



Economic Impact Of Arizona's Principal Military Operations

The executive summary highlights key points from the full report which was prepared to present the Economic Impact of Arizona's Principal Military Operations and contains a more complete presentation of the study effort and findings.

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Prepared by

In collaboration with



The Maguire Company



Executive Summary



ARIZONA DEPARTMENT OF COMMERCE

INTRODUCTION, BACKGROUND AND STUDY METHODOLOGY

Introduction

One of the largest and frequently overlooked industries in Arizona is the military industry. The presence of military personnel and their supporting activities pre-dates statehood, but is frequently ignored in economic development discussions. For years, the “Five C’s” were used to describe the basic industries of Arizona – Copper, Cotton, Citrus, Cattle, and Climate. These industries were identified as the core of Arizona’s economy. No where in this list was there any recognition of the thousands of Arizona jobs tied directly and indirectly to the many military operations within the State.

The presence and economic contribution of the military operations in Arizona may have historically been under-recognized due to the isolation of the operations from general commerce, the physical separation, for security reasons, of many of the facilities or simply as a unintended consequence of the methods typically used to collect and report economic and employment statistics. Whatever the reasons, the military operations within Arizona represent a substantial and valuable industry in the State that should be recognized and listed among the State’s most important sources of economic activity.

This study was commissioned by the State of Arizona through the Arizona Department of Commerce. It is the second such study of its kind undertaken for Arizona. The first was commissioned by several Arizona cities to document the economic importance of the military operations within Arizona and completed in 2002. Prior to the 2002 study, no such study had been completed on such a comprehensive and consistent basis.

Among the reasons for both studies is the increasing amount of proposed state legislation involving issues related to the location and activities of various military operations in the State, the continuing development of land adjacent to and near military facilities, and the continuing possibility of base closings by the Department of Defense. For these and other reasons, both studies were undertaken.

Background

While Arizona major military facilities were largely unaffected by the recent actions of the Base Realignment and Closing Commission (BRAC), it is anticipated that the another series of BRAC activities may occur in the future.

At the same time that federal actions may result in the reduction or closing of military facilities within Arizona, local action and activities also endanger the future of some military operations. In most cases, Arizona’s principal military operations have occurred on facilities either in remote locations or at the periphery of development. This physical separation has permitted the operations to exist largely unaffected by the surrounding population growth and development. However, in the last few decades Arizona’s sustained growth and development have, in some cases, brought new development closer to the formal boundaries of some bases and into the adjacent, off-base areas that are crucial to the safe and prudent execution of military activities operating from those bases.

Several pieces of state legislation have been introduced and debated in recent legislative sessions dealing with the issues of encroachment and the preservation of critical off-base properties in land uses compatible with military activities operating from the bases.

