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# The Economic Impact of **AVIATION IN ARIZONA**



Arizona Department of Transportation  
Aeronautics Division

**THE GUIDING MISSION OF THE AERONAUTICS DIVISION  
OF THE ARIZONA DEPARTMENT OF TRANSPORTATION IS TO**

encourage and advance the safe and orderly development of aviation in Arizona. The Aeronautics Division is also charged with assembling and distributing information on the state's aviation system to the public. In that vein, the Aeronautics Division commissioned a study to quantify the contribution of aviation to the Arizona economy. This report summarizes the statewide economic impacts of Arizona aviation.

Without question, aviation contributes greatly to the economic vitality of the Grand Canyon State. From the earliest days of human-powered flight, Arizona and aviation have been inextricably linked. With its ideal dry climate and wide-open spaces, all facets of the aviation industry thrive in Arizona today. Commercial aviation, pilot training, aerospace engineering and manufacturing, air park communities and aerial sightseeing are some of the many aspects of aviation that are woven like threads throughout the Arizona economy.



# ALL ARIZONANS BENEFIT FROM AVIATION

**Today more than ever, Arizona relies on aviation to remain competitive in the global marketplace. Aviation and airports are essential components of the state's infrastructure for moving people and goods, for facilitating local, national and international commerce, and maintaining quality of life for Arizona residents.**

## **Businesses and Residents Depend on Arizona's Air Transportation System**

The state's major employers, as well as small businesses, rely on Arizona's airports to provide fast, efficient transportation for personnel, supplies and products. Arizona's growing population relies on aviation for comfortable and convenient travel to cities across the US and worldwide.

## **Aviation Supports Arizona's Growing Tourism Industry**

The tourism industry in Arizona relies on commercial and general aviation to transport millions of visitors each year to the state's tourist attractions and recreational activities including the Grand Canyon National Park, the scenic vistas of Sedona and the Sonoran Desert, first class resorts and spas, championship golf courses and other outdoor adventures.

## **Aviation Creates Economic Benefits**

Beyond the obvious transportation benefits, aviation and airports create economic benefits that extend to all Arizona citizens. Even those that may never board an airplane or make an air

cargo shipment, receive economic benefits from the state's aviation activities through the creation of businesses, jobs, income, and tax revenues. Aviation directly and indirectly supports nearly one-half million jobs and over \$38.5 billion of economic activity in Arizona.

## **Aviation Enhances Quality of Life**

Arizonans derive benefits from aviation that are often intangible and hard to quantify, but nonetheless, of extreme value. Communities rely on aviation services and infrastructure for essential services such as overnight delivery services, air ambulance services, aerial applications, traffic

monitoring, and law enforcement. Arizona airports also support a number of recreational activities, such as soaring, ballooning, sightseeing, and other recreational flying that enhances the quality of life for residents.

## **Future Benefits Require Continued Investment**

Aviation is unquestionably a catalyst for economic growth in Arizona. The future of Arizona aviation is crucial to the state's continued economic growth and global competitiveness. Arizona must make a commitment to adequately fund the state's aviation resources in order to continue to derive the economic, transportation, and quality of life benefits of aviation.



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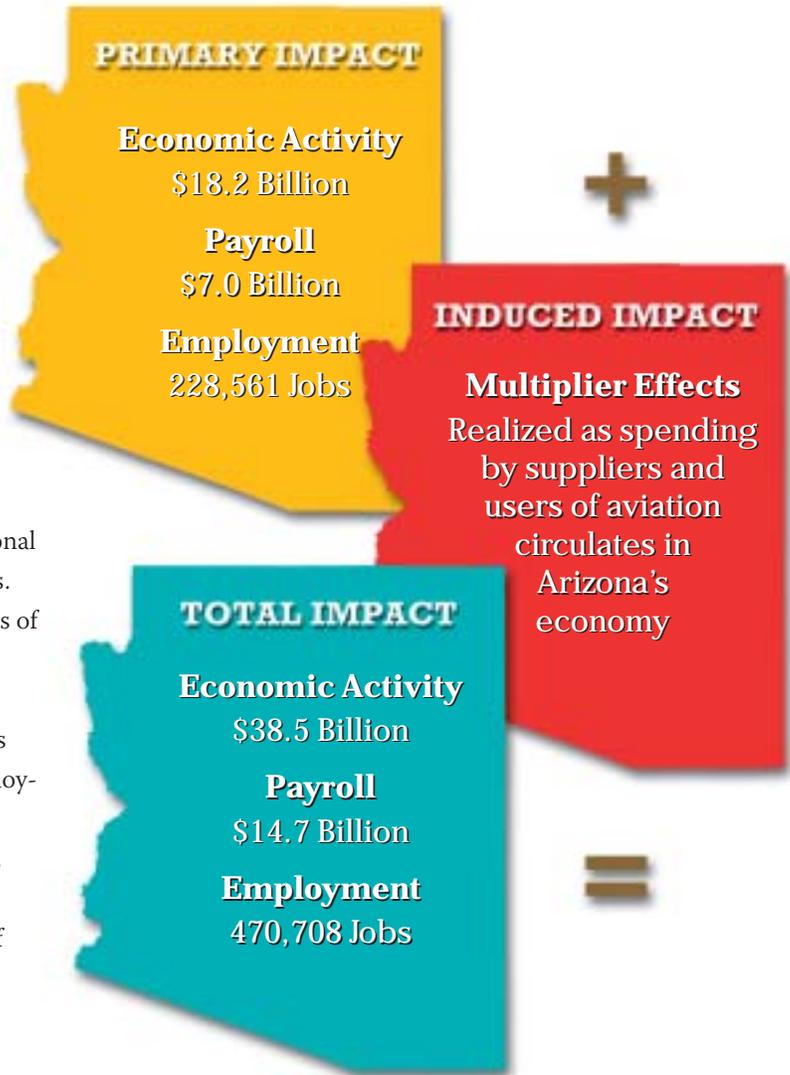
# AVIATION CONTRIBUTES \$38.5 BILLION TO THE ARIZONA ECONOMY



