



Center for Management & Economic Research

Building the Aerospace Industry of the Future

An Industry Perspective

January 2009

Building the Aerospace Industry of the Future in Alabama

Project Purpose

The challenge in this effort was to gain an understanding of Alabama's Aerospace Industry workforce expectations and how they may evolve over the next decade. This aerospace company perspective will provide the aerospace industry a better understanding of itself as well as offer insight about the strategic requirements necessary for the continued success of this important Alabama industry.

Data Timeframe

The data from Alabama's aerospace companies was collected for their most recent fiscal year ending in 2007. In some instances the data was for a period including 2006. All data, charts, and descriptions presented in this report should be considered to represent economic conditions in 2007 and may not adequately reflect the industry's current conditions.

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Building the Aerospace Industry of the Future in Alabama

1.0 Defining Alabama's Aerospace Industry

1.1 The Alabama Aerospace Industry Today

Alabama's aerospace industry today is best described in terms of the breadth of fixed and rotary wing aviation, spacecraft, and missile design, manufacture, maintenance, and overhaul. Some may even proclaim that, 'if it flies, Alabama companies are probably involved.' Alabama aerospace companies have had a hand in shaping much of the aerospace, aviation, and defense industries as they are known today. From the Wright Brother's early test flights to the space program to the modern weapon systems used by American soldiers, the evolution of aerospace continues in Alabama.

1.2 Aerospace Industry Sectors

The aerospace industry is often defined by referencing one or more of its sectors: Engineering, Research & Development; Manufacturing; Maintenance, Repair & Overhaul; and government programs (military and space). Each of these sectors contributes significantly to Alabama through jobs and revenues.

Engineering research and development is the largest sector with more than three-quarters of Alabama aerospace companies involved in some aspect of engineering R&D as noted in Figure 1.0 below. Both the commercial market and the government markets look to Alabama companies to deliver innovative solutions to the challenges of aerospace, aviation, and defense systems.

Approximately one-third of Alabama's aerospace companies are involved in the aerospace manufacturing supply chain. Manufacturing of both new systems and repair parts occurs in Alabama.

The maintenance, repair, and overhaul (MRO) sector benefits from and stimulates the manufacturing companies in Alabama. Again, commercial and government programs turn to MRO companies in Alabama to maintain, repair, and upgrade their aviation equipment for both fixed-wing and rotor aircraft.

Government programs for military systems and space exploration have grown in Alabama since the United States started its missile programs. Missile hardware, guidance, testing, and integration benefit from the work of companies located in Alabama. Access to space for much of the world comes through Alabama. Whether through the NASA Space Shuttle or through one of the Delta rockets, Alabama expertise is along for the ride. Alabama will continue to be on the future path to space as the new Ares rockets are developed in the next decade.

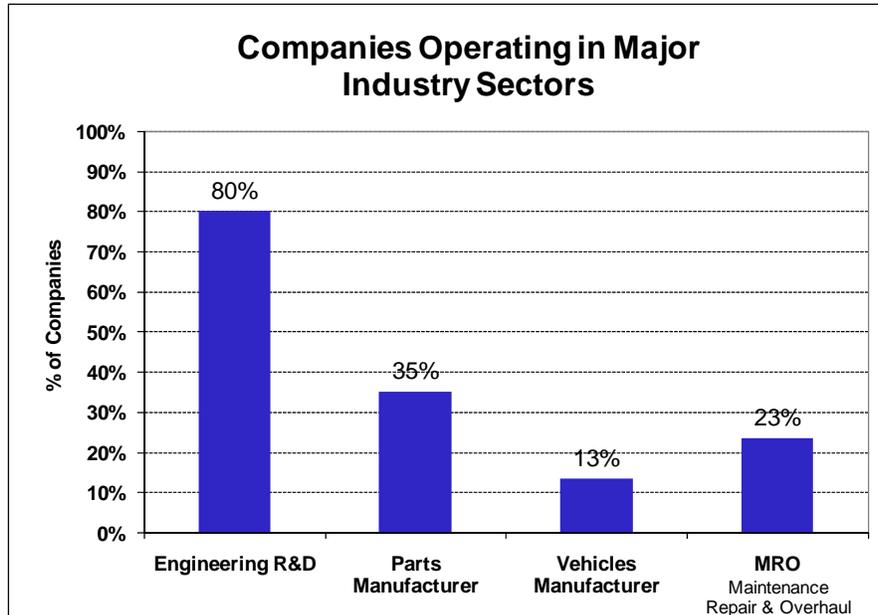


Figure 1.0 Companies Operating in Major Industry Sectors

1.3 Aerospace Regions of Alabama

Aerospace companies are clustered geographically as illustrated in Figure 1.1 utilizing data from the 2002 Alabama Aerospace Economic Impact Survey sponsored by the Alabama Department of Economic & Community Affairs (ADECA) in conjunction with the Alabama Aerospace Industry Association (AAIA) and conducted by University of Alabama in Huntsville Center for Management and Economic Research. According to the 2002 survey, the aerospace industry accounted for more than 139,000 jobs (direct & multiplier jobs), total private and federal payroll of \$6.16 billion.

The North Region (counties in red) is home to the greatest number of aerospace companies and employees. The government military and space programs comprise the largest aerospace industry segment in this region. Engineering, research, and development sector is significantly related to effort on government programs located on and around Redstone Arsenal.

In the Central Region (counties in dark blue), aerospace employment is lead by the maintenance, repair & overhaul sector. Manufacturing of parts and components to support the MRO is an important activity for this region.

The South-Central Region (counties in green) is lead by the Engineering R&D sector. Technical services provide most of the aerospace-related jobs.

The Southeast Region (counties in light blue) is the second largest aerospace area in Alabama. The MRO and manufacturing sectors provide the highest levels of aerospace employment within this region.

The Southwest Region (counties in orange) hosts a high concentration of Maintenance, Repair, and Overhaul jobs. Parts and component manufacturing to support the MRO activities is also significant.

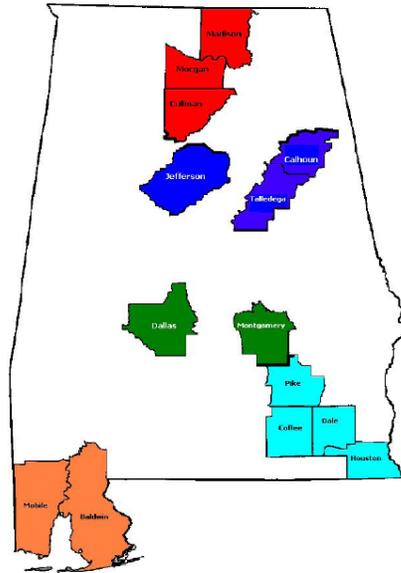


Figure 1.1 Geographic Concentrations of Aerospace Companies

1.4 Organizational Roles of Alabama Aerospace Companies

Aerospace companies operating in Alabama do so as headquarters, branch or office operations, corporate divisions, and sales offices. More companies serve as headquarters (53%) than as branch/offices (45%). All other roles account for about 2% of the aerospace companies in Alabama as noted in Figure 1.2.

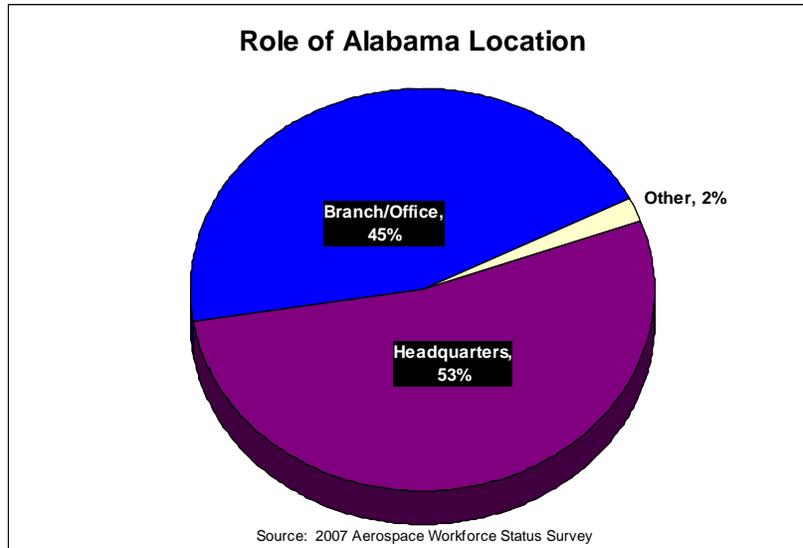


Figure 1.2 Role of Alabama Location

1.5 Ownership of Alabama-based Companies

More Alabama aerospace companies are privately held (56%) than publicly traded (44%). However, this proportion may be different within a particular industry sector or region of the state. Engineering R&D companies are most often (60%) privately held while the MRO companies in the majority (75%) are publicly traded companies. Manufacturing companies are equally split between privately held (50%) and publicly traded (50%). Ownership of Alabama-based companies by sector is noted in Figure 1.3.

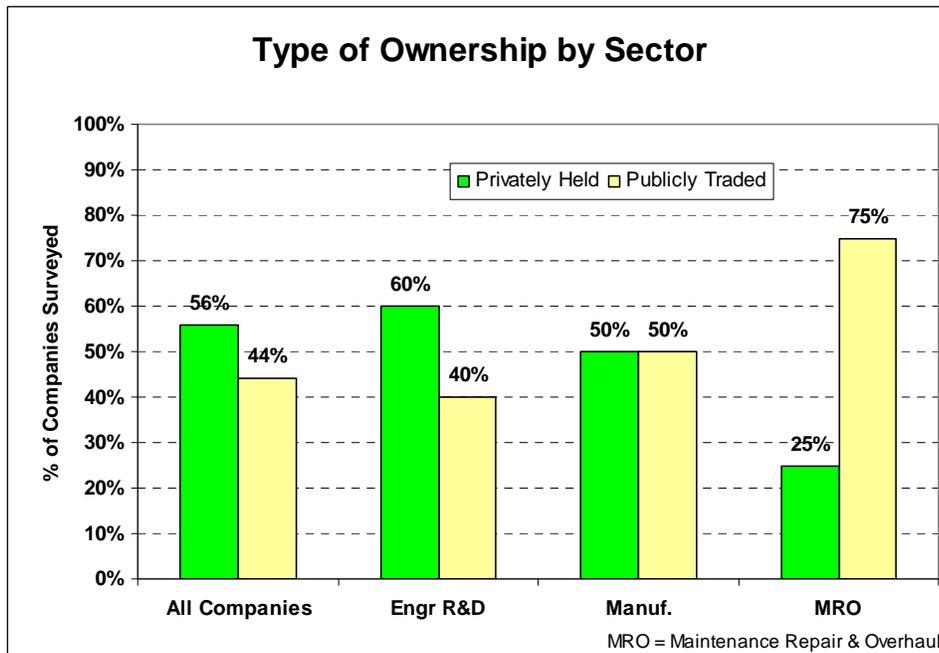


Figure 1.3 Type of Ownership by Sector

Segmenting the companies by size indicates that 88% of small companies (less than 100 employees in Alabama) are privately held. About three-quarters of publicly traded companies are larger employers (more than 100 employees in Alabama) as noted in Figure 1.4.

