

# | Albemarle County Existing and Target Industry Analysis

## Approach

This report for Albemarle County provides an understanding of the industry groups currently present in the county economy. Since at least 80 percent of economic growth within a county is typically generated by innovative existing industry, these groups must be understood and supported by economic developers.

In this study, existing industry groups have been analyzed in terms of growth, level of specialization in the local economy, degree of connectedness to the county economy and competitiveness. The region's strategic focus on balancing growth with maintaining the outstanding quality of life is also central to the analysis.

Target industry groups have been identified for the county and screened to select sectors that have the strongest local rationale and best industry outlook. New and emerging industry, technology assets, workforce and locational strengths were considered in screening for select target sectors.

The select target sectors have been narrowed to a relatively precise focus in order to provide the most meaningful guidance to the users of this report. The list of target sectors is a list of optimal targets and should not be considered to exclude related sectors. These sectors within the targeted industry group are also generally well-suited to the county.

All counties in the Thomas Jefferson Partnership for Economic Development Region (TJPED) can benefit from the successful attraction and expansion of businesses of the regional targets that are identified in the *Regional Target Analysis* of this report.

## Existing Business Clusters and Major Industry Groups

The economy of Albemarle County is comprised of 14 major industry groups or clusters listed in Table 1. Businesses within these 14 groups represent 60 percent of all jobs in the county. Information on all other industries is presented in Appendix F.

**Table 1**  
*Albemarle County*  
*Major Business Clusters/Industry Groups*

	Jobs	Five-Year Change	Five-Year Change (%)	Specialization (LQ)	Average Earnings	Jobs Multiplier	Firms
Education & Knowledge Creation	9,392	204	2.2	5.51	\$62,298	2.04	55
Business & Financial Services	8,924	1,865	26.4	1.05	\$50,608	5.73	554
Arts, Entertainment, Recreation & Visitor Industries	4,012	285	7.6	1.45	\$24,145	1.53	98
Information Technology & Telecommunications	3,258	120	3.8	1.15	\$78,685	1.65	193
Biomedical/Health Services	3,123	-793	-20.2	0.57	\$48,758	1.73	102
Energy & Construction	2,994	461	18.2	0.81	\$69,170	6.31	185
Defense & Security	2,690	-290	-9.7	0.92	\$80,142	2.02	119
Advanced Materials	1,945	-211	-9.8	0.96	\$93,687	1.62	47
Agribusiness, Food Processing & Technology	1,576	307	24.2	0.74	\$22,106	1.82	62
Computer & Electronic Product Mfg	1,381	-343	-19.2	2.97	\$100,709	1.58	14
Printing & Publishing	1,016	157	18.3	0.85	\$43,172	1.83	75
Transportation & Logistics	795	-44	-5.2	0.38	\$46,158	1.46	39
Forest & Wood Products	696	-178	-20.4	0.69	\$39,777	2.39	59
Apparel & Textiles	338	-51	-13.1	0.64	\$36,003	1.36	26
<b>Benchmarks</b>							
Albemarle County	70,429	4,196	6.3		\$49,809		
Virginia	4.7 M	23,688	0.5		\$56,533		
Nation	173 M	(895,331)	(0.5)		\$52,217		

Source: Economic Modeling Specialist, Younger Associates

Seven of the 14 groups added employment over the last five years, with five of these groups exceeding the county-wide growth rate of 6.3 percent. Six of the major industry groups in Albemarle County have average annual earnings greater than the overall averages in the state and nation.

The University of Virginia is at the core of the *Education & Knowledge Creation* group, helping to make it the largest group in the county, with 9,392 employees. Over the last five years, the *Education & Knowledge Creation* group increased by 204 jobs or 2.2 percent. Average annual earnings for the group equal \$62,298, which is 25 percent above the overall Albemarle County average of \$49,809.

*Business & Financial Services* represents the second largest group, comprised of 8,924 workers and 554 firms. Over the last five years, the *Business & Financial Services* group increased by 1,865 workers or 26 percent, experiencing both the largest absolute and percentage increases of any group in the county. Dominant subgroups of this industry in Albemarle County include *Portfolio Management, Payroll Services* and *Computer Facilities Management Services*. Examples of businesses in the group are State Farms Operations Center, Coventry Health Care Insurance, Financial Analysts Journal and Stellar One Corporation. Average annual earnings for the group equal \$50,608, which is 1.6 percent above the overall Albemarle County average.

*Arts, Entertainment, Recreation & Visitor Industries* is the third largest industry group with 4,012 workers. Major subgroups within this industry group in Albemarle County include *Museums, Historical Sites, Hotels* and *Golf Courses and Country Clubs*. Over the last five years, the group has grown by 285 jobs or 8 percent. Average annual earnings for the group equal \$24,145, which is 52 percent below the overall Albemarle County average.

Employing 3,258, the *Information Technology & Telecommunications* industry group is the fourth largest in the county. Overall, this group has some overlap with the *Business & Financial Services* group, but the dominant subgroups in Albemarle County are *Computer Systems Design Services, Custom Computer Programming Services, Wired Telecommunications Carriers* and *Semiconductor and Related Device Manufacturing*. In Albemarle County the industry groups *Defense & Security* has substantial overlap with *Information Technology & Telecommunications*. Over the last five years, the group has grown by 120 jobs or 4 percent. Average annual earnings for the group equal \$78,685, which is 58 percent above the overall Albemarle County average.

The industry grouping of *Biomedical/Health Services* consists of 102 firms with 3,123 total jobs. This is down 793 jobs over the past five years, not including growth shown in the *Offices of Physicians*, which are not part of the strict definition of the industry group, according to Purdue University. When the growth of 1,427 jobs in the subgroup *Offices of Physicians* is considered, the larger industry group added 634 jobs over the past five years. The average wage for this industry group is slightly lower than the county average for all industries.

In Albemarle County the *Biomedical/Health Services* has two large subgroups, *Biosciences/Medical Devices* and *Health Services*. The *Health Services* subgroup, which contains *Nursing Care Facilities*, has markedly lower average wages than the higher-skilled *Biosciences/Medical Devices* subgroup.

