Resources, Facilities Planning, and Marketing) and often involves a consultant or real estate broker. Site selection is not a scientific process but does involve a system of measurements and calculations.

In a location decision, the site selector (either a 3rd party consultant or company representing itself) has a list of mandatory requirements for their project. These are factors that must be met for the project to move forward. For example, the project may require that rail access be on site, or that the location be within 45 minutes of an international airport. Meeting the "musts" criteria is the first screen and often there is little a community can do to pass this first screening process; it either has a site that meets these requirements or it does not.

However, in every site selection process there are also factors that could be classified as "wants" that make a location much more attractive relative to a competing location. For example, a highly trained workforce and a quality workforce development system, a comfortable quality of life, and a quick and easy permitting process are all "want" criteria. These are factors that the community can control and take a more proactive role in developing. If a community meets the "musts" criteria, it is often these other "wants" criteria that ultimately decide where the project will be located. The economic developer must identify these criteria and work with the appropriate local organization to ensure that they are being provided to the current and prospective business community.

It is also important to understand that the growth of each target industry will not just be driven by site selection factors and business recruitment. Industry growth in these targets will also come from existing businesses expanding or new businesses starting up in the AUC. Just as site selection companies will be won over by a community that fulfills their "wants" criteria, so too will existing businesses and entrepreneurial ventures.

AngelouEconomics employs a combination of quantitative and qualitative analysis in selecting the best target industries for a community. The process is guided by the following four questions:

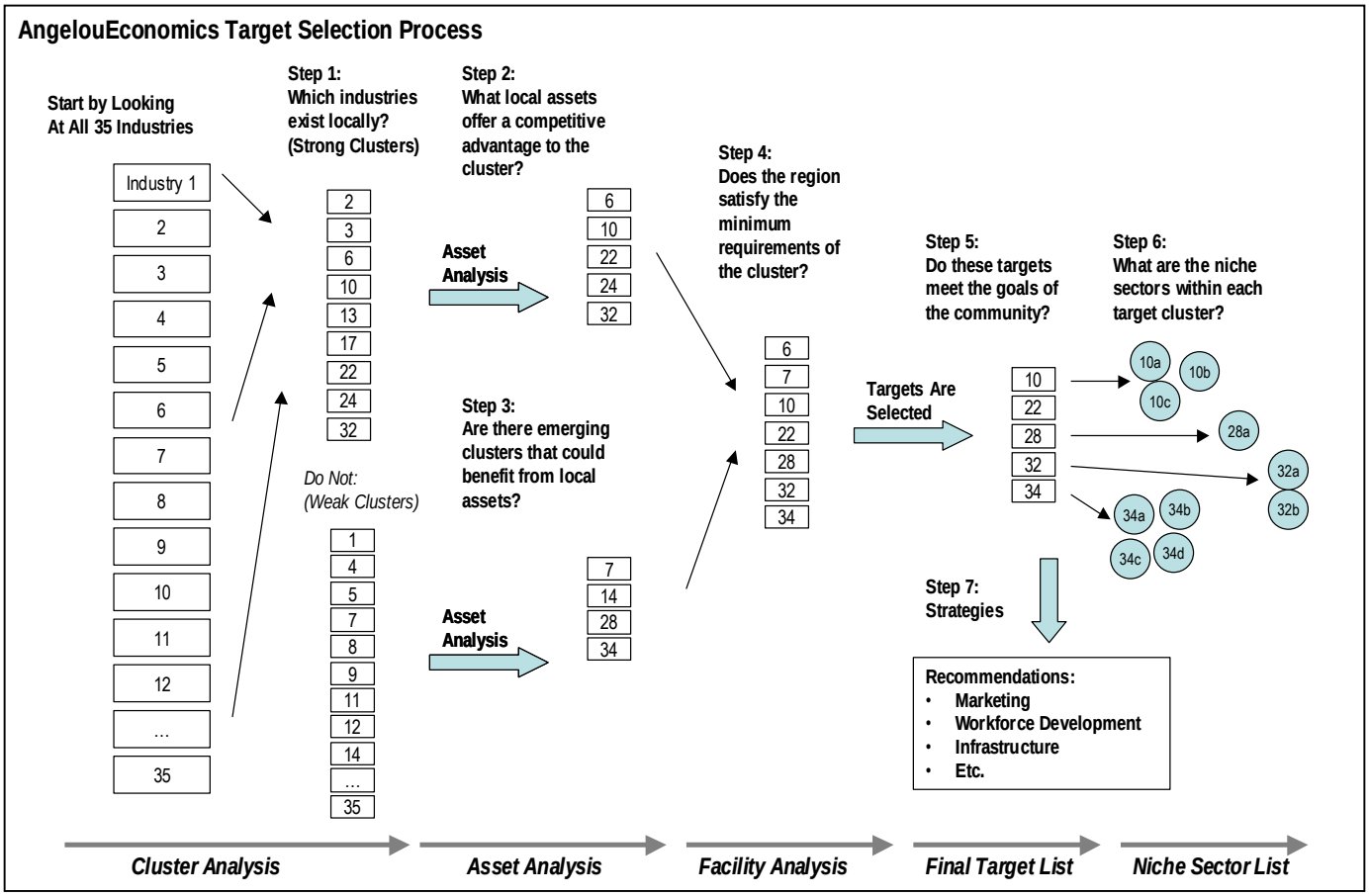
1. **What clusters currently exist locally, and are they growing?** Immediate and obvious candidates for targets are those that are experiencing growth within the community or surrounding communities. Industries that have a large presence but lack growth suggest that the region is losing its competitiveness in this industry. While the industry may be a candidate to target for a retention effort, a long-term decline calls for a close look at transitional opportunities into new industries that create jobs (e.g. textile workers transitioning into food processing).