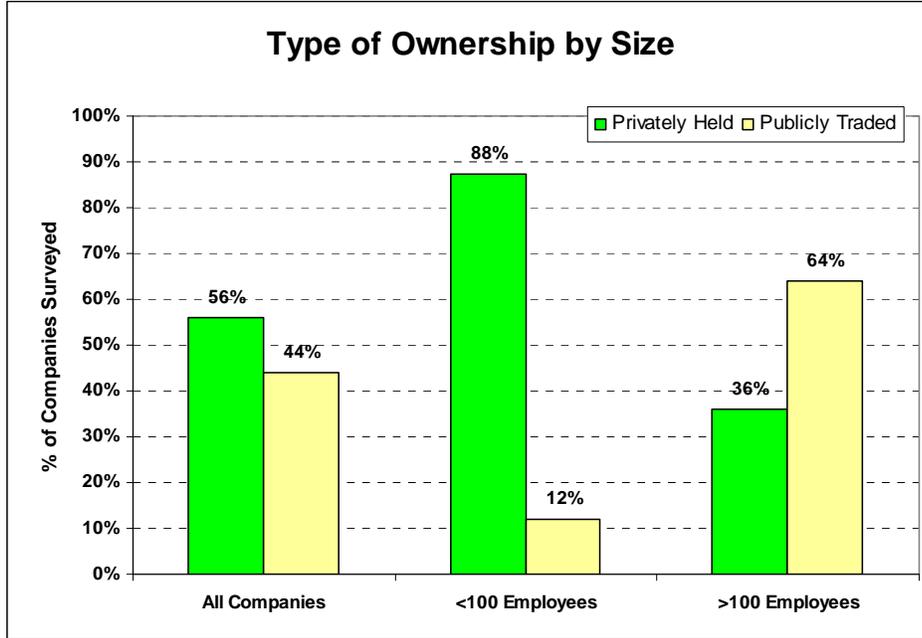


Figure 1.4 Type of Ownership by Size

1.6 A Global Industry

The aerospace industry by its nature is truly global today. With a global business, comes the opportunity for companies to locate business units anywhere in the world to best meet their customer needs, lower costs, ensure high quality, etc. Alabama has successfully competed with other parts of the U.S. and other countries to provide many of the advantages that aerospace companies need today to remain competitive.

Looking into the future, it is important to understand that the advantages available in Alabama to aerospace companies could be lost to other states or other countries. In many cases, decisions to grow a new operation or move an existing plant to another location are made in the corporate board rooms. In fact, 53% of the aerospace employees in Alabama work for companies which have operations outside the United States and therefore have more alternatives to consider in their decision process. For Manufacturing sector companies, the percentage grows to 75% while 60% of the Engineering R&D sector employees work for companies with operations outside the U.S.

Only Alabama’s MRO sector has more employees working for companies with no foreign operations (66%). Considering the challenges of business today, changes can come quickly and may be made for reasons previously thought to be irrelevant. Figure 1.5 below notes the various aerospace sectors with percentage of facilities outside the U.S.

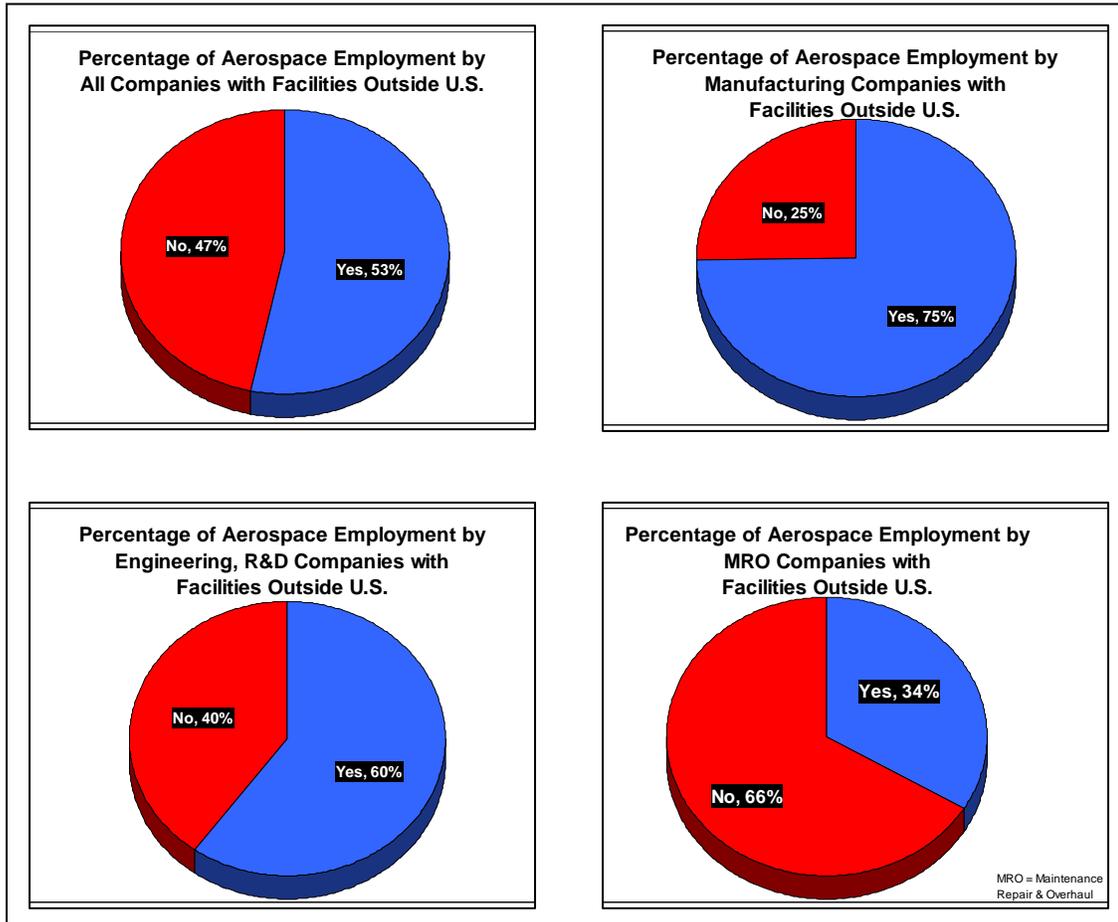


Figure 1.5 Percentage of Aerospace Companies with Facilities Outside the U.S.

1.7 Aerospace Companies by Sales Levels

The aerospace industry in Alabama is comprised of companies of all sizes. In terms of annual sales volume, more than one-fourth of the companies have an annual sales level (2007) of more than \$100 million. About one-fourth of the companies have sales between \$21 and \$100 million annually. Approximately half of Alabama’s aerospace companies have annual sales of \$20 million or less. This large portion of smaller companies is indicative of a mature and broad industry in Alabama. In Figure 1.6 a view of Alabama aerospace companies’ sales by industry sector is provided.

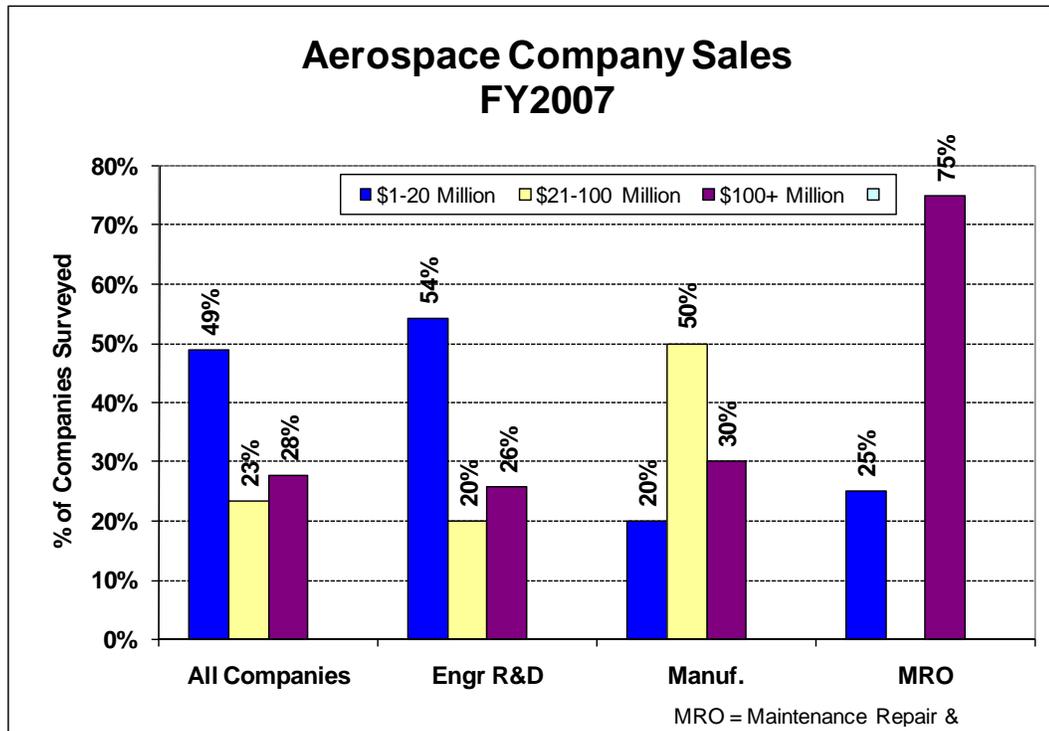


Figure 1.6 Aerospace Company Sales – FY2007

Size differences based on the level of annual sales are even more noticeable within the industry sectors. Most (54%) engineering R&D companies have less than \$20 million in annual sales. The manufacturing sector companies most often have annual sales in the \$21-\$100 million range and three-quarters of the MRO sector companies have annual sales exceeding \$100 million.

As of their most recent fiscal year ended in 2007, Alabama aerospace companies experienced sales growth for several years. Sales for 2006 grew from 2005 levels for 85% of the aerospace companies. Sales in 2005 were up from 2004 levels for 80% of the aerospace companies operating in Alabama. Only 12% saw a reduction in sales level from 2004-2005 or 2005 to 2006 as noted in Figure 1.7 below.