A comparison of the jobs multipliers in Table 1 presents a measure of the expected impact of job gains or losses in each industry group as they ripple through the county. The multiplier offers an indication of the connectedness of each group within the Albemarle County economy in terms of how many indirect jobs are created to support each job in an industry group. The *Energy & Construction* group has the highest jobs multiplier of 6.31, which means that another 5.31 jobs will be created across all industry groups in the county to support the economic activity generated by one direct job. The *Business & Financial Services* also has a high jobs multiplier of 5.73, which indicates a high level of connectedness with other industries (suppliers, support services, customers, etc.) located in the county.

## Industry Growth and Specialization

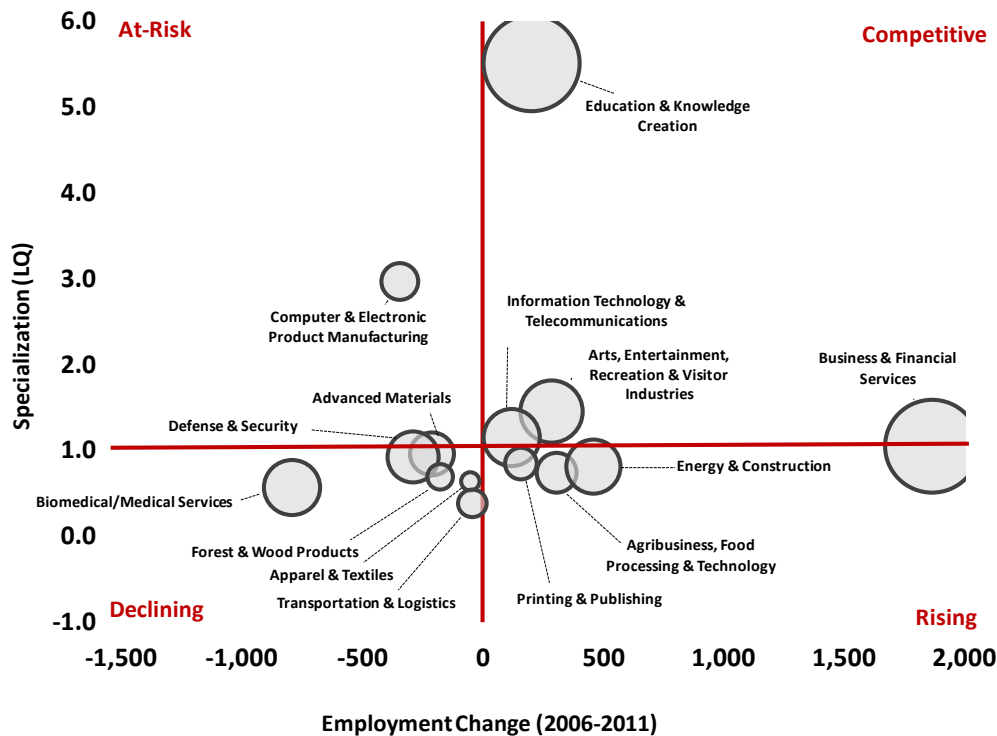
Also shown in Table 1 is the location quotient (LQ), which indicates the level of specialization in each industry group. The LQ compares the concentration of employment in an industry group in the county to the concentration of employment in that same group in the U.S. workforce, where the U.S. concentrations is stated as 1.

Among the 14 major industry groups in Albemarle County, five demonstrate levels of specialization above the nation by having a location quotient above 1.0. *Education & Knowledge Creation* has the highest degree of local specialization at 5.51. This means that the county is more than five and a half times more specialized in this industry group than the nation as a whole.

Next is the *Computer & Electronic Product Manufacturing* group with an LQ of 2.97, followed by *Arts, Entertainment and Recreation & Visitor Industries* at 1.45. The other two groups with an LQ above 1, *Information Technology & Telecommunications* and *Business & Financial Services*, register only a small degree of specialization at 1.15 and 1.05, respectively. Among the five locally specialized groups, only *Computer & Electronic Product Manufacturing* lost employment over the last five years.

Figure 1 below compares the level of specialization and the local absolute growth of the major industry groups in the county.

**Figure 1**  
**Albemarle County**  
**Growth & Specialization**  
**Major Business Clusters/Industry Groups**



Size of bubble represents 2011 employment  
Source: Economic Modeling Specialist, Younger Associates

