



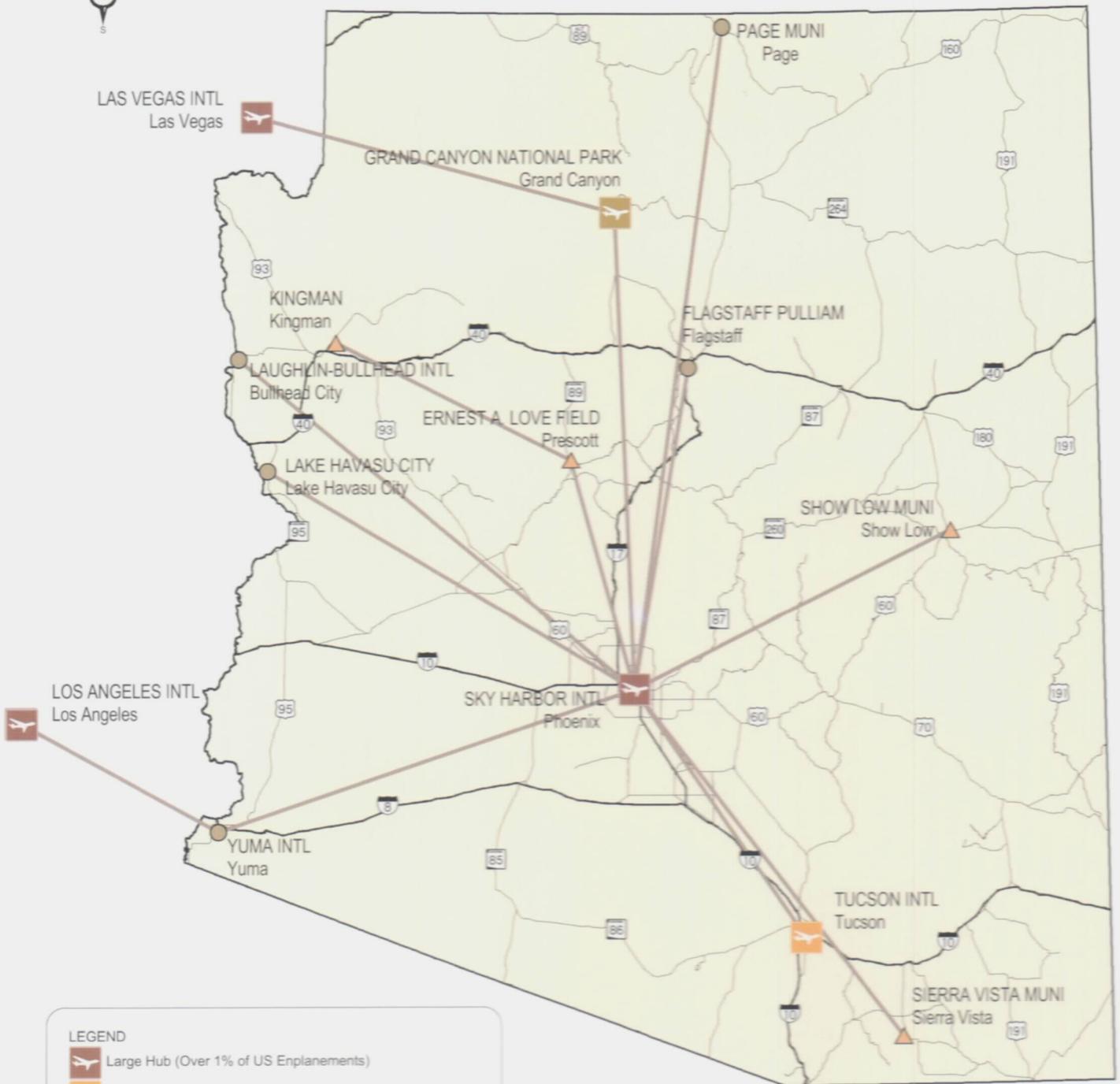
The Economic Impact of Aviation in Arizona

Arizona Aviation System Plan — Vol. I



State of Arizona

Existing Commercial Service Airports



LEGEND

-  Large Hub (Over 1% of US Enplanements)
-  Medium Hub (0.25% to 1% of US Enplanements)
-  Small Hub (0.05% to 0.25% of US Enplanements)
-  Non-Hub (10,000 to 0.05% of US Enplanements)
-  Other Commercial Service (less than 10,000 Enplanements)



Arizona Aviation System Plan — Vol. I

The Economic Impact of Aviation in Arizona



Prepared for the
Arizona Department of Transportation
Aeronautics Division
by
Arizona State University
College of Business
Tempe, AZ 85287

An Element of the
Continuous Aviation System
Planning Program
October 1999

Arizona's Economy Soars on the Wings of Aviation



Aviation is vital to the Arizona economy. Air travel and airports play the same role today as ships and seaports or trains and railways in by-gone years. Just as seaports formed the first settlements in America and railroads opened the West, airports now provide the essential linkages for Arizona's people and commerce to connect with the world. In the future as in the past, Arizona's economy rides the wings of aviation.

