

**THE ECONOMIC IMPACT OF  
AEROSPACE AND DEFENSE FIRMS  
ON THE STATE OF ARIZONA**

**Final Report  
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## Executive Summary

The purpose of this report is to measure the impact of aerospace and defense (A&D) companies on employment and income in Arizona. Estimated impacts include both the direct effects of the operations of A&D firms and their first-tier suppliers and the so-called multiplier effects that arise when employees spend a portion of their incomes and governments spend new tax revenues. The report also provides estimates of the contributions A&D companies and their employees make to Arizona state and local tax revenues.

The primary data used in the study were collected in a survey of local aerospace and defense firms. The survey was administered jointly by the Arizona Department of Commerce and the L. William Seidman Research Institute in the W. P. Carey School of Business at Arizona State University. By targeting known A&D firms in a special survey, one can obtain a more precise measure of the size of the industry than is possible from government statistics. The survey also provides information not available from other sources, such as purchases by A&D firms from Arizona vendors and state and local taxes paid by A&D firms.

An initial list of 37 companies was compiled using contact files from the Arizona Department of Commerce with additional input from industry representatives. Completed surveys were obtained from 19 of these companies, including all of the very large employers. Based on initial estimates of company employment, the completed surveys appear to cover approximately 90 percent of total A&D employment in the state.

The survey collected data for 2008 and 2009 on economic statistics important for conducting an economic impact analysis of the industry. Averaging the two years, the surveyed firms collectively employed 36,100 Arizona workers with a total annual payroll of \$3.9 billion. Arizona A&D firms annually purchased \$2.1 billion worth of goods and services from local suppliers.

One of the most important indicators of an industry's economic and fiscal impact is employee compensation per worker. As measured in the survey, compensation per employee in the Arizona A&D industry is approximately \$109,000. This is 2.3 times the statewide average for all employed individuals.

Estimates of economic impacts were made with the aid of an Arizona-specific version of IMPLAN, an input-output model used widely by researchers throughout the United States. In measuring the impact of supplier linkages, IMPLAN was used to specify the detailed commodity requirements of each A&D industry. The survey data were used, however, to estimate the percent of total supplier purchases that are made from Arizona producers. IMPLAN also was used to measure the multiplier effects relating to consumer spending and spending by state and local governments out of new tax revenues.

In the interest of gaining a more complete sense of the industry's impact on the local economy, the survey numbers and their corresponding impacts were rescaled to adjust for aerospace-defense firms who did not complete the survey but for whom employment could be

estimated from other sources. This adjustment served to increase the size of the economic impacts by about 11 percent.

Including multiplier effects, and citing results for 2009, the Arizona aerospace and defense industry can account for a total of 93,800 jobs, labor income of \$6.9 billion, and gross state product of \$8.8 billion. The A&D companies themselves employ 39,400 individuals with a total payroll of \$4.3 billion. Purchases of goods and services by A&D companies from Arizona suppliers generate 17,000 jobs and labor income of \$1.1 billion. The most important multiplier effect derives from the local consumer spending of employees of A&D companies and their suppliers. These effects are responsible for 30,000 jobs and labor income of \$1.2 billion.

This report also estimates the direct contributions of A&D companies and their employees to Arizona state and local taxes. Information on business taxes paid by A&D companies is taken directly from the survey. Individual income, sales and residential property taxes paid by A&D employees are estimated. The results suggest that the industry directly contributes approximately \$300 million each year to Arizona state and local tax revenues.

An important public policy issue that arises in connection with the presence of an industry in a local economy is whether the industry generates enough in state and local tax revenues to cover the cost of public services delivered to the firms, their employees and families. Because public services at the state and local level are driven primarily by population, it is possible to assess the net fiscal impact of an industry by comparing taxes generated per industry employee with the statewide ratio of total taxes to total employment. Because of the high earnings of its employees, total A&D taxes per worker are about 10 percent above the statewide average. Specifically, total taxes per employee are \$7,450 in the industry as compared with an average across the state of \$6,691 per worker. These results suggest that the aerospace-defense industry in Arizona has a net positive fiscal impact, generating a surplus in tax revenues that may be used to subsidize public services for other households and businesses.