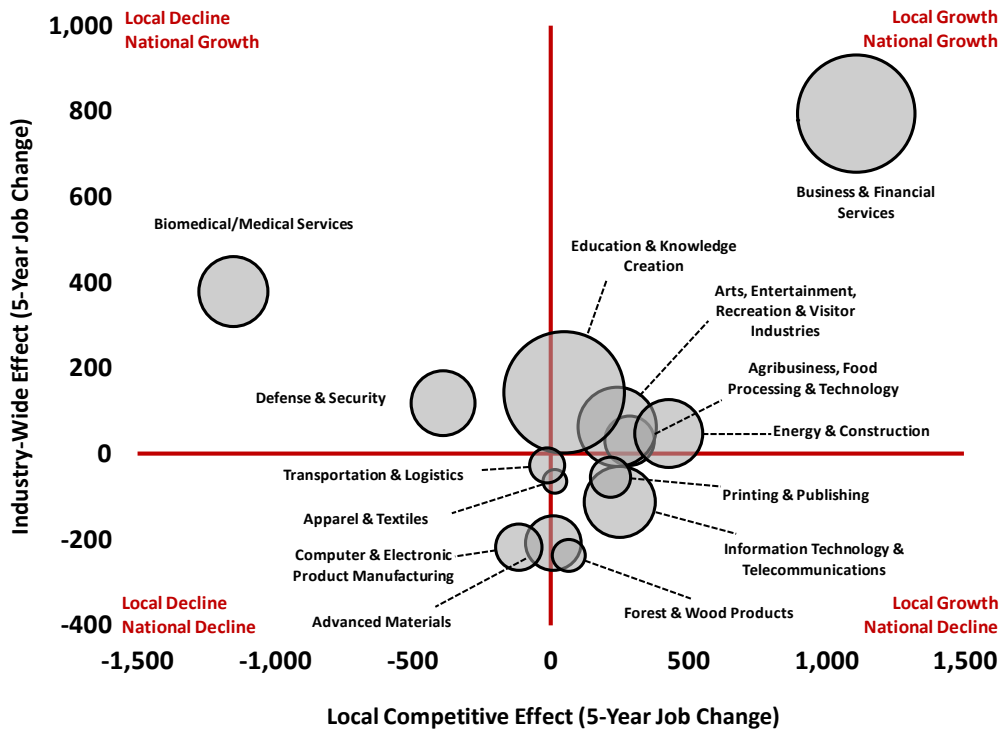
# Relative Competitiveness

Measuring relative competitiveness among the fourteen major industry groups in Albemarle County helps uncover unique local competitive advantages and industry-specific growth. The analysis, as illustrated in Figure 2, disaggregates employment change into three effects: national, industry-wide and the local competitive effect. The local competitive effect is the employment change that is not explained by national or industry-wide trends and may indicate local competitive advantages (or disadvantages). The analysis, also known as shift-share, does not answer the underlying causes for the growth or decline.

The *Business & Financial Services* industry group demonstrates strong industry-wide and national competitive effects, yet the local competitive effect resulted in more growth over the past five years than those trends would have predicted. Four other industry groups had positive industry-wide growth, plus some additional competitive effect.

Two groups, *Printing & Publishing* and *Information Technology*, outperformed the declining national and industry trends. The *Computer & Electronic Product Manufacturing* group, and to a lesser degree, the *Transportation & Logistics* group, experienced industry-wide declines, yet the local job losses were greater than the national trend would predict, indicating possible local disadvantages or weaknesses that should be examined by local economic development leaders.

**Figure 1**  
**Albemarle County**  
**Five-Year Competitiveness**  
**Major Business Clusters/Industry Groups**



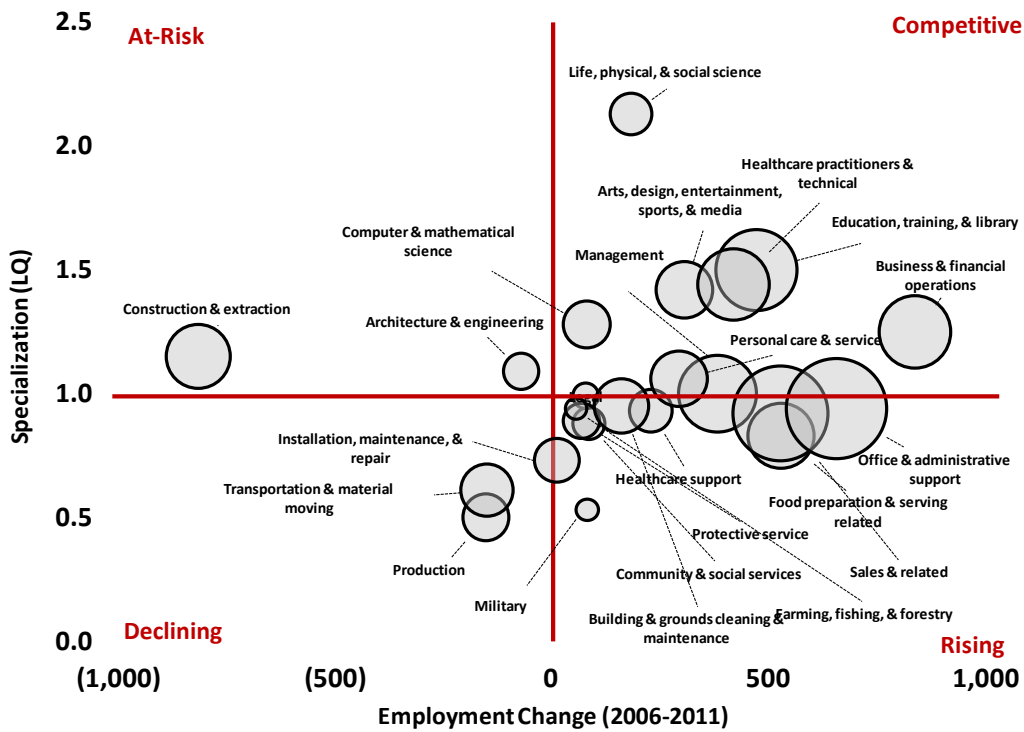
Size of bubble represents 2011 employment  
 Source: Economic Modeling Specialist, Younger Associates

## Occupational Growth and Specialization

Recognizing Albemarle County’s local occupational strengths and current job trends is just as critical as understanding its industrial position. An examination of local employment by major occupational groups confirms the county’s unique specialization in education and research activities (Figure 3 and Table 2). The highest measure of occupational specialization is in *Life, Physical, & Social Science* and the second highest is *Education, Training & Library*.

Positions in the *Education, Training & Library* group have the highest median hourly wages in the county at \$31.50, followed by *Healthcare Practitioners & Technical* and *Computer & Mathematical Science*, at \$31.24 and \$29.09 respectively. The county-wide median hourly wage per hour is \$18.50 while the overall state average is \$19.37.

**Figure 2**  
**Albemarle County**  
**Growth & Specialization**  
**Major Occupational Groups**



Size of bubble represents 2011 employment  
 Source: Economic Modeling Specialist, Younger Associates