2. **Are existing or emerging local clusters in industries that are growing nationally or undergoing geographic dislocation?** For those local clusters that have potential, are they growing nationally as well? While some industries are experiencing high growth rates, most U.S. industries are modest or stagnant in their growth. However, the dislocation of industries from one part of the country to another has been a long-standing opportunity for recruitment. Many industries undergo restructuring in order to be more competitive, or simply suffer a high rate of startup and failure.

3. **Are there local assets that give specific industries a competitive edge?** Communities are as unique as people. Each one has strengths that companies can leverage to create competitive advantages. These strengths can include such things as workforce skills, tax structure, infrastructure, and market proximity. Likewise, many companies have specific infrastructure and workforce minimum requirements, and understanding whether the region can meet those requirements is crucial. For example, if the region lacks water and wastewater capacity or has overly stringent environmental regulations, then the community could be ruled out for food processing and semiconductor manufacturing. Understanding the needs of target companies is essential to recruiting them.

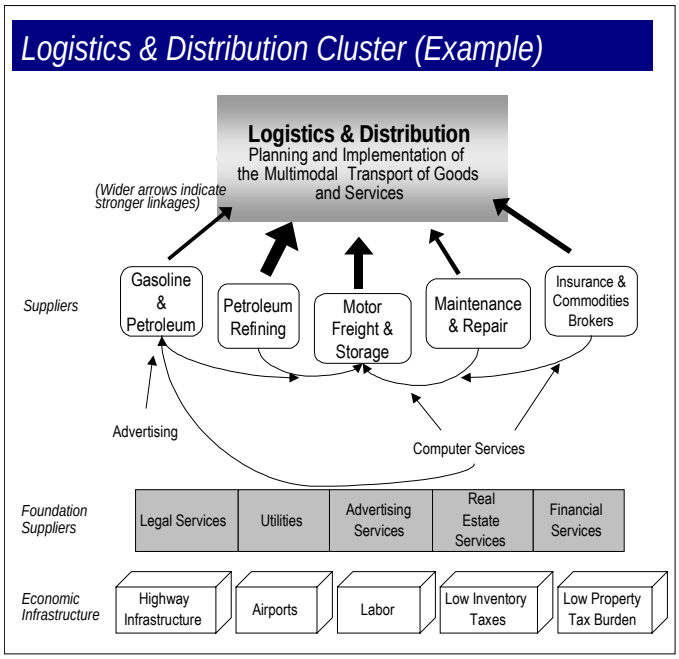
4. **Does the industry match community goals?** The most important criterion is often whether or not the industry matches the stated economic goals of the community. Some communities may want to avoid manufacturing businesses, or businesses that don't pay high enough wages. Sometimes lack of available land requires a more precise list of targets. Communities wanting to maintain a small-town appeal, for example, may target homegrown "soft" industries. Others wanting to transition into a more urban, metropolitan setting may focus more on larger office users. Industries that can survive locally will struggle to succeed without the backing of the populace and its elected officials. An aggressive marketing campaign and solid commitment by government to support a target can often overcome specific deficiencies or cost disadvantages.

