RETHINKING FORT MONMOUTH:

PROSPECTS & OPPORTUNITIES

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Executive summary

The closure of Fort Monmouth by 2011 will have a direct impact on workers on the base and the local economy. This summary focuses on the re-employment potential of the base's current workforce and the types of businesses that would be best suited to attract to the area.

What do we know about the base?

The Fort Monmouth workforce consists of over 5,500 employees, the majority (92%) civilians. The occupational distribution of the civilian workers reflects the specialized activities housed at the base: over one-third are engineers and scientists. The average salary for the workers is about $85,400; salaries are 17 to 33 percent higher than those of comparable positions in New Jersey. For example, scientists and engineers earned over 25 percent more than their State counterparts ($104,262 compared to about $83,000). Almost two-thirds (63%) of Fort Monmouth civilian workers had a bachelor's degree, compared to 30 percent statewide.

In addition to the civilian workers, there are also 2,754 contract workers at Fort Monmouth. Eighty percent perform "mission support" functions such as engineering, computer science, logistics, and supply management. The remaining 20 percent perform "operations support" functions, including blue collar trades, clerical work, and property management.

What do we know about the area around the base?

Analysis of the area within a ten mile radius of Fort Monmouth found that there are over 10,000 private sector employers within the area. Among high growth clusters, the Health Care/Biological Science cluster has the largest percentage of private sector employment in the area (9.4%). Competitive advantages around the base fit best with the clusters identified by the governor's high growth strategy. A location quotient analysis identified significant advantages in the Communications, Health Care/Biological Science and Energy Research clusters.

Overall, the area within 20 miles of Fort Monmouth currently has the capacity to absorb less than one-third the base's civilian workforce (the figure is less when contract workers are taken into account). This includes all of the management workers. In fact, even with the closure, there will be a surplus of management positions in the region. Current openings could potentially absorb about one-quarter of the scientists and engineers and 35 percent of computer and mathematics

workers. Less than one-fifth of the current business/finance workers on the base have job openings that they could seek and there are almost no openings for blue collar workers in the area.

Recommendation: Establish an Information, Communications, and Technology Village

An Information, Communications, and Technology (ICT) Village would serve as the technology center of the Fort Monmouth area. Ideally, it should incorporate ideas of incubation, innovation, research, development, and commercialization into its model. These principles serve an essential role in fostering the cluster's start-up and small size firms, as well as attracting new firms through their services and programs; stimulating collaboration and innovation between industry and university based research; expediting commercialization process; and promoting strategic investment partnership between the private and public.

The region's current industry competitiveness and characteristics would effectively support the ICT Village. Using the same methodology that was used to determine the Governor's High growth clusters we performed a customized analysis of industries in the region to determine the optimal combination for the post-Fort Monmouth environment. This analysis resulted in an ICT super cluster comprised of industries that are growing and competitive in the Fort Monmouth area.

Introduction

The closure of Fort Monmouth by 2011 will have a direct impact on workers on the base as well as the regional and state economies. The base occupies over 1,100 acres in Monmouth County, New Jersey. The federal government has operated the fort for 90 years. According to the Department of Defense, Fort Monmouth includes 425 buildings covering almost 5 million square feet of space.[1] It is within 60 miles of both New York City (to the north) and Philadelphia (to the southwest). The base is the headquarters of the Army's Command and Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) systems.[2] The primary Communications-Electronics Command (CECOM) operation performs what is generally known as sustainment (the acquisition, logistics, maintenance, and repair of communications and electronics equipment and software). The primary function is to design the radios, computers and software to keep troops in contact with each other. In September 2005 President Bush accepted the recommendation of the Base Realignment and Closure (BRAC) Commission to close Fort Monmouth and move most organizations and personnel to Maryland and Virginia. BRAC law requires that the base close by September, 2011.[3] The closure is part of a larger effort to cut military spending and will result in a direct loss of more than 5,000 jobs in New Jersey as well as thousands more who supply goods and services to the fort and its workers.

The Fort Monmouth civilian workforce currently consists of over 5,500 employees, of which 92 percent are civilians and eight percent are military personnel.[4] In addition, there are over 2,700 contract workers who are employed by contractors but work on the base.[5] The closure of the base by 2011 will have a direct impact on these workers and the local economy. This study, conducted by the Office of Labor Planning and Analysis' Division of Labor Market & Demographic Research (LMDR), focuses on the re-employment potential of the base's current workforce and the types of businesses that would be best suited to attract to the area. Analysis of

[1] Department of Defense, Base Structure Report, FY 2006 Baseline, www.acq.osd.mil/ie/irm/irm_library/BSR2006Baseline.pdf accessed 10/15/2007.
[2] Team C4ISR established in 2005 as result of a combination among the Communications Electronics Research, Development, and Engineering Center; PM Defense Communications and Army Transmissions Systems; and PM Defense and Army Switched Systems will continue to be LCMC partners throughout the activation
[3] Fort Monmouth, "Fort Monmouth and BRAC FAQ." http://www.monmouth.army.mil/C4ISR/faqs.htm accessed 10/1/2007.
[4] Fort Monmouth, "Fort Monmouth and BRAC FAQ."
[5] Personnel Office, Fort Monmouth, NJ. Personal Communication. September 2007.

the future demand and supply of labor in the region can empower decision makers in their efforts to attract new businesses by being able to match available occupational skills with potential employer needs. State, regional, and local industry trends and occupational patterns are examined to determine how the area competitively compares with the region and the State.

Questions we will answer

This report is organized around three central questions. The answers to these questions will help to provide a better understanding of the business operations on the base and the structure of the surrounding local economy.

1. What do we know about the base?
2. What do we know about the area surrounding the base?
    - What are its strengths and competitive advantages?
    - What are the staffing patterns of companies located around the base?
    - What are the types of labor surplus and shortages in the area?
3. What are the optimal policy options given the answers to the above questions?

It is crucial to understand the relationship between the base and supporting as well as auxiliary industries in the area in order to capitalize on the area's current strengths. These linkages should be the basis for a strategy for the revitalization of the local economy. Overall, this analysis will enable policy makers to maximize the economic development landscape, migrate the current workforce to the private sector, and continue to create a place for long-term high quality job growth potential – for both the area in close proximity to the base, as well as for the region and the State.

Organization of report

The first section provides a brief overview of the economic impact of the closure of Fort Monmouth in order to set the stage for the subsequent analysis. Next, we outline what we know about the base, focusing on both the civilian employees and contract workers. In the following section the characteristics of the labor market in the area around the base are described and analyzed – including a close look at high growth clusters and a location quotient analysis to determine competitive advantages of the region. In addition, labor market surpluses and shortages are examined to determine possible opportunities and challenges for workers displaced by the closure. Conclusions and recommendations are presented in the closing section. These

include a detailed analysis of the potential for an Information, Communications, and Technology (ICT) Village in the area as well as education and training solutions for workers who may find it difficult to secure a job in the current labor market.

Economic impact of base closure

To best utilize this land to attract new businesses and create high quality jobs that complement the existing workforce, the Governor established The Fort Monmouth Economic Revitalization Planning Authority (FMERPA) in April 2006. The overall plan is for FMERPA to establish a partnership between the public and private sectors to identify and draw on the strengths of area's (workforce and industry) assets to maximize the greatest potential for the area. FMERPA will identify potential future uses for the base. In addition, it will explore employment alternatives for the current workforce, as well as identify new industry clusters for attracting new employers to the site that the fort currently occupies. The ten-member panel will create a land reuse plan, in concert with the three affected communities, Monmouth County, and the Governor's Office. The plan must be submitted to HUD for approval by September 2008. Subsequently, the department of Defense will decide if the plan is marketable for development by developer(s).

The impact of the base closure does not only affect the base and its adjoining areas, it also will have a ripple effect, which will be felt throughout the geographic region and the State. Existing reports, such as a 2004 Fort Monmouth Economic Impact Report, have indicated that the base supports 22,000 jobs statewide and produces a total economic impact of $2.5 billion dollars.[6] These figures highlight the fact that this closure is not just a local geographic issue or concern. In order to prepare an economic development strategy for the future, we must first determine and understand the severity of the impact to the geographic region. From this point, we can move forward to develop a plan and establish applicable policies that are in the best interest of the surrounding communities, region, and the State.

[6] Congressman Rush Holt, BRAC FAQ, http://holt.house.gov/pdf/BRACFAQ.pdf accessed 10/15/2007.

The Department of Defense estimates that, assuming no economic recovery, the economic impact of the base closure on the surrounding communities could result in a potential reduction of 9,737 jobs (5,272 direct and 4,465 indirect jobs) between 2006 and the base closure in 2011 (within the Edison, New Jersey metropolitan division).

Impact analysis

As a foundation for the analysis presented here, LMDR calculated an estimate of the likely effect of the base closure on the state economy. Using an input-output model, we created a conservative scenario which most closely resembles what may happen regarding employment within certain industries in Monmouth County and its surrounding areas. Based on our knowledge of the functions performed on the base, there will be significant losses in both scientific research and development and telecommunications. Similarly, the model estimated the likely effect of the base's closure on the state economy and found negative results which were consistent with previous analysis conducted by the Department of Defense. For each job lost on the base at least one other job is lost in the local economy. For each dollar earned on the base, another $0.45 dollars in earnings is lost in the area. For each dollar spent by base employees on the purchase of goods and services, another $0.79 in sales is lost in the surrounding area. Overall, more than 10,000 jobs will be lost across the state and the statewide total loss in earnings will be more than $900 million.

What do we know about the base?

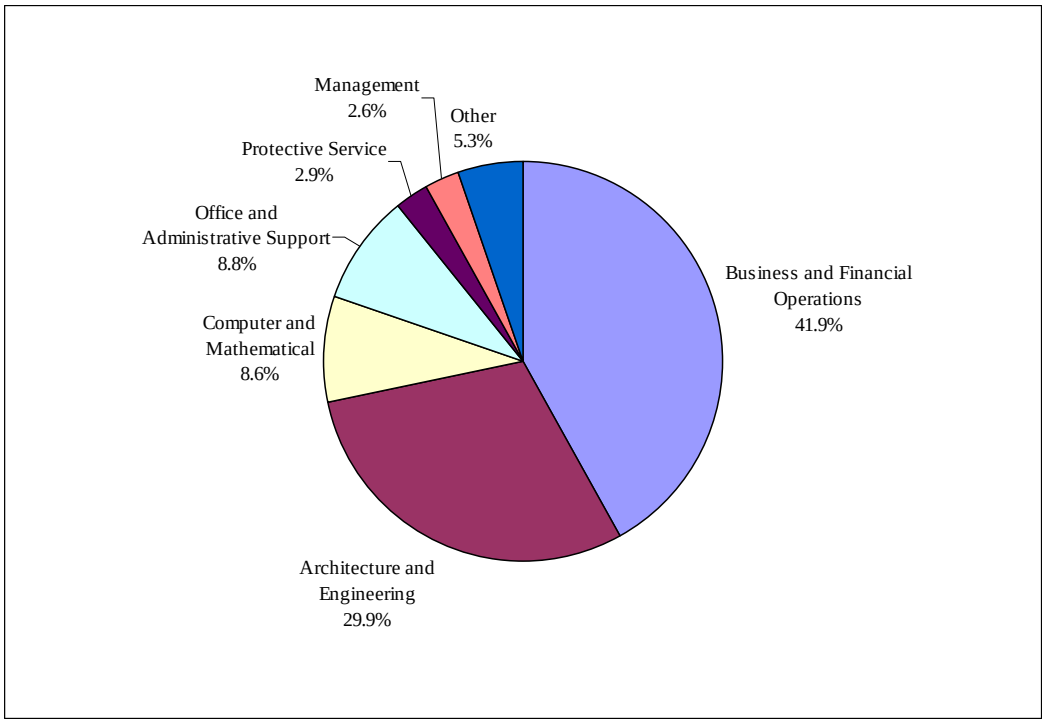
As explained above, the civilian workforce at Fort Monmouth includes workers who are civilian employees of the Department of Defense (DOD) and contract employees who are employed by firms who have contracts with the base. The information available about DOD civilian employees is much more detailed than that available for contracted employees. The groups are discussed separately in the next sections.

Characteristics of Fort Monmouth's civilian workforce

Occupational distribution of civilian workers

The Personnel Office at Fort Monmouth provided a detailed list of job series titles and number of employees in each title that were a key part of this analysis. The complete list of job series titles, categorized by Standard Occupational Classification (SOC) code is found in Appendix A. The occupational distribution of the civilian workforce at Fort Monmouth (Figure 1) reflects the specialized activities housed there. About 80 percent of all base employees are in three broad

Figure 1
Occupational distribution of Fort Monmouth civilian employees



Source: Personnel Office, Fort Monmouth, 2007

occupational groups: Business and Financial Operations (42%), Architecture and Engineering (30%) and Computer and Mathematical occupations (9%).

A detailed breakdown of the three major occupational categories (Figure 2) shows that a large proportion of the Business and Finance positions are related to logistics, contracts, and inventory management. In addition, the majority of the engineers are in electronic or computer (hardware) engineering.