**Table 2**  
**Albemarle County**  
**Growth & Specialization**  
**Major Occupational Groups**

	<b>Jobs</b>	<b>Specialization (LQ)</b>	<b>Five- Year Change</b>	<b>Median Hourly Wage</b>
Life, physical, & social science	1,553	2.13	179	\$23.51
Education, training, & library	5,998	1.5	468	\$31.50
Healthcare practitioners & technical	4,671	1.44	416	\$31.24
Arts, design, entertainment, sports, & media	2,945	1.42	302	\$12.60
Computer & mathematical science	1,996	1.28	78	\$29.09
Business & financial operations	4,767	1.25	833	\$19.82
Construction & extraction	3,678	1.15	-817	\$16.50
Architecture & engineering	1,160	1.09	-74	\$27.20
Personal care & service	2,901	1.06	290	\$10.99
Management	5,509	1	378	\$24.04
Legal	576	0.99	75	\$26.60
Building & grounds cleaning & maintenance	2,637	0.95	158	\$10.74
Office & administrative support	9,127	0.94	652	\$14.56
Farming, fishing, & forestry	430	0.94	53	\$12.09
Healthcare support	1,675	0.93	226	\$12.84
Sales & related	8,136	0.92	524	\$11.64
Protective service	1,177	0.89	66	\$15.72
Community & social services	915	0.88	82	\$18.66
Food preparation & serving related	3,908	0.83	525	\$11.19
Installation, maintenance, & repair	1,781	0.73	9	\$18.54
Transportation & material moving	2,487	0.61	-151	\$14.47
Military	438	0.53	79	\$23.29
Production	1,967	0.5	-154	\$14.85
<b>Benchmarks</b>				
Albemarle County				\$18.50
Virginia				\$19.37
Nation				\$19.94

Source: Economic Modeling Specialist, Younger Associates

## Technology Assets

Technology Assets are organizations, companies and facilities in a region that create knowledge or employ knowledge workers in significant numbers, so that they are sources of employment growth in a region. Lists of candidate technology assets were identified by reviewing patents, Small Business Innovation Research (SBIR) grants, Small Business Technology Transfer (STTR) programs and large federal defense contract awards. Then, each asset was reviewed to classify it by location, industry sector and number of employees. The complete list of assets for the region is listed in chapter Appendix E and further discussed in the Technology Assets Inventory.

Albemarle County is home to a substantial portion of the technology assets in the Thomas Jefferson Partnership for Economic Development region, especially the University of Virginia. The University assets comprise research centers in the Medical School that support biosciences and School of Engineering and Applied Science centers that develop technologies for medical devices, information technology, aerospace and other national security applications, advanced materials, including nanoscale, and a variety of energy technologies.

In addition, Albemarle County is home to a significant number of companies with strengths in the same technologies as the University. The *Biomedical/Medical Device* cluster is the largest of the technology sectors based on number of companies, and has two subsectors, bioscience and medical devices. Most of the local companies are in the bioscience subsector, although only two have more than 50 employees. The majority of the smaller companies in bioscience are spin-offs of the University of Virginia.

While the *Biomedical/Bioscience* subsector in the county has an impressive showing in terms of numbers of firms, most are very small and young. The technology asset inventory clearly identified that many of the biotechnology companies left the region, while none of the other sectors showed this pattern in the TJPED region.

Interviews with knowledgeable industry observers point to the lack of venture capital in the region as a key challenge. Companies in this sector require enormous investment to grow to a sustainable size and often require equity capital to reach this stage. For many small companies, the appropriate path to commercialization is to sell the company to a large pharmaceutical company or distributor that can manufacture and market the products. It can be difficult for a region, even one with as rich an intellectual position as the TJPED region, to maintain its start-up community in biotechnology.

Microaire, a medical device manufacturer, with between 50 and 500 employees, is an example of the type of light manufacturer that can be a target for the region. Light manufacturing that evolves from research and development in Charlottesville and Albemarle County can potentially locate in the University Parks. However, if the building and design code restrictions of park facilities are not suitable for the level of manufacturing involved, or if growth exceeds the capacity of the parks, the Thomas Jefferson Partnership for Economic Development for Economic Development can play a role in helping local growth companies find a more suitable location in other parts of the region. By effectively shepherding growing companies within the region to suitable expansion sites, the companies are not lost to the region.



Two other sectors that have significant technology assets in Albemarle County are *Information Technology* and *Defense Security*. In the TJPED region, these two sectors have a great degree of overlap. The largest employer in the information technology sector is GE Intelligent Systems, previously a joint venture of GE and FANUC. This manufacturer makes intelligent robots and control software.

The *Defense and Security* sector also has significant technology assets in the region and is anchored by two federal agencies, Defense Intelligence Agency (DIA) and the National Ground Intelligence Center. A major corporate asset in this sector is Northrup Grumman (previously Sperry Marine and Litton). In addition, at least eight defense contractors have a presence in Albemarle County and contribute to this combined defense technology cluster. A large portion of the defense technology developed here is linked to information technology and the analysis of imagery, but with specialized defense features.

Defense contractors that have moved to the region recently, mainly to be close to their clients, DIA and NGIC, include Battelle, CACI, NIITEK and SAIC. These companies illustrate the opportunities created when federal agencies move into a region, although the quality of workforce, quality of life, good broadband service and access to Washington, DC help guide these companies to a specific location in the TJPED region.

While this sector is somewhat vulnerable to changes in the federal budget, programs that support the intelligence community are less vulnerable. There does appear to be a trend toward federal agencies outsourcing critical data centers to more rural regions, where lower costs and distance from Washington, DC are a benefit.

Rural outsourcing is the phenomena of moving key assets, especially data centers, to rural parts of the US, rather than sending them offshore. The federal government and large financial institutions are increasingly turning to this option, as their data is too sensitive to be managed offshore. The events of 9/11 also emphasized to these organizations the criticality of having alternative data centers to the main operations located in Washington, DC or New York City.