In many ways, target industry selection is better described as target industry "elimination." The chart below illustrates AngelouEconomics' systematic process by which an industry is selected as a target.



STEP 1: CLUSTER ANALYSIS

The first step in the target industry selection process is to identify the current industry clusters that exist in the Atlanta University Corridor and surrounding region. These are the industry groups that support the current economic landscape. Understanding these clusters and identifying the underlying assets that facilitated their development can be important knowledge for the formation of future clusters. Often, new clusters form based on spin-off technologies, products, or processes from an existing cluster. These new clusters tend to be based on an advancement or breakthrough over their parent cluster. They tend to be more desirable industry targets because they require higher knowledge and higher wage earning individuals. It is critical to be fully aware of the trends in current clusters in order to be prepared to capture and cultivate potential emerging cluster opportunities.



The current presence of a cluster, however, does not necessarily translate into its selection as a final target industry in which the AUC should build its future economic base. Sometimes a cluster is not a suitable future target, even though at present it might represent a large share of the region's economy.

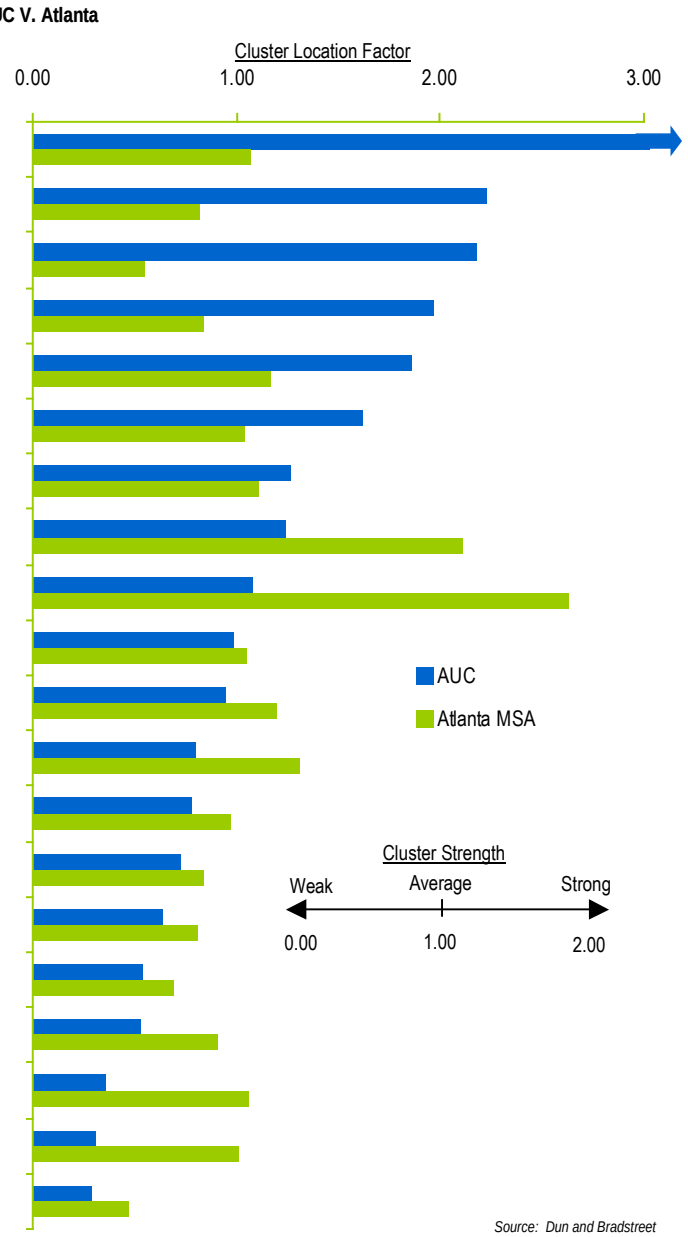
AngelouEconomics has created 35 cluster definitions that achieve a much higher level of detail than the standard classification of the 10 major industries (i.e. manufacturing, construction, services, government, etc.). This methodology categorizes businesses according to their final product and how these products are related to each other and integrated along the vertical supply chain. The results are a more accurate and detailed examination of industries than the broad method used currently by the Census. The new NAICS system is an improvement on how businesses are classified, but clusters will still be found across various NAICS codes and major industries.