Arizona's economic growth in the past decade consistently ranks the state among the nation's leaders in new residents and job creation. Population in 1990s increased by more than one third and employment increased by a striking 42 percent. Combined passenger enplanements at Phoenix Sky Harbor and Tucson International airports increased by 46 percent in the same period.

If the economy can be thought of as a machine that produces goods and services, then aviation is the lubricant that makes the gears turn in the Grand Canyon State.

Aviation and airports move more than just people and cargo for business or personal travel.

Suppliers of aviation goods and services create jobs and income in their own right, on airports and in the cities and towns across the state. For example, airlines now employ more than twice as many persons as copper mining, historically a fundamental Arizona economic sector, and aviation-related jobs in the state outnumber those in the construction industry.

If the economy can be thought of as a machine that produces goods and services, then aviation is the lubricant that makes the gears turn in the Grand Canyon State.

Aviation's importance in the dynamic growth of Arizona in the second half of the 20th Century is unquestioned. But, growth is a "two-edged sword"; it produces economic development, but it is not sustainable without maintenance of the infrastructure and enhancement of the system to meet future needs. We must insure that resources are made available to the system so it

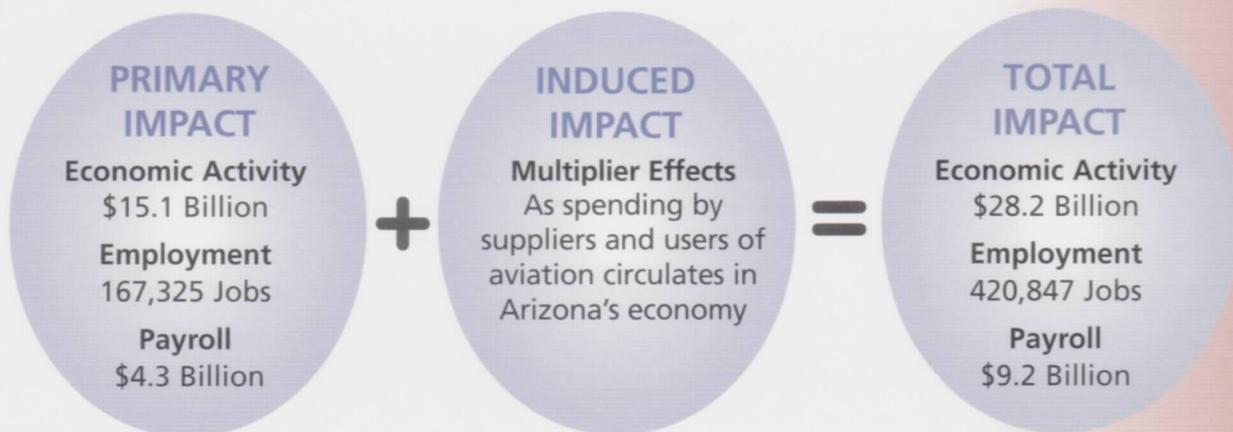
can continue to grow and contribute to the State's economy. It is estimated that more dollars will be needed to just maintain the present system than projected income from all the current revenue sources. Now, as we look toward the new millennium, it is essential that private and public stakeholders in Arizona's future provide for the infrastructure and develop aviation policies that will keep Arizona at the forefront of global economic development.

Aviation Creates a \$28.2 Billion Economic Impact



Aviation's total impact on the Arizona economy was \$28.2 billion in 1998. The jobs of more than 420,000 workers are supported by or linked in some way to aviation. These total impact figures include the influence of "multiplier effects" that come into play as aviation firms purchase goods and services and make wage payments to Arizona employees.

The primary impact of aviation without including multiplier effects was \$15.1 billion with 167,325 workers whose jobs involved supplying or using aviation services. Arizona's employees with aviation-related jobs received \$4.3 billion in wage payments in 1998.



**Arizona Aviation Total Economic Impact
(includes all multiplier effects)**

	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)
Commercial Aviation	75,081	1,782.4	5,635.3
General Aviation	22,329	476.4	1,466.0
Aviation Education	7,965	90.9	249.2
Aerospace Manufacturing	99,664	3,043.9	9,429.4
Military Aviation	30,641	741.3	2,386.0
Air Travel	185,167	3,016.0	9,007.1
TOTAL	420,847	9,150.9	28,173.0

Commercial Aviation is One of the Fastest Growing Components of Arizona's Economy



Commercial aviation ranks among the fastest-growing components of the Arizona economy. The sector includes firms and government agencies involved with transporting people and cargo at Arizona's commercial service airports.

In addition to scheduled air passenger service, commercial aviation includes air freight, overnight delivery services, and a myriad of on-site support functions that allow airports to operate smoothly and efficiently. Businesses on airports provide goods and services for passengers such as auto rental and other ground transport, food services, retail products, and parking. Other firms and agencies provide aircraft fuel and maintenance and airport security.