Figure 2
Fort Monmouth civilian employees by Standard Occupational Classification (SOC) and job series

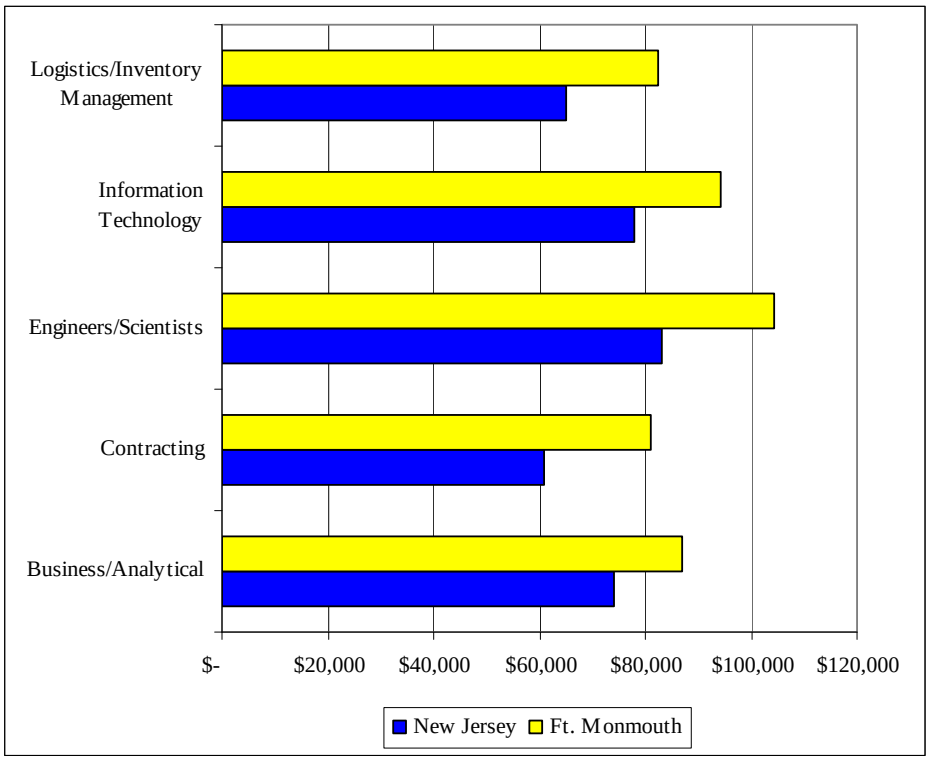
		Employees	
SOC	**Job Series**	**Number**	**Percent of total**
13-0000	**Business and Finance Occupations**		
	Logistics Management Specialist	526	10.6%
	Miscellaneous Administration And Program Specialist	364	7.3%
	Contract Specialist	328	6.6%
	Management Or Program Analyst	305	6.1%
	General Supply Specialist	149	3.0%
	Inventory Management Specialist	99	2.0%
	All other business and finance occupations	300	6.0%
	Sub-total	*2,071*	*41.7%*
15-0000	**Computer and Mathematical Occupations**		
	Computer Scientist	209	4.2%
	Information Technology Specialist	146	2.9%
	All other computer and mathematical occupations	73	1.5%
	Sub-total	*428*	*8.6%*
17-0000	**Architecture and Engineering Occupations**		
	Electronics Engineer	866	17.4%
	Computer Engineer	324	6.5%
	Telecommunications Specialist	54	1.1%
	General Engineer	51	1.0%
	Other engineers	57	1.1%
	All other architecture and engineering occupations	138	2.8%
	Sub-total	*1,490*	*30.0%*
Total		**4,963**	**100.0%**

Source: Personnel Office, Fort Monmouth, 2007

Salary comparison

The average salary for civilian workers at Fort Monmouth is about $85,400, compared to the New Jersey average of about $45,500. Although this dramatic difference reflects the specialized workforce at the base, a comparison of broad occupational groupings reveals that differences persist within occupations. Figure 3 displays the salaries of Fort Monmouth civilian workers and those of similar occupations statewide. The occupational categories listed in the chart represent

Figure 3
Comparison of Fort Monmouth and New Jersey salaries in select occupations



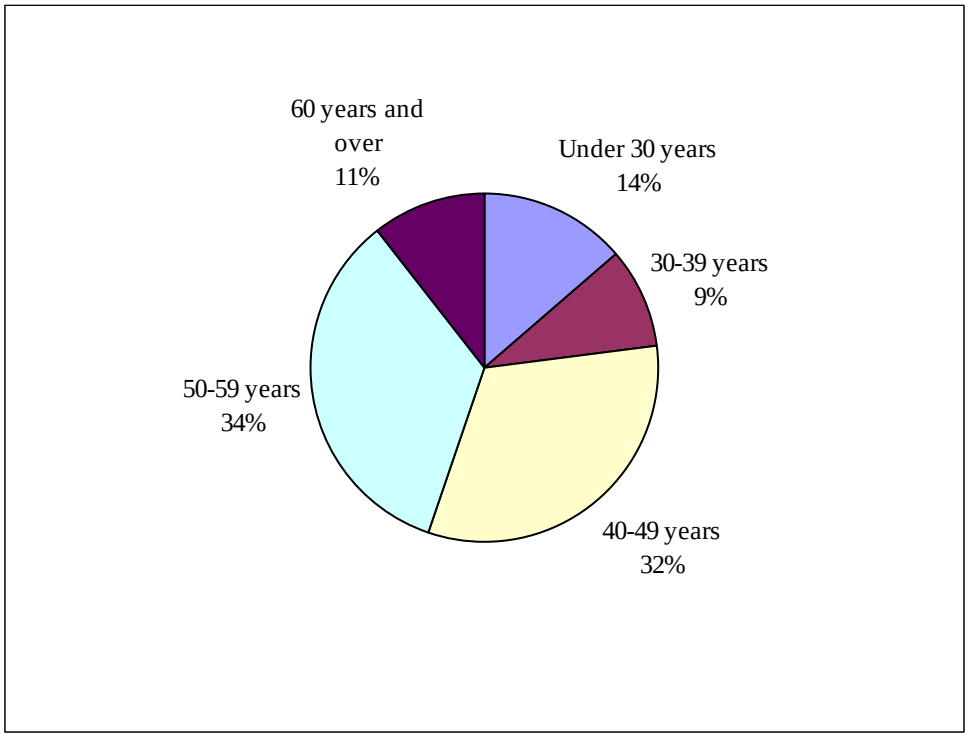
Sources:
1) New Jersey Department of Labor and Workforce Development. Occupational Employment Statistics Wage Survey, May 2006.
2) Personnel Office, Fort Monmouth, 2007

85 percent of the civilian workforce and include the occupations described in Figure 2. Average Fort Monmouth salaries are 17 to 33 percent higher than salaries of comparable positions in New Jersey. For example, the $81,185 average salary for contracting positions (e.g., procurement analysts, procurement coordinators, acquisition management specialists) at the base is one-third higher than the statewide average. In addition, scientists and engineers earned over 25 percent more than their counterparts statewide ($104,262 compared to about $83,000).

Demographics

The previous section described a highly specialized civilian workforce at Fort Monmouth. An analysis of the workers' age and educational backgrounds is consistent with these findings. The average age of civilian workers at Fort Monmouth is 46.5 years; 45 percent of workers are over 50 years old (Figure 4). Over two-thirds of civilian workers are eligible for early retirement. It is possible that many of these workers will choose to retire rather than move to support the Fort Monmouth Mission in Aberdeen. Retired workers may decide to look for new jobs locally, and might be willing to be more flexible with salary requirements because of their retirement income.

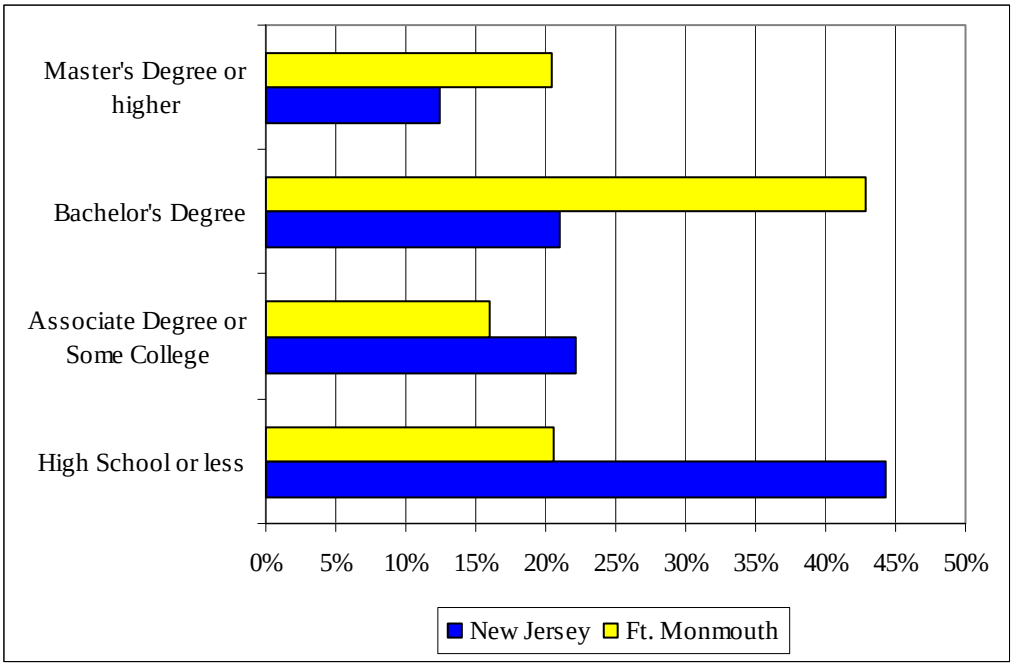
Figure 4
Age of Fort Monmouth civilian workers



Source: Fort Monmouth briefing, December 2006

Because of their specialized training and the occupational profile outline above, it is not surprising to learn that the Fort Monmouth civilian workforce is very well-educated. Almost two-thirds (63%) have at least a bachelor's degree, compared to just 30 percent of workers statewide. Notably, this includes one-fifth of workers who have a master's degree or higher, in contrast to just 11 percent of workers across the State (Figure 5).

Figure 5
Educational attainment of Fort Monmouth civilian workforce



Sources:
(1) U.S. Census Bureau, 2006 American Community Survey
(2) Personnel Office, Fort Monmouth, 2007

Support contractors and support industries

How important are the contractors?

Prior to the announcement of the base closure, the five host communities (Eatontown, Little Silver, Oceanport, Shrewsbury Borough, and Tinton Falls) hired a consultant to analyze the potential impact of the closure. The resulting report, "Smart Growth Study: Evaluation of the Impact of Ft. Monmouth on the Host Communities" was prepared by Jeffery Donohoe Associates in July 2005 and provides important background on the importance the military places on these functions of the base, as well as the role of the contractors.

Base Operations Budget

- The total Base Operations budget for 2004 was $127.5 million, more than 22 percent higher than the 2002 budget of $104.4 million. As a means of comparison, the Fort Monmouth Base Operations is more than double the budgets of the five surrounding communities combined.

- The Fort employed 663 personnel to perform base operations functions in 2003. The total budget was $127.5 million. Contracted services accounted for almost 32 percent of expenditures, with the remaining 68 percent used for functions performed on an in-house basis. The total budget for in-house functions is $87.2 million, which includes civilian labor cost of $39.1 million. However, much of the remaining costs within these budget categories are related to contacted services.

- Building and Grounds Maintenance make up the largest category of services which are performed strictly by contractors. The annual cost of $18.9 million equates to an average of $3.74 per square foot of building area for Fort Monmouth's 5.1 million square feet of space, and represents 47 percent of the contracted services budget. Utilities represents the next largest expenditure area, accounting for $13.8 million in annual cost, or about $2.74 for every square foot of building area at the Fort, while Facility Management and Minor Construction accounted for almost $6 million in cost, or another $1.17 per square foot of building area. Together, these three categories total more than $38.7 million in cost, an average of $7.65 per square foot of building area.