# **The Economic Impact of Aerospace and Defense Firms on the State of Arizona**

## **I. Introduction**

The purpose of this report is to measure the impact of aerospace and defense (A&D) companies on employment and income in Arizona. Estimated impacts include both the direct effects of the operations of A&D firms and their first-tier suppliers and the so-called multiplier effects that arise when employees spend a portion of their incomes in the local economy and when state and local governments spend new tax revenues.

The primary data used in the study were collected in a survey of local aerospace and defense firms. The survey was administered jointly by the Arizona Department of Commerce and the L. William Seidman Research Institute in the W. P. Carey School of Business at Arizona State University. By targeting known A&D firms in a special survey, one can obtain a more precise measure of the size of the industry than is possible from government statistics, where firm survey data are classified using alternative industry definitions. The survey also provides information not available from other sources, including purchases by A&D firms from Arizona vendors and state and local taxes paid by A&D firms.

Estimates of economic impacts were made with the aid of an Arizona-specific version of IMPLAN, an input-output model used widely by researchers throughout the United States. In measuring the impact of supplier linkages, IMPLAN is used to specify the detailed commodity requirements of each A&D industry. The survey data are used, however, to estimate the percent of total supplier purchases that are made from Arizona producers. IMPLAN also is used to measure the multiplier effects relating to consumer spending by employees and the spending of state and local tax revenues by governments.

The report also provides estimates of the direct impact of A&D operations on Arizona state and local tax revenues. These taxes include the business taxes paid by A&D companies and the individual income, sales and property taxes paid by A&D employees. By comparing total direct taxes per employee in the A&D industry with the statewide ratio of taxes to employment, it is possible to assess whether aerospace-defense companies and their employees contribute more in taxes than they receive in public services.

## **II. Survey of Aerospace-Defense Firms**

A survey of Arizona aerospace-defense companies was undertaken in the late spring and early summer of 2010. The survey was administered jointly by the Arizona Department of Commerce and the L. William Seidman Institute in the W. P. Carey School of Business at Arizona State University. An initial list of 37 companies was compiled using contact files from the Arizona Department of Commerce with additional input and oversight from industry representatives. Completed surveys were obtained from 19 of these companies, including all of

the very large employers. Based on initial estimates of company employment, the completed surveys appear to cover approximately 90 percent of total A&D employment in the state.

The survey was written to collect information important for conducting an economic impact analysis of the industry. The following information was requested from each company.

- *Description of productive activity:* This information was used to assign a six-digit NAICS code to each company. The NAICS code was then used to link the company to one of the 427 industry sectors in IMPLAN.
- *Employment in 2008 and 2009*
- *Wages and salaries in 2008 and 2009*
- *Employee compensation in 2008 and 2009:* Figures were to include wages, salaries and fringe benefits, including employer contributions to health care and retirement plans.
- *Purchases of goods and services from Arizona suppliers in 2008 and 2009:* To avoid double-counting, companies were asked to exclude purchases from other A&D companies who agreed to participate in the survey.
- *Business taxes paid to Arizona state and local governments in 2008 and 2009:* Figures were to include state corporate income taxes, sales taxes and property taxes.

The survey makes it possible to obtain a more precise measure of the size of the aerospace-defense industry than is available from government statistics. Regular surveys of employment and wages by the Bureau of the Census and the Bureau of Labor Statistics classify data by NAICS industry code. One NAICS industry (NAICS 3364) deals specifically with firms that manufacture aerospace products and parts. However, there is no clear scheme in the NAICS classification system for identifying defense-related activity. Firms producing under contract for the Department of Defense are scattered across several NAICS industries and, in many cases, these industries also include nondefense activity.

Another useful aspect of the survey is that it provides information not available from government sources. Particularly important for economic impact analysis is information on purchases by A&D firms from Arizona vendors and state and local taxes paid directly by A&D firms.

Exhibit 1 lists the 19 companies that completed the survey. The surveyed companies vary greatly in size (see Exhibit 2). One-third of the companies have fewer than 100 employees, while one-half have at least 500 employees.