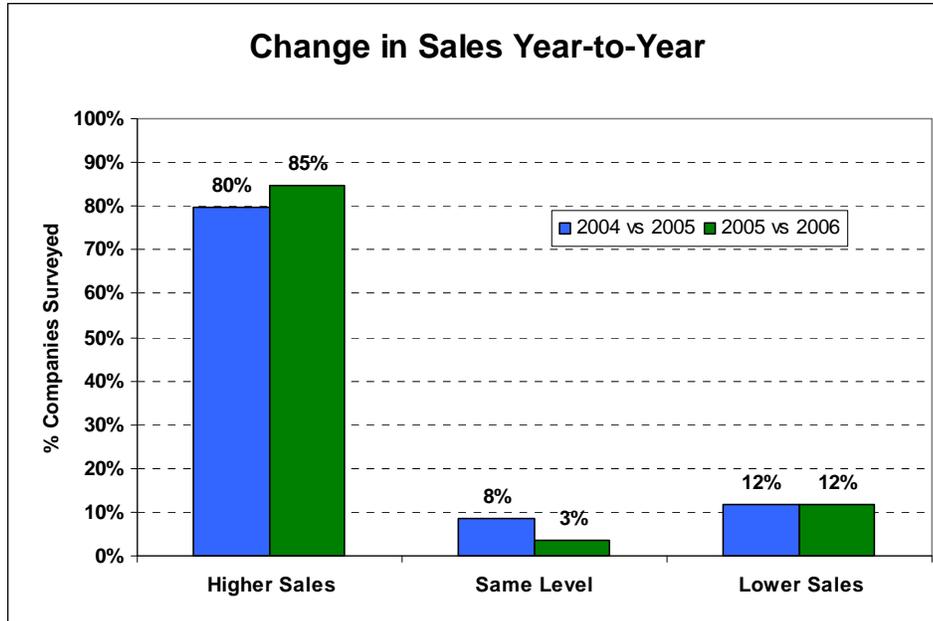


Figure 1.7 Change in Sales Year-to-Year

1.8 Years in Alabama

Aerospace and particularly aviation have been a part of Alabama for practically as long as aircraft have been flying. From the flight tests and training of the Wright Brothers to the national space program to the advanced military missiles, helicopters and fixed-wing aircraft, Alabama companies have played key roles in the advancement of aerospace. Thirty-seven percent of the aerospace companies operating in Alabama today have done so for over 20 years. An equal percentage of companies have been around for 11-20 years. Approximately one-fourth are relatively “new” to Alabama with 10 years or less presence in Alabama. The longevity of Alabama aerospace companies is noted in Figure 1.8.

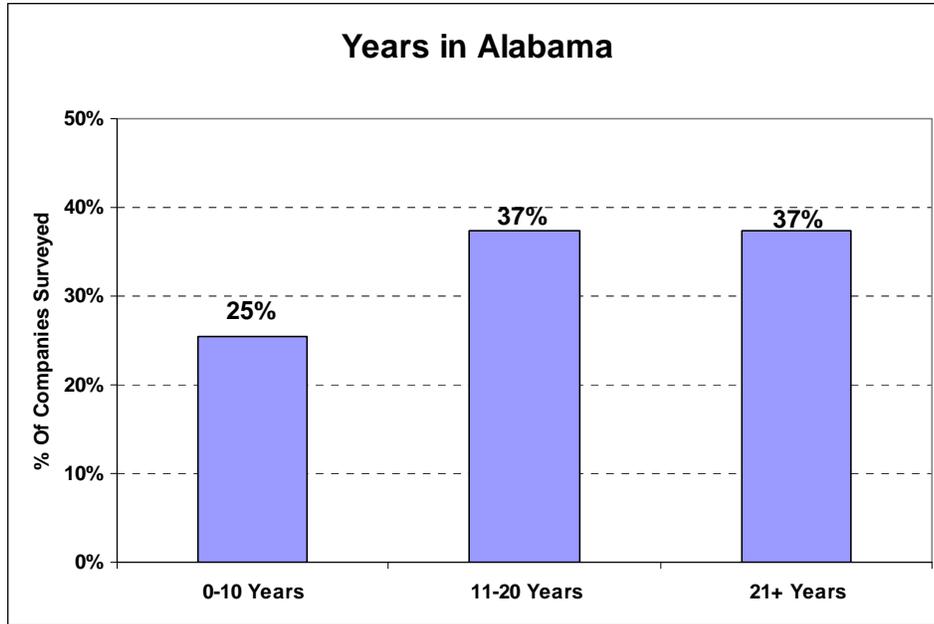


Figure 1.8 Years in Alabama

1.9 Industry Association



The Alabama Aerospace Industry Association represents the aerospace industry in Alabama. Its purpose is to promote the growth of the aerospace industry in Alabama. Leaders and members of the association are representatives from Alabama aerospace companies of all sizes and regions. The ex-officio representatives from the public sector support the communication and programs of the AAIA. Founded in 2003, AAIA works statewide with all sectors of the aerospace community. While not a lobbying entity, AAIA listens to input and disseminates information to the industry on issues affecting the success of the aerospace industry in Alabama.

2.0 Aerospace Employment In Alabama

2.1 Aerospace Jobs

The aerospace industry has created thousands of jobs for Alabamians especially over the past 50 years. Most of these jobs are full-time with only a small percentage classified as part-time (3%) or temporary (4%) as listed in Figure 2.0. Many aerospace companies are proud of the aerospace career employees in their organizations.

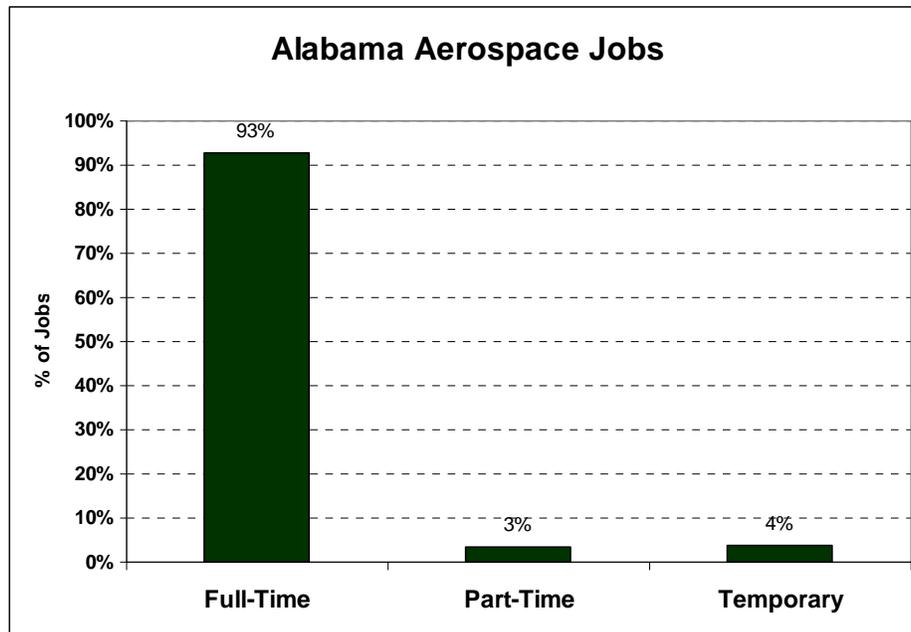


Figure 2.0 Alabama Aerospace Jobs

2.2 Education and Skill Requirements

The requirements of the aerospace workforce continue to rise as innovations occur in the design, materials, and manufacturing processes of both commercial and government sponsored aerospace vehicles. In 2007, about half of the aerospace jobs in Alabama required a bachelor's degree while one-fourth required only a high school diploma. Special licenses or certification requirements were necessary for approximately 20% of the aerospace jobs. For example, employees with a Class A Machinist certification is needed by almost half of the companies while graduate degrees are required for only 6% of the jobs. Small companies (under 100 employees and about half of all companies in Alabama) require graduate degrees for 34% of their jobs. Minimum education requirements by company size for surveyed Alabama aerospace companies is noted in Figure 2.1

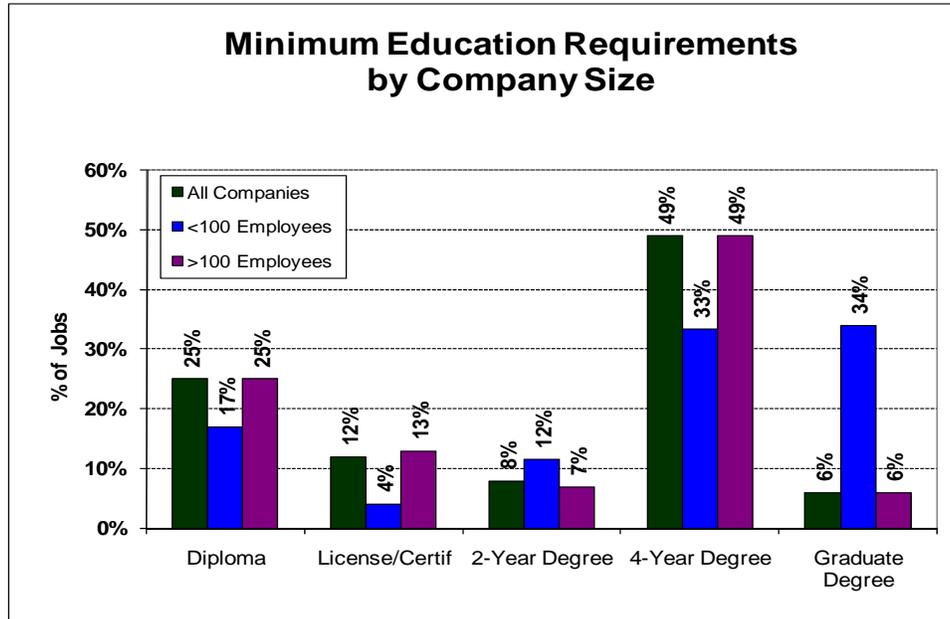


Figure 2.1 Minimum Education Requirements by Company Size

Examining the minimum education requirements by industry sector shows that most manufacturing and MRO sector companies are seeking employees with diplomas while the engineering research & development companies need college graduates. Licensed and certificate holding employees are most important for MRO sector companies. The minimum education requirements by aerospace sector is reflected in Figure 2.2.

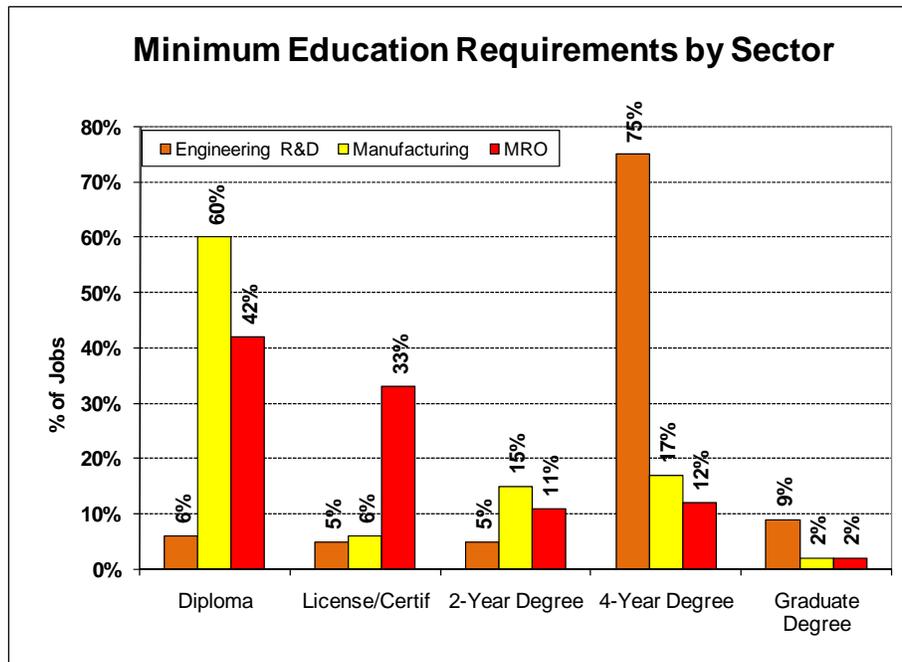


Figure 2.2 Minimum Education Requirements by Sector

2.3 Occupational Groups

The aerospace workforce, like most other industries, is comprised of numerous occupations. Utilizing broad occupational categories of the U.S. Department of Labor, Alabama aerospace jobs can be categorized as shown in Figures 2.3 and 2.4. Based on 2007 employment levels, the largest segment of aerospace jobs in Alabama are in the Production (33%), Engineering (25%), Administration or Management (12%), and Technician (8%) occupations.