(Source: Smart Growth Study: Evaluation of the Impact of Ft. Monmouth on the Host Communities, July 2005, by Jeffery Donohoe Associates, Inc. http://patriotsalliance.com/documents/briefings/SmartGrowthStudy.pdf)

Located throughout Fort Monmouth are both mission and garrison contracted employees, who work on the base to support the mission and operation, respectively. Patriots Alliance (2005) reported that based on a survey of 1,221 contractor employees at seven companies working at Fort Monmouth:[7]

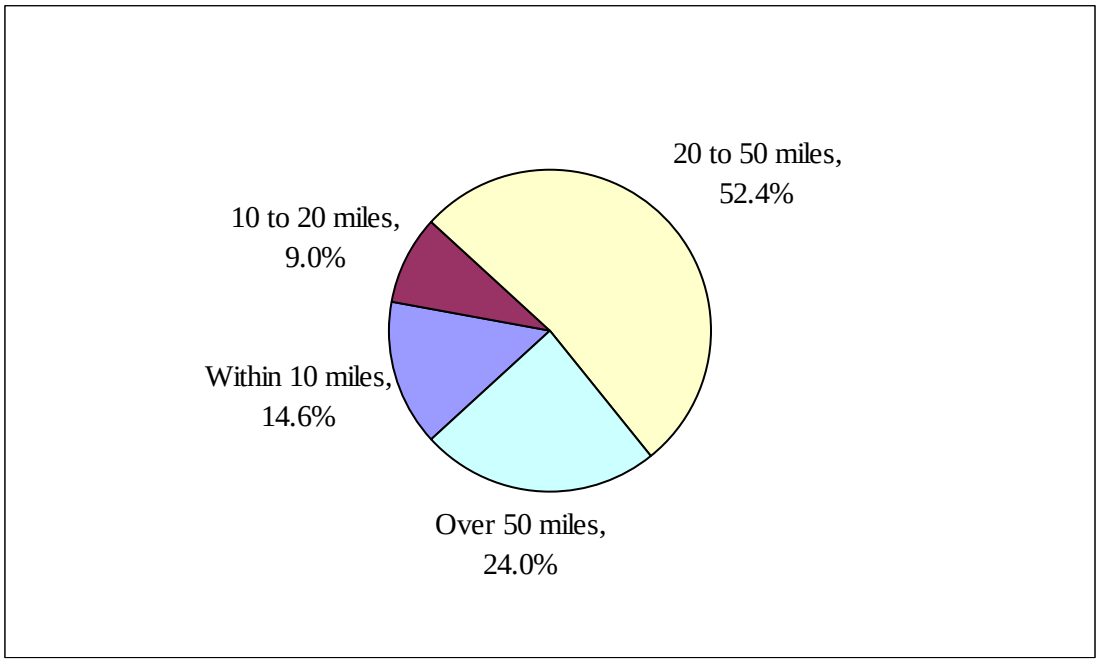
- 72 percent of the contracted employees have at least a four-year college degree.
- 93 percent of the contracted employees have at least a Confidential Security Clearance.

[7] Cited in Maryland Department of Business and Economic Development, "BRAC Activities Affecting Aberdeen Proving Ground, Andrews Air Force Base, Bethesda Naval Hospital, and Fort Meade and in the State of Maryland, March 31, 2006, http://www.choosemaryland.org/Resources/pdffiles/brac/Task%201%20DRAFT%20Final%20Report.pdf, accessed 10/15/2007.

Location and industry distribution of contracting firms

For the analysis of the contractors associated with Fort Monmouth a file was created merging a list provided by the base and department of labor data. The final file of establishments contained 705 unique Employer Identification Numbers, and 1,221 sites, (that is, companies including their multiple sites).[8] The final contractor data file included longitude and latitude making it possible

Figure 6
Fort Monmouth contractors by distance from base

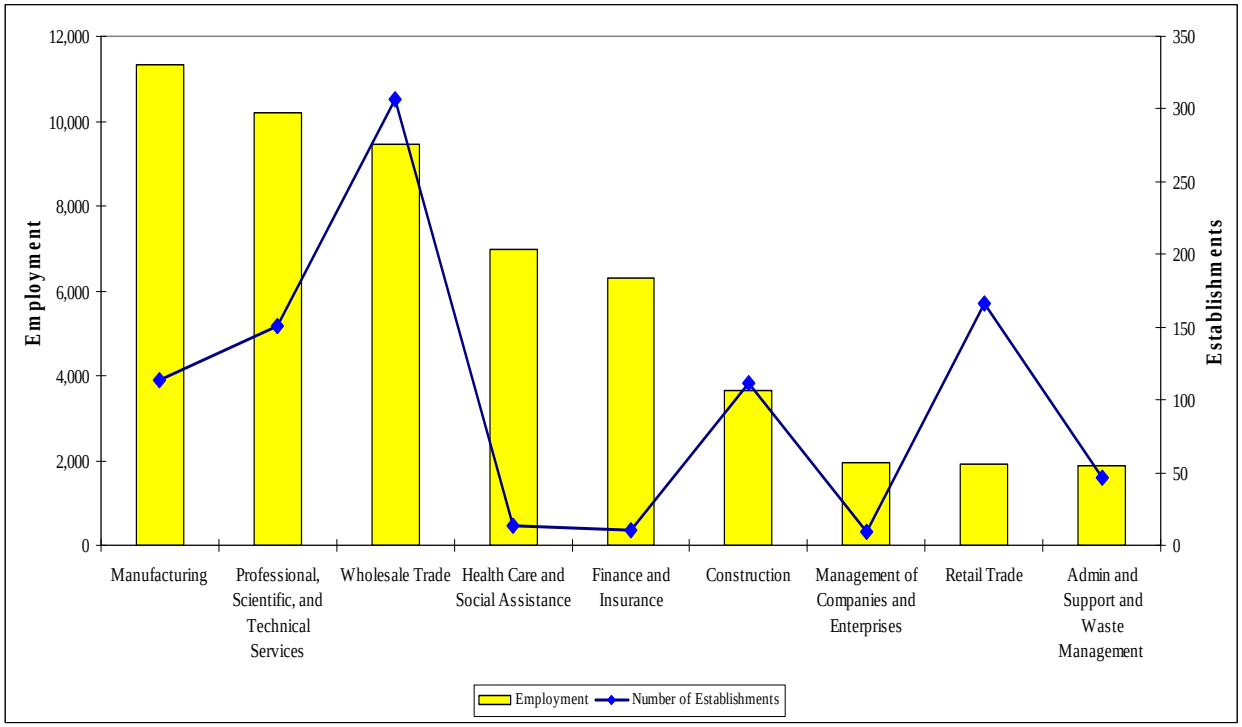


Source: New Jersey Department of Labor and Workforce Development, Quarterly Census of Employment and Wages, 2006

to analyze the locations of the firms. Almost 15 percent of contractors (including those with multiple locations) were within a very close proximity – less than a ten-mile radius (Figure 6); another nine percent were located ten to 20 miles from the base. The greatest concentration of contactors (52%) was located within a 20 to 50 mile radius. Since over 75 percent of contractors are more than 20 miles away, it is possible that some may be able to continue to service the base mission after Fort Monmouth has closed.

[8] Based upon the company/organization's name, the primary name was standardized (removed hyphens, quotes, etc.) and compared against the Department of Labor's Quarterly Census of Employment and Wages (QCEW) file. The file was also matched against each quarter's 2005 microfile. Companies with similar names and/or with replicated Employer Identification Numbers (EINs) were removed. Lastly, duplicate names/organizations, employers that were identified as self-employed and any questionable records, were removed.

Figure 7
Industry distribution and employment levels for Fort Monmouth contractors



Source: New Jersey Department of Labor and Workforce Development, Quarterly Census of Employment and Wages, 2006.

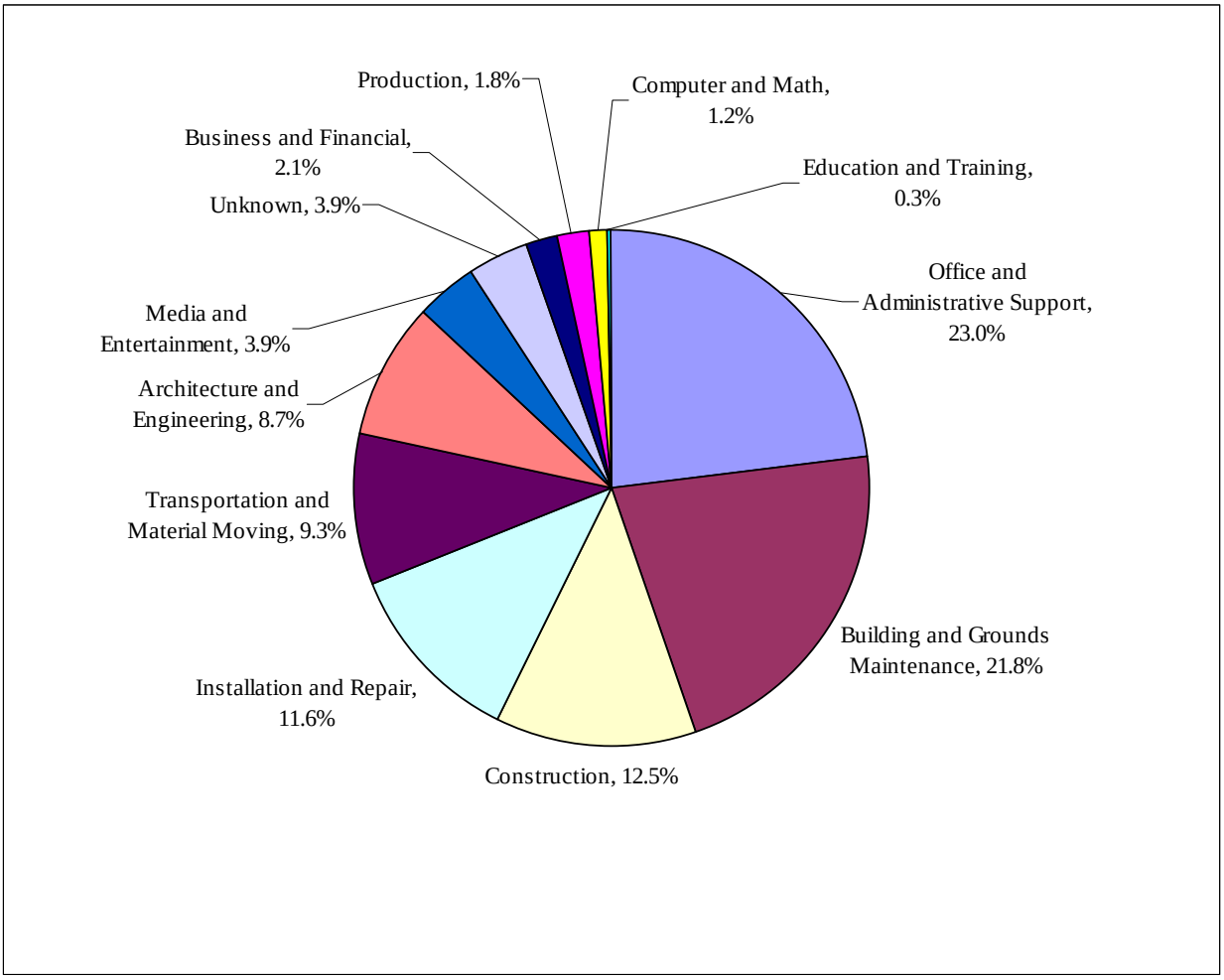
The contractors were also analyzed by each company's North American Industry Classification System (NAICS) code. The chart (Figure 7) displays the top ten industries in terms of level of employment and also indicates the number of establishments in each category. Contractors in Manufacturing and Professional, Scientific, and Technical both had more than 10,000 employees. Over 25 percent of the Manufacturing industries were involved in Computer, Electrical Equipment or Component related businesses. The Wholesale sector was third, with approximately 9,400 employees. When analyzing the group in greater detail, it was found that over 66 percent of this sector could be considered to be in a technology related industry.

This analysis confirms that a large concentration of businesses in the area complement the Fort Monmouth mission, particularly in telecommunications, research and development, and engineering. The industry infrastructure for these sectors is already in place, especially between the Manufacturing, Professional and Technical Services and Wholesale sectors. There are industries and qualified employees to support all aspects of high technology and/or electronics-related cluster(s).

Occupational distribution of contracted employees

The 2,754 contracted employees located at Fort Monmouth work for companies that contract with the military to furnish services or perform work at the base. The contractors are classified into two broad groups. The garrison group is responsible for the base's operational support, which includes various programs and services to enhance the well-being for soldiers and civilians at Fort Monmouth such as blue collar trades (e.g., janitorial workers, landscapers, and electricians), clerical work, property management, etc. The garrison employees will not be offered relocation opportunities. Of the 2,754 contractors, 549 perform base operations support functions. Information was obtained that provided over 60 percent of the occupations employed

Figure 8
Occupational distribution of Fort Monmouth garrison contracted employees



Source: Chenega Technology Services Corporation, 2007

within the garrison group (Figure 8).[9] Over 20 percent of the jobs were in the Office and Administration Support occupational group, closely followed by the Building and Grounds Maintenance.

The mission group consists of contracted employees that are responsible for research and development, technologically superior integrated communications, including engineering, computer science, logistics, and supply management occupations. Of the 2,754 contractors, 2,205 are performing highly technical support functions. Some of the contracting firms include BAE Systems (164 employees) and Lockheed Martin (149 employees).[10]

Employees in this group will be offered opportunities to relocate. However, since some surveys have indicated that the majority of these workers are not planning to relocate, the expertise of these highly well educated individuals, as well as the contractor teams, could help support related industries/clusters initiatives that will be targeted for development by utilizing their skills in complementary sectors.