Exhibit 3 provides a summary of some of the key findings from the survey. By any measure, economic activity in the aerospace-defense industry was moderately lower in 2009 than in 2008. Averaging the two years, the surveyed firms collectively employed 36,100 Arizona

workers. Total wages and salaries were \$2.9 billion, and total employee compensation (including benefits) was \$3.9 billion. Arizona A&D firms purchased \$2.1 billion worth of goods and services from local suppliers.

One of the most important indicators of an industry's economic and fiscal impact is employee compensation per worker. Industries with high compensation per worker have relatively large multiplier effects that operate through induced consumer and government spending. These industries also tend to make a net positive fiscal contribution to the state. As measured in the survey, compensation per employee in the Arizona A&D industry is approximately \$109,000 on a size-weighted basis. This is 2.3 times the statewide average for all employed individuals (IMPLAN data files). The relatively high rate of compensation paid by aerospace-defense companies reflects the high level of skills (e.g., engineering skills) required of their employees. Exhibit 4 shows the entire distribution of survey findings for compensation per employee in 2009. Compensation per worker ranges from a low of \$59,400 to a high of \$163,300.

Given the large amount of vertical disintegration that has evolved in modern economies, it is incomplete and potentially misleading to simply look at a company's own employment and payroll when assessing the importance of the company to the local economy. Companies that are highly specialized rely on independent suppliers, many of whom are local, to produce essential parts, components and services. Thus an important goal of the survey was to obtain information from aerospace and defense companies on the value of the intermediate inputs they purchase from Arizona suppliers.

The survey results suggest that local vendor purchases are significant but considerably smaller than what is suggested by IMPLAN's internal data files (see Appendix A for more detail). Averaging results for the two years, supplier purchases were around \$59,000 per employee, or 54 percent as large as payroll compensation per worker. Exhibit 5 shows the complete distribution of Arizona supplier purchases per employee for the year 2009. Ten of the 19 firms spent less than \$25,000 per worker purchasing goods and services from Arizona vendors. There were two firms in the sample, however, that spent over \$120,000 per worker on locally-produced intermediate inputs.

### **III. Economic Impact Analysis**

A separate economic impact analysis was done for each of the years 2008 and 2009. The results are shown in Exhibits 6 and 7. The reader is referred to Appendix A for detailed notes on methodology and estimation procedures. Economic impacts are measured in terms of three variables: gross state product, labor income and employment.

The general size of the numbers is driven by results reported in the AA&D survey. However, in the interest of gaining a more complete sense of the industry's impact on the local economy, it was decided to rescale the numbers to adjust for known aerospace-defense firms who chose not to complete the survey. This adjustment was accomplished by using estimates of individual company employment for each of the nonrespondents and then assuming that their impacts per employee were the same as the values calculated for responding firms.

Nonrespondent companies are estimated to employ only 11 percent as many workers as do the firms that completed the survey.

We review the findings for 2009. Aerospace and defense firms in Arizona directly employ 39,400 workers and make income payments to labor totaling \$4.3 billion. Purchases by A&D firms from Arizona suppliers can account for an additional 17,000 jobs and labor income of \$1.1 billion.

Multiplier effects relating to the consumer spending of A&D employees and employees of suppliers add up to 30,000 Arizona jobs and labor income of \$1.2 billion. Note that labor income per worker among the individuals whose jobs are supported by these multiplier effects is only \$39,000—much smaller than the numbers on labor income per worker in the first two rows of the table. This is because many of the jobs supported by consumer spending in the multiplier process are in the service sector where skills and wages are relatively low and where part-time employment is more common.

Line four of the table shows the economic impacts that would result when state and local governments spend tax revenues directly generated from business taxes paid by A&D companies and individual taxes paid by A&D employees. The impacts are based on an estimate of \$301 million for the direct taxes generated by A&D operations (see next section). When these monies are spent, the result is an additional 7,400 jobs and \$0.3 billion in labor income.

Including all direct and indirect impacts, the Arizona aerospace and defense industry can account for a total of 93,800 Arizona jobs and \$6.9 billion in labor income. The industry contributes \$8.8 billion to gross state product—a broad measure of income that includes capital income as well as labor income.