Aviation plays an important role as an economic catalyst in Arizona. In 2002, aviation activities generated \$38.5 billion in total economic activity statewide. More than 470,000 Arizona jobs are related directly or indirectly to aviation. These jobs created almost \$15 billion in wages and benefits for Arizona residents.

The total economic contribution of aviation includes primary impacts created by the economic activities of aviation suppliers and users, as well as spin-off impacts. Spin-off impacts are created when spending by aviation suppliers and users creates additional jobs and spending that support non-aviation businesses. The spin-off benefits created by these successive rounds of spending are also known as the “multiplier effects”.

Aviation is directly responsible for 229,000 Arizona jobs with an annual payroll of \$7 billion. This includes employment at the state’s airports and on-airport businesses, aerospace manufacturers, aviation education programs, the tourism industry, and military air bases. Together, these aviation related activities had a primary impact of \$18.2 billion on the Arizona economy.



## MEASURES OF ECONOMIC IMPACTS

**Economic Activity** The value of all goods, services and capital expenditures that can be linked to aviation. Measured as sales for businesses, operating budgets for government agencies, and spending by air visitors.

**Payroll** The wages and benefits of all persons whose jobs are directly or indirectly supported by aviation.

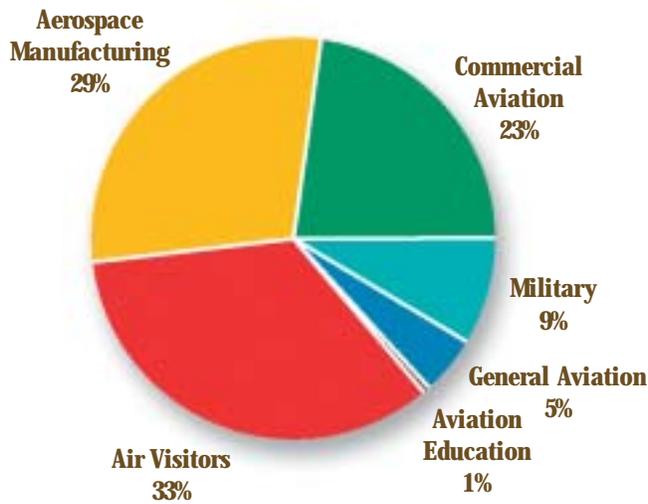
**Employment** The total number of full-time equivalent jobs that are directly or indirectly supported by aviation.

**Total Economic Impacts**  
(Including Spin-Off Impacts)

	Commercial Aviation	General Aviation	Aviation Education	Aerospace Mfg.	Military	Air Visitors	Total
<b>Economic Activity (mil)</b>	\$8,714	\$1,800	\$253	\$11,233	\$3,359	\$13,166	<b>\$38,525</b>
<b>Payroll (mil)</b>	\$3,063	\$762	\$101	\$3,879	\$1,570	\$5,288	<b>\$14,664</b>
<b>Employment</b>	91,519	24,735	2,314	95,369	50,792	205,979	<b>470,708</b>

Air visitors, aerospace, and commercial aviation account for 85% of aviation's primary economic impacts in Arizona.

*Total Economic Activity by Sector*



**EACH SECTOR OF THE AVIATION INDUSTRY PRODUCES ECONOMIC BENEFITS**





**Commercial aviation is a fast growing sector of the Arizona economy, fueled in part by the state's rapid population growth. During the 1990s, Arizona's population base grew by more than 1.5 million people, or 40%, making it the second fastest growing state in the nation.**

Thirteen commercial service airports serve the needs of Arizona's commercial airline passengers and shippers. These airports range in size from the Phoenix Sky Harbor International Airport, which accommodated 17.6 million passenger enplanements in 2002, to Kingman Airport, with just over 2,000 passenger enplanements.

Commercial aviation encompasses the activities of airport operators, passenger and cargo airlines, freight forwarders, air couriers, and a host of support businesses, such as food and retail concessions, parking, ground transportation, aircraft fuel and maintenance,

and airport security. In 2002, commercial aviation contributed \$4.1 billion in primary benefits to Arizona's economy. Commercial airports, their tenants, and support businesses employed more than 39,000 Arizona residents with a payroll of nearly \$1.5 billion.