## New or Emerging Industries

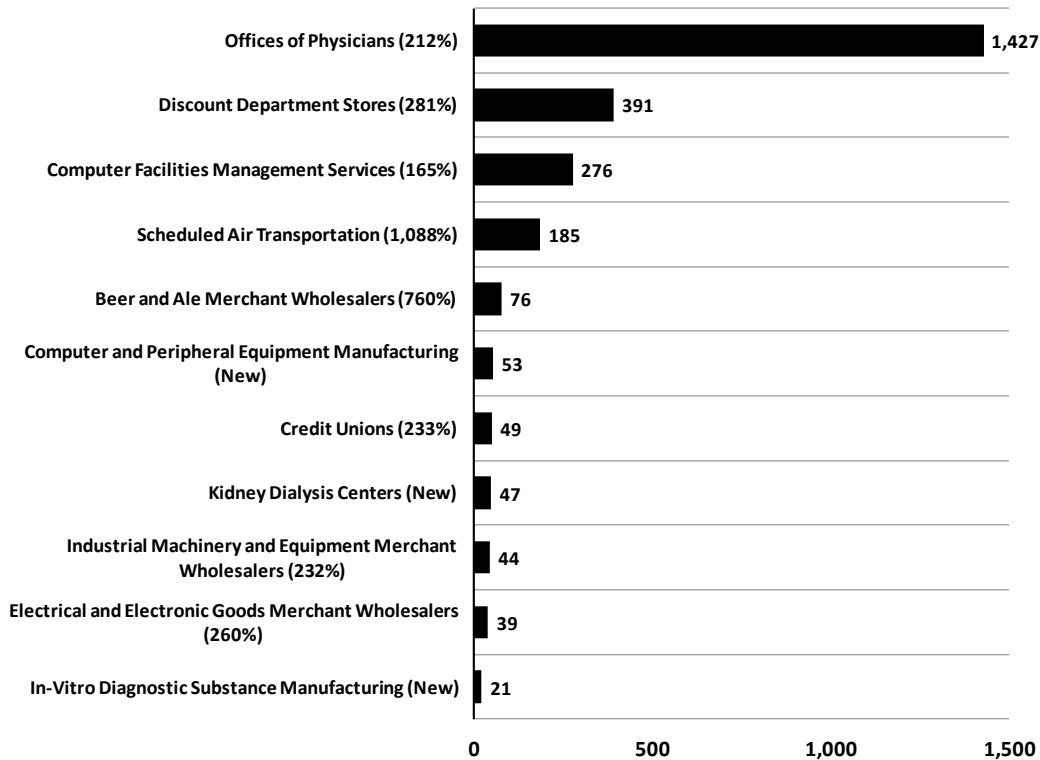
New or emerging industries are industry sectors that are new to the county within the last five years, or sectors that have recently experienced rapid employment growth. In some cases the industry may be represented by a single new or expanding firm. New or emerging industries may provide an early indication of changing conditions or reveal new opportunities.

Eleven industries have experienced rapid growth since 2006, growing by at least 100 percent (Figure 4 and Table 3). Percentages of growth can be deceptive when the beginning base is low. The largest absolute increases occurred in *Offices of Physicians*, which in this case is indicative of an administrative or inter-market move.

Three of the rapidly expanding industries were in *Wholesaling*. The largest growth in *Wholesaling* was in Beer and Ale, which is in keeping with the regional growth and specialization in beverage processing.

Of the three new industries to Albemarle County, two are manufacturing: *In-Vitro Diagnostic Substance Manufacturing* and *Computer and Peripheral Equipment Manufacturing*. The former is linked to the bioscience technology asset group, while the latter is a subset of the information technology asset groups.

**Figure 4**  
*Albemarle County*  
*New & Emerging Industries*  
*2006-2011 Employment Change*



Source: Economic Modeling Specialist, Younger Associates

**Table 3**  
**Albemarle County**  
**New & Emerging Industries**  
**2006-2011 Employment Change**

	<b>2006 Jobs</b>	<b>2006-2011 Change</b>	<b>2011 Jobs</b>	<b>Average Earnings</b>
Offices of Physicians (%)	672	1,427 (212%)	2,099	\$103,426
Discount Department Stores (%)	139	391 (281%)	530	\$21,806
Computer Facilities Management Services (%)	167	276 (165%)	443	\$64,573
Scheduled Air Transportation (%)	17	185 (1,088%)	202	\$42,443
Beer and Ale Merchant Wholesalers (%)	10	76 (760%)	86	\$52,916
Computer and Peripheral Equipment Manufacturing (%)	0	53 (new)	53	\$59,998
Credit Unions (%)	21	49 (233%)	70	\$43,059
Kidney Dialysis Centers (%)	0	47 (new)	47	\$37,896
Industrial Machinery and Equipment Merchant Wholesalers (%)	19	44 (232%)	63	\$50,421
Electrical and Electronic Goods Merchant Wholesalers (%)	15	39 (260%)	52	\$71,916
In-Vitro Diagnostic Substance Manufacturing (%)	0	21 (new)	21	\$86,445

Source: Economic Modeling Specialist, Younger Associates

## Optimal Target Markets

Optimal targets should both provide solid business rationale for firms looking to relocate or expand in Albemarle County and provide Albemarle County residents with a strong reason to support their presence in the county.

Screening criteria for optimal targets include:

- High relative wages
- Support or strengthen existing industry groups/clusters
- Make use of the location's unique attributes, including technology assets
- Leverage local/national/global trends
- High relative jobs multiplier
- Utilize incumbent occupational skill-sets
- Match area's educational infrastructure and postsecondary completions
- Match the area's capacity and desire for growth and development
- Potential to employ underemployed and unemployed

Environmental suitability for the region was also a consideration in selecting target industry groups. None of the optimal targets would have a detrimental impact on the environment under typical circumstances for the industry group. Protection of natural resources, sustainability, and compatibility with the quality of life in the region were considerations. The size of the industry operating footprint, the impact on highway traffic, noise considerations, and esthetics were also taken into account for Albemarle County and the City of Charlottesville.

For each target area matching the screening criteria, the final selected targeted industries had to meet two additional conditions: positive projected employment growth over the next five years and industry-specific earnings greater than the overall local or state average. Based on the screening criteria, optimal targets for Albemarle County fall into three major categories. A set of complementary targets that build upon local competitive advantages has been identified as well. Selected target sectors are listed and described in Tables 4-9.

## **Target Industry Group: Bioscience and Medical Devices**

Albemarle County has demonstrated strength and competitive advantages in the *Bioscience and Medical Device* industry group. Potential for growth in this group is primarily generated by start-ups and related commercialization opportunities emerging from research activities at the University of Virginia. As shown in Tables 4 and 5, select target sectors have very high relative wages and offer the opportunity for substantial growth.

With its highly regarded medical school and biomedical engineering department, the University consistently produces new technologies related to this industry group. To maximize the economic opportunity of a growing number of start-ups, Albemarle County could increase its support of these embryonic, potentially high-paying enterprises.