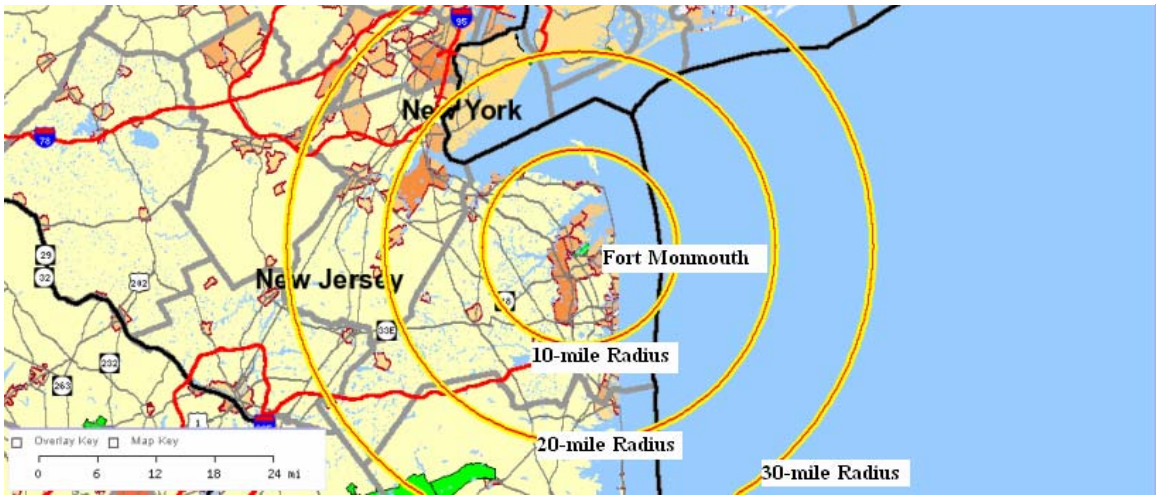
What do we know about the area around the base?

The previous section described the composition of the Fort Monmouth workforce. This part of the study looks more broadly at industries and employment in the surrounding region. First, the industry distribution is analyzed, with special attention to high growth clusters and competitive advantages in the area. Next, the region's labor market is accessed for surpluses and shortages, particularly compared to the occupations at the base.

[9]Ziobrio, Melissa, "Base Realignment and Closure at Fort Monmouth - 1988-2005, DCSOPS, Historical Office 2005, http://www.monmouth.army.mil/historian/pubupdates/BRAC.doc, accessed 10/15/07.
[10] Sklinar, John E., "Integration Under the Gun," Program Executive Office. Command, Control and Communications Tactical. http://test.fcw.com/solutions/presentations/cio/2004/5/sklinar_gun.pdf accessed 10/15/2007

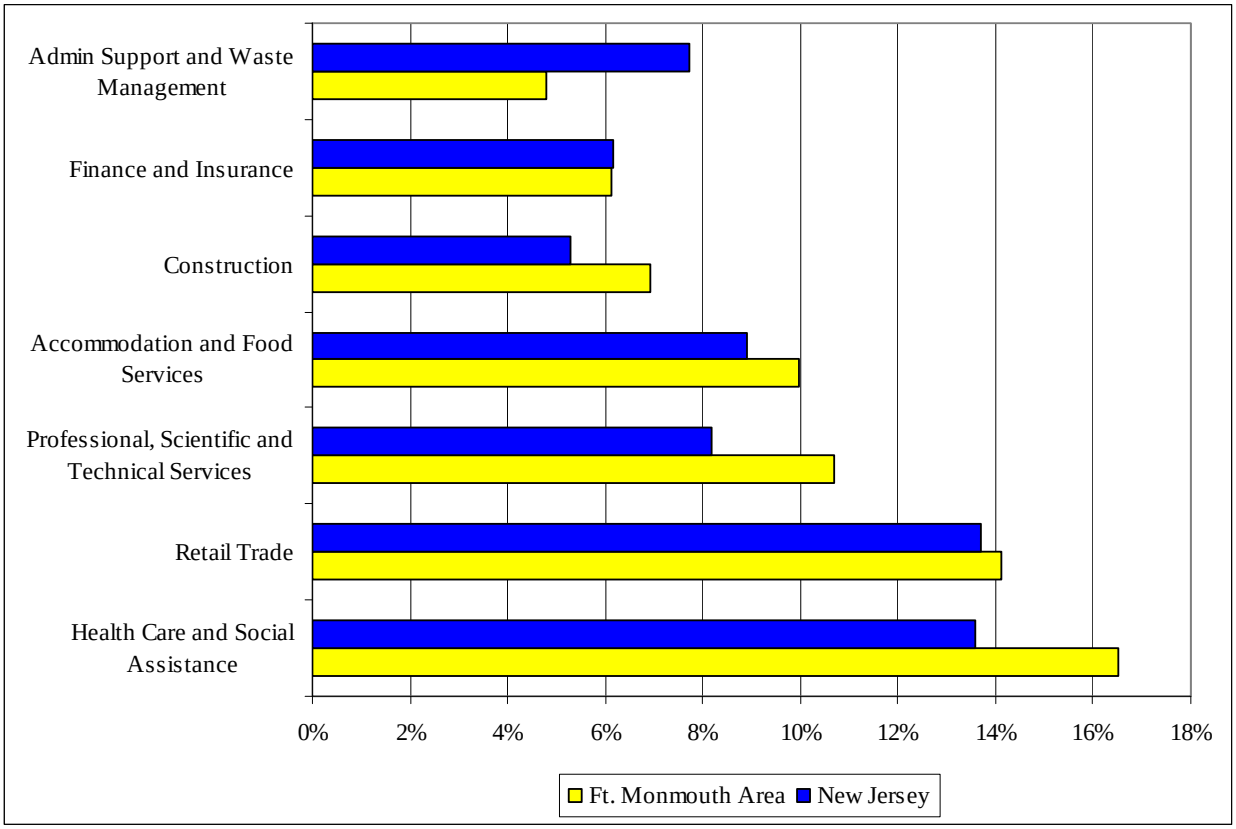
There are 40 municipalities located within a ten-mile radius of the base (here after referred to as the Fort Monmouth area). The Department of Labor's data files were analyzed in order to develop a snapshot of the area's industry and employment makeup in very close proximity to the base. In addition, the industries beyond the targeted ten-mile radius were identified to help determine the workforce availability within a 20 and 30 mile radius.

Figure 9
Fort Monmouth and the surrounding region



Our analysis found that in the Fort Monmouth area, there are over 10,000 private sector establishments within a ten-mile radius of the base. Furthermore, there are over 25,000 and 60,000 establishments within a 20-mile and 30-mile radius, respectively. Within a ten-mile radius, there are close to 1,000 establishments in the Communication and Professional, Scientific and Technical Services sectors employing over 12,500 workers; about 6,000 are employed in the Information sector. For these same sectors there are over 2,000 establishments with nearly 21,000 workers within a 20-mile radius. Lastly, for a 30-mile radius, there are over 5,700 establishments with close to 75,000 employees.

Figure 10
Distribution of employment by sector and location



Source: New Jersey Department of Labor and Workforce Development, Quarterly Census of Employment and Wages, 2006.

When using the Department of Labor and Workforce Development's latest available data to compare the area within a ten-mile radius around Fort Monmouth with the economy of the State there is undoubtedly a high concentration of employment identified among the health care and professional, scientific, and technical service industries (Figure 10).

<u>High growth clusters</u>

The analysis has demonstrated that the region has a diverse industry and employment base. Many industries are in clusters are high paying, growing, and competitive, and coincide with the high growth clusters identified by the Governor's Economic Growth Strategy. This strategy outlines six priorities for economic growth and includes action steps for the State government and key partners (e.g., leaders in business, education, and labor) to help foster job growth. Overall, the high growth clusters include industries that are concentrated in the State and have

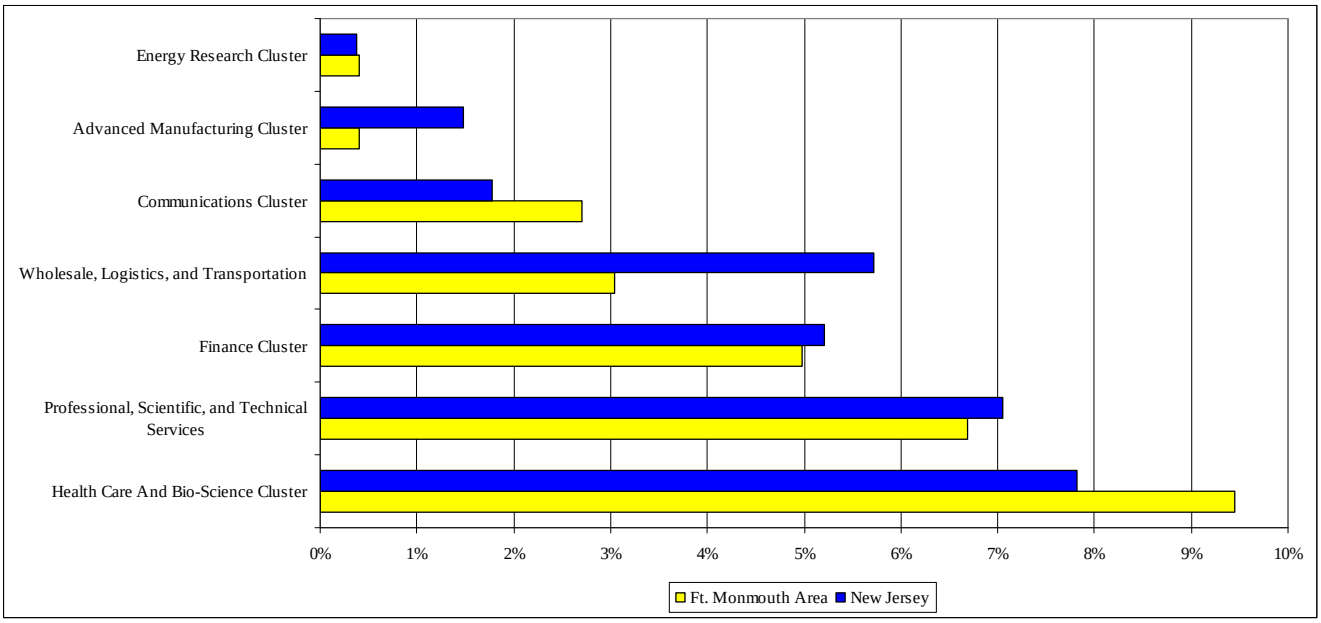
projected growth (nationally and internationally) over the next decade. Recall that most of the analysis thus far has focused on industry sectors and subsectors. These classifications are based on the North American Industry Classification System (NAICS) which groups industries into categories. The previous section introduced that concept of "cluster." Clusters are groups of various industries that may cross the boundaries of standard NAICS sectors. At the most basic level, an industry cluster is a "mix of industries linked together both geographically and functionally."[11] Clusters are typically characterized by relationships between firms that enable efficiency and competitiveness. These relationships can be categorized as: buyer-supplier, competitor-collaborator, shared resource. "The common factor in all these relationships is the premise that such relationships benefit from geographic proximity. The premise is that such relationships will be stronger if the distances separating participants in the cluster are as short as possible."[12] Steps necessary to define clusters include defining the region, calculating employment concentrations (location quotients), and analyzing recent trends in growth.[13]

The analysis used to define clusters for the Governor's Economic Growth Strategy focused on industries that are part of the core of New Jersey's economy. These clusters have high linkages with others, resulting in a high multiplier effect. Three additional factors were fundamental in creating these clusters: pace of industry growth, high salary potential, and competitive advantage. An analysis of the employment distribution among the industry clusters helps to illustrate the clusters with a high concentration of private sector employment in the Fort Monmouth area. Compared to the State, the Healthcare/Bio-Science and Communications clusters have higher concentrations of employment compared to the State (Figure 11). In fact, among the high growth clusters, Healthcare/Bio-Science has the greatest share of private sector employment in the area compared to the State levels. This industry cluster accounts for almost 9.5 percent of the region's total private sector employment compared to less than eight percent statewide.

[11] Robert Gibbs and G. Andrew Bernat, "Rural Industry Clusters Raise Local Earnings," *Rural Development Perspectives,"* Vol 12, no. 3, June 1997, pp. 18-25.
[12] Gary Anderson, "Industry Clustering for Economic Development," *Economic Development Review*, Vol. 12, no. 2, Spring 1994, pp. 26-32.
[13] Ibid.

Telecommunications is the region's second industry cluster with a high concentration of employment relative to the State. The industry cluster makes up nearly three percent of the region's total private sector employment compared to less than two percent statewide. This finding further suggests that the Telecommunications cluster continues to play major role in shaping the region's future economic growth, in spite of recent declines.

Figure 11
Distribution of employment in high growth clusters
by percentage of private sector employment



Source: New Jersey Department of Labor and Workforce Development, Quarterly Survey of Employment and Wages, 2006

The analysis also found other industry clusters that appear to having future growth potential in the local area. These high potential growth clusters are the Energy Research, Advanced Manufacturing, Professional, Scientific and Technical Services, and Finance. The Energy Research and Advanced Manufacturing clusters employ less than one percent of the region's total non-farm employment. The Professional, Scientific and Technical Services cluster accounts for over 6.5 percent of the region's total private sector employment.