Study Methodology

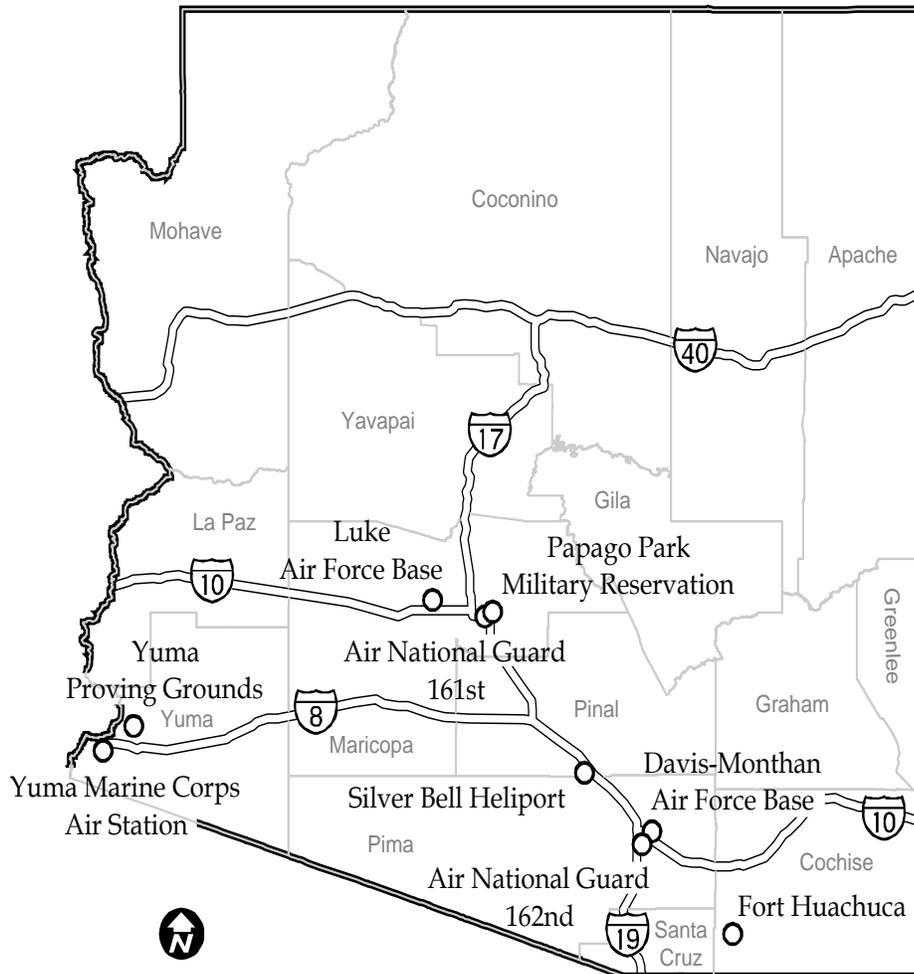
In order to fully measure the impact of the principal military operations within Arizona it was necessary for the Study Team to establish a study methodology. Since no previous study had examined the combined economic effect of all of Arizona's principal military operations on the State's economy, a new methodology had to be developed. It was critically important that the methodology used would insure a comprehensive, yet conservative, estimate of the operations' impact, based on information compiled using uniform and consistent techniques. In addition, the Study Team sought to develop a reproducible methodology assuring that subsequent studies could build upon the information and knowledge gained through this effort. A more complete discussion of the methodology used by the Study Team is included in the full report.

The Study Team utilized IMPLAN Pro software to conduct the economic impact analysis of Arizona's principal military operations. IMPLAN Pro software was created by the Minnesota Implan Group (MIG) as a tool for impact analysis (IMPLAN stands for IMPact Analysis for PLANning). Analysis of economic impacts depends on inputs to the analyzed activities available in the analyzed region. The "multiplier" effect occurs as spending is recirculated throughout the economy within the study area. For example, when a factory creates 10 new jobs paying \$20,000 per year the resultant \$200,000 in income to those workers and the increased output of the factory manifests itself in new economic activity of three major types. The *direct* impact is the additional activity itself (i.e. 10 direct jobs). *Indirect* impacts consider the interactions among industries (backward buyer-supplier linkages) to quantify the additional activity in other industries caused by the increase in activity in the factory, such as raw materials and transportation and wholesaling of product inputs. Some of the new economic activity involved in direct and indirect impacts manifests itself as wages paid to employees in local industries; which are analogous with household spending. This additional household spending represents the *induced* effect which supports local activity (both through services imparted directly, like a haircut at the local salon, as well as through the purchase of products which are manufactured and sold in the region). The portion of that spending which accrues to local businesses and employees is recirculated; again to an extent defined by the input-output relationships specific to the region (derived from Bureau of Economic Analysis data). The model reiterates until all of the spending is "leaked" outside of the regional economy.