However, noting that in recent years many start-up bioscience companies moved out of the area to gain significant venture funding or left after they were acquired, the county may wish to focus even more narrowly on the medical devices subsector. This subsector has a potential to create light manufacturing. These light manufacturing operations typically include relatively lower workforce skill requirements and tend to help anchor the company in a location.

An alternative strategy would be to build investor networks in the TJPED region, or to attract private equity firms to base key operations in the region. The feasibility of this strategy would have to be fully explored, but desirable quality of life, presence of high net worth organizations, proximity to major markets and broadband infrastructure could potentially support this strategy.

The occupations required by these industries include management and executive positions, a wide variety of life and physical scientists, as well as production positions. The life and physical scientists are well represented in the county, while production workers and science technicians may represent a training opportunity for those currently unemployed.

While the Thomas Jefferson Partnership for Economic Development region is not currently recognized as one of the top regions in the country for biotechnology and bioscience, it is located between two extremely high performing regions, the Washington, DC/Maryland area and the Research Triangle, NC, area. It may be possible to lure partners, venture funds and other support elements of a successful bioscience cluster to the TJPED region from these adjacent regions.

Other business rationales for targeting select *Bioscience and Medical Device* targets include:

- High relative patent activity related to this industry group
- History of local SBIR/STTR grant activity related to this industry group
- Average annual earnings for the selected targets wages is \$111,910
- The selected targets are projected to grow an average of 12 percent over the next five years

- Annual University of Virginia completions (including doctorates) in specialized fields that support the industry such as:
  - Bioengineering or biomedical engineering (77)
  - Chemical engineering (55)
  - Other related engineering (51)
  - Biochemistry (7)
  - Chemistry (97)
  - Medicine, Neuroscience, Pharmacology (147)
  - Biological and sciences (222)
  - Biophysics, Cellular Biology, Medical Microbiology (27)
  - Pathology, Experimental Pathology (2)

### Target Outlook

The select optimal *Bioscience and Medical Device* targets are expected to experience significant growth due to four major factors: 1) expanding market because of an aging population lead by the baby boomers, 2) potential gain of millions of new customers through Federally mandated healthcare coverage, 3) innovation and new product developments (for example implantable devices, wireless medical technology, real-time medical data and reporting devices) and 4) continued quest for speedy, cost-effective and non-invasive medical diagnoses and treatments.

**Table 4**  
***Albemarle County***  
***Optimal Bioscience and Medical Device Targets***

<b>Industry Group Title</b>	<b>NAICS</b>	<b>National Average Earnings</b>	<b>Projected Five-Year Job Growth</b>
Pharmaceutical and Medicine Manufacturing	3254	\$73,601	7%
Medical Equipment Manufacturing	3391	\$79,907	3%
Scientific R&D Services	5417	\$87,252	9%
In-Vitro Diagnostic Substance Manufacturing	325413	\$108,124	21%
Biological Product Manufacturing	325414	\$115,090	13%
Surgical and Medical Instrument Manufacturing	339112	\$100,844	7%
Research and Development in Biotechnology	541711	\$123,580	8%

Source: Economic Modeling Specialist, Younger Associates

**Table 5**  
***Albemarle County***  
***Optimal Life Sciences and Medical Device Target Descriptions***

<b>NAICS Code</b>	<b>Title</b>	<b>Description</b>
<b>3254</b>	Pharmaceutical and Medicine Manufacturing	This industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing biological and medicinal products; (2) processing (i.e., grading, grinding, and milling) botanical drugs and herbs; (3) isolating active medicinal principals from botanical drugs and herbs; and (4) manufacturing pharmaceutical products intended for internal and external consumption in such forms as ampoules, tablets, capsules, vials, ointments, powders, solutions, and suspensions.
<b>3391</b>	Medical Equipment Manufacturing	This industry comprises establishments primarily engaged in manufacturing medical equipment and supplies. Examples of products made by these establishments are surgical and medical instruments, surgical appliances and supplies, dental equipment and supplies, orthodontic goods, ophthalmic goods, dentures, and orthodontic appliances.
<b>325413</b>	In-Vitro Diagnostic Substance Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing in-vitro (i.e., not taken internally) diagnostic substances, such as chemical, biological, or radioactive substances. The substances are used for diagnostic tests that are performed in test tubes, petri dishes, machines, and other diagnostic test-type devices.
<b>325414</b>	Biological Product Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing vaccines, toxoids, blood fractions, and culture media of plant or animal origin.
<b>339112</b>	Surgical and Medical Instrument Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing medical, surgical, ophthalmic, and veterinary instruments and apparatus (except electrotherapeutic, electromedical and irradiation apparatus). Examples of products made by these establishments are syringes, hypodermic needles, anesthesia apparatus, blood transfusion equipment, catheters, surgical clamps, and medical thermometers.
<b>541711</b>	Research and Development in Biotechnology	This U.S. industry comprises establishments primarily engaged in conducting biotechnology research and experimental development. Biotechnology research and experimental development involves the study of the use of microorganisms and cellular and biomolecular processes to develop or alter living or non-living materials. This research and development in biotechnology may result in development of new biotechnology processes or in prototypes of new or genetically-altered products that may be reproduced, utilized, or implemented by various industries.

Source: U.S. Census Bureau

## Target Industry Group: Business & Financial Services

Albemarle County has demonstrated strong competitive advantages for the *Business & Financial Services* group and exhibits both specialization and growth momentum for this industry. A broad group of select targets offer opportunities for both expansion and attraction efforts (Table 6 and 7). Among the business rationales for targeting this industry group are:

- High jobs multiplier (5.73)
- Broad existing local base of 554 firms
- Average annual wages nationally of \$69,333, which is 39 percent above the county average
- Broadband infrastructure will support the technology needs of this industry group
- Synergistic overlap with *Information Technology* group assets and targets
- Average five-year projected job growth of 17 percent among selected targets
- University of Virginia graduates with degrees (including doctorates) in specialized fields that support this target:
  - Accounting (107)
  - Business Administration and Management (390)
  - Business and Commerce (363)
  - Management Information Systems (78)
  - Computer and Information Sciences, General (58)
  - Mathematics (68)
  - Economics (263)

### Target Outlook

The select optimal *Business & Financial Services* targets are expected to experience strong future growth due to four transformational developments: 1) rapid increases in the use of electronic payments, 2) new and emerging methods of retail electronic payment, including mobile technologies, 3) return to the U.S. of some foreign outsourced services due to diminished efficiencies and customer dissatisfaction and 4) increased demand for businesses to manage healthcare and pension plans into compliance with new legislation. Together these forces can generate a generous number of opportunities for new start-ups, expansions and relocations.