#### **IV. Impact on State and Local Tax Revenues**

This section of the report provides estimates of the direct contributions of the aerospace-defense industry to Arizona state and local taxes. A&D companies themselves pay corporate income taxes, sales taxes and business property taxes. The figures used for these payments are the ones reported in the survey. A&D employees also pay individual income, sales and residential property taxes. The procedures used to estimate these taxes are explained in Appendix B. Individual taxes paid by employees are estimated on a company-by-company basis to account for differences in location which will affect sales and property tax rates. The contributions A&D employees make to Arizona taxes are based solely on their earnings. Taxes effectively generated from capital income received by households or income from working spouses are not considered, even though in some cases an A&D household might not reside in the state were it not for the employment the industry provides to the primary earner.

Our estimates of the state and local taxes directly generated by the aerospace-defense industry are shown in Exhibit 8. The industry generated approximately \$300 million in tax revenues in each year. Employees contribute the lion's share of these taxes. Our calculations suggest that individual income, sales and property taxes account for 88 percent of the industry's total direct tax payments.

An important public policy issues that arises in connection with the presence of an industry in a local economy is whether the industry generates enough in state and local tax revenues to cover the cost of public service delivery to the firms, their employees and families. An industry with a net positive fiscal impact generates a surplus in tax revenues that may be used to subsidize public services for other households and businesses. Public service delivery at the state and local level is driven by population. Ignoring differences in the demographic makeup of households (e.g., population to employment ratios), it is possible to assess the net fiscal impact of an industry by comparing taxes generated per industry employee with the statewide ratio of total taxes to total employment. Such a comparison involving the aerospace-defense industry is shown in Exhibit 9. A separation of business taxes from individual taxes in the statewide figures was made using estimates from Ernst and Young (2009) on business taxes paid in Arizona in 2008. Arizona taxes are expressed on a per worker basis using estimates from the Bureau of Economic Analysis of total employment, including self-employed individuals.

According to the survey, business taxes paid by aerospace-defense firms in Arizona amount to \$880 per employee. This is only 30 percent as large as the statewide figure on business taxes per worker. Because of their high earnings, however, an average A&D employee makes 1.7 times the contribution to state and local taxes made by an average Arizona worker. Individual taxes per A&D worker are \$6,570 as compared with a statewide figure of \$3,782. The large size of the tax contributions from employees is enough to leave total A&D taxes per worker a little more than 10 percent above the statewide average. Total taxes per employee are \$7,450 in the aerospace-defense industry as compared with an average across the state of \$6,691 per worker.

## **V. Recommendations for Future Study**

An important finding in this study was unexpectedly low numbers reported by A&D companies for purchases of intermediate goods and services from Arizona suppliers. For nine of the twelve companies with at least 250 employees, the ratio of Arizona supplier purchases to company employee compensation was smaller in the survey than what is contained in IMPLAN's internal data files. In fact, the ratio in the survey was less than half of the IMPLAN ratio in eight of the cases. The data on local supplier purchases obtained from the survey then implied much smaller interindustry impacts than would be estimated in a routine IMPLAN run.

It would be useful to conduct a follow-up survey in which A&D companies are asked to detail the supplier purchases they make from companies located outside of Arizona. How firm are these out-of-state supplier relationships? Are close substitutes available from existing Arizona businesses? Or are the prices and/or technical standards of out-of-state products difficult to match by Arizona suppliers?

## Sources

Arizona Tax Research Association, *2009 Property Tax Rates and Assessed Values*, mimeo.

Bureau of Labor Statistics, *Consumer Expenditure Survey, 2008* (Table 2301),  
<http://www.bls.gov/cex/2008/aggregate/higherincome.xls>

Minnesota IMPLAN Group, Inc., *IMPLAN Professional: Social Accounting & ImpactAnalysis Software, Version 2.0* (Stillwater, MN).

Phillips, A.; Cline, R; and T. Neubig, "Total State and Local Business Taxes: 50 State Estimates for Fiscal Year 2009," Ernst and Young, January 2009.