The primary impact of Arizona's commercial aviation as measured by combined revenues of private firms and budgets of government agencies was \$3.6 billion in 1998. Employment in these businesses and agencies was 29,432 with payroll of \$884.1 million.

Since 1990, the primary impact of commercial aviation has increased two and one half times, while employment in commercial aviation has risen by more than one fourth.

The greatest economic impact of the commercial aviation sector is created by airlines, whose economic activity is \$2.7 billion and employment exceeds 15,000. Air carrier employment in Arizona has increased 65 percent since 1990.



\$5.6 Billion Impact From Commercial Aviation



Economic Impacts: Commercial Aviation and Airports

	Primary Impact			Total Impact		
	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)
Air Carriers	15,063	549.1	2,663.2	50,731	1,237.9	4,047.7
Air Cargo and Courier Agents Terminals Delivery Courier service	1,627	46.1	133.7	3,044	73.6	237.0
Airport Businesses Auto rental Airport shops Food services Parking Security Sky caps	7,236	126.5	421.5	12,090	258.6	775.4
Ground Transportation Taxis Limo service Van service	2,408	55.7	133.8	4,281	93.1	236.3
Govt. Services Air traffic control Other FAA Customs Postal service Weather service	588	27.2	67.9	1,117	33.9	110.4
Airport Admin.	1,013	40.4	100.9	1,747	35.8	111.8
Airport Construction Maintenance Capital improvements	1,497	39.1	100.4	2,071	49.4	116.7
TOTAL	29,432	884.1	3,621.3	75,081	1,782.4	5,635.3

General Aviation Fuels Arizona's Economic Development



Arizona has over 5,000 general aviation aircraft used by corporate, government, tribal and private pilots for travel across the state and throughout the nation. Arizona, 21st in population size, ranks 11th among all

states in number of private pilots and registered general aviation aircraft.

General aviation aircraft are used for business and recreational travel. Arizona records more than three million general aviation operations (take offs and landings) each year.

Over 10,500 Arizona workers have jobs directly related to general aviation. Economic activity from general aviation aircraft owners and general aviation airports was nearly \$1 billion in 1998. After allowing for multiplier effects, the total impact of general aviation was \$1.5 billion.

Economic Impacts: General Aviation

	Primary Impact			Total Impact		
	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)
Non-scheduled Carriers Commuter Unscheduled	1,112	34.9	153.7	3,025	71.9	229.8
Aircraft Sales and Service Sales Rentals Parts FBO service Storage	8,299	227.9	741.5	16,737	351.1	1,085.5
Aerial Services Agricultural Photography/maps	496	11.8	43.0	1,456	26.0	72.2
Government Services	248	10.4	26.0	370	11.0	35.7
Airport Administration	218	7.4	18.5	277	5.6	17.3
Construction	221	6.1	15.4	463	10.9	25.5
TOTAL	10,594	298.6	998.1	22,329	476.4	1,466.0

Arizona Aerospace Firms Generate \$9.4 Billion Economic Impact

Arizona is a favored location for aerospace research and manufacturing. World-class firms including Allied-Signal, Boeing, Honeywell and Raytheon compete globally from sites in Arizona where they enjoy unrivaled flying weather, a skilled labor force and a tradition of aviation progress.

Arizona's aerospace manufacturing firms produced output valued at \$4.4 billion in 1998. Although products were shipped across the nation and around the globe, one out of every four of these dollars stayed within the Grand Canyon State as \$1.4 billion of earnings for Arizona aerospace workers. And aerospace firms contribute more dollars to the state economy as they purchase goods and services, support community-based charities and pay taxes.

Arizona's 26,936 aerospace workers are among the highest paid among all workers in the state, with average annual salaries exceeding \$50,000.

The total impact of aerospace manufacturing was \$9.4 billion in 1998. Aerospace research and manufacturing supports nearly 100,000 jobs in the Arizona economy.



Economic Impacts: Aerospace Manufacturing

	Primary Impact			Total Impact		
	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)
Aircraft & Parts	18,468	917.9	3,197.8	68,597	2,130.0	61,853.2
Missiles & Parts	8,448	446.4	1,235.6	31,067	913.9	2,576.2
TOTAL	26,936	1,364.3	4,433.4	99,664	3,043.9	9,429.4

Military Aviation



There are 21,886 persons employed at military aviation bases or with the Air National Guard throughout the state.

Military aviation accounts for \$1.3 billion of spending and over one half million dollars in annual payrolls. The total economic impact of military aviation is \$2.4 billion, including all multiplier effects.

Aviation Education

In 1998 there were 1,324 persons working in the field of aviation education, creating primary economic activity of \$94.3 million.