The model uses actual input and output information for each county in the United States and is therefore tailor made for the study region. Study areas are generally single counties, multi-county regions, one or more states, or national. Generally speaking impacts are greater the larger the study area chosen, since they are based on the amount of recirculation of spending which is done before the impact of each dollar is fully "leaked" out of the study area. Impacts *can* be equal or smaller for larger areas in special cases, since the average productivity of workers in each industry and other industries in its supply chain will vary by geographic region. This is also determined through the use of input-output data at the county level. Detailed information concerning individual facilities and their countywide impacts are summarized in the appendices to the full report.

Based on the experience gained through the 2002 Study effort and, most importantly, the availability of a number of key personnel at the various military installations that had participated in the 2002 Study effort, the financial data collected is significantly improved from the prior study. Consequently, not all of the changes in the reported impacts are entirely attributable to changes in the scope of operations, some changes, in some cases, significant amounts, are the result of better data collection and reporting.

ARIZONA'S PRINCIPAL MILITARY OPERATIONS



Utilizing a two-test standard, the Study Team identified the principal military operations within the state to be included within the study. There are 5 major military installations in Arizona:

- Davis-Monthan Air Force Base
- Army Intelligence Center & Fort Huachuca
- Luke Air Force Base
- Yuma Army Proving Grounds
- Marine Corp Air Station - Yuma

Also included are 4 principal National Guard operations:

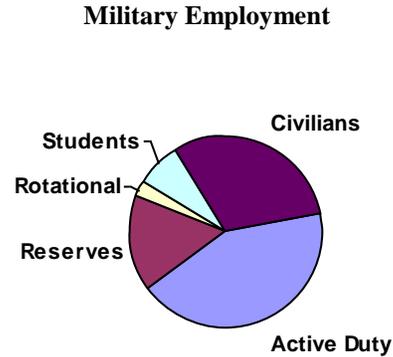
- Air National Guard's 161st Air Refueling Wing
- Air National Guard's 162nd Fighter Wing
- Army National Guard – Papago Park
- Western Army National Guard Aviation Training Site - Silverbell

The Study Team eliminated from consideration military contractors, such as, the Boeing helicopter facilities in Maricopa County, the Raytheon facilities in Pima County and a wide variety of other military-related contractors within the state of Arizona, that were not directly linked to the location of one of the principal military operations in the state. The businesses excluded from this study are important contributors to Arizona's economy; however, their location in Arizona is largely attributable to other factors including labor force characteristics, lower costs-of-doing-business in Arizona, quality of life considerations, and the other attractive characteristics of Arizona and its economy.

EMPLOYMENT AND SPENDING BY PRINCIPAL MILITARY OPERATIONS

Employment

The starting point for the economic analysis of the principal military operations in Arizona was the number, type, and characteristics of employees at each operation. Personnel headcounts and payroll spending were collected, reviewed, and standardized for each operation. Personnel at the different operations were accumulated into several broad categories. These categories included active duty, permanent party military personnel; reserve personnel; rotational personnel, students (attending training, but normally based elsewhere); and civilian employees (both Department of Defense and other).



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SUMMARY OF BASIC PERSONNEL STATISTICS
Arizona's Principal Military Operations
(Personnel Headcounts)

Active Duty Permanent Party	Reserves	Rotational	Students (Military)	Civilians	TOTAL
19,402	7,471	1,198	3,292	14,205	45,568

Not all operations had headcounts attributable to each general category. The standardized headcount for each of the principal military operations by category is displayed in the adjacent table.

(Additional information concerning the input received from each operation is available in Appendix One.) These personnel figures have not been converted to full-time equivalent personnel.

In total, over 45,500 individuals were routinely employed on a full-time or part-time basis in fiscal year 2005.