## COMMERCIAL AVIATION SERVES THE NEEDS OF ARIZONA'S FAST GROWING POPULATION



 Primary Commercial Service  
 Other Commercial Service

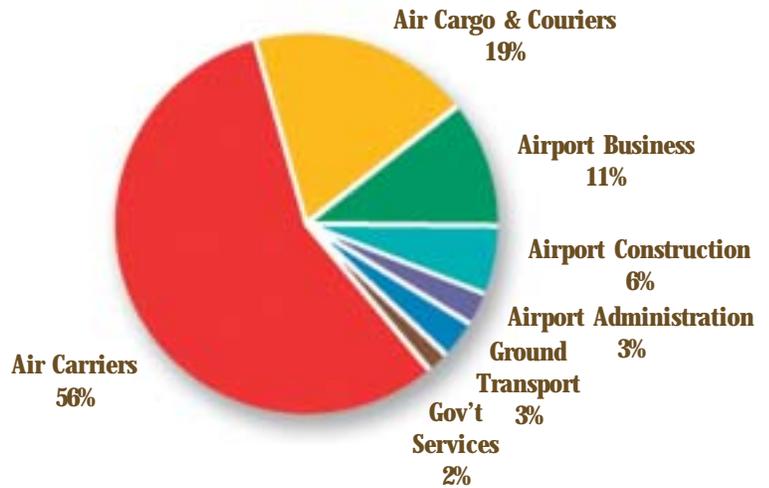


# THE ECONOMIC IMPACT OF COMMERCIAL AVIATION IS \$8.7 BILLION

## Primary Economic Impacts of Commercial Aviation

**Commercial airlines produced \$2.3 billion in economic output, more than half of the economic contribution of total commercial aviation.**

The airlines created over 16,000 Arizona jobs with a total payroll of \$727 million. Businesses engaged in air cargo and overnight delivery services also had a significant impact on the state's economy. Air cargo and courier agents produced \$765 million in revenues, which supported 9,400 jobs with a payroll of \$307 million.



## Economic Impact of Commercial Aviation and Airports

	Air Carriers	Air Cargo & Couriers	Airport Businesses	Ground Transport	Gov't Services	Airport Admin.	Airport Construct.	Total
<b>Primary Impact</b>								
<b>Economic Activity (mil)</b>	\$2,321	\$765	\$429	\$122	\$80	\$120	\$235	<b>\$4,071</b>
<b>Payroll (mil)</b>	\$727	\$307	\$146	\$62	\$60	\$49	\$102	<b>\$1,454</b>
<b>Employment</b>	16,505	9,449	5,913	2,599	1,879	719	2,424	<b>39,487</b>
<b>Total Impact *</b>								
<b>Economic Activity (mil)</b>	\$4,880	\$1,714	\$898	\$267	\$178	\$260	\$517	<b>\$8,714</b>
<b>Payroll (mil)</b>	\$1,492	\$694	\$335	\$119	\$99	\$104	\$219	<b>\$3,063</b>
<b>Employment</b>	38,750	25,979	11,488	4,268	3,017	1,824	6,193	<b>91,519</b>
Category Includes:	Scheduled Commercial Passenger Airlines, Cargo Airlines, Off-Airport Airline Call Centers	Terminals, Delivery, Courier Service	Auto Rental, Airport Shops, Food Services, Parking, Skycaps	Taxis, Limo Services, Van Services	Air Traffic Control, Other FAA, Customs, Postal Service, Weather Service, Airport Security (TSA)	Management, Custodial, Marketing	Maintenance, Capital Improvements	

\* Includes Spin-Off Impacts

# GENERAL AVIATION CONTRIBUTES TO BUSINESS PRODUCTIVITY AND QUALITY OF LIFE IN ARIZONA

General aviation includes all aviation activity other than scheduled airline operations and occurs at all airports in Arizona. The Arizona airport system includes an extensive network of public use general aviation airports to meet the aviation needs of Arizona's businesses and recreational users.

In 2002, there were more than 6,500 registered general aviation aircraft based at Arizona airports. In total there were 3.4 million general aviation operations (aircraft landings and take-offs) at Arizona's general aviation and commercial airports. General aviation airports accommodated 76% of the state's general aviation operations.



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Arizona's Top 10 Airports for GA Operations		
	Annual GA Operations	Share of Total AZ
Phoenix Deer Valley	389,497	11%
Prescott	335,696	10%
Falcon Field	290,902	9%
Chandler Municipal	230,507	7%
Scottsdale	196,014	6%
Williams Gateway	166,510	5%
Tucson Int'l	165,946	5%
Ryan Field	142,407	4%
Phoenix Goodyear	138,067	4%
Glendale Municipal	118,134	3%



The primary impact of general aviation activity and support services in Arizona was \$842 million in economic activity. More than 9,800 Arizonans are employed in the general aviation industry and receive wages and benefits of \$362 million. Over 60% of the economic contribution of general aviation comes from aircraft sales and services. This includes the sale of private aircraft and aircraft parts, as well as aircraft rentals, fuel, maintenance, support services and storage.

The spending of persons directly employed by general aviation supports an additional 15,000 jobs in other sectors of the Arizona economy. General aviation's total contribution to the Arizona economy is \$1.8 billion, including multiplier effects.