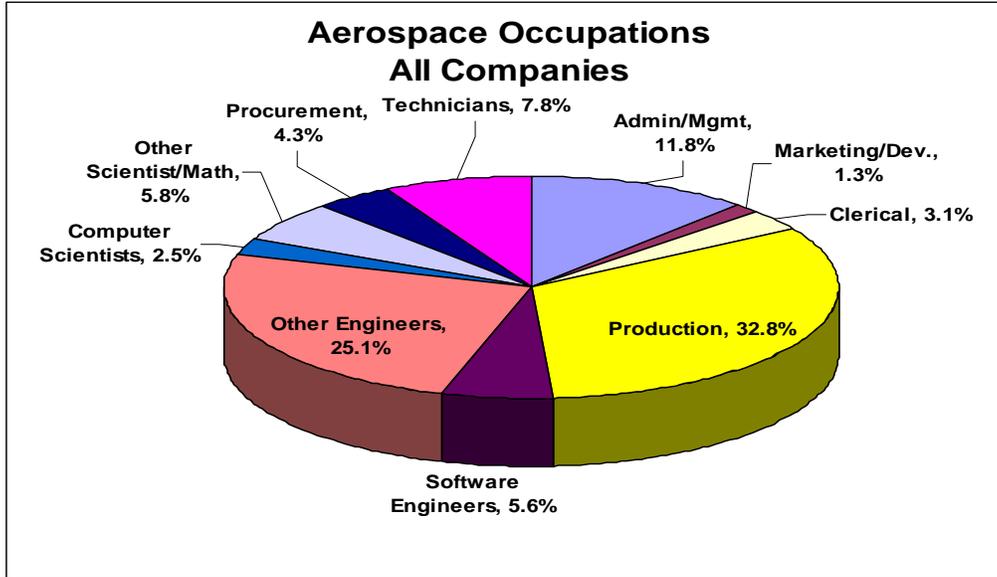


Figure 2.3 Aerospace Occupations – All Companies

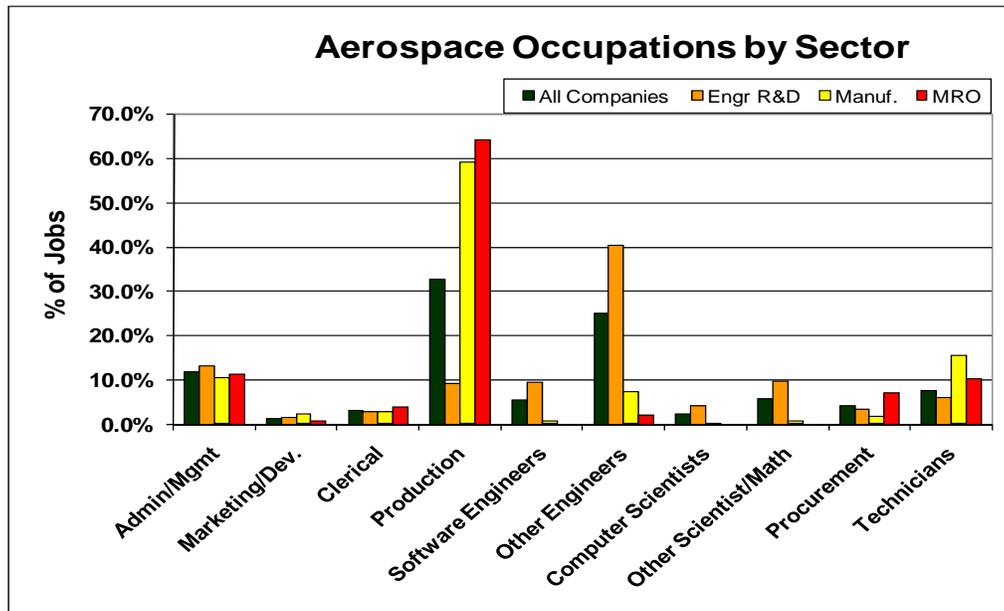


Figure 2.4 Aerospace Occupations by Sector

Analyzing the industry sectors individually, shows a different makeup of occupations between sectors. Companies in the Engineering, Research & Development sector as seen in Figure 2.5 need a higher share of engineering talent and a lower share of production employees than the Manufacturing and MRO sectors.

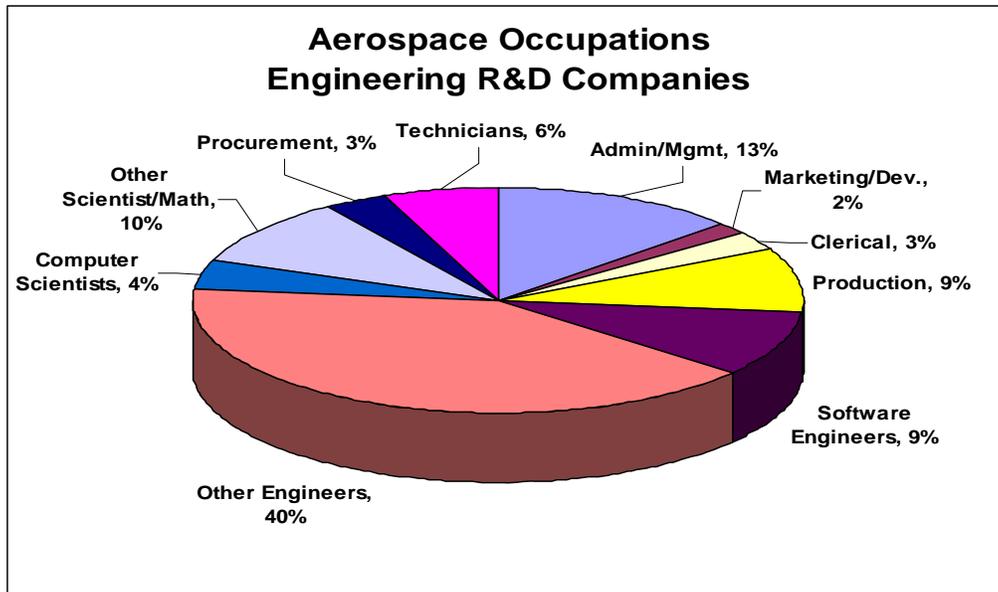


Figure 2.5 Aerospace Occupations – Engineering R&D Companies

Manufacturing sector companies categorize the majority of their jobs in the Production occupation (59%) with Technician occupations (15%) as the second largest category. Engineering occupations are third at 7% as shown below in Figure 2.6.

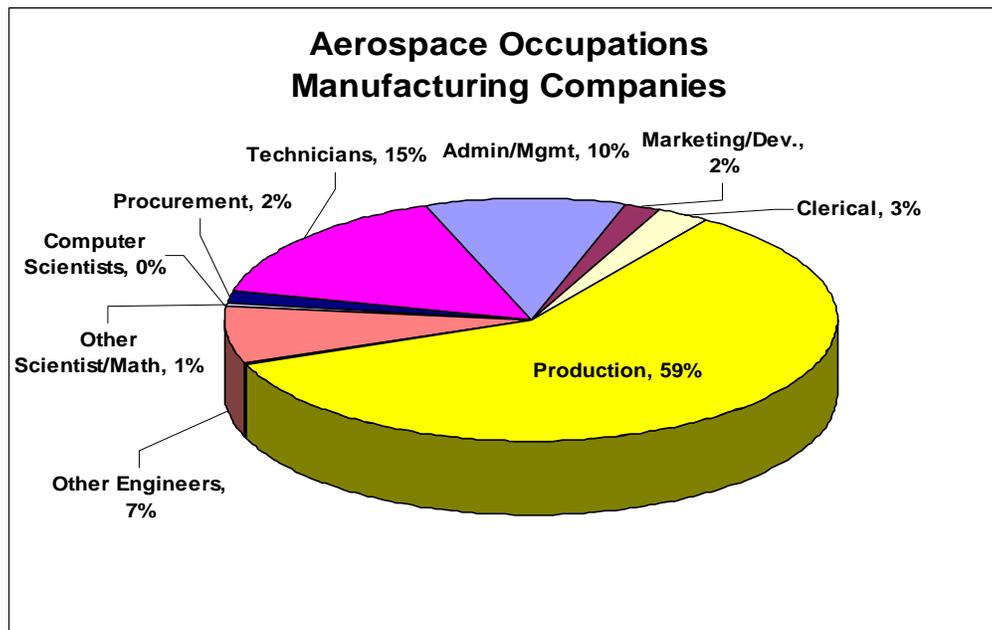


Figure 2.6 Aerospace Occupations – Manufacturing Companies

The MRO sector is comprised of the largest percentage of production occupations (64%) of the three aerospace sectors. Administration and Management positions (11%), Technicians (10%), and Procurement positions (7%) are the next largest occupational groups (Figure 2.7).

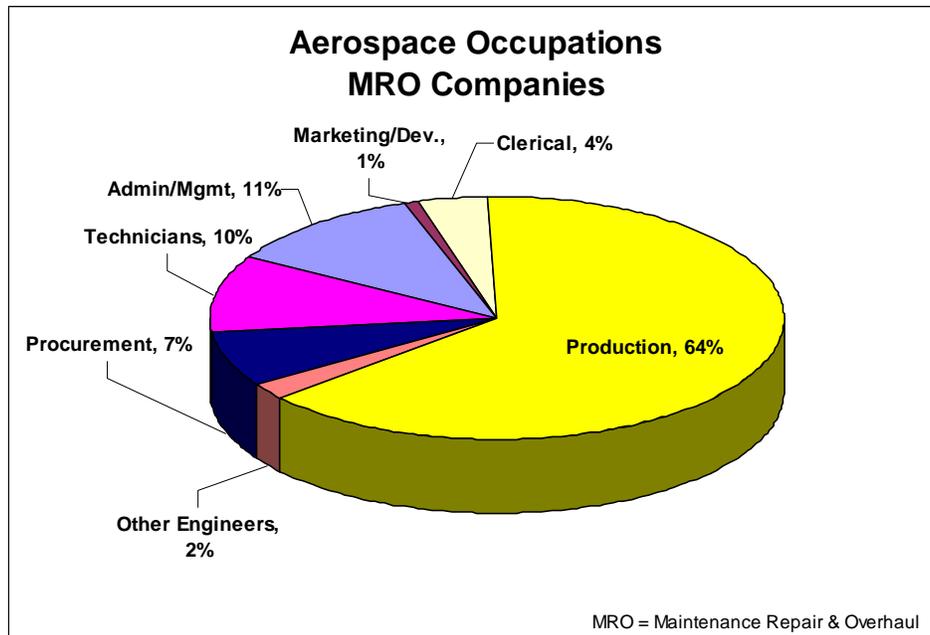


Figure 2.7 Aerospace Occupations – MRO Companies

2.4 Licenses and Certifications

Certification as a Class A Machinist is required by the largest number of companies of any occupation identified. Airframe & Power (A&P) Licenses, Professional Engineer (PE), and Airframe & Repair licenses are required by at least 15% of the companies. A&P Licenses and Airframe & Repair licenses are the second and third most required certifications as noted in Figure 2.8. When weighting the companies by number of employees, Class A Machinist, A&P License and A&R License become even more apparent as critical requirements for the Alabama aerospace industry.