Military Retirees

In addition to those individuals employed at the principal military operations throughout the State, a substantial number of military retirees receive regular payments for retirement benefits. These retirement benefit payments are closely equivalent to regular payroll in terms of their utilization by the recipients and their effect on the economy. The Study

SUMMARY OF MILITARY RETIREE STATISTICS
Arizona's Principal Military Operations

	Military Retirees Within 50-Miles ¹	Linked Retirees (25 percent)
Statewide Total	45,328	11,332

1 - Data Source: Department of Defense, Office of the Actuary

Team determined that some portion of the military retirement benefits paid to military retirees in Arizona should be included in the analysis. A prime methodological issue confronting the Study Team was which retirees to identify as inexorably *linked* to the military operations being analyzed. In summary, one quarter of the military retirees living within approximately a one hour travel radius of the key military facilities were included in the study as representing those individuals who were so strongly *linked* to a military installation and the services available there that they would not reside in Arizona if the facility was not located here and would relocate if it were closed. A more detailed discussion of the methodology and treatment of military retirees is presented in the full report. The preceding table displays the total number of military retirees, which generally are those within zip code areas that are, at least partially, within fifty miles of a major facility. It also illustrates those that are identified as *linked* to an installation, which are generally the one-quarter included in this analysis.

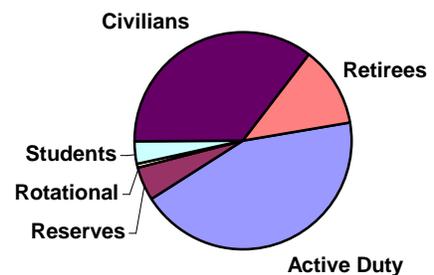
It should be noted that the Study Team considered other methods of allocating and incorporating the economic impact of military retirees. In fact, some previously completed analyses conducted by others have employed alternative approaches while others have simply estimated the total impacts excluding any military retiree benefits or they included all military retiree benefits. After significant consideration, the Study Team determined that it was most comfortable with the methodology selected. However, the Study Team recognized that other more complex techniques could be used.

In addition to the full-time resident military retirees, a substantial number of out-of-state military retirees travel to Arizona. This influx of visitors is reflected in higher utilization levels at the various service centers located on principal military installations. Where such information is available, medical, legal services and commissary operations reported significantly higher utilization rates in the winter months. However, due to the limited availability of such data and in recognition of a likely, at least partial, offset due to travel by Arizona military retirees during summer months, no specific amounts were included in the analysis. Consequently, the total economic and fiscal impact of military retirees may be understated in this study.

Payroll & Retirement Benefit Information

Payroll and retirement benefit payments were included in the analysis for the employees of the principal military operations and the linked retirees determined as described in the preceding section. These payroll and benefit payment amounts represent gross spendable income for the recipient household and directly contribute to the level of economic activity in their region and the State. The preceding table illustrates the payroll and retirement benefit payments information included in the analysis.

Payroll & Benefits



SUMMARY OF PAYROLL AND RETIREMENT BENEFITS
Arizona's Major Military Operations
(\$ millions)

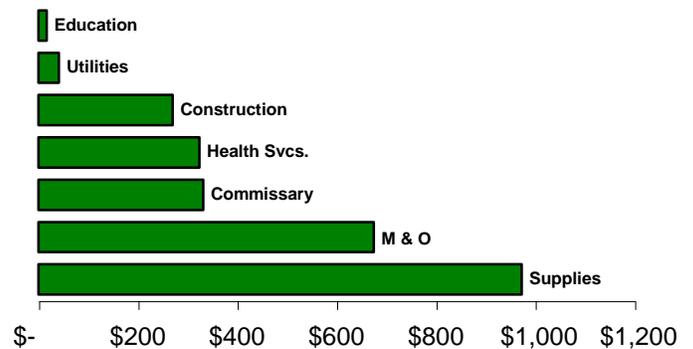
Active Duty Permanent Party	Reserves	Rotational	Students (Military)	Civilians	Linked Retirees	ARIZONA TOTAL
\$938.4	\$107.3	\$13.9	\$71.2	\$748.4	\$245.3	\$2,124.7

In total, over \$2.1 billion in annual payroll and retirement benefits are directly added to the Arizona economy by the principal military operations in the State.