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## THE ECONOMIC IMPACT OF GENERAL AVIATION IN ARIZONA IS \$1.8 BILLION

Economic Impact of General Aviation							
	Non-Scheduled Carriers	Aircraft Sales & Service	Aerial Services	Gov't Services	Airport Admin.	Airport Construct.	Total
<b>Primary Impact</b>							
<b>Economic Activity (mil)</b>	\$64	\$528	\$195	\$13	\$18	\$24	<b>\$842</b>
<b>Payroll (mil)</b>	\$27	\$223	\$82	\$11	\$9	\$11	<b>\$362</b>
<b>Employment</b>	635	5,920	2,456	260	297	253	<b>9,821</b>
<b>Total Impact *</b>							
<b>Economic Activity (mil)</b>	\$137	\$1,119	\$421	\$29	\$40	\$54	<b>\$1,800</b>
<b>Payroll (mil)</b>	\$57	\$472	\$174	\$17	\$20	\$23	<b>\$762</b>
<b>Employment</b>	1,611	15,015	6,229	480	753	647	<b>24,735</b>
Category Includes:	Commuter, Unscheduled Carriers	Sales, Rentals, Parts, FBO Service, Storage	Agricultural, Photography, Aerial Mapping, Air Sightseeing, Air Ambulance	Air Traffic Control, Other FAA, Customs, Postal Service, Weather Service, Airport Security	Management, Custodial, Marketing	Maintenance, Capital Improvements	

\* Includes Spin-Off Impacts

# AEROSPACE SUPPORTS HIGH WAGE JOBS IN ARIZONA AND CONTRIBUTES \$11.2 BILLION IN ECONOMIC IMPACT



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Arizona's favorable dry climate, wide-open spaces, and skilled labor force have attracted a number of aerospace research and manufacturing firms to the Grand Canyon State. These firms, which include Raytheon, Honeywell, Boeing, and MD Helicopters are engaged in research and the manufacturing of aircraft parts, avionics, communication systems and missiles for commercial and military applications. Aerospace businesses have a significant impact on Arizona's economy. In 2002, aerospace accounted for almost one-third of the primary economic impacts of aviation in Arizona.

The aerospace sector contributed \$5.6 billion to Arizona's economy in 2002. More than 28,000 Arizonans are employed by aerospace firms, with annual payrolls totaling \$1.8 billion. These are high paying jobs with average wages and benefits exceeding \$60,000 a year.

In addition to those employed in the industry, aerospace indirectly supported another 67,000 jobs in Arizona. The total impacts of aerospace, including the multiplier effects, was \$11.2 billion in 2002.

## Economic Impact of Aerospace Manufacturing

### Primary Impact

Economic Activity (mil)	<b>\$5,628</b>
Payroll (mil)	<b>\$1,777</b>
Employment	<b>28,768</b>

### Total Impact \*

Economic Activity (mil)	<b>\$11,233</b>
Payroll (mil)	<b>\$3,879</b>
Employment	<b>95,369</b>

\* Includes Spin-Off Impacts



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# ARIZONA AIR VISITORS SPEND \$5.9 BILLION

In 2002, 8.4 million visitors traveled to Arizona by air. Visitors are attracted to Arizona for a variety of reasons. Some travel to Arizona to conduct business, others come to visit with family and friends, and still others are tourists who come to enjoy Arizona's sunshine, natural beauty, resorts and other attractions. Over 80% of Arizona's air visitors traveled to the state on a commercial airline, and 18% utilized a private general aviation airplane.

While staying in Arizona, air visitors spent \$5.9 billion on items such as lodging, food and drink, retail purchases, local transportation, and entertainment. Air visitor spending directly supported 120,000 jobs in the hotel, restaurant, retail, and entertainment sectors. The total impact of air travelers on the Arizona economy, including the multiplier effects, was \$13.2 billion.



## Economic Impact of Air Visitors

	Lodging	Food & Drink	Retail	Local Transportation	Entertainment	Travel Agencies	Total
<b>Primary Impact</b>							
<b>Economic Activity (mil)</b>	\$2,057	\$1,936	\$1,028	\$333	\$423	\$134	<b>\$5,910</b>
<b>Payroll (mil)</b>	\$824	\$735	\$506	\$101	\$183	\$69	<b>\$2,419</b>
<b>Employment</b>	33,991	52,174	20,579	3,100	8,418	2,495	<b>120,757</b>
<b>Total Impact *</b>							
<b>Economic Activity (mil)</b>	\$4,556	\$4,303	\$2,241	\$794	\$983	\$289	<b>\$13,166</b>
<b>Payroll (mil)</b>	\$1,824	\$1,672	\$1,012	\$242	\$408	\$130	<b>\$5,288</b>
<b>Employment</b>	63,773	79,582	35,553	7,239	15,582	4,251	<b>205,979</b>

\* Includes Spin-Off Impacts





## ARIZONA OFFERS IDEAL CONDITIONS FOR TRAINING MILITARY AND CIVILIAN PILOTS



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Arizona is a leader in private sector aviation education with the second highest number of flight instructors per capita in the US.

In addition to private flight instructors, Arizona boasts leading institutions that offer undergraduate and graduate degree programs preparing students for careers in aeronautics, aerospace engineering, aviation business management, and other aviation careers. In 2002, the aviation education field created more than 1,200 full time jobs and had a primary impact of \$110 million on the Arizona economy.

**More than 28,000 people are employed at Arizona military bases that are engaged in aviation or aviation related activities.**

In 2002, these military sites had an annual payroll of \$989 million and were responsible for spending nearly \$1.7 billion in the state. The total economic impact of military aviation in Arizona was \$3.4 billion including multiplier effects.