An important characteristic of most occupations in the high growth clusters is that they have high paying jobs. Statewide the high growth clusters have an average salary of over $73,000 which is much higher than the statewide average of $45,000. In the Fort Monmouth area, both the Communications and the Wholesale, Logistics, and Transportation clusters have particularly

high annual salaries compared to the State. Communications workers make about $100,000 in the Fort Monmouth area, compared to almost $80,000 statewide. For Wholesale, Logistics, and Transportation the comparable figures are over $85,000 and $63,000, respectively.

Lastly, the analysis also looked at the competitive advantage in the Fort Monmouth area: Compared to the rest of the State, Telecommunications, Heath-care/Bio Science, and Energy Research are competitive clusters in the region. The next section discusses competitive advantage in more detail and provides a measure to better understand how industries are performing.

Analysis of competitive advantage in the Fort Monmouth area

The previous section discussed competitive advantage in broad terms, here a measure of the competitiveness of the region's industries and the feasibility of high growth clusters across all industry sectors is introduced: location quotient (LQ) analysis. [14] By studying the LQ ratios, we can have a better understanding of competitiveness and specialization of an industry in the region. The LQ analysis enables interpretations about industries' concentration and provides a picture of the current economic, business, and infrastructure conditions.

Location quotients are ratios that allow a region's distribution of employment by industry to be compared to a larger region. This tool provides a measure of the degree of industry specialization within an area. It can be used a guide for the allocation of investment resources with a mind for the "comparative advantage" of the area. If an LQ is equal to 1, then the industry has the same share of its area employment as it does in the reference area. An LQ greater than 1 indicates an industry with a greater share of the local area employment than is the case in the reference area. While the location quotient analysis does not measure important factors such as productivity, it remains an important tool to understand the industries in a region.

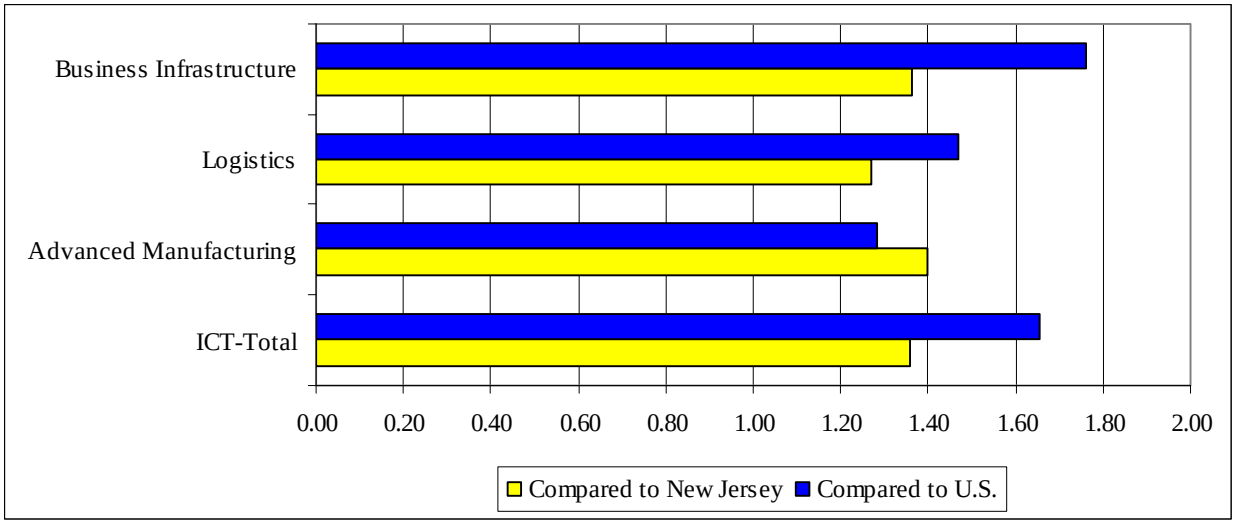
[14] Location Quotient is a technique to assess a region's specialization in an industry. Location Quotient less than one (1) implies that the area has a less than proportionate share of employment in a particular industry, whereas Location Quotient greater than one (1) implies a greater than proportionate concentration of employment

Information and Communications Technology (ICT) in the Fort Monmouth area

Based on the analysis above it is clear that many of the high growth clusters are doing well in the Fort Monmouth area. Because of the importance of the economic changes ahead for the region, the analysis was taken a step further in order to find the best mix of industries or clusters for the area. The basic methodology used here mirrored that was for the Governor's High growth clusters; we focused on core industries and analyzed three criteria: pace of growth, salary potential, and competitive advantage. This method was used to perform a customized analysis of industries in the region to determine the optimal industry mix for the post-Fort Monmouth economy. In addition to high growth clusters, the analysis also considered the Information and Communication Technology ICT cluster, as defined by the Organisation for Economic Co-Operation and Development (OECD).[15]

The Fort Monmouth-specific ICT supercluster includes industries from the Governor's Advanced Manufacturing and Logistics cluster, and what we shall call Business Infrastructure (see Appendix B for a complete list of industries). A location quotient analysis was performed

Figure 12
Location quotients for the Fort Monmouth area ICT supercluster



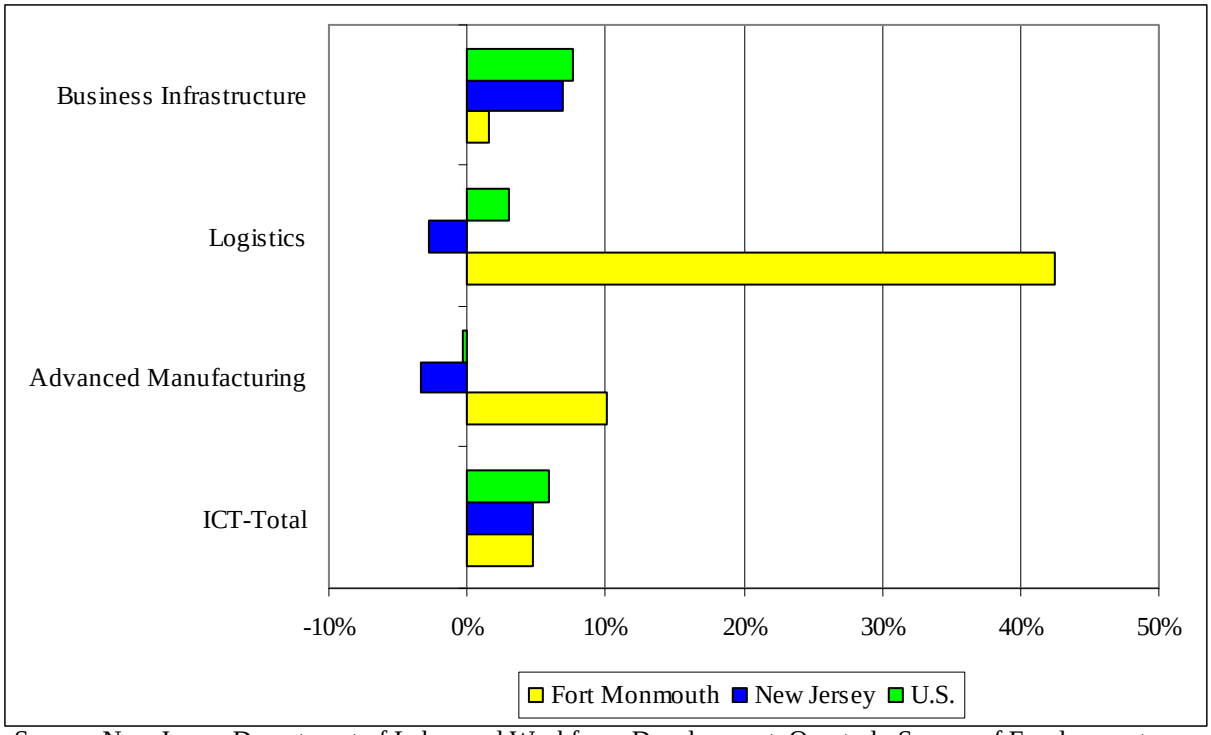
Source: New Jersey Department of Labor and Workforce Development, Quarterly Survey of Employment and Wages, 2006

[15]Organisation Annex 1B: OECD Definitions Of The Information Economy Sectors, Revised 2007, http://www.oecd.org/dataoecd/49/44/35930616.pdf

for the ICT supercluster as well as its three components. The analysis compares the Fort Monmouth area to New Jersey and the nation. Both comparisons show that that the ICT supercluster and its components are competitive compared to the State and nation. The LQ was 1.25 or higher in every category. In the State comparisons the overall location quotient was 1.40, while the LQ compared to the U.S. was even higher (1.71). Among the smaller component clusters, there were only small differences at the State level (1.27 to 1.41, however, national the LQ ranged from 1.25 (Advanced Manufacturing) to 1.84 (Business Infrastructure).

Growth is an important component in calculating the location quotient; however our analysis also looked separately at growth in order to gain a better understanding of recent cluster and super cluster dynamics. Figure 13 shows the growth rates for the ICT super cluster and the smaller clusters. Although the overall growth in ICT during this period was less than five percent in the State and the Fort Monmouth area, showed much greater growth in two of the groups that comprise the supercluster. Advanced manufacturing and Business Infrastructure

Figure 13
ICT cluster growth, 2004 to 2006

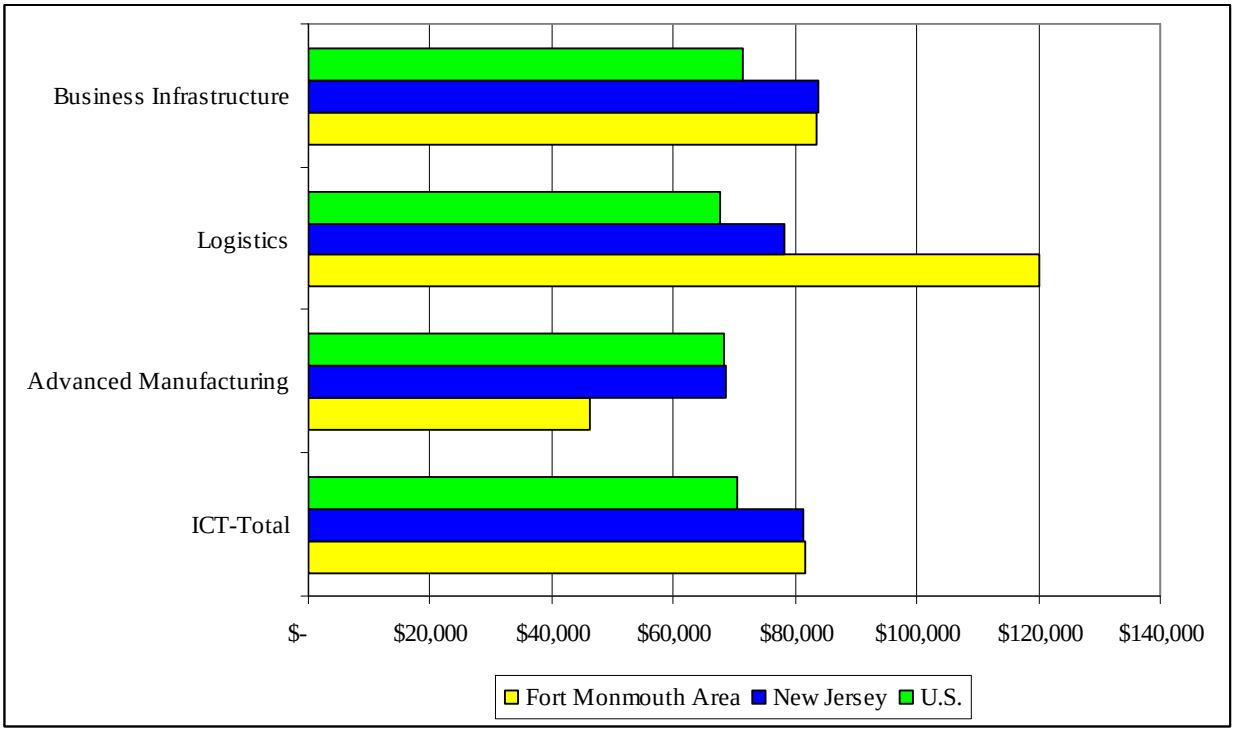


Source: New Jersey Department of Labor and Workforce Development, Quarterly Survey of Employment and Wages, 2006

both grew during this period, by ten percent and 43 percent, respectively. As a whole, New Jersey saw declines during these two years; nationally, Advanced Manufacturing remained almost unchanged (declining about one-third of one percentage point), while Logistics increased about ten percent.

A final component of the analysis used to create the clusters was the average salary. For the most part, the ICT supercluster in the Fort Monmouth area offers salaries that are competitive both statewide and nationally (Figure 14). The average ICT salary is over $81,000, or about 16 percent higher than comparable positions in the rest of the country. The most striking difference in is Logistics: the average salary in the Fort Monmouth area is $120,000, which is over two-thirds greater than the state average ($78,000). Nationally the average is less than $68,000.