To assess the strength of a cluster in a regional economy, **AngelouEconomics has calculated location factors (or quotients) for each cluster.** These factors are calculated by comparing the cluster's share of total local employment to the cluster's national share. This location quotient will yield a value generally between 0 and 2, where a result of 1 demonstrates that the cluster commands an average (expected) share of the local economy. Cluster location factors greater than 1.5 indicate a strong cluster agglomeration, while those less than 0.5 indicate weak clusters.

The following table shows the cluster location factors for the Atlanta University Corridor and the Atlanta Metropolitan Statistical Area.

TOP 20 AUC INDUSTRY CLUSTERS, 2006

Cluster	AUC	Atlanta MSA
Food Processing	4.43	1.07
Government	2.23	0.82
Higher Ed. & Research	2.18	0.55
Civic Enterprises	1.97	0.84
Logistics & Distribution	1.86	1.17
General Services	1.62	1.04
Eat/Drink	1.26	1.11
Communication Services	1.24	2.11
Transportation Services	1.08	2.63
Material Supplies	0.98	1.05
Wholesale	0.95	1.20
Business & Prof. Svcs.	0.80	1.31
Retail	0.78	0.97
Mass Media	0.72	0.84
Hotels & Entertainment	0.64	0.81
Health Services	0.54	0.69
Utilities	0.53	0.91
Housing & Construction	0.36	1.06
Apparel & Textiles	0.31	1.01
Biotechnology	0.29	0.47



Source: Dun and Bradstreet

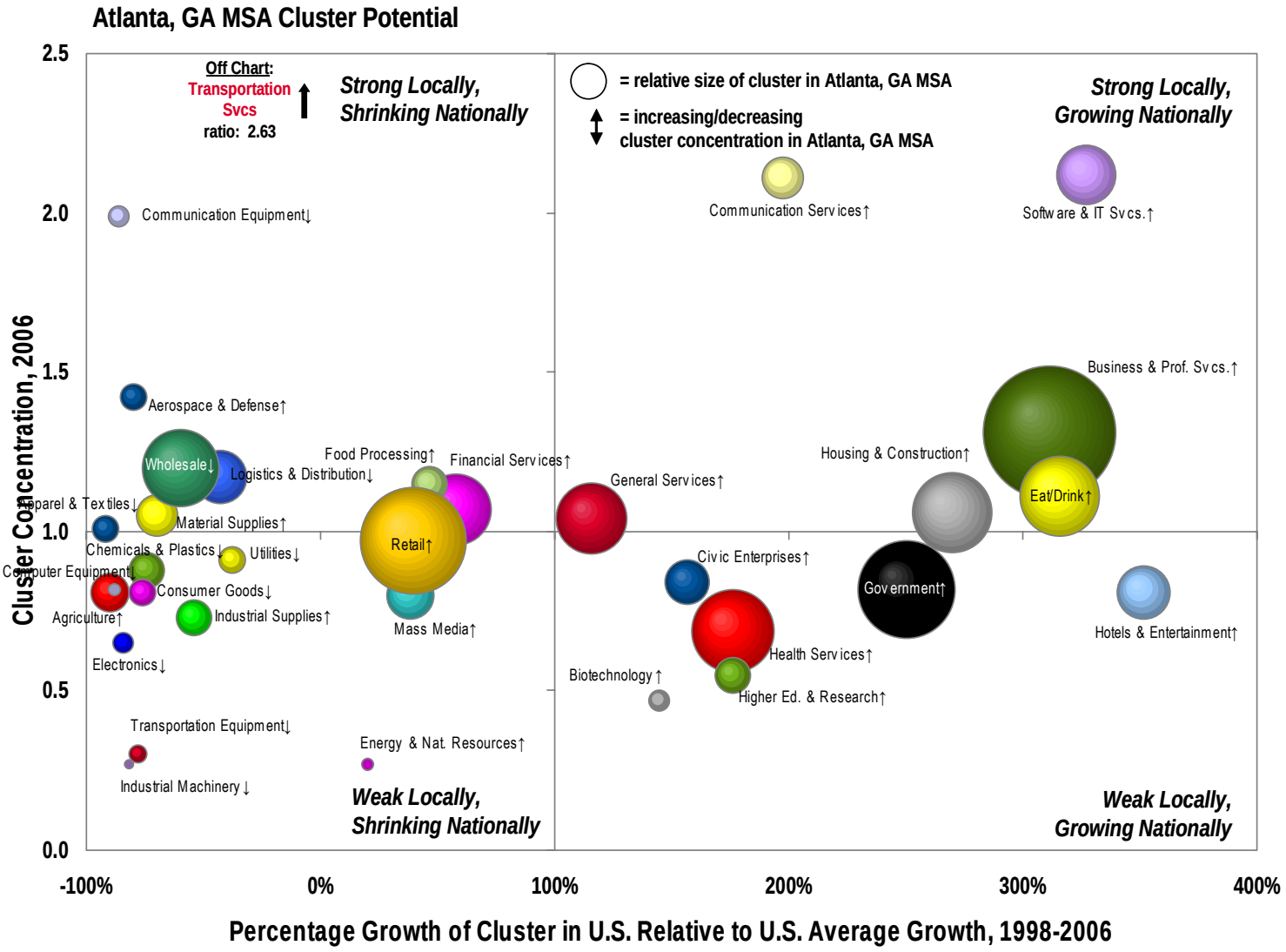
WHICH CLUSTERS ARE GETTING STRONGER IN THE ATLANTA METROPOLITAN STATISTICAL AREA?