### *Military Air Bases in Arizona*

Air National Guard 161<sup>st</sup> – Phoenix

Air National Guard 162<sup>nd</sup> – Tucson

Davis-Monthan Air Force Base

Libby Army Airfield – Sierra Vista

Luke Air Force Base

Marine Corp Air Station – Yuma

Papago Park Military Reservation

Silver Bell Heliport

### Economic Impact of Military and Aviation Education

	Military	Aviation Education
<b>Primary Impact</b>		
<b>Economic Activity (mil)</b>	<b>\$1,678</b>	<b>\$110</b>
<b>Payroll (mil)</b>	<b>\$989</b>	<b>\$46</b>
<b>Employment</b>	<b>28,497</b>	<b>1,230</b>
<b>Total Impact *</b>		
<b>Economic Activity (mil)</b>	<b>\$3,359</b>	<b>\$253</b>
<b>Payroll (mil)</b>	<b>\$1,570</b>	<b>\$101</b>
<b>Employment</b>	<b>50,792</b>	<b>2,314</b>

\* Includes Spin-Off Impacts

# AVIATION GENERATES \$1.8 BILLION IN TAX REVENUES FOR ARIZONA

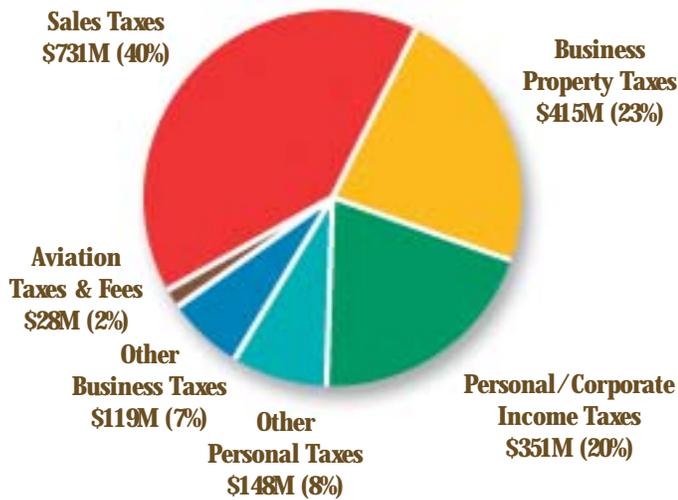


**Arizona aviation and air visitor spending also generate state and local tax revenues. Corporations and persons directly involved in aviation pay taxes, including income taxes, sales taxes and user fees. As persons employed in aviation spend their salaries, additional revenue is generated through sales taxes. Air visitors, through their spending in the state, are another source of tax revenues.**

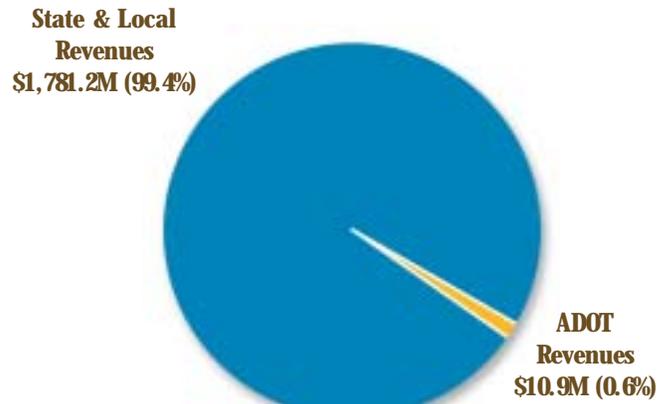
The spending from these direct and indirect activities recirculates through the Arizona economy creating additional sources of tax revenues. In 2002, the combination of direct, indirect and induced activities created \$1.8 billion in state and local taxes for Arizona.

Sales tax collections were the single largest source of tax revenues at \$731 million, followed by business property taxes at \$415 million. Personal income taxes, which amounted to \$290 million, was the third largest source of tax revenues stemming either directly or indirectly from aviation. In addition, several taxes are levied on aviation activities, from excise taxes on aircraft, to aviation fuel taxes, and aircraft registration fees. These taxes raised \$28.1 million in state and local revenues in 2002. Of all the tax revenues stemming from aviation activities, only \$10.9 million (less than 1%) was reinvested in aviation through the Aeronautics Division of the Arizona Department of Transportation, whose mission is to encourage and advance the safe and orderly development of aviation in the state.

*State and Local Tax Revenues Generated by Aviation Activities and Multiplier Impacts*