Arizona has an active aviation education community. Private and public organizations offer opportunities ranging from basic flight training to advanced theoretical courses at the post-graduate level. Favorable flying weather and skilled flight instructors at local airports make it possible for people of all ages to experience the thrill and advantages of travel by general aviation aircraft. Those seeking a complete foundation in aviation theory or wishing to pursue a career in aviation



engineering or administration can select courses of study at the state's universities or Embry-Riddle Aeronautical University.

Economic Impacts: Aviation Education

Primary Impact			Total Impact		
Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)
1,324	\$37.7	\$94.3	7,965	\$90.9	\$249.2

Air Travelers and Tourists Spend \$4.5 Billion in Arizona

Arizona's resorts, scenery and thriving economy attracted some seven million visitors who traveled to the state by commercial air carrier in 1998. An additional one million persons arrived on private general aviation aircraft. Air visitors came to the state to see relatives, to play golf or relax in the sunshine, to participate in conventions or meet business clients, or as spectators at events such as the Fiesta Bowl. Whatever the purpose of their travel, visitors to Arizona found a modern aviation system in place to meet their travel needs.

Air travelers and tourists spent \$4.5 billion in Arizona in 1998, creating 77,000 jobs in lodging, retailing, and the service sector, including travel agencies. Air traveler dollars recirculated in the economy to create a total economic impact of \$9 billion.



Economic Impacts: Air Travelers and Tourists

	Primary Impact			Total Impact		
	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)	Employment	Payroll (\$ Millions)	Economic Activity (\$ Millions)
Travel Agencies	3,052	62.0	131.8	3,234	83.8	281.36
Air Passengers						
Lodging	30,449	535.9	1,501.9	73,211	1,150.7	3,035.5
Food and drink	28,081	344.7	1,413.5	47,011	688.4	2,729.3
Retail	6,144	108.8	750.9	29,582	533.5	1,493.4
Transportation	2,246	43.8	441.7	15,567	369.0	852.5
Entertainment	7,180	87.6	309.2	16,562	190.7	615.0
TOTAL	77,153	1,182.8	4,549.1	185,167	3,016.0	9,007.1

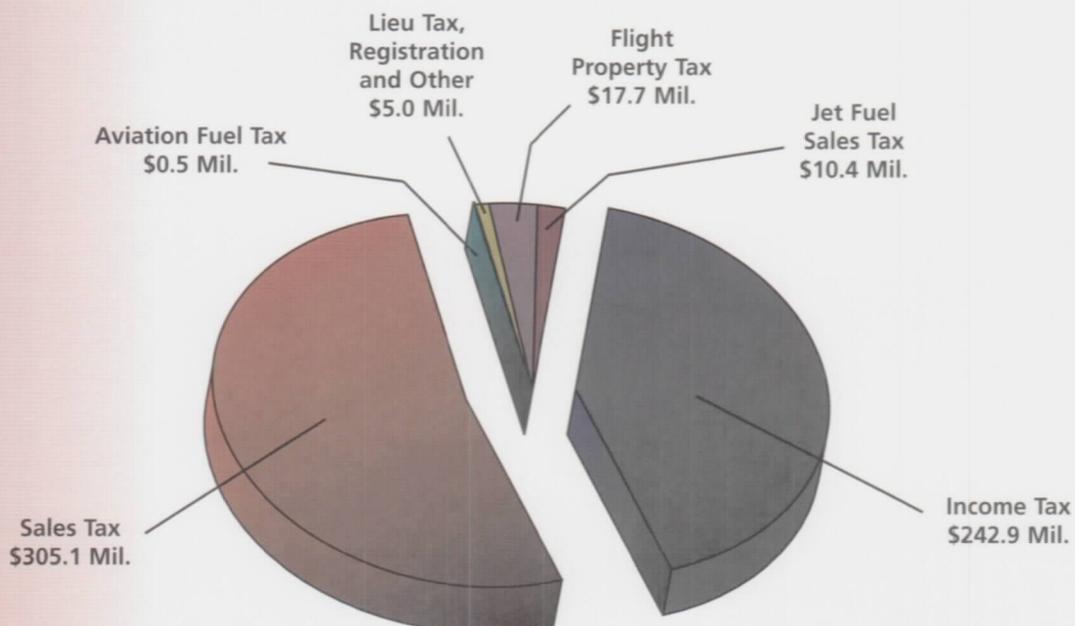
Aviation is a Source of Tax Revenues



Aviation creates jobs and income for Arizona residents while stimulating economic development in the state. Moreover, aviation "pays its way" as a source of tax dollars, creating income, sales and special aviation tax revenues. The largest source of tax revenues was sales tax collections from spending by suppliers and users of aviation services. Income taxes on payroll earned was the second largest source of revenues.

Most of these tax dollars are returned to the general fund of state government or to local governments for education and public services. Of the total collections of one half billion dollars, only \$17 million is allocated to aviation through the budget of the Aeronautics Division of the Arizona Department of Transportation.