Contract and Other Spending

While payroll and retirement benefit payments represent an important source of economic input, other spending by the military operations in Arizona is an equally important source of economic stimulus to the State's economy. Furthermore, this spending

Military Contract Spending
(\$ millions)



SUMMARY OF SPENDING STATISTICS
Arizona's Major Military Operations
(\$ millions)

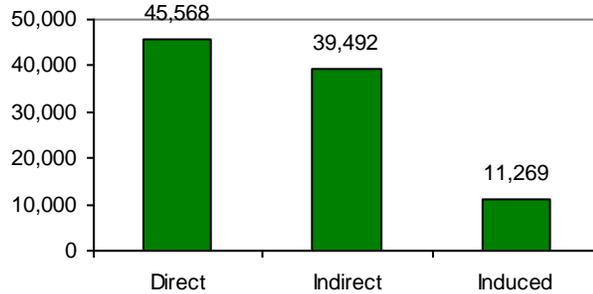
Contracts and direct spending: maintenance & operations	\$674.8
Construction & Buildings maintenance and repair	\$269.9
Spending for Supplies	\$973.1
Utilities	\$40.5
Education Payments	\$16.6
Health Services	\$324.2
Commissary & Exchange Sales	\$332.0
TOTAL	\$2,631.1

results in additional, subsequent activity in the economy as suppliers of goods and services to the military operations pay their employees and in turn purchase goods and services to meet their production needs. A substantial portion of the contract and other spending of the military operations occurs within the local region and the State, however not all goods and services are available regionally or statewide. As purchases occur outside the region or the state, the re-circulation of that spending is lost to the regional or statewide economy.

ECONOMIC IMPACTS OF THE MILITARY INDUSTRY

The adjacent table summarizes the economic impact of the principal military operations within Arizona. In total, these operations provide 45,568 direct jobs and produce \$3.2 billion in direct economic output. Arizona's *military industry*, which includes the principal military operations as well as the businesses they support, is responsible for creating 96,328 jobs and \$9.1 billion in economic output.

Military Industry Employment



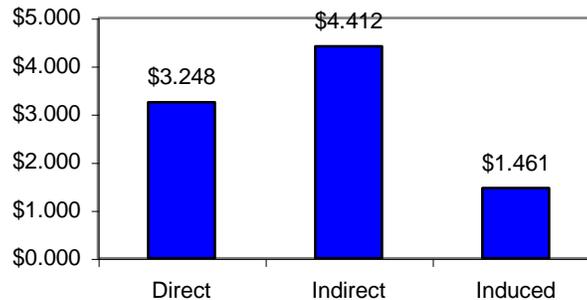
SUMMARY OF STATEWIDE ECONOMIC IMPACTS
Arizona's Major Military Operations

	Employment	Output (\$ Billions)
Direct Impacts	45,568	\$3.247
Indirect Impacts	39,492	\$4.412
Induced Impacts	11,269	\$1.460
Total Non-Direct Impacts	50,760	\$5.873
TOTAL IMPACT	96,328	\$9.120

Arizona's *military industry*, (including the principal military operations as well as the businesses they support) is responsible for creating or supporting over 96,000 jobs that are dispersed through a wide variety of industries. The largest number of total jobs is within the government sector,

which is logical since the military operations are themselves, government entities. In addition to the government sector employment, over 24,000 jobs are supported in the service sector, over 14,000 jobs in the retail trade sector, almost 3,000 in the construction sector, almost 1,000 in the manufacturing sector, and thousands more distributed throughout the economy.

**Military Industry Output
(\$ Billions)**



GOVERNMENT REVENUES DERIVED FROM THE MILITARY INDUSTRY

In addition to estimating the economic impact of Arizona's military industry, the Study Team estimated the amount of state and local government revenues paid by the employees at the state's principal military operations, linked military retirees, and the individuals and businesses in Arizona supported by those operations. Special care was taken to recognize the special and unique characteristics of military personnel and their households. A more complete discussion of the methodology used to estimate the fiscal impacts of the military industry is contained in the full report and its appendices.