*Allocation of Taxes Generated by Aviation Activities*



# AVIATION IMPACTS ON OTHER SECTORS OF THE ARIZONA ECONOMY

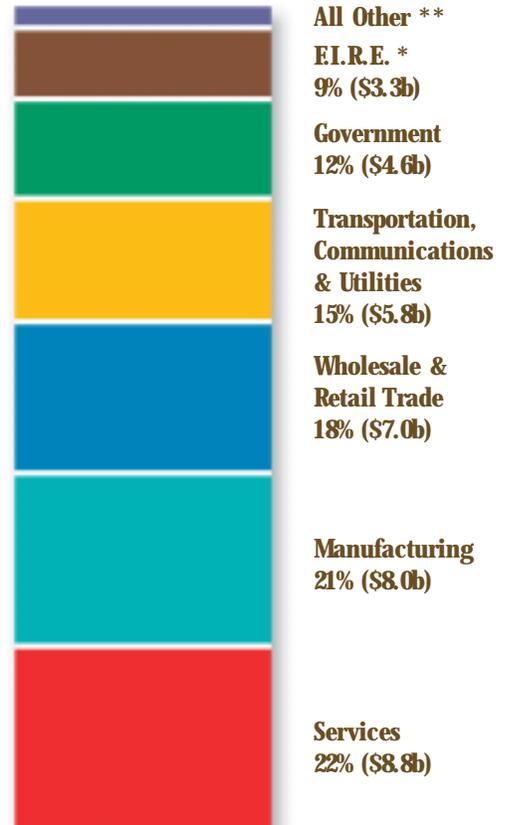
Aviation benefits all sectors of the Arizona economy. Arizona businesses rely on aviation to transport personnel, send products to customers, and receive materials and supplies. They also depend on and benefit from the spending generated by air visitors and persons employed in aviation.

The majority of aviation's economic benefits accrue to the Services, Manufacturing, and Trade sectors.



## Economic Impact of Arizona Aviation by Industry Sector 1998-2002

**\$38.5b**



\*\* Includes Agriculture, Mining, and Construction

\* Includes Finance, Insurance & Real Estate

# THE ECONOMIC IMPACT OF ARIZONA AVIATION CONTINUES TO GROW

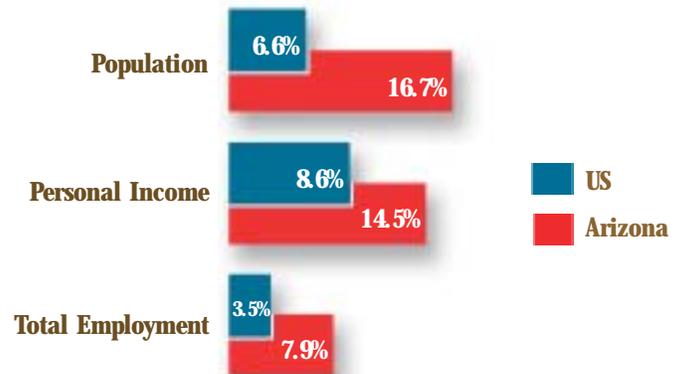
The economic impact of Arizona aviation increased from \$31.1 billion in 1998 (measured in constant 2002 dollars) to \$38.5 billion in 2002, representing a real increase of 24%. This is not surprising given the growth of the Arizona economy and aviation industry over this period. Despite the 2001 economic recession and the negative impacts of the 9/11 terrorist attacks, the Arizona economy, as well as aviation activities, grew at above-average rates between 1998 and 2002.

Over this period, Arizona outpaced the United States in basic economic measures. Statewide employment grew by 8% and personal income, measured in constant dollars, increased by nearly 15% significantly faster than average US growth. Moreover, Arizona's population increased by 17%, more than twice the rate of US population growth.

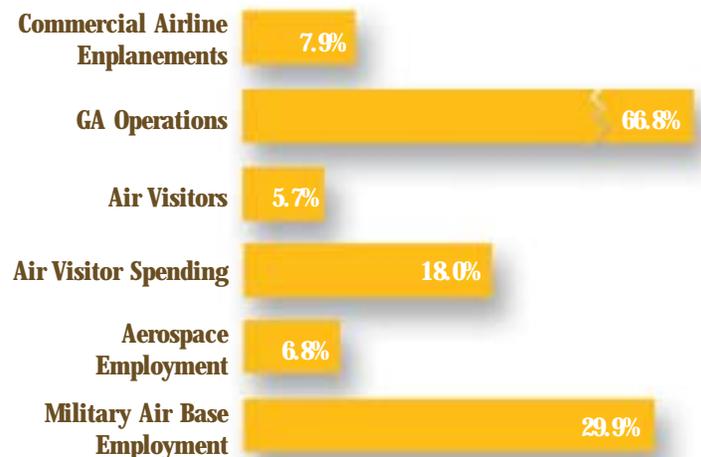
Within Arizona, both commercial and general aviation activities have grown since 1998. Arizona's airline enplanements rose by 8%, while total US enplanements showed no growth between 1998 and 2002. General aviation operations in Arizona grew by 67% over the 5-year period while national general aviation operations declined by 1.2%. Commercial airline and general aviation visitors to Arizona increased by 467,000. Total spending by these visitors rose from \$4.7 billion in 1998 (expressed in 2002 dollars) to \$5.6 billion in 2002, representing a real increase of 18%. The Aerospace industry added 1,800 jobs in Arizona and employment at Arizona's military air bases rose by 6,500 jobs.