Tax Revenues From Aviation Activity: \$586.1 Million



Methodology of the Study

The 1998 Arizona aviation impact study was developed based on a methodology recommended by the Federal Aviation Administration and is consistent in approach with earlier studies dating back to 1980. All previous studies used multipliers from the Regional Input Output Modeling System (RIMS) of the U.S. Department of Commerce and all were based on employment figures by Standard Industrial Classification (SIC) code as provided by the Arizona Department of Economic Security. Thus, the studies are comparable and can be used to show a strong pattern of growth of the impact of aviation in Arizona.

Arizona Aviation Employment

The first phase of data collection for the study involved identifying aviation related employment sectors state wide and compiling 1998 employment and payroll for these sectors. The employment figures are shown in the accompanying table.

Not all types of aviation employment are available as a separate SIC category from the Arizona Department of Economic Security.



These sectors were estimated as follows: airport businesses (retail, food service, auto rental, security) and ground transportation were computed using ratios of employees/passenger from reported data at Arizona commercial service airports; airport construction payroll was computed as 40 percent of total reported construction outlays and employment was estimated based on county average construction wage; air traveler employment in lodging, retail, food services, etc. was estimated from figures made available by the Arizona Office of Tourism by county and summed to a statewide total. Payroll figures for each employment category were from the Arizona Department of Economic Security.

Arizona Aviation Employment: 1998

Category	Workers
Aerospace Manufacturing	26,936
Military Aviation	21,886
Air Carriers	16,175
Airport Businesses*	7,236
Rental & Charter	3,959
Ground Transportation	2,408
Airport Administration	2,067
Airport Construction*	1,718
Air Cargo/Couriers	1,627
Aviation Education	1,324
Fueling	973
Aerial Services	496
Subtotal	90,172
Air Travelers*	77,153
TOTAL	167,325

* Estimated

Source: Arizona Department of Economic Security.

Methodology

Aviation Economic Activity

Economic activity is a measure of total revenue flows for private businesses, or total budget for government agencies. Published information on value of output was used to compile economic activity figures for the aerospace sector. Air carrier revenues in Arizona were based on annual reports and passenger activity at commercial service airports. Arizona military bases provided their economic impact figures for use in this study. Ratios of economic activity to payroll as published from survey data for Arizona airports were used to estimate economic activity for on-airport businesses including FBO firms and other aviation related employers. Airport construction and budget figures were obtained from a survey of Arizona airport managers.

Expenditures for commercial air travelers in Arizona as compiled by the Arizona Office of Tourism were used to represent economic activity for each spending category (lodging, retail goods and services, transportation, entertainment). Expenditures by general aviation travelers were compiled through surveys of 800 visitors who arrived via GA aircraft at Arizona airports during 1998. State-wide, the average Arizona airline visitor stayed 3.5 days, according to the Arizona Office of Tourism, and spent \$111 per day. General aviation visitors were grouped into two components. GA travel parties who did not stay overnight spent an average of \$68 per trip while overnight travel parties spent an average \$555 per trip.

Multiplier Analysis

To obtain the statewide induced and total economic impact of the various aviation sectors, detailed Regional Input-Output Modeling System multipliers from the U.S. Department of Commerce were used for Arizona, with separate multipliers for employment, earnings and economic activity. For example, multiplier impacts for commercial aviation required separate RIMS multipliers for commercial air carriers, air cargo, airport service businesses, airport retail and food service businesses, airport administration, airport construction, etc. ; for general aviation an additional 30 separate multiplier

were used for non-scheduled airlines, aircraft maintenance services, fuel services, aircraft sales, etc; appropriate multipliers were used for aerospace, military, and aviation education. Air travel and tourism multipliers were used for each spending category such as retail, eating and drinking places, entertainment, etc. Thus, there is not one "multiplier" which is associated with the economic impact of aviation. Because suppliers and users of aviation include a myriad of sectors, firms, and agencies, there are many multipliers required to compute the induced jobs, earnings and economic activity associated with aviation in Arizona.

Impact by County

Aviation impact by county was computed by combining multiple sources of data. The major components of Arizona's aviation economic impact are commercial aviation, general aviation, aviation education, air travelers, aerospace manufacturing and military aviation. Arizona Department of Economic Security data on employment by sector by county were used to identify the presence of each aviation impact component in each county. Not all counties have aerospace manufacturing or commercial aviation, but all counties do have general aviation airports and are visited by air travelers. The impact of aerospace, military, and aviation education were allocated to counties based on employment. The impact of air travelers was allocated based on two measures. Those counties with commercial service record spending by visitors that arrive directly in the county by air carrier, but all counties also receive visitors that arrive at Phoenix Sky Harbor Airport and Tucson International Airport. Spending from these visitors was allocated by county using estimates from the Arizona Office of Tourism for air traveler spending in counties. A final source of information for county impact was the impact of individual airports within the county. Therefore, it should be noted that aviation's impact by county does include the impact of each airport, but may be larger depending on the presence of aviation education, aerospace manufacturing, airline visitors that arrived at a major urban airport, or military aviation.