Statewide Fiscal Contribution of Military Operations

The Study Team estimated payments of state and local sales taxes (technically speaking the transaction privilege taxes), state and local property taxes, and state income taxes. Revenues derived from state-imposed sales and income taxes were allocated to the state and local governments consistent with the existing statutory distribution formula, which basically is population proportionality.

SUMMARY OF STATEWIDE FISCAL IMPACTS
Arizona's Military Industry
(\$ millions)

	Annual Local	Annual State	Annual Total
Sales Tax	\$110.8	\$118.1	\$228.8
Property Tax	\$85.6	\$0.2	\$85.9
Income Tax	\$7.3	\$79.4	\$86.8
TOTAL	\$203.7	\$197.7	\$401.4

STATEWIDE FISCAL IMPACTS
Arizona's Military Industry
(\$ millions)

	Annual Total
Direct Impacts	\$140.2
Indirect & Induced Impacts	\$261.26
Total	\$401.4

The preceding table summarizes the fiscal contributions of impact of the military industry within Arizona to state and local governments. In total, the industry provides over \$401 million to fund the operations of the state and local governments in the state. Of that amount, over \$197 million flows to state government and over \$203 million flows to local governments.

The adjacent table also illustrates the fiscal contributions of the military industry within Arizona. The principal military operations (and the individuals they employ) *directly* pay over \$140 million in taxes each year, while the *entire* military industry provides over \$401 million to support governments throughout the state.

COMPARISONS TO THE MILITARY INDUSTRY IN ARIZONA

The principal military operations in Arizona and the businesses those operations support form a substantial and vibrant industry. Arizona's military industry creates thousands of jobs, billions of dollars of economic activity and hundreds of millions of dollars of state and local tax revenue.

Characteristics of Arizona's Military Industry

As important as the size and scope of the economic and fiscal impacts of the military industry in Arizona are some of the special characteristics of the economic activity supported by these military related activities. The jobs created and supported by Arizona's military industry are an especially valuable part of Arizona's economy because they are largely unaffected by routine economic cycles. Federal defense spending is not subject to substantial fluctuations as a result of normal economic cycles. Unlike many other Arizona industries and businesses, military operations in the state do not contract substantially during economic slowdowns or recessions nor do they increase dramatically during economic expansions. Similarly, the tax revenues generated in Arizona by the employees at the military operations and in the business supported by those operations remain relatively constant throughout all phases of the normal economic cycle. The stability of employment and tax revenues produced by the military industry adds substantially to their value as a component of Arizona's economy.

The State's military industry has provided a stable and reliable component of the economy as Arizona's economy has developed and diversified from the traditional "Five C's", with the development of more high tech employment, the expanded tourism industry and other industrial shifts. As Arizona's economy continues to grow and diversify, the military industry will continue to be an important and positive contributor to the State's economic vitality. However, shifts in Department of Defense priorities and technological advances in military operations can result in base closures within the State along with the resultant loss of this stabilizing force in local economies. Arizona would be well served to guard this economic asset and preserve its viability.

Comparison of Statewide Employment

In order to provide a reasonable framework to evaluate the magnitude of the military industry in Arizona, the Study Team compiled from several sources, employment statistics for a variety of employers and industries within the State to illustrate the general, comparative magnitude of the military industry. Among the information reviewed were the findings of the *Cluster Mapping Project* of the Institute for Strategy and Competitiveness, at the Harvard Business School and the survey of top employers completed and published by *The Business Journal*. The Institute for Strategy and Competitiveness describes a

Major Employers & Direct Military Employment



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“cluster” as a “geographically proximate group of interconnected companies and associated institutions in a particular field, including product producers, service providers, suppliers, universities, and trade associations.” *The Business Journal* periodically conducts a survey of the largest employers throughout Arizona and publishes its findings. A complete survey was conducted in 2005.