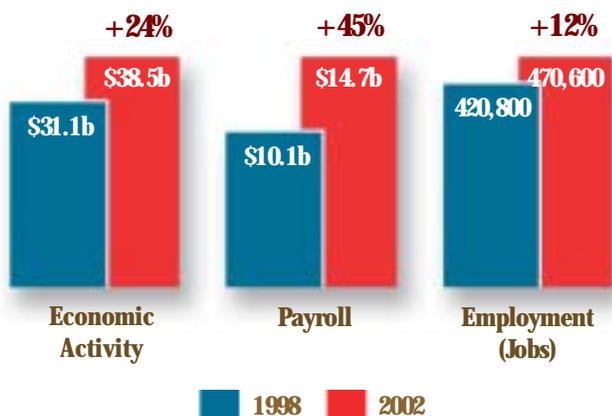
*Arizona's Economic & Demographic Growth 1998-2002*



*Arizona's Aviation Growth 1998-2002*



*Arizona's Aviation Industry Growth 1998-2002*



**Air transportation, aviation support services, and airport facilities are essential for Arizona's continued economic growth. For Arizona, aviation creates jobs, provides access to domestic and international markets and encourages tourism. The growing integration of businesses, economies and societies around the world is a driving force of the modern era that will continue to shape and influence the Arizona economy and lifestyle, well into the future.**



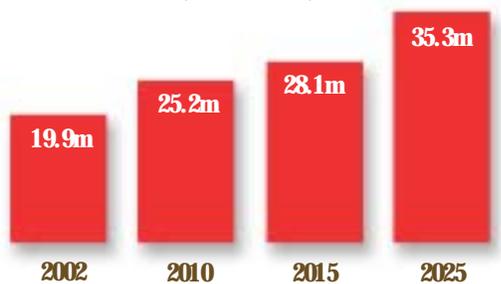
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As Arizona businesses continue to expand their global reach, they will increasingly require fast, efficient air transportation to move goods, supplies and personnel. As individuals increase and broaden their connections with the global community through technological developments, the demand for air passenger travel will continue to grow. On top of the globalization trend, Arizona's vigorous population growth will further accelerate the need for air transportation services and infrastructure. Arizona's population is forecast to reach 8 million by 2025, an increase of 54% over the state's 2002 population base.

Arizona's demand for aviation is forecast to increase significantly in step with the pace of globalization and population growth. The number of airline passengers using

## THE FUTURE OF ARIZONA AVIATION IS VITAL TO THE STATE'S ECONOMIC GROWTH AND GLOBAL COMPETITIVENESS

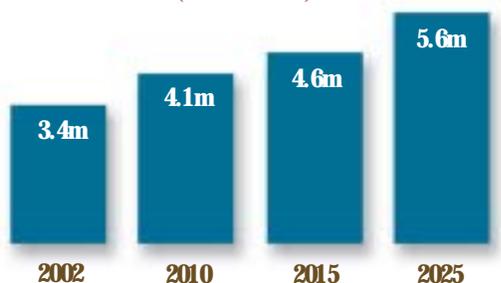
**Forecast Passenger Enplanements**  
(In millions)



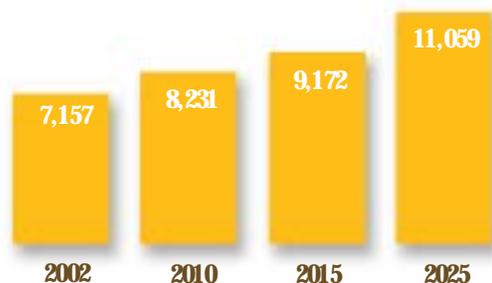
an Arizona airport is expected to rise by 77% from 19.9 million enplanements in 2002 to 35.3 million by 2025. General aviation operations are projected to grow from 3.4 million in 2002 to 5.6 million in 2025, an increase of 64%. Similarly, the number of aircraft based at Arizona airports is forecast to expand by 55%, reaching 11,059 registered aircraft.

The economic contribution of aviation to the Arizona economy is projected to grow from \$38.5 billion in 2002 to \$68.8 billion in 2025. More than 800,000 Arizona jobs will be linked in some way, either directly or indirectly, to aviation.

**Forecast GA Operations**  
(In millions)



**Forecast GA Based Aircraft**



Sources: (1) ADOT, Arizona State Aviation Needs Study, 2000; (2) Maricopa Association of Governments, Regional Aviation System Plan Update, 2001; and (3) Pima Association of Governments, Regional Aviation System Plan Update, 2001.

# ECONOMIC IMPACT PROJECTIONS FOR ARIZONA AVIATION



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## Projected Economic Impacts: Employment and Economic Activity (Dollar Amounts in \$ Millions)