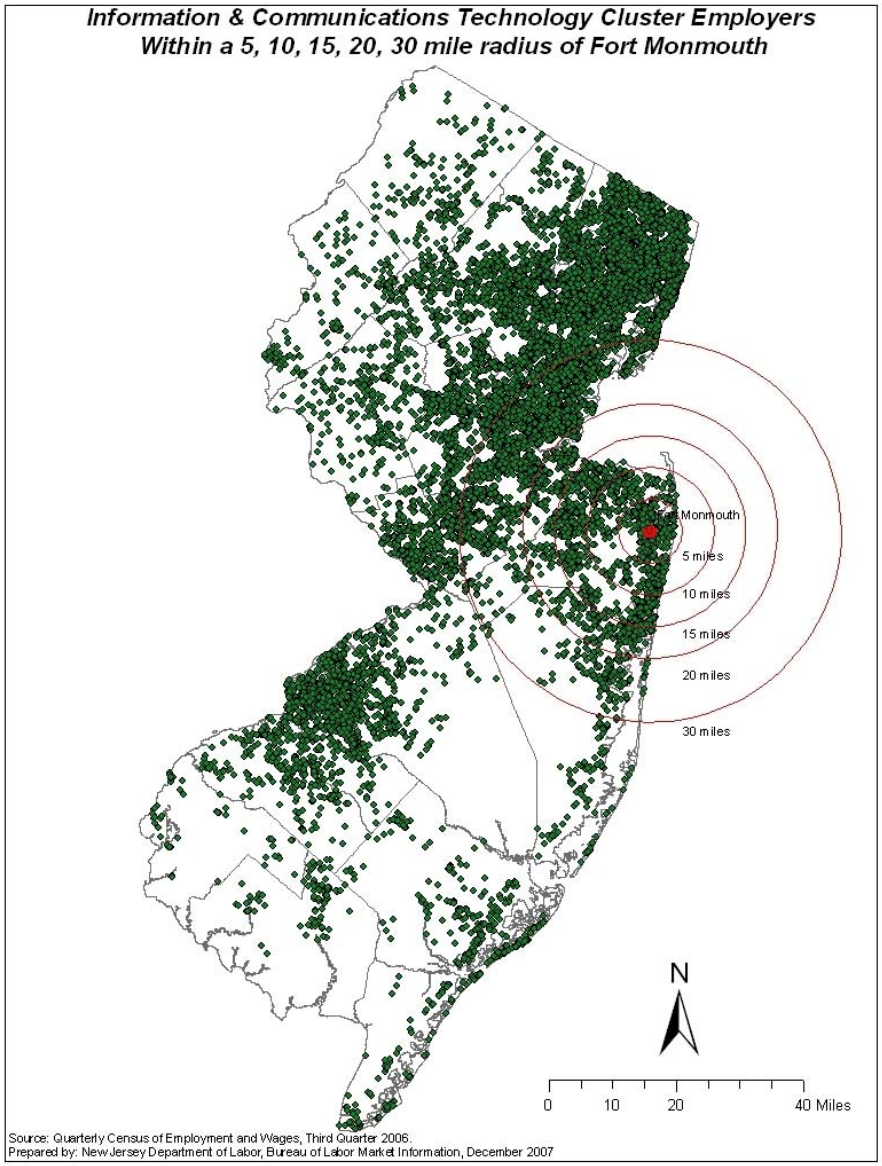
Figure 14
Average ICT supercluster salaries by location



Source: New Jersey Department of Labor and Workforce Development, Quarterly Survey of Employment and Wages, 2006

There are over 1,100 ICT companies within a ten-mile radius of the base. These firms employed over 19,000 workers, with an average salary of about $81,000. When the radius is extended to 20-miles around the base there are over 2,800 ICT companies employing more than 30,000 workers. The map below shows the concentration of ICT employers in the Fort Monmouth area.

Figure 15



Labor surpluses and shortages in the Fort Monmouth area

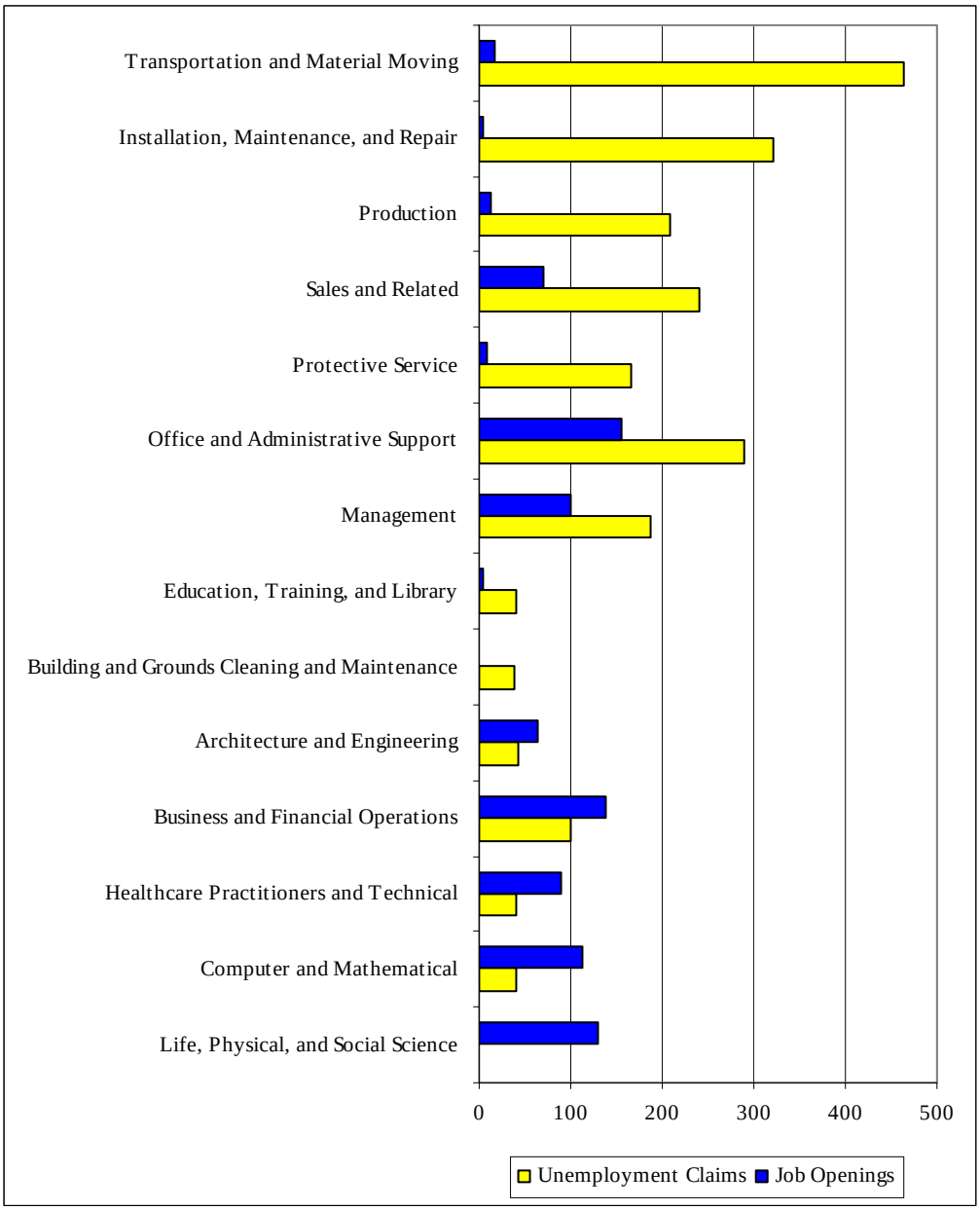
The previous section provided an overview of the industries in the area surrounding Fort Monmouth. We also performed an occupational crosswalk to determine the fit of the current Fort Monmouth workforce and employment in the ICT supercluster. Because of the highly specialized nature of much of the logistics and technology work conducted on the base, some groups (particularly logisticians and contractor managers) are overrepresented compared to employment levels in the ICT cluster. The analysis in this section and the steps proposed in the concluding recommendations offer potential strategies for the reemployment of these groups.

This section looks more closely at employment and unemployment in the current economy. Monthly unemployment claims and job openings data were used to develop a snapshot of the labor demand and supply gaps in the Fort Monmouth area. As described in the introduction, references period for this analysis is was drawn from June 2007. We were able to identify occupations with labor surpluses or shortages by comparing unemployment claims and job openings within a 10-miles radius from the base. There were 2,180 unemployment claims filed during this period. About 70 percent of claims were in just four occupations: Transportation and Material Moving, Installation, Maintenance and Repair, Office and Administrative Support, and Sales and Related occupations. In these fields the number of claims ranged from 241 in Sales to 463 in Transportation and Material Moving. By far the lowest number of reported claims was in Life, Physical, and Social Science occupations – just two claims were filed during the month.

There were 910 job openings over the same period. Here again the majority of the openings (60%) were in just four occupations, unfortunately, they were not a match for the unemployment claims: Office and Administrative Support, Business and Financial Operations, Life, Physical and Social Sciences, and Computer and Mathematical occupations. There were more than 110 openings in each group. Many occupations had fewer than 20 job openings, notably Transportation and Material Moving (17 openings) and Installation, Maintenance and Repair (five openings).

A side-by-side comparison of the job openings and unemployment claims highlights current job shortages and surpluses in the area (Figure 16). The most dramatic surpluses were in blue collar

Figure 16
Unemployment claims and job openings within ten miles of Fort Monmouth



Source: New Jersey Department of Labor and Workforce Development
(1) Unemployment database, June 2007
(2) Job openings database, June 2007

occupations. Only 35 jobs were available, however there were almost 1,000 claimants. Life, Physical, and Social Sciences occupations had the largest shortage of workers. As shown in

Figure 16, there were two unemployment claimants compared to 130 openings for these occupations. Surpluses were also cited in Computer and Mathematical occupations and Healthcare Practitioners and Technical Occupations.

Job openings and Fort Monmouth civilian workers

The previous section used a ten-mile radius to evaluate a snapshot of the labor surpluses and shortages in the area immediately surrounding the base. In this section, the radius is extended to 20 miles, based on the assumption that displaced workers will consider job opportunities beyond ten miles. Notably, the statewide average travel time to work was 29 minutes in 2006 while

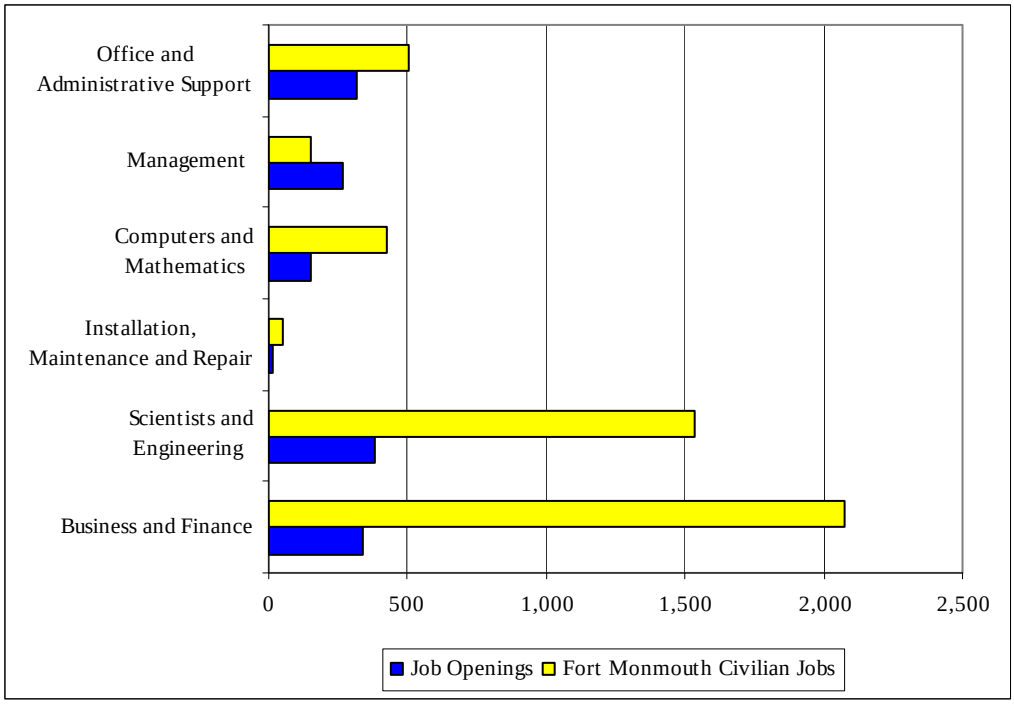
Figure 17

Source: New Jersey Department of Labor and Workforce Development

workers in Monmouth have an average commute of about 32 minutes. This average time to work was the third longest in the State.[16] In addition, as explained above, while there are over 10,000 private sector employers in a ten mile radius of the base. This number increases more than two-fold to almost 28,000 private sector employers when the radius is extended to 20 miles. The analysis below is useful because it allows us to consider what would happen if the base were to close immediately. Specifically, what is the current job absorption capacity of the area within 20 miles of the base?