Arizona Aviation Economic Impact by County: 1998

County		Employment	Payroll (\$ Mil)	Economic Activity (\$ Mil)	Aviation Activity
Apache	Direct — on airport	76	2.2	6.9	Operations: 19,200
	Indirect — air travelers	315	4.8	18.5	
	Primary	391	7.0	25.5	Based Aircraft: 33
	Induced	563	9.0	22.5	
	Total	954	16.0	48.0	
Cochise	Direct — on airport	419	11.9	38.6	Operations: 171,565
	Indirect — air travelers	1,053	16.1	62.0	
	Primary	1,472	28.0	100.6	Based Aircraft: 151
	Induced	2,136	33.9	84.7	
	Total	3,608	61.9	185.3	Enplanements: 9,822
Coconino	Direct — on airport	1,653	48.9	188.9	Operations: 245,690
	Indirect — air travelers	6,125	93.9	360.7	
	Primary	7,778	142.9	549.7	Based Aircraft: 233
	Induced	11,200	190.9	464.5	
	Total	18,978	333.8	1,014.2	Enplanements: 578,938
Gila	Direct — on airport	106	3.0	9.6	Operations: 27,000
	Indirect — air travelers	546	8.4	32.1	
	Primary	652	11.4	41.8	Based Aircraft: 35
	Induced	934	15.1	37.6	
	Total	1,586	26.5	79.4	
Graham	Direct — on airport	33	0.9	3.0	Operations: 14,500
	Indirect — air travelers	119	1.8	7.0	
	Primary	152	2.8	10.0	Based Aircraft: 28
	Induced	219	3.5	8.7	
	Total	371	6.3	18.7	
Greenlee	Direct — on airport	21	0.6	1.9	Operations: 7,300
	Indirect — air travelers	117	1.8	6.9	
	Primary	138	2.4	8.8	Based Aircraft: 2
	Induced	198	3.2	8.0	
	Total	336	5.6	16.8	
LaPaz	Direct — on airport	88	2.5	8.0	Operations: 24,000
	Indirect — air travelers	242	3.7	14.3	
	Primary	331	6.2	22.3	Based Aircraft: 25
	Induced	478	7.6	19.0	
	Total	809	13.8	41.3	
Maricopa	Direct — on airport	30,678	912.1	3,590.5	Operations: 2,018,714
	Indirect — air travelers	47,292	724.7	2,787.1	
	Aerospace Mfg.	23,973	1,214.2	3,945.7	
	Military	7,267	173.0	402.5	Based Aircraft: 3,277
	Primary	109,210	3,024.0	10,725.8	
	Induced	180,816	3,547.7	9,533.7	
	Total	290,026	6,571.7	20,259.5	Enplanements: 15,992,591
Mohave	Direct — on airport	593	17.2	60.5	Operations: 130,583
	Indirect — air travelers	1,799	27.5	106.0	
	Primary	2,391	44.7	166.5	Based Aircraft: 453
	Induced	3,456	57.1	140.2	
	Total	5,847	101.8	306.7	Enplanements: 43,520
Navajo	Direct — on airport	113	3.2	10.2	Operations: 62,800
	Indirect — air travelers	1,221	18.7	72.0	
	Primary	1,334	21.9	82.2	Based Aircraft: 88
	Induced	1,897	31.4	77.3	
	Total	3,231	53.3	159.5	Enplanements: 2,000
Pima	Direct — on airport	4,155	122.6	468.3	Operations: 512,443
	Indirect — air travelers	12,997	199.2	766.0	
	Aerospace Mfg.	2,694	136.4	443.4	
	Military	8,359	263.3	608.8	Based Aircraft: 825
	Primary	28,205	721.5	2,286.5	
	Induced	37,545	662.8	1,993.4	
	Total	65,750	1,384.3	4,279.9	Enplanements: 1,735,088
Pinal	Direct — on airport	1,468	41.6	132.9	Operations: 98,500
	Indirect — air travelers	1,041	15.9	61.0	
	Primary	2,509	57.5	193.9	Based Aircraft: 104
	Induced	3,748	54.9	141.8	
	Total	6,257	112.4	335.7	
Santa Cruz	Direct — on airport	75	2.1	6.8	Operations: 23,000
	Indirect — air travelers	464	7.1	27.4	
	Primary	540	9.3	34.2	Based Aircraft: 28
	Induced	772	12.6	31.2	
	Total	1,312	21.9	65.4	
Yavapai	Direct — on airport	1,577	42.9	129.6	Operations: 412,915
	Indirect — air travelers	2,630	40.2	154.8	
	Aerospace Mfg.	269	13.6	44.3	Based Aircraft: 429
	Primary	4,475	96.7	328.7	
	Induced	5,080	85.6	221.9	Enplanements: 8,366
	Total	9,555	182.3	550.6	
Yuma	Direct — on airport	294	8.6	30.7	Operations: 106,108
	Indirect — air travelers	1,232	18.9	72.6	
	Military	6,260	133.7	334.3	Based Aircraft: 86
	Primary	7,786	161.1	437.6	
	Induced	3,544	87.1	348.0	Enplanements: 68,800
	Total	11,330	248.2	785.6	

Aviation Impact by Airport



Arizona's citizens are served by more than 100 public use airports and 13 commercial service airports.