Target selection must identify existing, strong clusters in the surrounding region not just the immediate area. Analysis of the region should also consider how clusters are gaining or losing strength. Clusters can gain strength in two ways:

1. **Above-average growth nationally.** This will result in a larger cluster employment concentration in the region.

2. **An increasing cluster concentration ratio.** A growing cluster concentration in a region indicates that a cluster is capturing a larger share of new jobs in the U.S., suggesting an improvement in the region's attractiveness and competitiveness for the cluster.

We show these two forces in the following diagram:



The Atlanta Metropolitan Statistical Area enjoys key cluster strength in:

Software - The software industry is comprised of computer programming services, prepackaged software, data processing, and information retrieval services. Demand for software is driven by efficiencies derived through computer automation and data management.

Communication Equipment – The occupational employment that supports this industry will be essential in recruiting and retaining companies in industries that require skilled manufacturers.

Aerospace & Defense – This industry consists of civilian and military aircraft, space vehicles, and missiles. Aircraft suppliers provide parts and machinery for aircraft assembly and maintenance. These parts include engines, interior components, avionics, and aircraft hardware such as landing gear. These suppliers are important for both the assembly and maintenance of aircraft. The aircraft industry's customers include the military, commercial airlines, and general aviation.

Business & Professional Services– This sector is comprised of companies that provide a broad base of services for business customers including legal, back office, marketing, and consulting support. A strong business and professional services cluster is a competitive asset for attracting companies in other industries as this represents an existing base of companies to meet business support needs.

Logistics and Distribution – Atlanta's location provides immediate proximity to numerous large metropolitan areas and its transportation assets has positioned it well for growth in this industry.

Food Processing - The food processing industry complements the existing agricultural industry in Georgia. Fruits and vegetables can be transported quickly and easily from nearby farms to food processing plants, allowing the goods to remain fresh. Atlanta also offers direct access to large markets, which is a necessity for food processing.