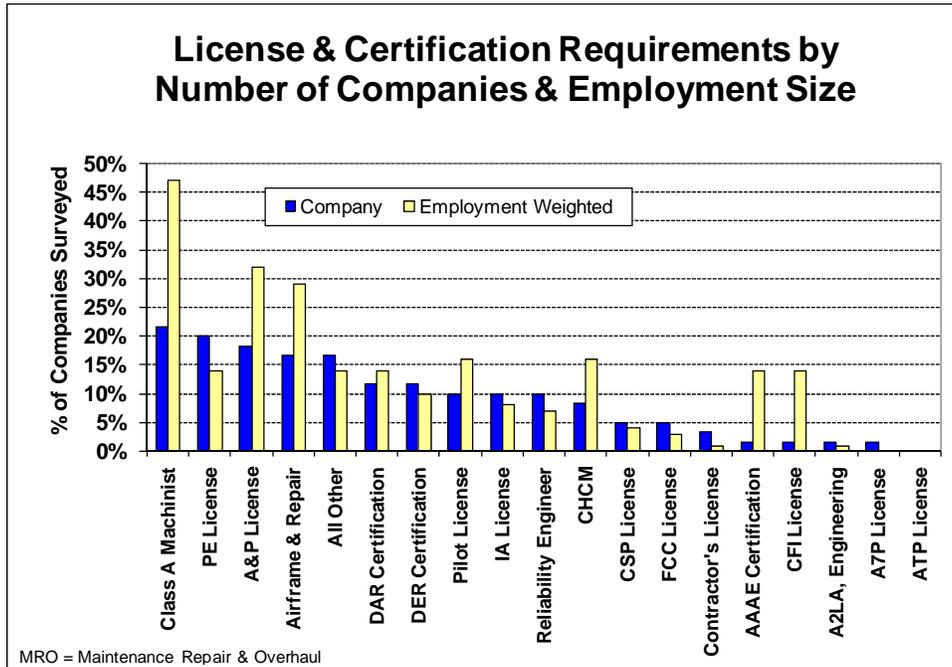


Figure 2.8 License & Certification Requirements by Number of Companies & Employment Size

3.0 Job Opportunities

3.1 Current and Anticipated Workforce Needs

In 2007, many Alabama aerospace companies were expecting to increase their hiring activity over the next five years (Figure 3.0). Practically all companies (98%) were working on the planning assumption of company growth. Although the economic downturn of 2008 may reduce this expectation level for the next year or so, the long-term outlook by 2012 of many companies probably continues as a period of growing employee recruitment.

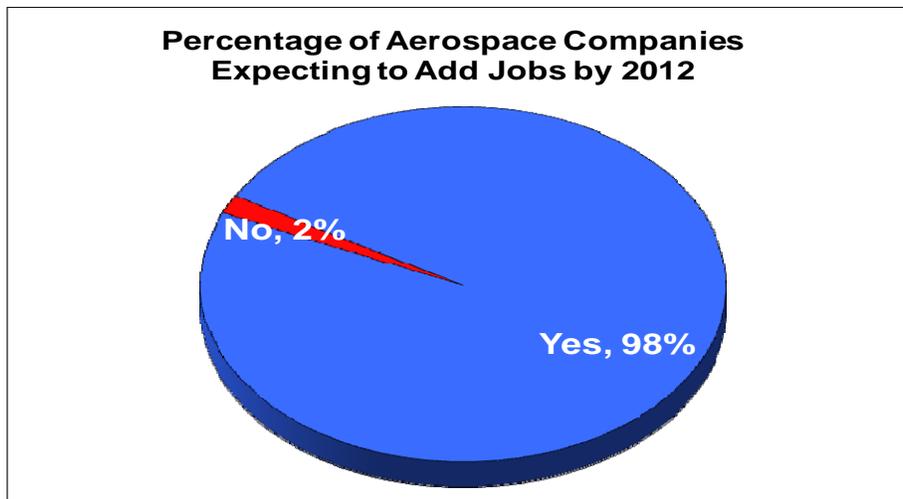


Figure 3.0 Percentage of Aerospace Companies Expecting to Add Jobs by 2012

An overwhelming majority (85%) of these companies are working with the expectation that their operations will increase employment in Alabama over the next 10 years as noted in Figure 3.1. In 2007, no company was expecting to reduce employment and only 15% expected not to grow over the next 10 years.

The slowing economic conditions experienced in 2008 may dampen these forecasts in the short-term but as the economy rebounds, Alabama companies will need more employees with the knowledge and skill sets of the 21st century.

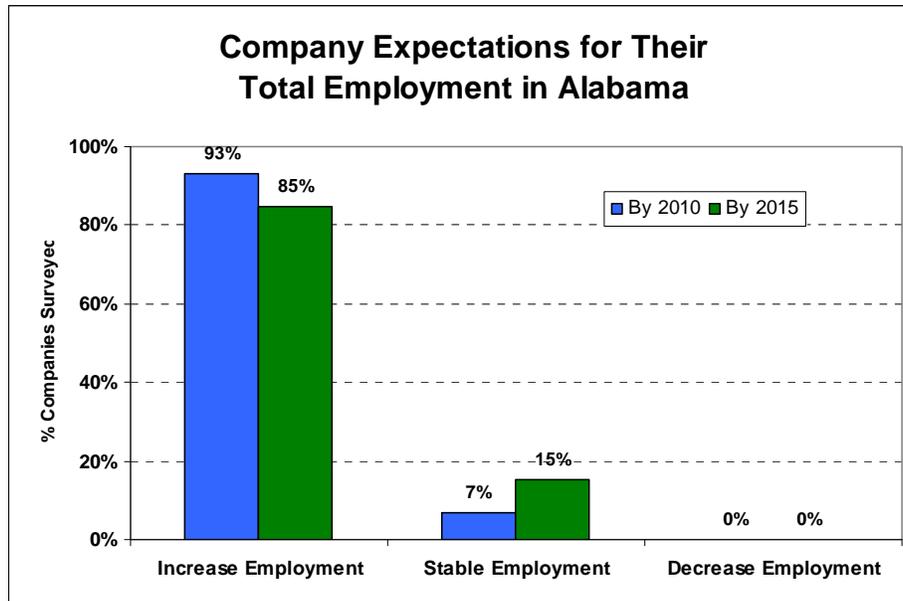


Figure 3.1 Company Expectations for Their Total Employment In Alabama

Aerospace job openings through 2010 are expected to be in the professional (50%) and skilled (42%) categories. Unskilled jobs are expected to be only 8% of the new job openings in Alabama aerospace by 2010. (Figure 3.2) The aerospace industry in Alabama generally categorizes professional jobs to include: engineers, scientists, marketing employees, salespersons, business developers, administrators, and managers. Skilled jobs include production, purchasing, clerical and technicians.

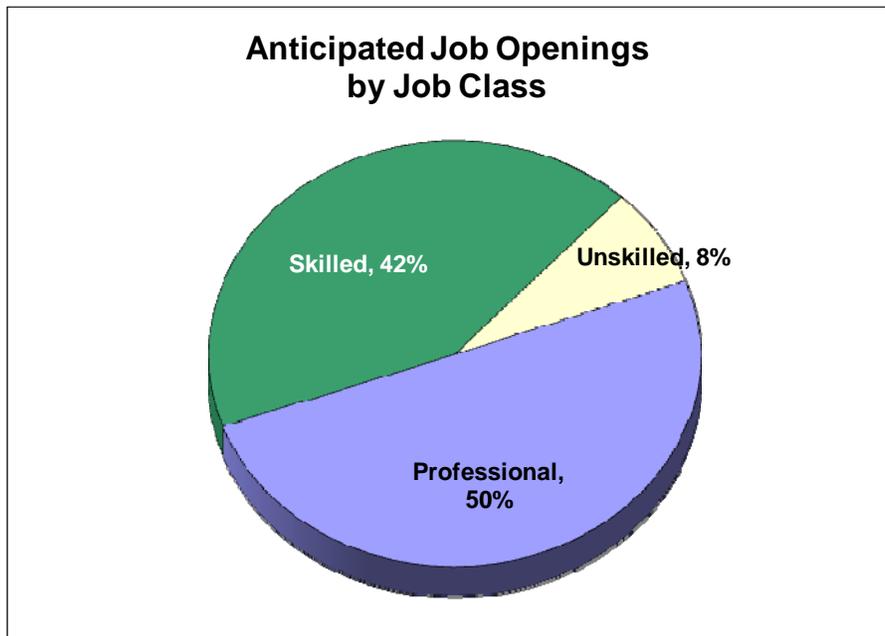


Figure 3.2 Anticipated Job Openings by Job Class

3.2 Aerospace Jobs are Attractive

It is encouraging that aerospace jobs are still attractive to many in Alabama’s workforce. In recent years, the average aerospace job opening in Alabama attracted about 20 applicants as noted below in Figure 3.3. Aerospace manufacturing jobs attracted a slightly higher number of applicants at 23 per opening while the MRO sector jobs received about 14 applicants per opening. Of course, not all of the applicants had the skill sets and/or experience needed. But due to numerous advantages of the aerospace industry like pay, benefits, and nature of the work, the aerospace industry is appealing to the Alabama’s workforce.

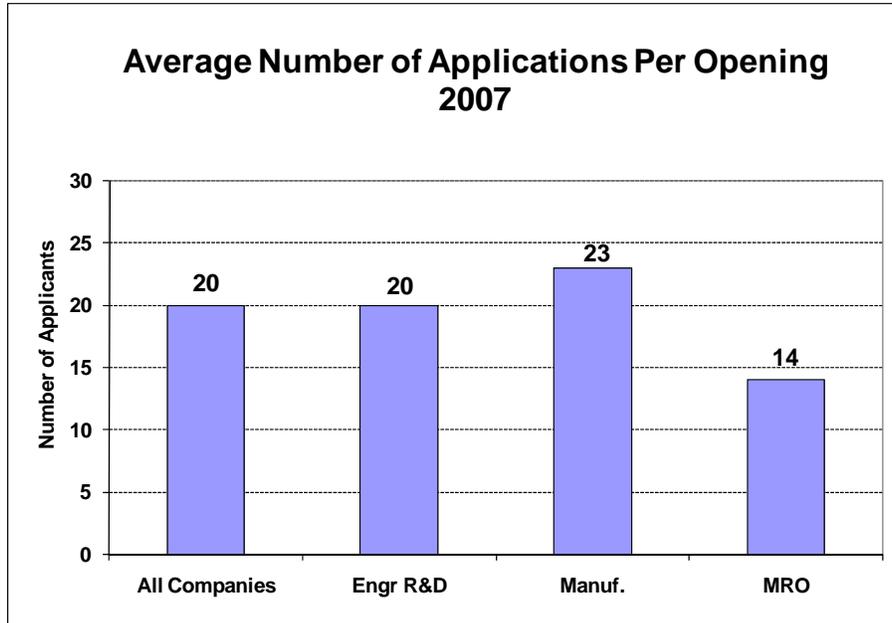


Figure 3.3 Average Number of Applications Per Opening - 2007

3.3 Retirement Curve

The looming retirement of the baby boomers creates opportunities for job seekers in Alabama. The aerospace industry is no exception to job openings being created by retirements of an aging workforce. Figure 3.4, which charts aerospace manufacturing against all manufacturing in Alabama, shows the aerospace manufacturing workforce to be comprised of older, more experienced workers closer to retirement.