The adjacent table illustrates the number of jobs created by Arizona's military industry both *directly* as well as *in total* (including indirect and induced impacts) in comparison to other major employers and industries.

As illustrated in the adjacent table, the military industry in Arizona *directly* provides 45,568 jobs and supports a total of 96,328 jobs statewide. The total number of jobs dependent on Arizona's military industry exceeds the number of jobs in the hospitality and tourism industry and the heavy construction industry as measured by the *Cluster Mapping Project* of the Institute for Strategy and Competitiveness, at the Harvard Business School.

The principal military operations in the State *directly* employ over 45,568 individuals, which is approximately equal to the two largest private sector employers in the State – Wal-Mart, and Banner Health Systems, as measured by *The Business Journal* survey conducted for 2006.

**COMPARISON OF MAJOR INDUSTRIES / EMPLOYERS
IN ARIZONA**

	Employment
Military Industry – TOTAL ¹	96,328
Traded Business Services ²	74,626
Traded Hospitality ²	67,138
State of Arizona ⁴	49,000
Traded Heavy Construction	48,261
Military Industry – DIRECT ³	45,568
<i>Arizona's Largest Private Employers</i> ⁵	
Wal-Mart	28,800
Banner Health System	16,400
Wells Fargo & Co.	11,800
Fry's	11,780
Raytheon	10,750
Honeywell	10,700
Intel Corp.	10,100

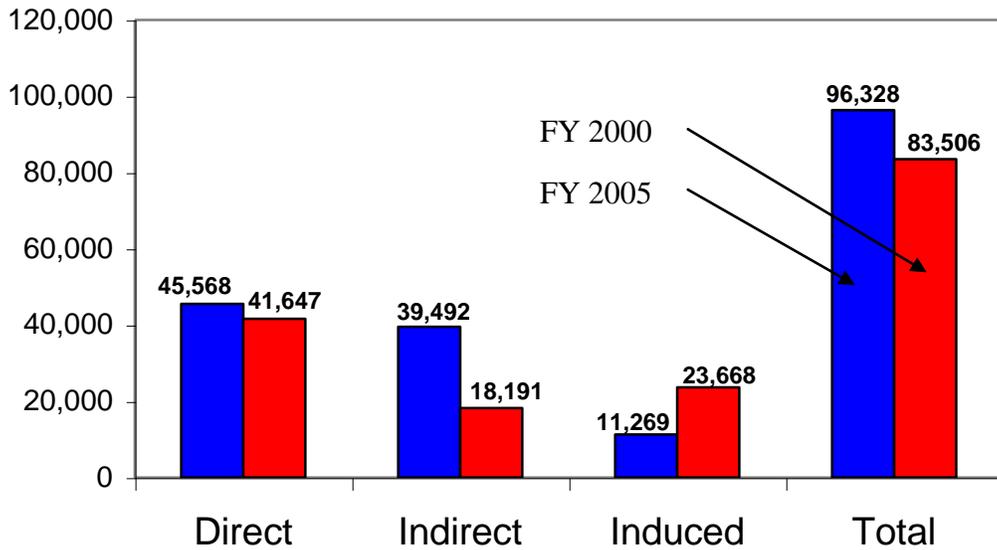
Sources and Notes:

- 1– Includes Direct, Indirect and Induced employment
 - 2 – Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School
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 - 3– Includes only Direct employment, based on full time equivalents
 - 4 – Approximate, excludes Universities
 - 5 –*Book of Lists – The Business Journal*, 2006 – Employer Survey
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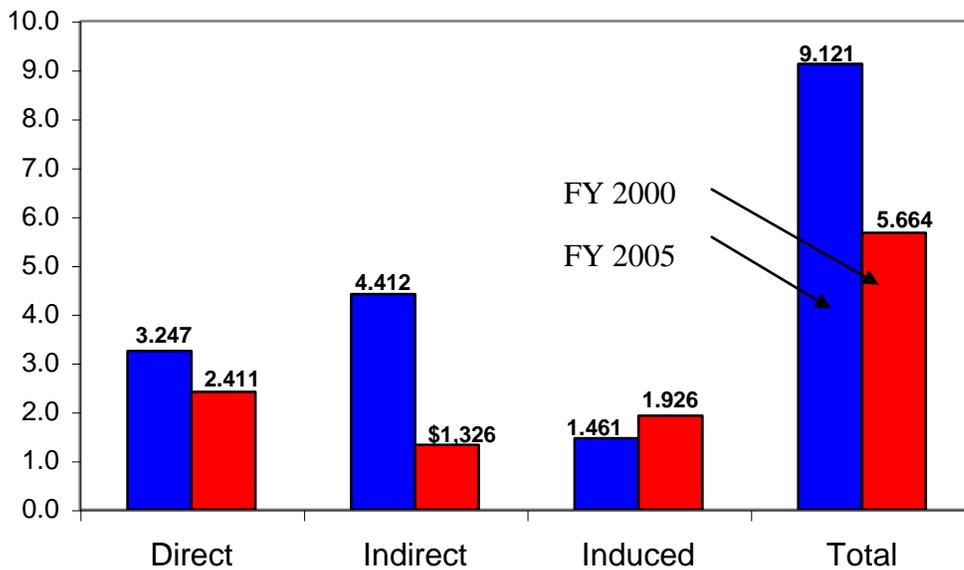
COMPARISONS OF FY 2000 AND FY 2005

Direct employment at the principal military operations in Arizona increased only slightly more than 9% from FY 2000, the last study period to FY 2005 the current study period. However, overall employment attributable to the direct employment and the businesses those operations increased by more than 15%.

**Military Industry Employment
FY 2000 and FY 2005**



**Military Industry Economic Output
FY 2000 and FY 2005
(\$ Billions)**



During the same period, total economic output from Arizona's *military industry* increased by over 60%, while the direct output increased just less than 35%.

Conclusions

The several large military installations, operations examined in this study and the businesses they support comprise Arizona's military industry. It is an industry that provides substantial, stable employment, draws on the same private, non-governmental vendors and suppliers, as many private commercial enterprises in the state, and serves as an important building block in the State's overall economy.

Historically the impact of these operations has often been overlooked in discussions and analyses of Arizona's economy. The economic and fiscal impacts of the State's military industry calculated in this analysis and presented here are significant and represent a key component of the state's economy. Maintaining these operations, the jobs, and economic output they support should be a priority of state and local government. In so doing, appropriate steps should be identified and undertaken to ensure the continued vitality and viability of this industry in Arizona and its strong, stable contribution to the State's economy.

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Acknowledgements

We wish to acknowledge and thank the personnel and leadership of the various military operations included within this analysis. Without the perseverance and diligence of these individuals, it would have been impossible to produce this Report.

In addition, we would like to thank the State of Arizona that sponsored this Study and the supporting analysis. Special gratitude is due to the Arizona Department of Commerce, and the Governor's Military Affairs Commission support of this effort.

Finally, the econometric analysis that lies at the foundation of this Report could not have been accomplished without the tireless efforts of the staff of ESI Corporation, who assisted in the data collection and input for the IMPLAN model and in all other aspects of the analysis supporting this Report, under the guidance and leadership of Judie Scalise.

More information concerning this study may be obtained by contacting either:

Alan E. Maguire
President
The Maguire Company
Phoenix, Arizona
(602) 840 – 6400
FAX 840 – 6468
alan@aemaguire.com

Judie Scalise
President
ESI Corporation
Phoenix, Arizona
(602) 265 – 6120
FAX 265 – 5919
jscalise@esicorp.net

The Maguire Company
ESI Corporation