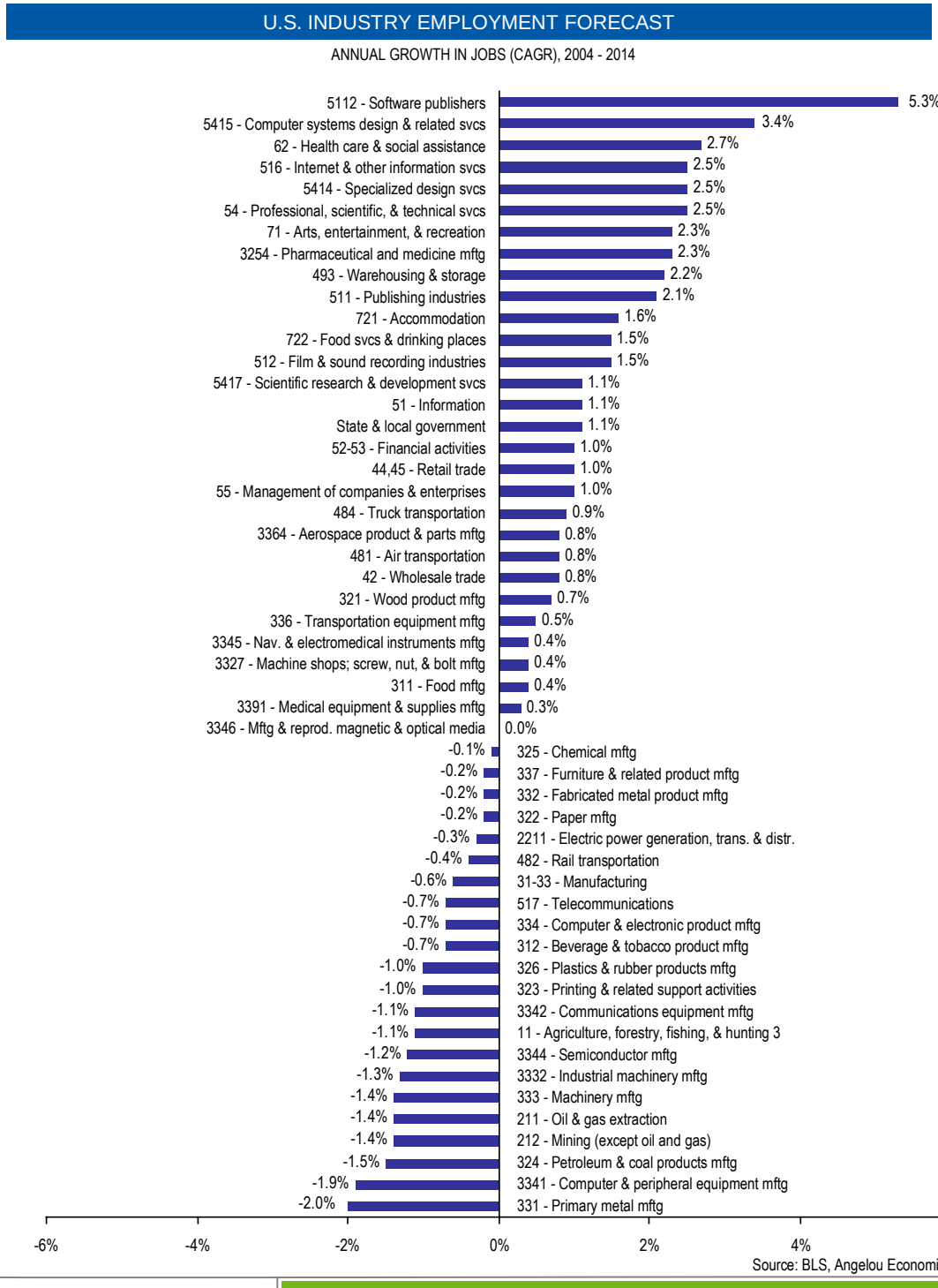
Financial Services - The Financial Services industry is comprised of commercial banks, savings institutions, financial leasing firms, and insurance companies. Financial service providers include equipment leasing companies, stockbrokers and investment banking firms, and back-office credit operations.

In addition to Atlanta's large clusters, the region is also experiencing strong growth in the following clusters. These clusters hold promise for the region's future economic growth:

- **Higher Education and Research**
- **Health Services**
- **Biotechnology**
- **Mass Media**
- **Hotels and Entertainment**

Which industries are growing nationally?

In general, communities should target industries that are growing, although targets can still include low growth or negative growth targets as well. The following chart shows the anticipated growth trends for specific industries and clusters:



Technology sectors such as those relating to the use of computers and networks promise a high level of growth from 2004 to 2014. Productivity improvements continue to be felt in traditional companies that adopt new computer technologies. The highest rates of growth will be found in design and service sectors such as **Computer Systems Design** (3.4% per year), **Internet Services and Data Processing** (2.5%), and **Packaged Software Publishers, not custom** (5.3%)**. Electronics**, **Semiconductor**, and **Computer Manufacturers** will shed jobs as more and more production is moved to low cost facilities overseas.

Health Care will be a high growth industry, as the aging U.S. population becomes the dominant demographic story over the next 20 years. By 2010, nearly 15% of the population will be seniors 65+, a period in one's life where nearly half of health care expenditures occur. The senior population will be growing four times faster than the overall U.S. population by 2015. In 1950, there were 16 workers per retiree; today, the ratio is less than four to one, and by 2030, it will be two to one. With this massive demographic shift occurring, an estimated 4.3 million additional jobs will be created in the health care industry by 2014, with residential and elderly care receiving the highest rates of growth. **Medical Instruments** and **Scientific R&D** will experience modest growth. **Biotechnology** and **Pharmaceuticals** are expected to see strong employment in the near and long term.

The steady growth of the overall U.S. population will drive the growth of industries that supply, feed, house and entertain us. Distribution of consumer goods will experience high growth: **Warehousing and Storage** (2.2% per year), **Truck Transportation** (1.0%), and **Wholesalers** (0.8%). **Entertainment and tourism** industries will see high growth, and end-sales industries such as **Retail Trade** and **Restaurants** will see moderate growth. The **Construction** industry tends to do well during periods of overall economic growth, and is expected to experience modest growth.