	2002		2010		2015		2025	
	Jobs	Economic Activity						
<b>Commercial Aviation and Airports</b>								
Air Carriers (On/Off Airport)	38,751	\$4,880	49,043	\$6,176	54,623	\$6,879	68,672	\$8,648
Air Cargo and Courier Agents	25,979	\$1,714	32,879	\$2,169	36,620	\$2,416	46,038	\$3,037
Airport Businesses	11,488	\$898	14,539	\$1,136	16,193	\$1,265	20,358	\$1,591
Ground Transportation	4,268	\$267	5,402	\$338	6,016	\$377	7,563	\$474
Government Services	3,017	\$178	3,820	\$225	4,254	\$250	5,348	\$315
Airport Administration	1,824	\$260	2,308	\$329	2,571	\$367	3,232	\$461
Airport Construction	6,193	\$517	7,838	\$655	8,730	\$729	10,975	\$916
<b>Subtotal</b>	<b>91,519</b>	<b>\$8,714</b>	<b>115,829</b>	<b>\$11,028</b>	<b>129,007</b>	<b>\$12,283</b>	<b>162,188</b>	<b>\$15,442</b>
<b>General Aviation</b>								
Non-scheduled Carriers	1,611	\$137	1,945	\$166	2,179	\$186	2,638	\$225
Aircraft Sales and Service	15,015	\$1,119	18,130	\$1,351	20,310	\$1,513	24,586	\$1,832
Aerial Services	6,229	\$421	7,521	\$509	8,426	\$570	10,199	\$690
Government Services	480	\$29	580	\$35	649	\$39	786	\$48
Airport Administration	753	\$40	909	\$48	1,019	\$54	1,233	\$65
Airport Construction	647	\$54	781	\$65	875	\$73	1,059	\$88
<b>Subtotal</b>	<b>24,735</b>	<b>\$1,800</b>	<b>29,867</b>	<b>\$2,174</b>	<b>33,458</b>	<b>\$2,435</b>	<b>40,501</b>	<b>\$2,948</b>
<b>Other Aviation Sectors</b>								
Aerospace Manufacturing	95,369	\$11,233	123,257	\$14,517	147,073	\$17,323	203,256	\$23,940
Aviation Education	2,314	\$253	2,624	\$287	2,839	\$311	3,322	\$364
Air Travelers	205,979	\$13,166	256,768	\$16,413	286,508	\$18,314	355,939	\$22,752
Military Aviation	50,792	\$3,359	50,792	\$3,359	50,792	\$3,359	50,792	\$3,359
<b>Total</b>	<b>470,708</b>	<b>\$38,525</b>	<b>579,137</b>	<b>\$47,778</b>	<b>649,678</b>	<b>\$54,024</b>	<b>819,998</b>	<b>\$68,804</b>

# HOW THE ECONOMIC IMPACT OF ARIZONA AVIATION IS CALCULATED



**The contribution of aviation to the Arizona economy was calculated using accepted methods and guidelines for estimating economic impacts. To the extent possible, the approach used is consistent with the 1998 study, *The Economic Impact of Aviation in Arizona*, and previous studies commissioned by the Aeronautics Division.**

The primary impacts of the various aviation sectors were identified through several sources: (1) the Arizona Department of Economic Security (ADES), which provided industry specific employment and wages; (2) a survey of airport managers that provided on-airport employment, operating budgets, and capital expenditures for Arizona airports; (3) airport economic impact studies conducted for the Flagstaff, Phoenix Sky Harbor, Deer Valley and Goodyear airports in 2002 and 2003; (4) aviation activity levels at the state's public use airports; and (5) the Arizona Office of Tourism (AOT), which provided an estimate of annual spending by domestic and international airline visitors. In addition, the economic contribution of Arizona's military air bases was based on the *Economic Impact of Arizona's Principal Military Operations (2002)*, prepared by The Maguire Company.

Business sales and total economic impacts, including the spin-off impacts that are generated as spending recirculates through the Arizona economy, were calculated using the

IMPLAN economic impact modeling system. IMPLAN provided economic statistics that describe that structure of the Arizona economy in terms of employment, wages and economic output by industrial sector. IMPLAN also provided Arizona-specific multipliers for employment, wages and economic output. When applied to the primary economic impacts, the state multipliers provide an estimate of total economic impacts in Arizona, including both the primary impacts of aviation and the spin-off (or "multiplier") effects. The state-specific multipliers account for the goods and services purchased locally and excludes the impacts of business, government and personal expenditures that flow to entities outside of Arizona. IMPLAN is now the most widely used input-output economic modeling system in the US. The IMPLAN model relies on data provided by the US Department of Commerce for inter-industry technology relationships, and state and county economic data from the US Bureau of Economic Analysis, the US Bureau of Labor Statistics, and the US Department of Agriculture.

Forecast economic impacts for commercial aviation, general aviation, and air travelers are based on forecasts of enplanements and general aviation operations that were derived from three system planning studies: (1) ADOT, *Arizona State Aviation Needs Study*, 2000; (2) Maricopa Association of Governments, *Regional Aviation System Plan Update*, 2001; and (3) Pima Association of Governments, *Regional Aviation System Plan Update*, 2001. Forecast growth rates for individual airports from the various studies were applied to actual 2002 base year activity. Projections for Aerospace Manufacturing were based on aerospace industry forecasts of employment and wages prepared by Global Insight (formerly DRI). The economic impacts of military aviation were held constant over the forecast period, consistent with the 1998 study methodology. Aviation education impacts were projected based on projections of private educational employment and Arizona population.



## AVIATION THRIVES IN ARIZONA

Aviation-related jobs provide employment for 228,000 people in Arizona – *10% of the state's total employment in 2002*

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Phoenix Sky Harbor is the nation's 5<sup>th</sup> busiest commercial service airport, with 17.6 million enplaned passengers in 2002

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More than 8 million visitors rely on air transportation to reach Arizona each year

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Arizona ranks 4<sup>th</sup> among US states in total general aviation hours flown

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Arizona is a leader in aviation education and pilot training, with more flight instructors per capita than any other state, except Colorado

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Arizona is home to a number of military air bases, which support the local economy, provide training for military pilots and other aviation specialists, and strengthen the nation's air defense

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Several leading aerospace companies operate in Arizona creating high-paying, skilled jobs for Arizona residents



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