U.S. Census Bureau, *State and Local Government Finances, FY 2008*,  
<http://www2.census.gov/govs/estimate/08slsstab1a.xls>

## Appendix A: Economic Impact Calculations

### *Scope of impacts*

The economic impacts measured in this study are classified into two groups. *Direct impacts* refer to the jobs and incomes immediately supported by A&D company operations and the productive activities of their first-tier suppliers. *Indirect impacts* are those arising from the consumer spending of company employees and the employees of local suppliers. Also considered among the indirect impacts are the jobs and incomes supported by the spending of state and local governments out of tax revenues obtained from A&D business taxes and the individual taxes paid by A&D employees.

### *Economic impact variables*

Impacts are reported for three economic variables: gross state product, labor income and employment. *Gross state product* is a broad measure of income (value added) consisting of employee compensation, proprietor income, property income, and indirect business taxes. Employee compensation includes wages, salaries, bonuses, vacation and sick-leave pay, and employer contributions to retirement, health and life insurance plans. *Labor income* is the sum of employee compensation and proprietor income. *Employment* is a count of both full- and part-time jobs. Employment figures include both wage and salary workers and self-employed individuals.

The study area for the analysis was the state of Arizona. Impacts refer to jobs and incomes generated somewhere in the state.

### *The IMPLAN model*

Estimates of economic impacts were made with the aid of an Arizona-specific version of IMPLAN, an input-output model used widely by researchers throughout the United States. The specific model used was based on IMPLAN's 2007 economic database.

IMPLAN is maintained and licensed by the Minnesota IMPLAN Group, Inc. (MIG). IMPLAN was originally developed by the USDA Forest Service to assist the Forest Service in land and resource management planning. MIG began work on IMPLAN databases in 1987 at the University of Minnesota. In 1993, Minnesota IMPLAN Group, Inc. was formed to privatize the development of IMPLAN data and software. IMPLAN data and accounts closely follow the conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis.

### *Direct impacts from company operations*

The AA&D survey provided information on employment and employee compensation in A&D companies. Estimates of company total value added (gross state product) were made using the ratio of value added to employee compensation available in the IMPLAN data files for individual industry sectors.

### *Direct impacts relating to purchases from Arizona suppliers*

IMPLAN provides estimates of the economic impacts that arise when an industry purchases intermediate inputs from local suppliers. These impacts are sometimes referred to as interindustry impacts and are available, for example, from a Type 1 multiplier analysis. IMPLAN's estimates of these impacts are based on a detailed list of commodity requirements drawn from national survey data together with locally-specific estimates of the percent of commodity purchases made from local suppliers—what are known as “regional purchase coefficients.”

Because of a lack of data on interregional trade flows, any estimates of regional purchase coefficients will have relatively low reliability, especially in the case of goods that can be readily sourced from outside of the local economy. For this reason, the AA&D survey specifically requested information from A&D companies on the total value of goods and services purchased from Arizona suppliers. The survey responses were used to scale the IMPLAN estimates of interindustry impacts.

The data on local supplier purchases obtained from the survey suggest much smaller interindustry impacts than would be estimated in a routine IMPLAN run. For example, for nine of the twelve companies with at least 250 employees, the ratio of Arizona supplier purchases to company employee compensation was smaller in the survey than in IMPLAN. The ratio in the survey was less than half of the IMPLAN ratio in eight of the cases, and it was less than 20 percent in five cases.

### *Indirect impacts from consumer spending*

In economic impact analysis, estimates are made of the indirect impacts that arise when a company's employees and the employees of its suppliers spend a portion of their incomes in the local economy. To estimate these impacts, we assume that the overall propensity to consume out of labor income, including both local goods and goods produced out of state, is 0.6. IMPLAN is used to evaluate the effects of this spending on gross state product, labor income and employment. IMPLAN utilizes data from the Bureau of Labor Statistics' *Consumer Expenditure Survey* to determine the detailed commodity pattern of consumption expenditures. We also rely on IMPLAN for its internal estimates of regional purchase coefficients. There is less of an issue with these coefficients in the case of consumer spending than with supplier purchases since a large share of consumption expenditures are for services which can only be provided locally.

### *Indirect impacts from spending by state and local governments*

As an additional indirect impact, we consider the effects of spending by state and local governments of new tax revenues generated by A&D companies. The analysis is limited to the direct tax revenues paid by A&D companies in the form of business taxes and the individual taxes paid by A&D employees. IMPLAN was used to assess the impact of this spending on the Arizona economy.