Local and State Government will see annual job growth of 1.1%, slightly lower than total employment growth (1.3%), as urbanization continues and federal jobs are kept almost flat. Increasing wealth in the U.S. will require a larger **Financial Services** sector, which will also grow slightly faster than the population.

Manufacturing industries overall can expect continued job losses in the future due to continued technological improvements in the manufacturing process, large scale operations moving overseas, and for some, overall declines in final demand. Smaller, niche-manufacturing sectors will see modest growth: **Aerospace, Medical Equipment**, **Wood Products**, **Machine Shops**, and **Food Processing**. Other sectors that will see falling job levels are **Agriculture**, **Oil and Gas Extraction and Refining, Chemicals**, **Apparel Manufacturing**, and **Rail Transportation**.

As the U.S. economy moves away from manufacturing and into service related industries, the occupational profile of the country will change dramatically. Through a careful analysis of an area's established and emerging industries, community leaders will be able to anticipate occupational shifts at the local level and better prepare the labor force for the necessary skill sets.

The Role of Dislocating Industries

Most communities make the right choices to preserve their existing industry base, and when these industries are shrinking, communities make every effort to forestall job losses (e.g. communities in traditional manufacturing or facing base closures). We label these industries "Dislocating," as they are undergoing a basic restructuring in geography, technology, or markets.

At a national level, shrinking industries may still be an appropriate target for some communities if:

- **The industry is undergoing restructuring in order to be more competitive.** This often means that a company may relocate to another city, or may spinout divisions to more competitive locations. For example, the automotive industry is expected to create few net new jobs and have moderate growth rates nationally, but is migrating facilities from the Upper Midwest to the South.

- **The industry suffers a high rate of startup and failure.** While the U.S. South's economy grew as a result of some companies relocating from northern cities, most of the job growth occurred at companies that were founded in the South. As industries shrink in one region of the U.S., more competitive firms pop up and take market share. The success of financial services firms in the South and Midwest demonstrates the role that a competitive environment can play in an industry that suffers high churn.

- **Job loss is due primarily to technological investments, not declining revenue.** As some industries get more capital-intensive, they require fewer workers (such as the semiconductor industry), but their strategic value to a regional economy still grows (a higher economic job multiplier or higher local tax payments).

- **The region has a unique comparative advantage in a consolidating industry.** Due to declines in demand for their end product, or other economic pressures, some industries may be forced to consolidate operations into very select areas of the country. Even though the overall industry may be in decline, a desirable region may be able to have an almost monopolistic hold on the cluster.

The following sectors are considered "Dislocating" clusters (slow U.S. growth, but strong local strength) in the Atlanta MSA that can be targets, but deserve caution. These industries will be difficult to grow because of national trends; however, there may be opportunities for restructuring and/or targeting emerging niche segments within the clusters:

- **Agriculture**
- **Chemicals and Plastics**
- **Consumer Goods**

COMPETITIVE ASSET INVENTORY FOR ATLANTA AND THE ATLANTA UNIVERSITY CORRIDOR

Are there local assets that offer a unique competitive advantage to the target industry?

Report 1, the *Comprehensive Assessment*, evaluated the AUC and Atlanta on key economic, demographic, and infrastructure factors that limit or support the ability of the region to support a specific industry. Below, we provide a brief list of the local assets that are strengths for industry development and barriers that the region will need to work to mitigate.

We evaluate the region's core assets for industry recruitment and expansion by grouping assets in two categories: **core strengths**, and **barriers**:

Core Strengths

Location – One of Atlanta's core strengths lies in its proximity to large metropolitan areas and the east coast**.** This provides the area with countless benefits, including access to research centers, venture capital, and a growing educated workforce.

Overall Tax Structure - The overall tax rates including state and local sales taxes are less than national averages. Although local residents repeatedly expressed concerns regarding the tax burden, the Georgia state and local taxes are $3,564 per capita. This is less than the U.S. average of $4,072. Additionally, the cost of living index shows that the Atlanta MSA is four points below the national average.

Education - The presence of the six colleges and universities in the Atlanta University Corridor provide an extremely competitive asset for the region. According to students, faculty, and national recruiters the programs do an excellent job of preparing graduates for professional life through a variety of competitive degree programs.