Airports create economic benefits by providing aviation-related activity on and off the airport. Both the private sector and government agencies are typically represented on Arizona's airports.

General aviation airports have one or more fixed base operators who provide maintenance and service for aircraft. Larger or more complex aircraft require a broad range of sophisticated technical services as well as basics such as fuel and storage. Airports frequently are home to firms that provide flight training, aircraft parts, aircraft sales and rental, and charter services. Government agencies include the airport administration and usually, but not always, an airport tower. Airports may provide a base for police, fire and air ambulance units, which also serve the local community. Larger airports have well trained emergency response units. Airports in Arizona often serve such important public service agencies as the weather bureau, customs agents, public safety, forest fire control and the immigration service.

Commercial service airports have all the businesses found at general aviation airports and in addition, there will be airline offices and more extensive terminal businesses, such as auto rental, retail and food services. Larger airports often have air freight and courier services and many have industrial employers that have located on the airport for testing or ready access to

air cargo facilities. For example, the estimated on-airport employment at Phoenix Sky Harbor Airport is 23,655 workers with an additional 13,233 aviation-related jobs off the airport. Many successful airports in Arizona have developed airparks on airport land where tenants have access to runways and both scheduled and unscheduled air service, and these sites may have several thousand employees in a range of businesses.

The combined primary economic impact (no multiplier effects) of Arizona's commercial service and general aviation airports was \$4.6 billion in 1998, with over 40,000 aviation related jobs.

The accompanying table shows the economic impact of Arizona airports, along with 1998 aviation activity measures (based aircraft, operations and passenger enplanements). The (direct) on-airport impact was compiled from a survey of airport managers who reported on-airport economic data as well as airport activity. Average capital improvement outlays for the past five years were incorporated to provide an estimate of the impact of airport construction on employment and spending. The (indirect) impact of visitor spending for each airport combines spending by general aviation visitors with commercial airline visitors. (For those airports with no commercial service, the entire visitor spending impact is from GA travelers.) The primary economic impact combines direct and indirect impacts before multiplier effects. The total economic impact includes primary and induced or second round spending, and shows the impact of each airport on its service area.

Arizona Aviation Impact by Airport

(payroll and economic activity in dollars)