## Appendix B: Tax Calculations

Estimates of state and local taxes generated by the operations of Arizona aerospace and defense firms were limited to the direct business taxes paid by companies and the individual income, sales and residential property taxes paid by their employees. The numbers for direct business taxes were those reported by companies in the AA&D survey. Individual taxes associated with the earnings of employees were estimated on a firm-by-firm basis using information on the location of the company's operations and the average annual compensation of company employees. Details of the procedure for estimating individual taxes are provided below.

### *Individual income taxes*

Because income taxes are progressive, we first estimated the Arizona income tax liability of a representative company household. Then a pro rata share was used to obtain the contribution made by the company's employee to those taxes. Separate calculations were made for each year (2008 and 2009) using the company's average employee compensation in that year and the relevant Arizona tax schedule.

To illustrate, consider a hypothetical A&D company with average employee compensation of \$110,000 in 2009. Based on nationwide statistics, 19 percent of that compensation is assumed to take the form of nontaxable benefits. This leaves \$89,100 as the taxable earnings of the company worker. To this amount we then add \$25,000 for other household taxable income, i.e., that related to the earnings of other household members and nonlabor income such as rent and dividends. A figure of \$114,100 then is used to represent the Federal Adjusted Gross Income of the company household. Once taxes are calculated at the household level, 78 percent (i.e.,  $\$89,100/\$114,100$ ) of the taxes are assumed to be attributable to company payrolls.

To calculate the household's state income tax liability, we use the rate schedule pertaining to a family of four with a status of married filing jointly. Under 2009 tax law, Arizona taxable income would be \$98,446 and the family's tax liability would be \$3,298. Taxes attributable to each company employee are 78 percent of that amount, or \$2,575.

### *Sales taxes*

Based on national data from the Consumer Expenditure Survey, consumption expenditures subject to general sales taxes are approximately 20 percent of money income for households with income between \$80,000 and \$120,000. Using a figure of \$114,100 for average household money income, \$22,820 of that amount would be subject to the general sales tax. For the cities in which our A&D companies are located, the combined state/county/city sales tax rate ranges from a low of 7.95 percent (Scottsdale) to 8.60 percent (South Tucson). Using the lower rate to illustrate, and assuming that employees purchase taxable items in the city where they work, the general sales taxes paid by an average company household would be \$1,814. When pro-rated, the portion attributable to the employee's earnings would be \$1,417.

In Arizona, revenues from selective sales taxes on motor fuel, tobacco, utilities, etc. are approximately 25 percent of general sales tax revenues. We use this figure to estimate the selective sales taxes paid by A&D employees. Continuing with the above illustration, the average employee would pay \$354 in selective sales taxes.

### *Residential property taxes*

The average market value of residential property occupied by A&D households is assumed to be three times that of their Federal Adjusted Gross Income, or about \$342,000 in our illustration. The tax rates used to estimate residential property tax payments were taken from the compilation of 2009 rates made by the Arizona Tax Research Association. In choosing a particular rate for each group of employees, employees were assumed to reside in a highly-rated school district near the company site. To illustrate, for an employee who lives in the Scottsdale Unified School District, the total (primary and secondary) property tax rate in 2009 was \$4.458 per \$100 of assessed value. This implies a household property tax liability of \$1,525. When pro-rated, property taxes per employee amount to \$1,191.

**Exhibit 1**  
**List of Survey Participants**

Alliant Techsystems, Inc.  
Applied Energetics  
BAE Systems  
Boeing Company, The  
Bombardier Aircraft Services  
Engineering Science Analysis  
General Dynamics C-4 Systems  
Goodrich Interiors  
Hamilton Sunstrand Aerospace  
Honeywell Aerospace

Kutta Technologies  
L-3 Electro-Optical Systems  
Nammo Talley, Inc.  
Orbital Sciences Corp.  
Paragon Space Development Corp.  
Planetary Science Institute  
Qwaltec, Inc.  
Raytheon Missile Systems  
Universal Avionics Systems Corp.