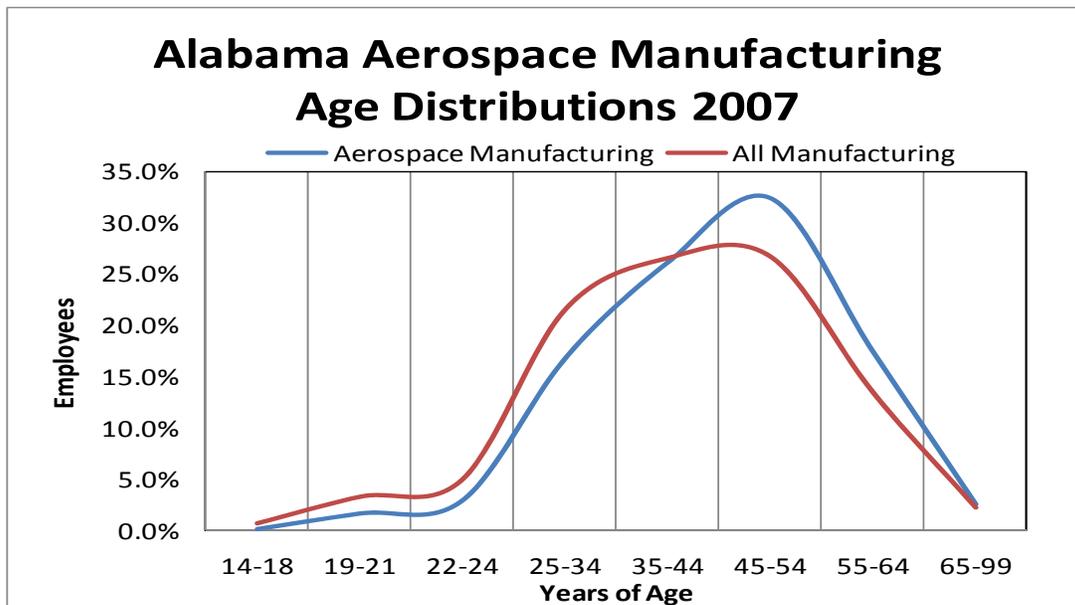


Figure 3.4 Alabama Aerospace Manufacturing Age Distributions - 2007

However, there is good news as seen in Figure 3.5. It shows that aerospace workers in Alabama tend to work until at least age 65. The MRO sector employees tend to work even longer (past 65 years of age). Over half of the employees retire at between the ages of 66 - 70. Most engineering R&D sector employees (64%) and manufacturing sector employees (60%) retire by age 65. By comparison, most MRO sector employees (56%) work past age 65. So, openings created by the slightly older aerospace workforce may not cause a significantly higher loss rate as the aerospace employees probably will retire later.

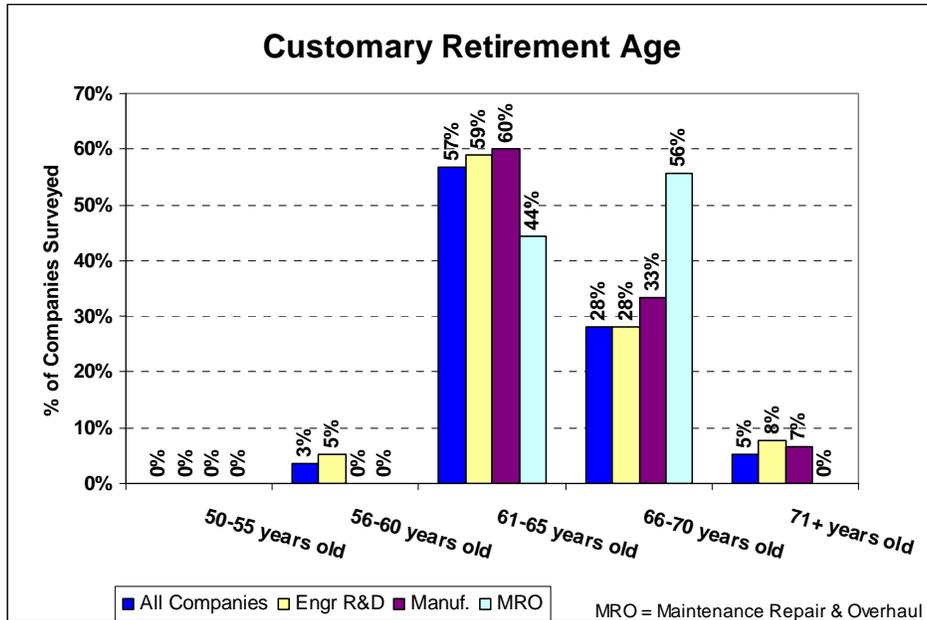


Figure 3.5 Customary Retirement Age

4.0 Workforce Challenges

4.1 Workforce Demands in Alabama

Replacing skilled, well-educated, and experienced talent in the aerospace industry will be no small task. With this challenge come opportunities for the aerospace industry. More than three quarters of the aerospace companies responding indicated that they were experiencing workforce challenges in 2007 and 2008. (Figure 4.0) More than sixty percent replied that finding available workers with the skills and experience levels desired was a major issue. Although the economic slowdown since 2007 may have reduced the immediate challenge, the industry will again face this issue as the economic growth returns. Other issues such as retention of employees and education levels in the available workforce were also noted.

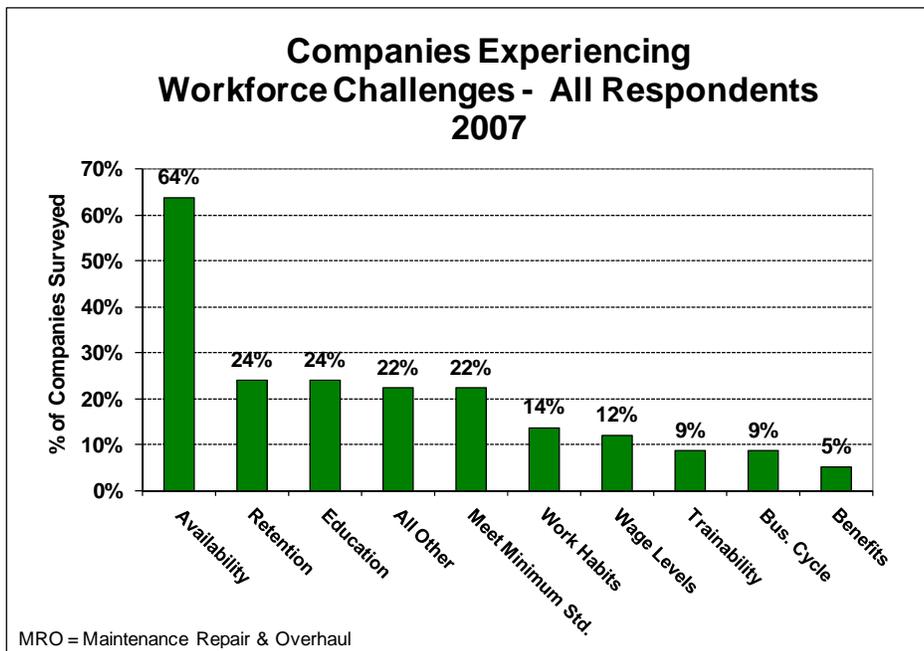


Figure 4.0 Companies Experiencing Workforce Challenges – All Respondents – 2007

Across the aerospace sectors, availability of qualified workers was the top issue in each sector in 2007 expressed in Figure 4.1. Recruiting challenges were noted by 89% of the MRO sector companies with retaining qualified employees and finding employees that meet minimum employment criteria are challenges for about one-third of the aerospace companies surveyed.

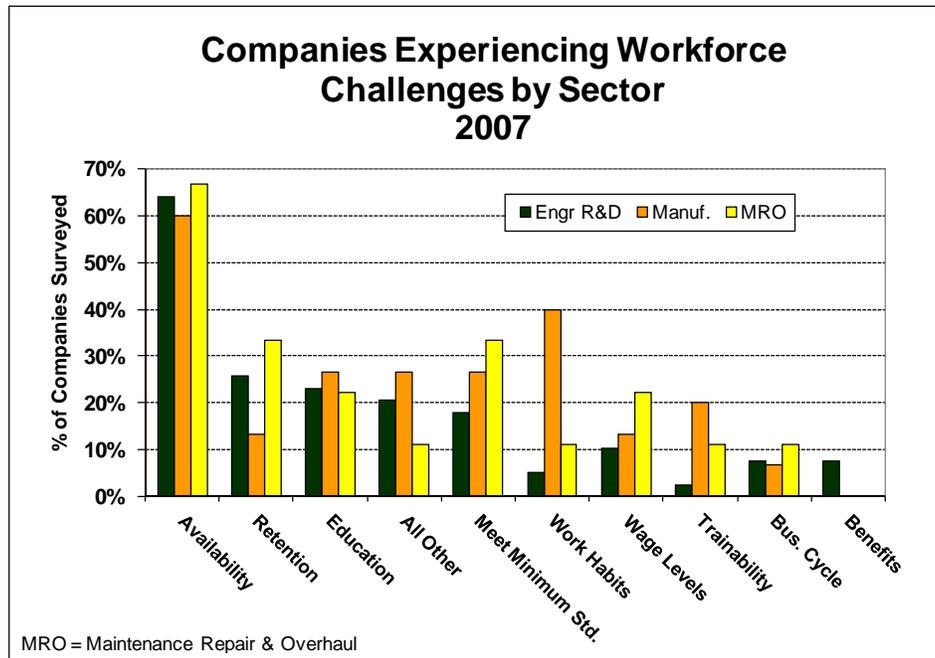


Figure 4.1 Companies Experiencing Workforce Challenges by Sector – 2007

Approximately 60% of the Manufacturing sector companies identified recruiting employees as a significant issue in 2007. Other challengers were present but to a lesser extent. The MRO sector companies were working to recruit employees and retaining employees that met their specific requirements.

4.2 National Workforce Challenges

The Aerospace Industries Association (AIA), the major national aerospace industry association, has been working for several years to increase awareness of the workforce challenges facing the aerospace industry. The major focus of their efforts has been to increase the number of students and graduates who are prepared to enter the aerospace workforce. In the *Revitalization of the Aerospace Workforce* initiative, AIA asserts the need for improving math and science test scores in the U.S. high schools. Realizing that one-quarter of the workforce is eligible for retirement coupled with the possibility of a shrinking pool of talent for higher value jobs like those in the aerospace industry should be consistently communicated to the education institutions and workforce training programs. (www.aia-aerospace.org).