The map in Figure 17 shows the municipalities encompassed by the 20 miles around the base. The larger radius encompasses the eastern towns of Middlesex County and the northeast towns in Ocean County. The 20 mile radius includes 71 municipalities, compared to 40 within a ten mile radius.

Figure 18
Fort Monmouth civilian jobs and job openings within 20 miles of base



Sources:
(1) New Jersey Department of Labor and Workforce Development, Job openings database, June 2007
(2) Office of Personnel, Fort Monmouth, 2007

[16] U.S. Census Bureau, 2006 American Community Survey

Overall, the area within 20 miles of the base has the capacity to absorb 31 percent of the Fort Monmouth civilian workforce (a conservative estimate, as it includes only a portion of the garrison contractors). This includes all of the base's management workers. In fact, even with the closure, there will be a surplus of management positions. However, many other groups of workers on the base do not fair as well. There are currently enough job openings to potentially absorb almost 25 percent of the scientists and engineers and 38 percent of computers and mathematics workers. By far the greatest challenges will be faced by business and financial analysts and installation, maintenance and repair workers. Less than one-fifth of the current business/finance workers on the base have job opportunities available and almost none of the blue collar workers will find a safe landing after the base closure.

Conclusions and recommendations

We estimated that:

- For every job we lose on the base, 1.1 additional jobs will be lost outside the base.
- Over 50 percent of occupations on the base are electronics engineers, logistics managers, management specialists, computer scientists and engineers.
- The area has a competitive advantage in Information, Communications and Technology, a super cluster comprised of Advanced Manufacturing, Logistics, and Business Infrastructure.

This study provides decision-makers with the best and most reliable information concerning the region's opportunities, challenges, and prospects in order to develop optimal policy choices. Specific recommendations on how to foster the cluster competitiveness and help the region's economic success are offered below.

<u>Best fit industries</u>

The findings strongly suggest that the ICT cluster that we have defined here represents an optimal policy option for the State, not only given the staffing pattern on the base, but also the economic profile of the area surrounding the base. As described in the earlier analysis, the components of this cluster are specific to the Fort Monmouth area and include industries from

the following clusters: Advanced Manufacturing, Business Infrastructure, and Wholesale/Logistics. Targeting this also paves a promising pathway to the region's future economic, industry, and business activity. To ensure that the targeted clusters continue to succeed and thrive, decision-makers should take the following course of actions into consideration:

Establish an "Information and Communications Technology Village"

The State and region need to establish an Information and Communication Technology (ICT) Village to encourage research, development, and innovation capacities that would in turn drive the region's business and economic growth. The main functions of the ICT Village would support the region in achieving the following objectives:

- increase the innovation and research capacities of the ICT industries in the region
- attract and nurture new firms for the cluster
- expedite technology transfer and commercialization process
- expand the region's employment and economic base
- promote a strategic partnership between private and public sectors.

An ICT Village would serve as the technology center of the Fort Monmouth area. Ideally, it should incorporate ideas of incubation, innovation, research, development, and commercialization into its model. These principles serve an essential role in fostering the cluster's start-up and small size firms, as well as attracting new firms through their services and programs. This would stimulate collaboration and innovation between industry and university based research, expedite the commercialization process, and promote a strategic investment partnership between the private and public sectors.

New Jersey has long recognized and promoted these sound practices. The State has developed three world-class technology facilities and a number of industry driven research centers throughout the State.[17] In addition, there are 12 Technology Incubators administered by New

[17] See www.njeda.com for more information.

Jersey Commission on Science and Technology.[18] The concept of business incubation has been successfully applied throughout the nation and around the world and offers excellent return on investment for successful business creation, job and revenue growth with measurable direct and indirect economic impact.[19] However, none of these vital technology incubators is located in the region. A new "Information and Communications Technology Incubator" should be established for the region within the ICT Village. The State may also consider strategically reallocating resources and efforts to support the region's ICT Village initiative. One of the best possible scenarios is to expand the Greater New Brunswick Innovation Zone programs to the region.

These recommendations and the industry analysis support the fact that the ICT companies in the area benefit from the Fort's presence in the region, especially Team C4ISR. Taken together with the recommendation of the ESOP advisors for creating a C4ISR research center and tapping into the contracting skills of the Fort Monmouth workforce, [20] the proposed ICT village is consistent with the State's economic growth strategy as the Governor's Economic Growth Strategy emphasizes "nurturing the development of new technologies, and ensure that the State continues to be a leader in innovation."[21] The State has offered technology and science based business a wide array of programs, services, and assistance to ensure the technology cluster thrives and expands in the State. These programs include the Edison Innovation Fund, Innovation Zones, and Technology Incubators. The region can strategically tap the State's current economic growth initiatives, programs, and incentives to fuel its economic development efforts and supporting its core industry cluster through the ICT Village.

The Fort Monmouth area is an attractive and unique location where efforts to rebuild the Information and Communication Technologies cluster can be successful. The region has number of critical assets: high industry competitiveness and innovation; State of the art infrastructure;

[18] Some of the 12 Technology Incubators throughout 10 locations of New Jersey serve as industry driven research centers such as the Picatinny Technology Innovation Center, Food Innovation & Research and Extension Center, NJIT Enterprise Development Centers I, II, III (source: New Jersey Commission on Science and Technology- http://www.state.nj.us/scitech/

[19] Technology Incubator, NJ Commission on Science and Technology, http://www.state.nj.us/scitech/techinc/

[20] ESOP Advisors, "Analysis of the Viability of Reconstitution of the Technical Workforce of Fort Monmouth, New Jersey and its Impact on Regional Revitalization, Draft, November 2007.

[21] Governor's Initiatives: Six Priority Areas for Economic Growth, the Governor's Economic Growth Strategy, Priority Area #4. For further information, visit http://www.state.nj.us/njbusiness/economic/priorities.shtml

access to a highly educated workforce; and proximity to major markets (New York and Philadelphia). The region also has a high concentration of the cluster's presence. The ICT cluster not only has the capacity to absorb a good portion of the Fort Monmouth displaced workers, but may also correct the labor surplus challenge for blue-collar workers. The ICT cluster would employ a pool of skilled workers that posses similar industry-specific skills. The availability of a highly skilled workforce is a high priority to the industry because the firms depend on the region's human capital assets for their competition and success. Furthermore, businesses may not have a difficult time finding skilled workers since the region's geographic advantage would provide businesses access to a large pool of skilled workers from Middlesex, Mercer, Somerset, and Ocean counties.

Foster a strong environment for technology entrepreneurship

New Jersey has both recognized vital role of the entrepreneurship in contributing its economy and business growth and implemented programs that aim to cultivate a stronger entrepreneurial environment in the State. Because the potential significant economic contributions of entrepreneurship, the Fort Monmouth region should adopt the critical idea into its economic redevelopment plan by fostering a strong technology entrepreneurship environment in order to further business and economic activities and ensure competitiveness. According to the Office of Advocacy, US Small Business Administration, the non-employer firms (entrepreneurs) contributed over $32 billion in sales to the State business activities in 2005; and the number of non-employer firms increased by 2.9 percent between 2004 and 2005, from 556,973 to 573,134.[22] In addition, private reports show that the State and region have business, industry, and infrastructure advantages to warrant success for nurturing a strong technology entrepreneurial environment.[23].

[22] 2007 State Economic Profiles, Office of Advocacy, US Small Business Administration- http://www.sba.gov/advo/research/profiles/

[23] For example, the 2007 Beacon Hill Report ranked the State as the second in term of high technology share of all business establishments and respectively the fifth in venture capital investment dollars per workers and ninth in IPO per 1000 companies in dollars 2007 State Competitiveness Report, Beacon Hill Institute, Suffolk University- http://www.beaconhill.org/

The proposed Information and Communication Technology Incubator should offer technology entrepreneurship program as one of its core services. The region should also adopt key features of the Entrepreneurial Services and Technology Entrepreneur Assistance programs, administered by the New Jersey Economic Development Authority and New Jersey Commission on Science and Technology. These programs offer a variety of important services to entrepreneurs and technology-based businesses: entrepreneurial training, technology transfer assistance, access to capital and fund, technical assistance, and facility services. These are critical resources to cultivate a strong technology entrepreneurial environment and ensuring that start-ups and expansion firms (entrepreneurs) succeed. In addition, universities and small business centers also provide assistance and training to entrepreneurs.[24],[25]

Lastly, to make sure that the region succeeds in nurturing a strong technology entrepreneurial environment, the entrepreneurial culture should be aggressively promoted. Despite the favorable rankings discussed above, New Jersey has experienced lower entrepreneurship activities as compared to other states. In 2007, both the State New Economy Index and the State Economic Development Card reports respectively ranked New Jersey's Entrepreneurship activity 21st and 22nd in the nation despite the State's business vitality, economic development, industry competitiveness and innovation as well as the state of the art infrastructure. In order to overcome this issue, the region should strategically coordinate with the state agencies, colleges and universities as well as trade and industry associations to increase awareness about the State's current business and industry conditions, resources, and opportunities as well as potential return on investment of entrepreneurship activity among targeted industries and prospective entrepreneurs.

Strong leadership and commitment

The State's leadership and commitment are crucial in shaping the outcome of the Fort Monmouth area's redevelopment efforts and helping to sustain the region's long-term growth. Because of the industry's competitive pressures and intense use of technology, as well as a

[24]Entrepreneurial Services, New Jersey Economic Development Authority- http://www.njeda.com/Entrepreneurialservices_menu.asp

[25] Technology Entrepreneur Assistance, New Jersey Commission on Science and Technology- http://www.state.nj.us/scitech/entassist/

business environment characterized by rapid change in the global and domestic marketplaces, the region itself needs assistance to leverage its capacity for competition and innovation. The Fort Monmouth area needs to have the State's systematic government guidance coupled with private decision-making in order to successfully re-grow and expand its economy and industry.

The State can play a leadership role in helping the region to facilitate the private and public partnership. A new partnership not only generates new investments but also help business and industry in the region to increase their research and development capacities and competitiveness. Recently, the Governor's Office has unveiled a number of critical initiatives and programs such as University Collaboration, Entrepreneur Assistance, and Commercialization centers that gear toward supporting growth of the science and technology based businesses.[26] The need for having these vital investments and commitments in the local area will become crucial and more urgent than ever.

Another effective way that the State can help to encourage growth in the region's economy and industry is by linking the State's business development policies and programs to the region's redevelopment efforts. The State can customize its business attraction program to recruit new firms included in the same clusters and non-core industry firms to the local area. The State could collaboratively work with the region to ensure the existing cluster firms to expand and grow in the region. Lastly, the State can dedicate its resources to enhance the region's infrastructure. All of the State's leadership, support, and investment would assist the region in remaining competitive and attractive to business. This could greatly help to reverse the current declining trend in the Telecommunications industry. In addition, these efforts would lay a solid foundation for the region to prepare for any future economy and industry expansion that would lead the region to economic growth.

[26] NJ Commission on Science and Technology has implemented programs as result of the Governor's Edison Fund Programs New Jersey Technology Fellowship Program, Edison Innovation Centers of Excellence Federal Matching Program (under University Collaboration); Edison Innovation R&D Fund, Commercialization Center for Innovative Technologies, Incubator Seed Fund (under Entrepreneur Assistance). For further information, visit http://highpoint.state.nj.us/scitech/

Phase 2 of Fort Monmouth Prospects and Opportunities

This report outlines an overall vision for the future prospects and opportunities at Fort Monmouth, based on our knowledge of the area's industry and economy. In order for this vision to move forward into the implementation phase additional analysis will need to be conducted. Phase 2 of the study will focus more explicitly on issues related to training, skills, job creation and wages, particularly in the ICT supercluster. This closing section provides a glimpse at the types of analysis that will be featured in the next study.

Education and training opportunities

The report outlined the current job openings and unemployment claims, and the findings suggest that many Fort Monmouth employees may not find positions in their current fields. In addition to attracting industries to move and expand in the area, some Fort Monmouth workers could be retrained or take courses to advance their current skillset and widen their job opportunities. There are educational institutions in the area that could help further this goal. FMERPA has an education committee that could also play a vital role in coordination and needs assessment of displaced workers.

This section provides two examples of how different occupations might use the area's educational institutions to improve their skills. Despite the current labor surplus, there are some blue collar occupations that are projected to have high employment growth in Monmouth County, including janitors and cleaners and landscaping and groundskeeping workers. There is also projected growth in the county's Installation, Maintenance, and Repair occupations. Brookdale Community College provides automotive technology courses which could be used by the civilian blue collar workers. In addition, some blue collar workers could also seek additional training to prepare for projected management openings. For example, there are projected openings in Installation, Maintenance, and Repair such as supervisors/managers of Mechanics; Electrical and Electronic Equipment Mechanics, and Vehicle and Mobile Equipment Mechanics; all these positions are projected to grow in the county through 2014.