**Exhibit 2**  
**Size Distribution of Surveyed Companies**  
(as measured by employment)

<b>Employment Size Class</b>	<b>Frequency</b>
1 to 19 employees	3
20 to 99 employees	3
100 to 249 employees	1
250 to 499 employees	3
500 to 999 employees	4
1,000 to 2,499 employees	1
2,500 employees or more	4

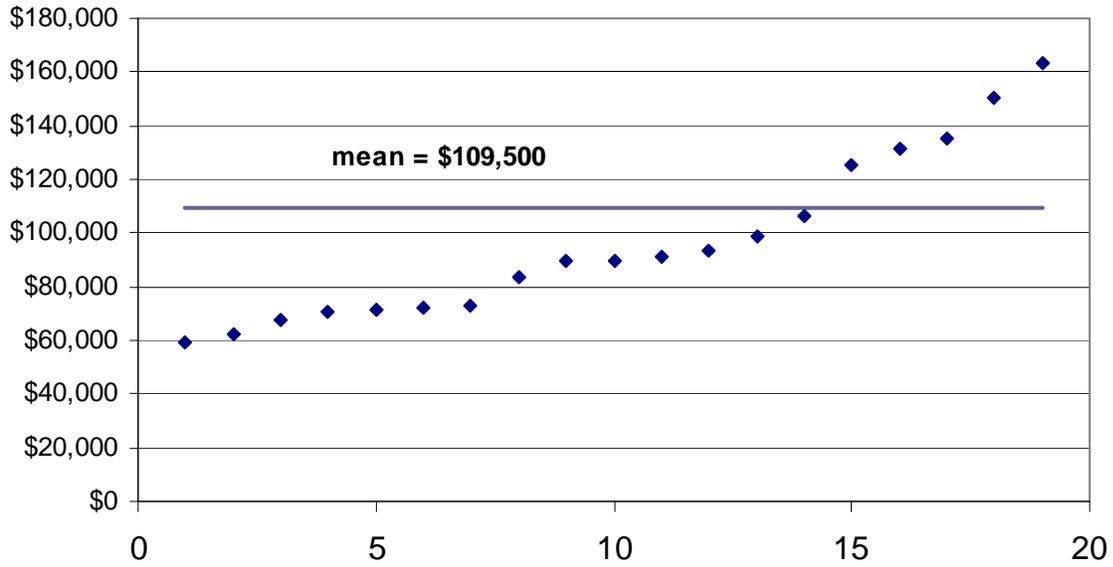
Source: Arizona Aerospace and Defense Survey (2010)

**Exhibit 3**  
**Summary of Primary Data from the AA&D Survey**

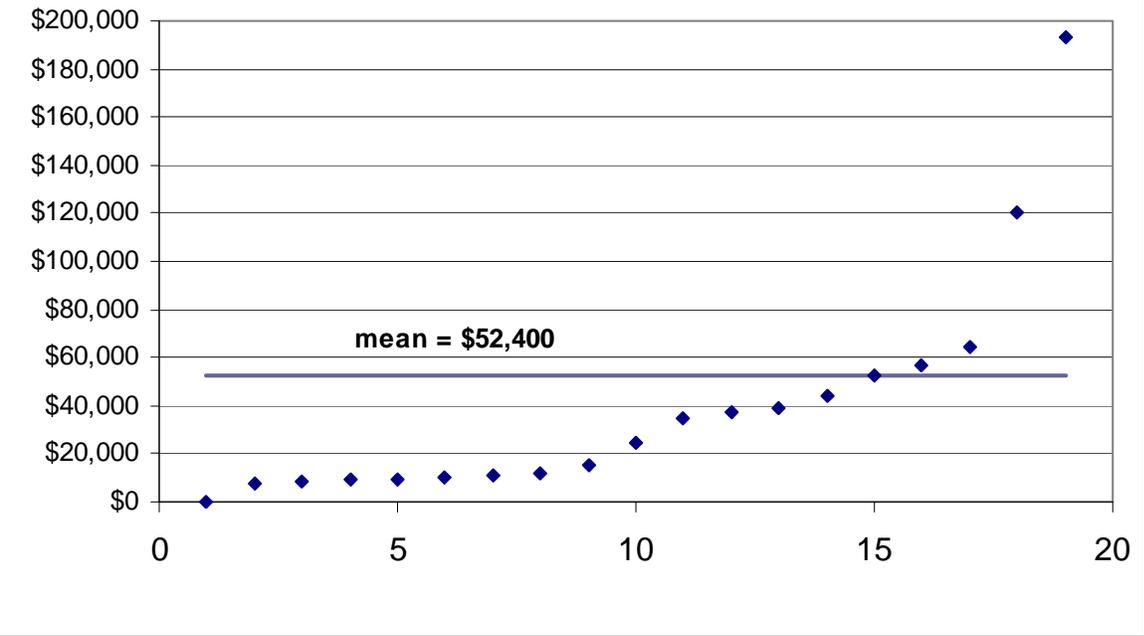
	2008	2009
Total number of employees	36,548	35,559
Total wages and salaries (in millions)	\$2,946.8	\$2,863.7
Total employee compensation (in millions)	\$3,948.7	\$3,894.6
Total purchases from Arizona suppliers (in millions)	\$2,376.7	\$1,864.1
Compensation per employee	\$108,000	\$109,500
Supplier purchases per employee	\$65,000	\$52,400