The AIA supported 2006 legislation to create a task force of industry and government representatives to assess the aerospace workforce needs. AIA Chairman William Swanson (Chairman and CEO, Raytheon Company) described the future aerospace workforce challenge as a “looming matter” given the retirement eligibility of the baby boom generation. (Remarks, AIA Regional Meeting, February 22, 2007).

5.0 Increasing the Talent Pool Requires:

5.1 Experience

The aerospace industry has enjoyed its ability to attract an experienced workforce for much of the last five decades. Growth of the aviation industry (fixed and rotary wing aircraft) during the second half of the 20th century as well as the space race beginning in the 1950's and '60's provided opportunities for educated and skilled persons to gain experience and build careers critical to the success of the aerospace industry.

Aerospace companies in Alabama desire experienced applicants 3-to-1 over new college graduates in filling current job openings. (Figure 5.0) Applicants with at least two years experience is preferred by 76% of the aerospace companies represented in the survey. Only 21% of the companies consider recent graduates desirable in meeting their current and near-term workforce needs.



Figure 5.0 Experience Desired in New Employees

5.2 Education

Education is highly regarded by the aerospace industry. The aerospace industry's preference for experienced workers may be contributing to the support for educational incentives by companies. (See Figure 5.1). The education incentive offered more often than any other is tuition payment/reimbursement (46%). Pay increases and or promotions upon education attainment levels is made available by 35% of Alabama's aerospace companies. The third most popular education incentive is allowing time-off (leave) for attending classes. Aerospace companies realize that increasing knowledge in its workforce improves competitiveness and expands opportunities for growing business.

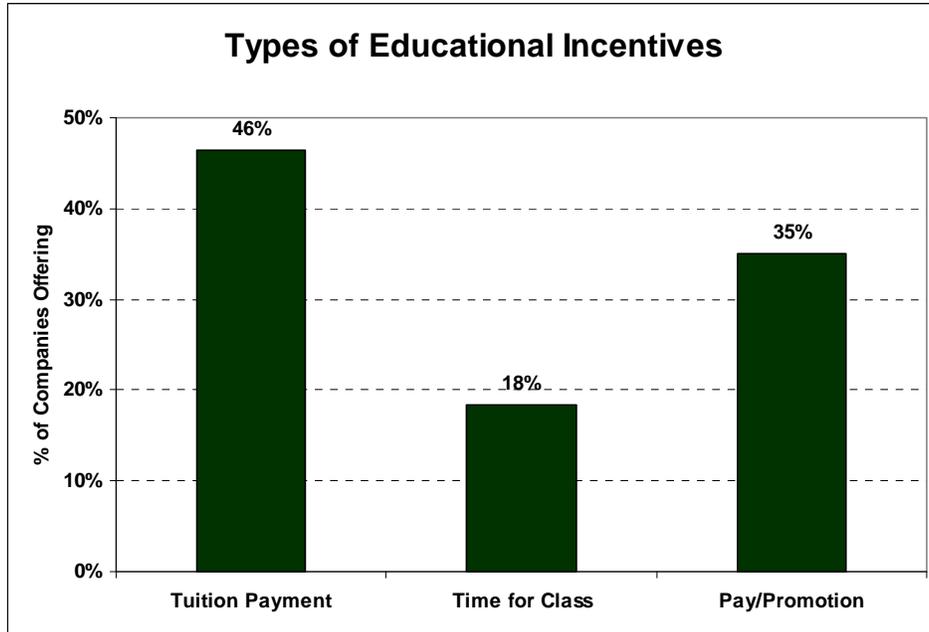


Figure 5.1 Types of Educational Incentives

5.3 Recruiting

Alabama aerospace companies recruit nationally for talent. Overall, 65% recruit nationally while 45% recruit only in Alabama and/or the adjacent states (Figure 5.2). Examining the recruitment efforts by industry sector, shows efforts on a national scope are present in all sectors. Engineering R&D, has the most balanced scope with 45% of companies recruiting in Alabama; 48% recruiting in the surrounding states and 50% recruiting nationally. Manufacturing companies tend to recruit in Alabama (56%) or nationally (56%) with only 31% of the companies recruiting in adjacent states. The Maintenance, Repair & Overhaul sector companies most often look for employees in adjacent states or nationally. MRO companies recruit least often in Alabama (22%) or outside the United States (22%).

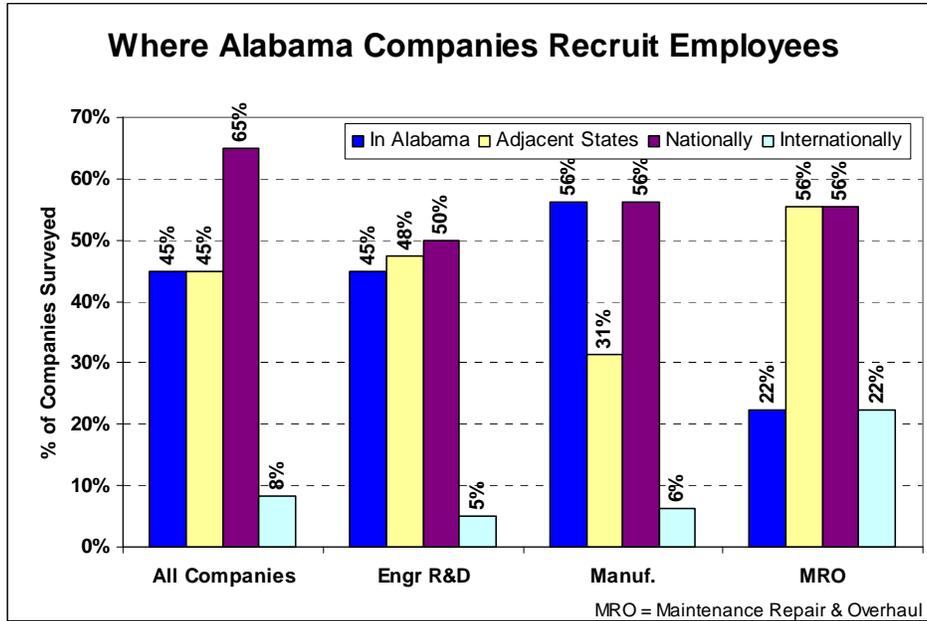


Figure 5.2 Where Alabama Companies Recruit Employees

5.4 Competing

The demand for skilled and experienced workers is expected to grow significantly over the coming decade in aerospace and other high value industries. It is reasonable to expect that Alabama aerospace employees are or will be recruited by companies located in other states such as California, Florida, Texas, Ohio, Virginia, etc. The good news is that Alabama is not competing with all of the 49 other states but a smaller number of states with aerospace or other high-value, highly-skilled industries which can benefit from the aerospace workforce capabilities. The caution is that Alabama must continue to successfully compete with these few states that are often larger and have more resources to invest in their 21st century aerospace workforce.

6.0 Summary And Conclusions

It is as important as ever to understand that Alabama's aerospace industry has multiple industry sectors, various roles in the global supply chain, and multiple markets to serve. Each of the three industry sectors: Engineering R&D, Manufacturing (vehicle & parts), and Maintenance Repair & Overhaul, have unique workforce needs and expectations which increase the importance of preparing a workforce which allows each sector to grow.

Alabama's aerospace companies play vital roles in the global supply chain for aviation and aerospace vehicle systems. Whether in design, final assembly, or lifecycle support, Alabama aerospace companies must continue to successfully compete with the strongest competitors around the world. Innovation must continue to be a significant competitive advantage for Alabama's aerospace industry.

Alabama is positioned well to chart the course for aerospace into the future. Approximately half of Alabama's aerospace companies have roles in their enterprise which provide opportunities to influence company-wide growth and expansion decisions. These decisions will be made in the corporate headquarters and major program management offices operating in Alabama by leaders who realize the significant, competitive advantages attributable to their workforce.

Aerospace jobs today require higher knowledge and skills than in the past as will the jobs of the future. From production to design, the workforce must meet the aerospace industry's needs which continue to grow and evolve. Alabama's technical workforce must continue to prepare for innovation for Alabama aerospace companies to remain industry leaders.

Maintaining a world class aerospace workforce is growing more challenging as the retirement of baby-boomers accelerates over the next decade. Alabama is not immune from this loss of talent phenomenon especially in the aerospace occupations. It is very important to the growth of the aerospace industry that well educated and well trained talent is available as needed.

The breadth of aerospace programs in Alabama creates exciting career opportunities which can be used to attract students to aerospace careers and to attract experienced professionals to Alabama. Competition for top aerospace-quality talent extends well beyond the state into the continental U.S. and around the globe. Due in part to baby boomer retirements, Alabama's aerospace industry must work diligently to retain its workforce while supporting initiatives to prepare students for aerospace careers.

In summary, Alabama's aerospace industry is poised to continue its success for the next 50 years. Realizing this success will require an aggressive, focused, and collaborative effort by many industry and workforce stakeholders. The more that companies, schools, associations, and governments work together to enhance Alabama's workforce, the more successful Alabama will be in building the aerospace industry of the future.

7.0 About The Project

A major task of this project was to obtain insights on Alabama's workforce directly from aerospace companies operating in the state. A survey of these aerospace companies was conducted primarily by interview between the Spring of 2007 and the Spring of 2008. Although their workforce forecasts were asked in the context of 3 to 10 years into the future, current economic conditions at the time undoubtedly influenced the responses. Changes in the economy of Alabama, the nation, and around the globe since the Spring of 2008 have not been incorporated into this report and could significantly impact the relevance of the data.

Visits and/or phone conversations involved approximately 15%-20% of Alabama's aerospace companies. The selection of companies to survey was not random but was structured to ensure representation in the data set of all sectors, and all major geographic concentrations of aerospace companies in Alabama. A concerted effort was made to obtain information from the government funded program contractors as well as commercial companies. The Alabama Aerospace Industry Association members and industry databases were primary sources for identifying companies to participate in the survey. Other organizations such as the Economic Development Partnership of Alabama and local economic development organizations added valuable information about the aerospace industry in Alabama.

The charts below compare the results of this 2007 survey to the survey conducted by the University of Alabama in Huntsville Office for Economic Development in 2003. Special effort was made to obtain a representative sample of both the various types of companies and the employment base by sector and geographic region.

The distribution of respondents to the survey conducted as part of this research closely match the geographic and sector distribution of the 2003 Aerospace Industry Survey. Geographically, the North Region has the largest number of companies (Figure 7.0) and largest number of employees (Figure 7.1). Sixty-three percent of the aerospace employment is represented in this survey. Engineering R&D is heavily concentrated in north Alabama. Approximately half of the private sector aerospace jobs are located in north Alabama and 56% of the private sector employment base is represented through the companies responding in 2007. There is no government employment represented in the responses to the survey. There is no consideration in this analysis or report for the affects of the Base Realignment & Closure (BRAC) Commission 2005 decisions. Where government employment data was used, specific requests for information were directed to the human resource office (or equivalent) of government entities involved with aerospace programs. More information about the needs (especially for the BRAC affects) of the public sector aerospace-related enterprises will be important to fully appreciate the aerospace workforce challenges ahead.