**Table 6**  
**Albemarle County**  
**Select Optimal Business & Financial Services Targets**

Industry Title	NAICS	National Average Earnings	Projected Five-Year Job Growth
Financial Transactions Processing, Reserve, and Clearinghouse Activities	522320	\$74,608	26%
Data Processing, Hosting, and Related Services	518210	\$80,651	13%
Third Party Administration of Insurance and Pension Funds	524292	\$59,018	10%

Source: Economic Modeling Specialist, Younger Associates

**Table 7**  
**Albemarle County**  
**Optimal Business & Financial Services Target Descriptions**

NAICS Code	Title	Description
522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities	This industry comprises establishments primarily engaged in providing one or more of the following: (1) financial transaction processing (except central bank); (2) reserve and liquidity services (except central bank); and/or (3) check or other financial instrument clearinghouse services (except central bank).
518210	Data Processing, Hosting, and Related Services	This industry comprises establishments primarily engaged in providing infrastructure for hosting or data processing services. These establishments may provide specialized hosting activities, such as web hosting, streaming services or application hosting; provide application service provisioning; or may provide general time-share mainframe facilities to clients. Data processing establishments provide complete processing and specialized reports from data supplied by clients or provide automated data processing and data entry services.
524292	Third Party Administration of Insurance and Pension Funds	This U.S. industry comprises establishments primarily engaged in providing third party administration services of insurance and pension funds, such as claims processing and other administrative services to insurance carriers, employee-benefit plans, and self-insurance funds.

Source: U.S. Census Bureau



## Target Industry Group: Information Technology and Defense & Security

The combined *Information Technology* and *Defense Security* cluster offers a third target area for the county. Building upon two large federal installations and a large number of high-paying jobs at nearly ten federal contractors, and supported by University research centers and long-time large employers like GE and Northrup Grumman, the county is positioned to both expand and recruit in select sectors of this industry group (See Tables 8 and 9).

While the direction of defense spending is always a question, the intelligence community seems more immune to wide swings in federal spending. In addition, there is a trend toward moving these assets out of the Washington, DC region, yet they cannot be sent overseas. In fact, the TJPED region's strategic location near, but just far enough away from, Washington, DC has proven to be very advantageous in some recent location decisions.

Albemarle County already has a high specialization in the industry group, particularly in the three select industry sectors listed in Table 9, with location quotients of 4.11, 3.2 and 3.67 respectively. Furthermore, the occupations relevant to these industries, such as computer specialists are in good supply in the region. Other business rationales for targeting these sectors include:

- High relative wages offered by the industry group
- Technology assets including the federal agency locations, two large employers and other defense contractors
- Utilizes robust broadband fiber optic infrastructure and presence; major telecommunications providers will support industry requirements
- Overlaps with other exiting business clusters in the county
- Patent activity related to this industry group
- SBIR activity related to this industry group
- Reflected in regional growth in computer facilities management services
- Leverages county specialization in computer and mathematical occupations
- Offers opportunity to existing workforce, which has interest in computer technologies training

### Target Outlook

The select optimal *IT* and *Defense Security* targets are expected to experience strong future growth due to four transformational developments: 1) new product developments like battery back-up systems, open-road intelligent transportation systems and mobile medical monitors, 2) growth in market for semiconductors in consumer electronics, such as smartphones, digital cameras and automotive electronics, 3) increased use of electronics in the transportation industry, due to substitution of mechanical devices and 4) increased downstream demand for sophisticated measuring and monitoring systems from the energy, military, health and biotechnology sectors. These factors indicate a growing number of opportunities for new start-ups, expansions and relocations.

**Table 8**  
**Albemarle County**  
**Select Optimal IT and Defense Security Targets**

Industry Title	NAICS	National Average Earnings	Projected Five-Year Job Growth
Communications Equipment Manufacturing	334290	\$95,290	15%
Electronic Connector Manufacturing	334417	\$69,235	5%
Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	334513	\$87,643	1%

Source: Economic Modeling Specialist, Younger Associates

**Table 9**  
**Albemarle County**  
**Optimal IT and Defense Security Target Descriptions**

NAICS Code	Title	Description
<b>334290</b>	Communications Equipment Manufacturing	This industry comprises establishments primarily engaged in manufacturing specialized communications equipment.
<b>334417</b>	Electronic Connector Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing electronic connectors, such as coaxial, cylindrical, rack and panel, pin and sleeve, printed circuit and fiber optic.
<b>334513</b>	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	This U.S. industry comprises establishments primarily engaged in manufacturing instruments and related devices for measuring, displaying, indicating, recording, transmitting, and controlling industrial process variables. These instruments measure, display or control (monitor, analyze, and so forth) industrial process variables, such as temperature, humidity, pressure, vacuum, combustion, flow, level, viscosity, density, acidity, concentration, and rotation.