Source: Arizona Aerospace and Defense Survey (2010)

**Exhibit 4**  
**Compensation per Employee in the Arizona**  
**Aerospace-Defense Industry, 2009**  
Source: AA&D Survey (2010)



**Exhibit 5**  
**Arizona Supplier Purchases per A&D Employee, 2009**  
Source: AA&D Survey (2010)



**Exhibit 6**  
**Economic Impact of the Arizona Aerospace-Defense Industry, 2008**

	<b>Gross State Product</b> (\$ millions)	<b>Labor Income</b> (\$ millions)	<b>Employment</b>
Direct impacts from A&D company operations	4,965.7	4,371.2	40,474
Direct impacts from Arizona supplier purchases	1,830.6	1,349.1	21,849
Indirect impacts from consumer spending by A&D employees and employees of A&D suppliers	2,172.4	1,250.3	32,014
Indirect impacts from spending of new state and local government tax revenues	402.2	326.8	7,387
<b>Total economic impact</b>	<b>\$9,370.9</b>	<b>\$7,297.4</b>	<b>101,724</b>

Source: Center for Competitiveness and Prosperity Research, L. William Seidman Research Institute, W.P. Carey School of Business, Arizona State University

**Exhibit 7**  
**Economic Impact of the Arizona Aerospace-Defense Industry, 2009**

	<b>Gross State Product</b> (\$ millions)	<b>Labor Income</b> (\$ millions)	<b>Employment</b>
Direct impacts from A&D company operations	4,897.6	4,311.3	39,389
Direct impacts from Arizona supplier purchases	1,433.4	1,054.9	17,059
Indirect impacts from consumer spending by A&D employees and employees of A&D suppliers	2,036.7	1,172.1	30,014
Indirect impacts from spending of new state and local government tax revenues	401.7	326.7	7,377
<b>Total economic impact</b>	<b>\$8,769.4</b>	<b>\$6,865.0</b>	<b>93,839</b>

Source: Center for Competitiveness and Prosperity Research, L. William Seidman Research Institute, W.P. Carey School of Business, Arizona State University

**Exhibit 8****Direct Impact of A&D Industry on Arizona State and Local Taxes**

(in millions of dollars)

	2008	2009
Taxes paid by A&D companies:		
Income	5.0	5.0
Sales	7.3	9.3
Property	23.3	22.8
Taxes paid by A&D employees:		
Income	116.2	114.8
Sales	69.8	69.3
Property	79.9	80.0
Total state and local taxes	\$301.5	\$301.1

Source: Center for Competitiveness and Prosperity Research, L. William Seidman Research Institute, W.P. Carey School of Business, Arizona State University

**Exhibit 9**  
**Comparing State and Local Taxes per Worker, 2008**

(dollars per worker)

	<b>Aerospace &amp; Defense</b>	<b>All Arizona Industries</b>
Business taxes per worker	880	2,909
Individual taxes per worker	6,570	3,782
Total taxes per worker	\$7,450	\$6,691

Source: Center for Competitiveness and Prosperity Research, L. William Seidman Research Institute, W.P. Carey School of Business, Arizona State University