Area institutions provide potential training solutions for civilians working in business and finance occupations as well. As discussed, there are currently only enough job openings for a small percent of business and financial analysts at the base. The New Jersey Coastal Communiversity, Brookdale Campus at Wall is a consortium that includes Brookdale Community College, New Jersey City University, NJIT, Rutgers, Geogian Court, and Montclair State. The Communiversity offers degrees and programs for professionals seeking graduate education. For example, accounting occupations are projected to have 50 annual openings through 2014. The Communiversity's online MA in accounting could be used to broaden career opportunities. The Communiversity also offers programs or "degree pathways" that start at Associates level and go through Masters programs for part-time professionals (on-line courses, evening classes).

Appendix A
Data sources and methods

Data sources and methods

A variety of data sources and tools were used in the analysis in order to provide the most comprehensive information possible about the base and the economy of the surrounding area. This section provides an overview of the data sources, tools, and other resources used in the study.

Occupational and industry microdata

Existing data sets were customized specifically for the analysis conducted in this study: for the first time occupational and industry data were merged. The occupational data are from the May 2006 Occupational Employment Statistics (OES) Wage Survey, the State's primary information source on occupational wages. The survey provides valuable input for wage comparisons and for identifying trends in emerging or declining occupations. This data was merged with the industry data from the Quarterly Census of Employment and Wages (QCEW), which represents the statistical universe for employment covered by unemployment insurance. This merger enabled many analyses, including an industry-occupation crosswalk. Furthermore, because industry data is geocoded, occupational distributions were identified at the sub-municipal level.

Unemployment claims and monthly job openings data

Unemployment and monthly job openings data from June 2007 were also used for the analysis. Monthly unemployment claims data were collected from the Unemployment Insurance (UI) database, known as the Local Office On-line Payment System (LOOPS). Job openings data is a new data tool representing information on job openings in New Jersey and was collected through a "spidering" software that mines all job advertisements on the Internet and in newspapers. LMDR has developed a methodology that identifies 33,000 job openings statewide. This powerful tool categorizes the openings by location and occupational category and is used to measure labor market activity throughout the State.

Appendix A
Data sources and methods

Mapping techniques

Mapping programs are used to analyze geocoded data and present it graphically. This report uses mapping techniques with longitudinal information to identify concentrations of industries down to the municipal level. When combined with occupational data on the State's unemployed population, skill mismatches can be identified and resources directed to where they are needed most.

Existing research on the economic impact and scope of the base closure

This report also relies on previous research conducted by others interested in the impact of the base closure – both in New Jersey and in Maryland where many of the base activities will be relocated. Two primary sources include a research study commissioned by the Maryland Department of Business and Economic Development and a "Smart Growth Study" prepared for the five Fort Monmouth host communities (Eatontown, Little Silver, Oceanport, Shrewsbury Borough, and Tinton Falls).[27]

Government personnel and other contacts

In addition to the sources outline above, information on base civilian workers and contractors was collected from government personnel and other contacts. For example the Personnel Office at Fort Monmouth was essential in providing both data and background information about the civilian personnel and the functions of the contracted employees.

[27] Maryland Department of Business and Economic Development, "BRAC Activities Affecting Aberdeen Proving Ground, Andrews Air Force Base, Bethesda Naval Hospital, and Fort Meade and in the State of Maryland, March 31, 2006, http://www.choosemaryland.org/Resources/pdffiles/brac/Task%201%20DRAFT%20Final%20Report.pdf Jeffery Donohoe Associates, Inc. Smart Growth Study: Evaluation of the Impact of Ft. Monmouth on the Host Communities, July 2005, http://patriotsalliance.com/documents/briefings/SmartGrowthStudy.pdf)

Appendix B
Fort Monmouth civilian employees by Standard Occupational Classification (SOC) and job series

		Employees	
SOC	Job Series	Number	Percent of total
11-0000	**Management Occupations**		
	Maintenance Management Specialist	45	0.9%
	Program Manager	42	0.8%
	Student Trainee (Maintenance Management)	22	0.4%
	Administrative Officer	21	0.4%
	Public Affairs Specialist	9	0.2%
	Maintenance Manager	4	0.1%
	Building Manager	2	0.0%
	Housing Manager	2	0.0%
	Medical Officer	2	0.0%
	Financial Management Specialist	1	0.0%
	Sub-total	*150*	*3.0%*
13-0000	**Business and Finance Occupations**		
	Logistics Management Specialist	526	10.6%
	Miscellaneous Administration And Program Specialist	364	7.3%
	Contract Specialist	328	6.6%
	Management Or Program Analyst	305	6.1%
	General Supply Specialist	149	3.0%
	Inventory Management Specialist	99	2.0%
	Budget Analyst	95	1.9%
	Financial Management Analyst	40	0.8%
	Human Resources Specialist	36	0.7%
	Student Trainee (General Supply)	35	0.7%
	Accountant	29	0.6%
	Auditor	19	0.4%
	Student Trainee (Program Analysis)	9	0.2%
	Construction Representative	7	0.1%
	Equal Employment Specialist	7	0.1%
	General Inspector	5	0.1%
	Budget Technician	4	0.1%
	Health System Specialist	4	0.1%
	Student Trainee (Financial Management)	4	0.1%
	Purchasing Agent	3	0.1%
	Claims Examiner	1	0.0%
	Contact Representative	1	0.0%
	Marine Cargo Specialist	1	0.0%
	Sub-total	*2,071*	*41.7%*

Appendix B
Fort Monmouth civilian employees by Standard Occupational Classification (SOC) and job series

15-0000	**Computer and Mathematical Occupations**		
	Computer Scientist	209	4.2%
	Information Technology Specialist	146	2.9%
	Operations Research Analyst	36	0.7%
	Intelligence Specialist	24	0.5%
	Student Trainee (Computer Scientist)	11	0.2%
	Intelligence Aid	1	0.0%
	Technical Information Specialist	1	0.0%
	Sub-total	*428*	*8.6%*
17-000	**Architecture and Engineering Occupations**		
	Electronics Engineer	866	17.4%
	Computer Engineer	324	6.5%
	Telecommunications Specialist	54	1.1%
	General Engineer	51	1.0%
	Student Trainee (Engineering)	46	0.9%
	Equipment Specialist (Electronics)	31	0.6%
	Mechanical Engineer	25	0.5%
	Engineering Technician	17	0.3%
	Electronics Technician	16	0.3%
	Safety Engineer	14	0.3%
	Quality Assurance Specialist	11	0.2%
	Safety & Occupational Health Specialist	6	0.1%
	Chemical Engineer	5	0.1%
	Electrical Engineer	5	0.1%
	Architect	4	0.1%
	Environmental Protection Specialist	4	0.1%
	Industrial Engineer	4	0.1%
	Civil Engineer	2	0.0%
	Environmental Engineer	2	0.0%
	Industrial Hygienist	2	0.0%
	Industrial Hygiene Technician	1	0.0%
	Sub-total	*1,490*	*30.0%*
19-0000	**Life, Physical, and Social Science Occupations**		
	Health Physicist	7	0.1%
	Historian	2	0.0%
	Physical Scientist	2	0.0%
	Research Psychologist	2	0.0%
	Sub-total	*13*	*0.3%*
21-0000	**Community and Social Services Occupations**		
	Social Worker	5	0.1%
	Army Community Services Specialist	3	0.1%
	Social Services Assistant	1	0.0%
	Sub-total	*9*	*0.2%*

Appendix B
Fort Monmouth civilian employees by Standard Occupational Classification (SOC) and job series

23-0000	**Legal Occupations**		
	Attorney	27	0.5%
	Paralegal Specialist	3	0.1%
	Patent Attorney	3	0.1%
	Legal Administrative Specialist	1	0.0%
	Student Trainee (Legal)	1	0.0%
	Sub-total	*35*	*0.7%*
25-0000	**Education, Training, and Library Occupations**		
	Instructor	29	0.6%
	Education Technician	11	0.2%
	Instructional Systems Specialist	4	0.1%
	Library Technician	2	0.0%
	Education Services Specialist	1	0.0%
	Museum Curator	1	0.0%
	Teacher	1	0.0%
	Sub-total	*49*	*1.0%*
27-0000	**Arts, Design, Entertainment, Sports, and Media Occupations**		
	Technical Writer	71	1.4%
	Illustrator	1	0.0%
	Student Trainee (Visual Information)	1	0.0%
	Sub-total	*73*	*1.5%*
29-0000	**Healthcare Practitioners and Technical Occupations**		
	Practical Nurse	7	0.1%
	Clinical Nurse	6	0.1%
	Pharmacist	6	0.1%
	Medical Records Technician	3	0.1%
	Medical Technician	3	0.1%
	Pharmacy Technician	3	0.1%
	Diagnostic Radiologic Technologist	2	0.0%
	Medical Technologist	1	0.0%
	Nutritionist	1	0.0%
	Optometrist	1	0.0%
	Sub-total	*33*	*0.7%*
31-0000	**Healthcare Support Occupations**		
	Medical Support Assistant	10	0.2%
	Dental Assistant	2	0.0%
	Sub-total	*12*	*0.2%*

Appendix B
Fort Monmouth civilian employees by Standard Occupational Classification (SOC) and job series

33-0000	**Protective service occupations**		
	Police Officer	47	0.9%
	Security Specialist	46	0.9%
	Firefighter	40	0.8%
	Security Assistant	6	0.1%
	Investigative Operations Assistant	1	0.0%
	Sub-total	*140*	*2.8%*
37-0000	**Building and Grounds Cleaning and Maintenance**		
	Custodial Worker	1	0.0%
39-0000	**Personal Care and Service Occupations**		
	Sports Specialist	1	0.0%
43-0000	**Office and Administrative Support Occupations**		
	Secretary	147	3.0%
	Supply Systems Analyst	102	2.1%
	Administrative Support Assistant	55	1.1%
	Management Or Program Assistant	47	0.9%
	Supply Technician	20	0.4%
	Office Automation Clerk	14	0.3%
	Procurement Technician	13	0.3%
	Computer Operator	8	0.2%
	Human Resources Assistant	6	0.1%
	Legal Assistant	4	0.1%
	Mail Clerk	3	0.1%
	Student Trainee (Human Resources)	3	0.1%
	Computer Assistant	2	0.0%
	Military Pay Technician	2	0.0%
	Civilian Pay Technician	1	0.0%
	Sub-total	*427*	*8.6%*
49-0000	**Installation, Maintenance, and Repair Occupations**		
	Facility Operations Specialist	9	0.2%
	Laborer (Field Maintenance)	1	0.0%
	Sub-total	*10*	*0.2%*
53-0000	**Transportation and Material Moving Occupations**		
	Traffic Management Specialist	6	0.1%
	Storage Specialist	5	0.1%
	Transportation Specialist	5	0.1%
	Transportation Assistant	3	0.1%
	Materials Handler (Motor Vehicle Operator)	1	0.0%
	Packaging Specialist	1	0.0%
	Sub-total	*21*	*0.4%*
Total		**4963**	**100.0%**

Appendix C
Fort Monmouth area Information, Communication, and Technology Supercluster
Industry by title and NAICS code

NAICS code	Industry
Advanced Manufacturing	
33331	Commercial and Service Industry Machinery Manufacturing
33392	Material Handling Equipment Manufacturing
33411	Computer and Peripheral Equipment Manufacturing
33422	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
33429	Other Communications Equipment Manufacturing
33441	Semiconductor and Other Electronic Component Manufacturing
33451	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
33461	Manufacturing and Reproducing Magnetic and Optical Media
33521	Small Electrical Appliance Manufacturing
33592	Communication and Energy Wire and Cable Manufacturing
33911	Medical Equipment and Supplies Manufacturing
33994	Office Supplies (except Paper) Manufacturing
Logistics	
42343	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers
42369	Other Electronic Parts and Equipment Merchant Wholesalers
42383	Industrial Machinery and Equipment Merchant Wholesalers
42384	Industrial Supplies Merchant Wholesalers
42499	Other Miscellaneous Nondurable Goods Merchant Wholesalers
48833	Navigational Services to Shipping
Business infrastructure	
51121	Software Publishers
51511	Radio Broadcasting
51711	Wired Telecommunications Carriers
51721	Wireless Telecommunications Carriers (except Satellite)
51791	Other Telecommunications
51821	Data Processing, Hosting, and Related Services
51919	All Other Information Services
53242	Office Machinery and Equipment Rental and Leasing
53249	Other Commercial and Industrial Machinery and Equipment Rental and Leasing
54121	Accounting, Tax Preparation, Bookkeeping, and Payroll Services
54133	Engineering Services
54142	Industrial Design Services
54151	Computer Systems Design and Related Services
54161	Management Consulting Services
54162	Environmental Consulting Services
54169	Other Scientific and Technical Consulting Services

Appendix C
Fort Monmouth area Information, Communication, and Technology Supercluster
Industry by title and NAICS code

Business infrastructure (continued)	
54171	Research and Development in the Physical, Engineering, and Life Sciences
54172	Research and Development in the Social Sciences and Humanities
54181	Advertising Agencies
54191	Marketing Research and Public Opinion Polling
54199	All Other Professional, Scientific, and Technical Services
55111	Management of Companies and Enterprises
56121	Facilities Support Services
81121	Electronic and Precision Equipment Repair and Maintenance