Diversity – The Atlanta MSA is a diverse region, which is not unusual for a large metropolitan community. Blacks account for 28.6% of the area's population, Whites 54.0%, Asian 4.2%, Hispanic 8.6%, and Other 4.6%. The U.S. breakdown is as follows: Blacks 12.2%, Whites 61.2%, Asian 4.4%, Hispanic 14.5%, and Other 7.7%.

Business Climate – In Forbes' ranking of the cost to do business in the 150 largest metropolitan areas (1=best, 150=worst), the Atlanta MSA was rated the 37th least expensive place to do business. This index is based on cost of labor, utilities, taxes, and office space. When compared to other similarly sized cities in its geography, the Atlanta MSA cost of living and doing business is low.

Barriers

Shrinking Share of City Population – Population growth in the Atlanta University Corridor has remained virtually flat over the past fifteen years; since 1990, the area has experienced average annual growth of just *one-tenth of one percent*. During this same period, the City of Atlanta has grown by nearly 20 percent and the Atlanta MSA has increased its population by over 60 percent. As a result of lagging growth, the share of Atlanta's population living within the Atlanta University Corridor area has steadily dropped. In 1990, for example, over 28 percent of the City's population lived in the Atlanta University Corridor area. Today, this figure is less than 25 percent.

High Unemployment Rate and Low Educational Attainment - The unemployment rate in the AUC for 2005, at 12.5%, was well above the U.S. average of 5.5%. In addition, the educational attainment in the AUC is 16.5% compared to the U.S. at 27.7%. Fortunately, the AUC can draw on the positive attributes of the Atlanta MSA, which has an unemployment rate of 4.7% and an educational attainment of 35.1%.

Lack of a four-year research university in the AUC - Research universities play a large role in the creation of start-up companies and the commercialization of technology. They supply many resources, such as lab space, access to professors, an educated workforce, and funding opportunities. The closest research institution in the AUC is the Morehouse School of Medicine, but the area does have access to numerous institutions throughout the metropolitan area.

Lack of an Industry Presence in the AUC – There are limited current industry clusters and depth in existing clusters. Also, the lack of diversity in retail, recreational, and entertainment amenities in the AUC is a significant deterrent to attracting a young professional population and expanding business activity.

Quality of life –The crime rate in the AUC is above average and the cost of living is high relative to median household incomes. With a median household income of $21,391, the AUC is well below the U.S. median household income of $46,350

DOES THE TARGET MATCH THE COMMUNITY'S GOALS?

Public opinion and community input is as critical to the industry cluster selection process as data and asset analysis. **The growth of industry clusters requires a community effort.** Local government officials, economic developers, business leaders, and the general public must be **united in their vision** and **enthusiastic in their support** to grow the region's presence in industry clusters that are unanimously viewed as desirable. This is particularly critical when a region lacks a strong local concentration in a targeted cluster. The lack of cluster concentration does not rule out an industry as a target, but it does indicate that community efforts have to be more focused and enhanced to successfully grow the desired industry locally.

During the course of our project, AE talked to numerous public and private sector leaders in both interviews and focus groups. Many of these individuals represented key industries and support institutions currently located in the region. Through this public input process, we received a great deal of information regarding the types of businesses that the residents of the Atlanta University Corridor desire for the future of their community. Three overarching community goals were the most prominent:

- Industries that allow **"Balanced Growth"**
- Industries that are **"Clean"** and **"Environmentally Sensitive"**
- Industries that pay **"Higher Wages"** and employ **"Higher Skilled Workers"**

WHAT WILL THESE TARGETS LOOK LIKE?

These types of development will be high quality and of varying footprints:

Example: **Advanced Manufacturing / Flex Industrial**

Typical specs:

- 50,000 - 200,000 s.f. – Flex industrial
- $10-20 million investment in building and equipment
- 100 - 500 jobs
- Average wage for manufacturing = ~$69,000/year,
- Average wage for advanced technology R&D = ~$75,000/year

Example: **Mixed Use / Business and Financial Service Office**

Typical specs:

- 80,000 s.f. – Mixed use retail/ Class 'A' office
- $8 million investment in building and inventory
- 200 jobs
- Average wage retail = ~$25,000/year,
- Average wage business and financial services = $57,500/year

Example: **Technology Services/ Software/ Life Sciences**

Typical specs:

- 50,000 s.f. - Class 'A' office
- $5 million investment
- 200 jobs
- Average wage = ~$80,000/year

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