Source: U.S. Census Bureau

## Target Industry Group: Select Agribusiness, Food Processing & Related Technology

In Albemarle County approximately 95% of land is designated as Rural Areas where only low intensity development is allowed. Agriculture and some agribusiness uses are allowed in the Rural Areas so economic growth in these sectors is important to balancing the economy in the county. The vibrant quality of life surrounding the University is conducive to microbreweries and specialty foods operations. Targeting a select number of sectors in the *Agribusiness, Food Processing & Related Technology* industry group also offers several business rationales for expansion and attraction:

- Can tap into the growing demand for locally produced and farm fresh foods
- The county and surrounding region have demonstrated success in wineries
- Select target sectors have a positive growth outlook
- Close proximity to large metro consumer markets
- Cost savings to processors seeking to be closer to inputs and customers

**Table 10**  
*Albemarle County*  
*Select Optimal Small-Scale Agriculture Targets*

NAICS Code	Industry Title	Forecasted Five-Year Growth	National Average Earnings
<b>Agribusiness, Food Processing &amp; Technology</b>			
<b>311991</b>	Perishable Prepared Food Manufacturing	13%	\$36,844
<b>312130</b>	Wineries / Breweries	24%	\$61,013

Source: Economic Modeling Specialist, Younger Associates

**Table 11**  
*Albemarle County*  
*Select Small-Scale Agriculture Target Descriptions*

NAICS Code	Title	Description
<b>311991</b>	Perishable Prepared Food Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing perishable prepared foods, such as salads, sandwiches, prepared meals, fresh pizza, fresh pasta, and peeled or cut vegetables.
<b>312130</b>	Wineries / Breweries	This industry comprises establishments primarily engaged in one or more of the following: (1) growing grapes and manufacturing wines and brandies; (2) manufacturing wines and brandies from grapes and other fruits grown elsewhere; and (3) blending wines and brandies.

Source: U.S. Census Bureau

## Target Outlook

Select manufacturing/processor industries in the *Agribusiness, Food Processing & Technology* industry group are expected to experience solid growth driven by demand from: 1) new product innovations that focus on health, 2) increased market for pre-cooked valued-added convenient products, 3) appeal of smaller “non-industrial” niche food producers and 4) consumer desire to be “closer” to the sources of their food and processors desire to be closer to inputs.

## Complementary Targets: Health Services and Arts, Design, Sports & Media

The complementary targets that have been identified are a set of industries that boost attraction to the area, add to quality of life factors for residents and potential newcomers and help support a vibrant, sustainable, urban community. The *Health Services* targets emphasize the support of an aging population and relocating retirees, whereas the *Arts, Design, Sports & Media* targets can appeal particularly to young people looking for a diverse and active community.

Because of the types of services offered, the complementary targets provide employment opportunities for a lower skilled workforce, a group often overlooked in some of the higher wage targeted groups. The select target sectors are listed in Table 10 and described in Table 11.

Rationales for the *Health Services* target sectors include:

- A logical off-shoot of the *Biomedical and Medical Devices* industry
- Complementary to the University health care system
- An opportunity for the Not Employed group who seek medical related training, but do not possess highly technical skill sets
- Support for aging population and relocating retirees

Rationales for the *Arts, Design and Sports & Media* include:

- Complementary to the attractive quality of life in the region
- Proximity to the regional core, Charlottesville, increases attraction of artists
- Some specialized sectors related to the group already exist in Albemarle County and in Charlottesville
- Complementary to University student population
- Complementary to and supportive of the *Visitor Industry* group
- Large number of annual visitors to the region can provide some of the revenue and support base for firms in this group
- Can be a complementary element and continuing contributor to the regional quality of life

**Table 12**  
**Albemarle County**  
**Optimal Complementary Targets**

Industry Title	NAICS	National Average Earnings	Projected Five-Year Job Growth
<b>Health Services</b>			
Nursing Care Facilities	623110	\$35,793	11%
Residential Care Facilities	623990	\$34,041	10%
Continuing Care Retirement Communities	623311	\$31,127	17%
<b>Arts, Sports, Media</b>			
Graphic Design Services	541430	\$46,154	25%
Spectator Sports	711219	\$15,644	16%
Independent Artists, Writers, and Performers	711510	\$21,291	9%
Fitness and Recreational Sports Centers	713940	\$15,189	15%
Promoters of Performing Arts, Sports, and Similar Events	7113	\$35,695	11%

Source: Economic Modeling Specialist, Younger Associates

**Table 13**  
**Albemarle County**  
**Optimal Health Services Target Descriptions**

NAICS Code	Title	Description
<b>623110</b>	Nursing Care Facilities	This industry comprises establishments primarily engaged in providing inpatient nursing and rehabilitative services. The care is generally provided for an extended period of time to individuals requiring nursing care. These establishments have a permanent core staff of registered or licensed practical nurses who, along with other staff, provide nursing and continuous personal care services.
<b>623990</b>	Residential Care Facilities	This industry comprises establishments primarily engaged in providing residential care. These establishments also provide supervision and personal care services.
<b>623311</b>	Continuing Care Retirement Communities	This U.S. industry comprises establishments primarily engaged in providing a range of residential and personal care services with on-site nursing care facilities for (1) the elderly and other persons who are unable to fully care for themselves and/or (2) the elderly and other persons who do not desire to live independently. Individuals live in a variety of residential settings with meals, housekeeping, social, leisure, and other services available to assist residents in daily living. Assisted-living facilities with on-site nursing care facilities are included in this industry.

Source: U.S. Census Bureau

**Table 14**  
**Albemarle County**  
**Optimal Arts, Design, Sports & Media Target Descriptions**

NAICS Code	Title	Description
541430	Graphic Design Services	This industry comprises establishments primarily engaged in planning, designing, and managing the production of visual communication in order to convey specific messages or concepts, clarify complex information, or project visual identities. These services can include the design of printed materials, packaging, advertising, signage systems, and corporate identification (logos). This industry also includes commercial artists engaged exclusively in generating drawings and illustrations requiring technical accuracy or interpretative skills.
711219	Spectator Sports	This U.S. industry comprises (1) independent athletes, such as professional or semiprofessional golfers, boxers, and race car drivers, primarily engaged in participating in live sporting or racing events before a paying audience; (2) owners of racing participants, such as cars, dogs, and horses, primarily engaged in entering them in racing events or other spectator events; and (3) establishments, such as sports trainers, primarily engaged in providing specialized services required to support participants in sports events or competitions.
711510	Independent Artists, Writers, and Performers	This industry comprises independent (i.e., freelance) individuals primarily engaged in performing in artistic productions, in creating artistic and cultural works or productions, or in providing technical expertise necessary for these productions.
713940	Fitness and Recreational Sports Centers	This industry comprises establishments primarily engaged in operating fitness and recreational sports facilities featuring exercise and other active physical fitness conditioning or recreational sports activities, such as swimming, skating, or racquet sports.

Source: U.S. Census Bureau