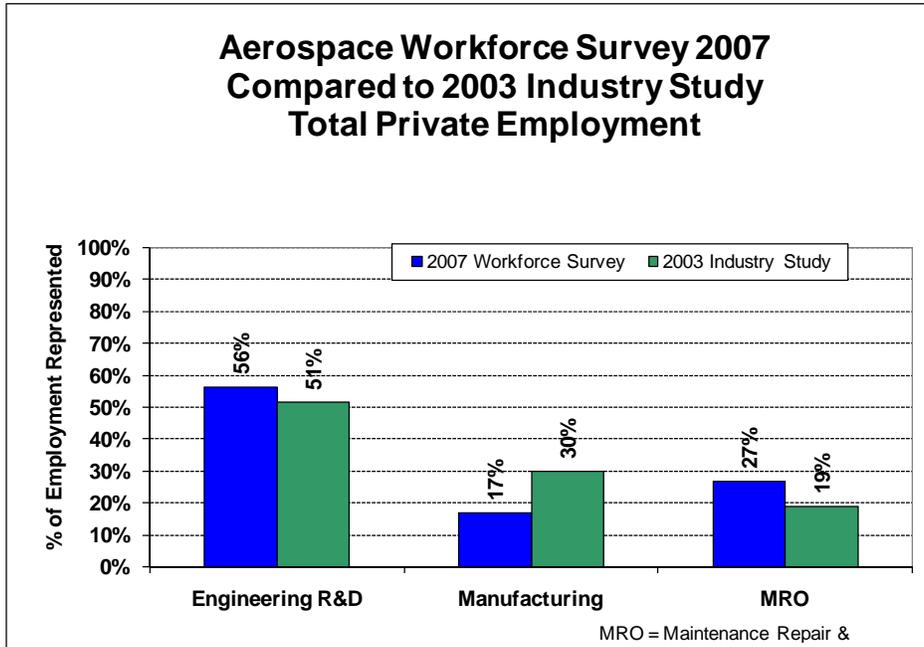


Figure 7.0 Aerospace Workforce Survey 2007 Compared to 2003 Industry Study Total Private Employment

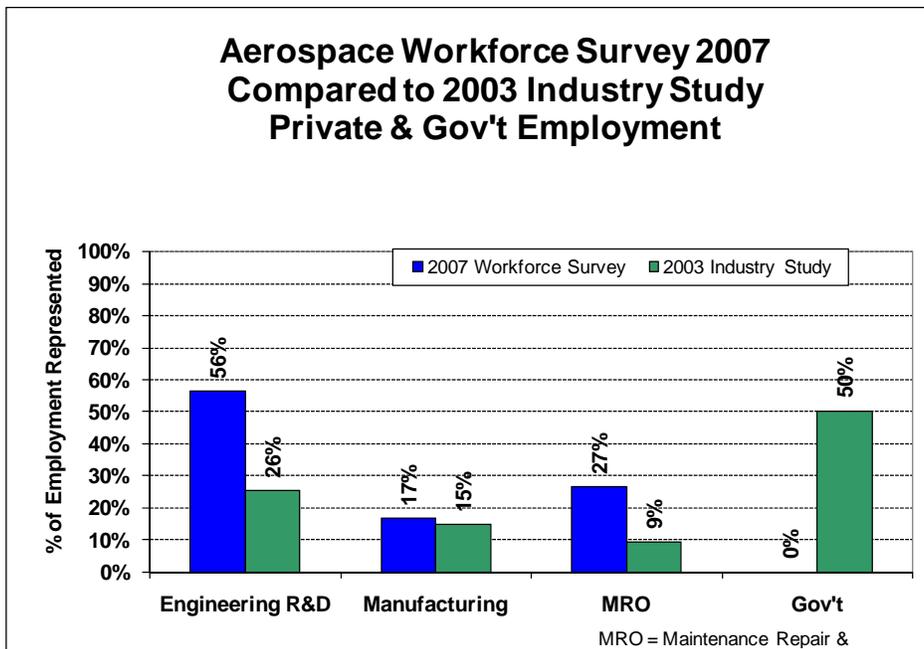


Figure 7.1 Aerospace Workforce Survey 2007 Compared to 2003 Industry Study Private & Government Employment

ATTACHMENT A

Survey Form Used to Collect Information from Alabama Aerospace Companies



ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

Your Company's Private Survey ID #: _____ (will need if entering data via web-based survey)

If your contact information below is incomplete or incorrect, please update.

Name: _____ Job Title: _____

Mailing Address: _____

City: _____ County: _____ Zip: _____

Phone: _____ E-mail Address: _____

Web Address (URL): _____

Please answer all questions as they apply to **the plant or facility at this location only**. Company-sensitive information will be kept confidential by UAH researchers and reported only in aggregate form.

Today's Date: _____

1. My company at this location: Percentage Of
Total Revenue

Provides information technology services, engineering services, and/or research and development to the aerospace, aviation, and /or defense industries Yes No _____%

Manufactures aviation or aerospace vehicles Yes No _____%

Manufactures aviation or aerospace parts, supplies Yes No _____%

Refurbishes or overhauls aerospace or aviation vehicles Yes No _____%

2. Type of facility (please select all that apply):

Headquarters Division Office Operation Branch Operation

Distribution/Warehouse Manufacturing

3. Total number of years in business in Alabama: _____ (#)

4. Number of years your company established in its current community: _____ (#)

(continue to next page)

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707



ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

5. **Type of ownership: (please select one)** Publicly Traded Privately Held

6. **Affiliation to parent company:** Subsidiary Division Branch
 Other _____ N/A

7. **Total gross 2005 sales for this plant or facility:** \$ _____

8. **Compared to 2004, were 2005 sales:** Higher Lower Same

9. **Compared to 2006, do you expect sales to:** Increase Decrease Same

10. (a) **Describe your company's primary products/services:** _____

(If known, please provide up to three primary NAICS codes for your company.)

(1) _____ (2) _____ (3) _____

10. (b) **Is this facility certified for:** (check all that apply) CMMI ISO

11. **Does the company have facilities outside the United States:** Yes No

12. **Is there union representation at your plant:** Yes No

13. **Does the company expect to add jobs in the next five years:** Yes No

14. **Do you expect a change in ownership of the company in the near future:** Yes No

15. **Are there suppliers or service providers that the company would like to have located closer to this facility:** Yes No

If yes, who: _____

(continue to next page)

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707



ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

Please have the person responsible for human resources and employee training information in your company complete the following questions. Please answer all questions as they apply to the plant or facility at this location only. Company-sensitive information will be kept confidential by UAH researchers and reported only in aggregate form.

Name of person completing pages 3-7: _____ Phone: _____
E-mail Address: _____

Human Resources/Employee Training Information:

16. **Approximate 2005 gross annual payroll at this location:** \$ _____
(Round to the nearest \$100K.)

17. **Total current number of employees at this location:**
(Include employees that work on-site as well as those who may be located at a local customer's site.)

<u>Type</u>	<u>Number (#)</u>
Full-time employees	_____ (#)
Part-time employees	_____ (#)
Temporary employees	_____ (#)

18. **Total number of employees hired in 2006:** _____ (#)

19. **Total number of employees that left the company in 2006:** _____ (#)

20. **Over the past few years, what was the average number of qualified applicants for an advertised job:** _____ (#)

21. **Do you expect the total number of employees at this plant/facility over the:**

Next **Five** Years to Increase Decrease Be Stable

Next **Ten** Years to Increase Decrease Be Stable

(continue to next page)

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707

ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

22. Please indicate the number of your employees in the following occupational categories:

	<u>Number (#) of employees</u>
Production Workers/Operators	_____
Software Engineers	_____
Other Engineers	_____
Computer Scientists	_____
Purchasing/Logistics/Supply Chain	_____
Marketing/Sales/Business Development	_____
Administrative/Managerial	_____
Clerical	_____
Other Scientists and/or Mathematicians	_____
Technicians	_____

23. Approximately what percentage of your anticipated hires over the next three years will be:

_____ % Non-skilled
 _____ % Skilled
 _____ % Professional
 = 100 %

24. Approximately what percentage of your anticipated hires over the next three years will be:

_____ % Workers with Two or more year's experience
 _____ % Recent graduates

25. If you elect to hire people to gain the necessary skills, where are you likely to recruit:

- Only in Alabama
 Surrounding States (FL,GA,MS,TN)
 Nationwide

 Internationally
 Other (Please specify.) _____

(continue to next page)

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707



ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

26. What percentage of your jobs requires the following educational levels:

- _____ Professional License or Certificate
- _____ Graduate Degree (Master's or Doctorate)
- _____ 4-Year College Degree
- _____ 2-Year College Degree
- _____ High School Diploma

27. Which professional or technical certificates or licenses are required of your workforce:
(Select all that apply.)

- A&P License A7P License IA License
- Airframe & Repairman's Certificate
- Designated Airworthiness Representative (DAR) Certification
- Designated Engineering Representative (DER) Certification
- Pilot License ATP License CFI License FCC License
- AAAE Certification Certified Hazard Control Mgr. (CHCM) A2LA, Engineering
- Class A Machinist Contractor's License PE License
- CSP License Reliability Engineer License
- Other _____ Other _____ Other _____

(continue to next page)

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707



ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

28. What is the customary retirement age for your industry:

- 50-55
- 56-60
- 61-65
- 66-70
- 71 & above

29. Do you expect your company expenditures for employee training over the next 5 years to:

- Increase
- Decrease
- Stay the Same

30. Indicate which of the following incentives your company offers its employees to enhance their skills: (Select all that apply.)

- Tuition Reimbursement
- Time Off for Classes
- Increased Pay or Promotion
- Other _____

31. Do you have any positions to be filled: Yes No

If yes, please provide approximate number of jobs

- _____ # Currently
- _____ # Within One Year
- _____ # Within Three Years

32. Is the company experiencing recruitment challenges with any positions or skills:

- Yes
- No

If **Yes**, Please Continue **to Question 33** on the **next page**.

If **No**, Thank for completing the survey. Please follow instructions provided for returning the survey to UAH.

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707



ALABAMA AEROSPACE INDUSTRY WORKFORCE SURVEY

33. If you are experiencing recruiting challenges, to what do you attribute the challenges in filling positions in this facility: (Select the top three impacting your facility.)

- | | |
|---|--|
| <input type="checkbox"/> Workforce Educational Levels | <input type="checkbox"/> Nature of Business Cycle |
| <input type="checkbox"/> Workforce Trainability | <input type="checkbox"/> Wage Levels |
| <input type="checkbox"/> Availability of Workforce | <input type="checkbox"/> Retention of Qualified Workers |
| <input type="checkbox"/> Acceptable Work Habits | <input type="checkbox"/> Meeting Minimum Employment Criteria |
| <input type="checkbox"/> Benefits | <input type="checkbox"/> Other _____ |

Thank you for completing the survey.

Please follow the instructions provided below for returning the survey to UAH.

Thank you for your time. If you have questions or need advice, please contact Jeff Thompson, 256-824-2605 or jeff.thompson@uah.edu. Please return the completed survey by fax to: 256.824.6970 or mail to The University of Alabama in Huntsville, ATTN OED VBRH A3, Huntsville, AL 35899. 011707