Airport	Aviation Activity Measures			Direct On-Airport Impact (including construction spending)			Indirect Off-Airport Impact of Visitor Spending			Primary Economic Impact (no multiplier effects)			Total Economic Impact (including multiplier effects)		
	Opns.	Based A/C	Enplane- ments	Employ- ment	Payroll	Economic Activity	Employ- ment	Payroll	Economic Activity	Employ- ment	Payroll	Economic Activity	Employ- ment	Payroll	Economic Activity
Ajo Municipal	1,500	5		3	70,148	168,887	1	17,926	68,948	4	88,074	237,835	9	176,452	490,713
Avra Valley Municipal	86,000	330		88	1,714,477	6,362,538	39	466,501	1,974,060	127	2,180,978	8,336,598	234	4,885,715	14,175,260
Bisbee Municipal	14,000	13		15	266,746	963,237	1	20,358	78,300	16	287,104	1,041,537	33	692,336	2,087,158
Bisbee-Douglas Intl.	25,650	24		3	51,127	178,537	7	116,563	448,320	10	167,690	626,857	25	407,263	1,248,929
Buckeye Municipal	150,000	60		21	533,196	1,318,998	1	17,750	68,268	22	550,945	1,387,266	45	949,405	2,800,921
Casa Grande Municipal	73,500	79		22	462,108	1,454,256	5	75,279	289,536	27	537,387	1,743,792	58	1,155,940	3,491,961
Chandler Municipal	196,716	308		111	3,014,753	6,836,809	7	113,757	437,528	118	3,128,511	7,274,337	246	5,133,215	14,806,091
Cochise College	20,000	14		3	52,116	181,454	1	1,916	7,368	4	54,032	188,822	7	129,086	378,798
Cochise County	8,200	21		3	58,078	197,538	3	42,453	163,280	6	100,393	360,204	13	243,096	724,633
Colorado City	4,000	10		7	107,688	366,821	2	23,666	91,024	9	131,354	457,845	18	358,260	958,931
Coolidge Municipal	5,000	2		7	139,987	434,935	1	5,881	22,620	8	145,868	457,555	15	312,154	923,058
Cottonwood Municipal	21,000	26		11	211,730	614,363	14	223,567	859,872	25	435,296	1,474,235	59	1,030,286	2,992,935
Douglas Municipal	10,000	29		13	227,906	746,866	8	124,235	477,828	21	352,141	1,224,694	46	852,100	2,483,411
Eloy Municipal	20,000	23		59	1,260,755	4,077,672	5	83,621	321,620	64	1,344,376	4,399,292	135	2,793,690	8,715,428
Flagstaff Pulliam	44,864	140	39,573	108	1,994,639	6,754,432	167	2,630,172	10,116,047	275	4,624,811	16,870,479	640	11,488,218	33,734,065
Glendale Municipal	115,056	235		118	3,044,330	7,564,560	4	61,840	237,848	122	3,106,170	7,802,408	254	5,338,929	19,942,612
Grand Canyon Natl. Park	164,479	47	512,365	505	9,298,469	33,337,028	279	4,379,438	16,843,993	784	13,677,907	50,181,021	1,305	25,160,072	75,158,340
HA Clark	3,800	8		21	392,020	1,221,266	1	10,843	41,704	22	402,863	1,262,970	44	936,144	2,605,156
Holbrook Municipal	15,000	18		6	118,361	315,797	1	20,767	79,872	7	139,128	395,669	15	296,497	818,629
Kingman	34,000	160	3,500	74	1,238,044	4,785,559	18	282,157	1,085,220	92	1,520,201	5,870,779	198	3,928,401	11,784,528
Lake Havasu City Mun.	46,000	221	9,633	54	897,711	3,451,000	52	810,482	3,117,239	106	1,708,193	6,568,239	241	4,403,719	13,136,206
Laughlin/Bullhead Intl.	46,583	62	30,387	116	1,860,939	6,769,001	294	4,627,246	17,797,100	410	6,488,185	24,566,101	1,760	29,500,000	81,706,000
Mesa Falcon Field	220,969	867		5,950	290,543,100	595,971,169	49	835,200	2,621,600	5,999	291,378,300	598,592,769	16,629	407,100,000	866,700,000
Nogales International	23,000	28		25	372,266	1,456,354	24	371,841	1,430,156	49	744,106	2,886,510	112	2,007,804	5,852,805
Page Municipal	32,547	38	27,000	84	1,544,069	5,680,501	73	1,144,027	4,400,102	157	2,688,096	10,080,604	358	6,591,278	20,047,371
Payson Municipal	27,000	35		61	1,309,706	3,901,609	28	270,215	1,182,020	89	1,579,922	5,083,629	132	1,990,540	8,067,518
Phoenix Deer Valley	266,000	925		168	4,733,000	12,871,000	80	1,253,720	4,822,000	248	5,986,720	17,693,000	269	6,963,000	23,054,000
Phoenix Goodyear	103,795	156		652	33,016,119	48,820,373	20	318,699	1,225,765	672	33,334,818	50,046,138	1,507	53,498,000	123,810,000
Phoenix Sky Harbor Intl.	594,053	242	15,984,591	36,937	1,164,294,701	4,900,533,827	54,615	858,817,293	3,303,143,434	91,552	2,023,111,994	8,203,677,261	263,416	5,349,197,000	16,174,679,000
Prescott - Love Field	349,915	300	8,366	282	5,227,981	18,642,160	33	523,008	2,011,568	315	5,750,989	20,653,729	666	13,760,099	41,359,031
Safford Municipal	14,500	28		*									85	1,700,000	18,300,000
Scottsdale Municipal**	208,464	405	8,000	192	4,727,537	12,598,192	56	887,484	3,413,400	248	5,615,021	16,011,592	1,669	49,400,000	119,600,000
Sedona	42,000	103		76	1,080,027	4,795,386	28	356,871	1,578,148	104	1,436,898	6,373,534	185	2,461,225	12,167,060
Show Low Municipal	19,000	40	2,000	70	1,448,527	4,385,667	56	884,411	3,401,580	126	2,332,938	7,787,247	287	5,202,286	15,624,955
Sierra Vista Municipal	93,715	50	9,822	43	782,171	2,526,568	36	564,367	2,170,644	79	1,346,539	4,697,212	178	3,343,365	9,519,250
Springerville Municipal	4,200	15		20	392,854	1,173,610	2	27,429	105,496	22	420,283	1,279,106	45	933,968	2,627,574
St. Johns Municipal	15,000	18		12	234,344	638,642	7	108,728	418,184	19	343,072	1,056,826	41	763,041	2,164,334
Taylor Municipal	1,800	15		15	313,528	918,496	2	32,529	125,112	17	346,057	1,043,608	36	736,561	2,124,244
Tucson International **	266,641	260	1,735,088	474	10,592,800	31,088,320	5,663	89,050,377	342,501,451	6,137	99,643,177	373,589,771	25,306	561,973,228	1,703,243,958
Tucson Ryan Field	158,302	230		43	969,230	2,530,514	3	53,296	204,984	46	1,022,526	2,735,498	96	1,991,588	5,614,880
Wickenburg Municipal	8,253	36		27	671,194	1,861,359	6	88,218	339,300	33	759,412	2,200,659	72	1,442,231	4,394,112
Williams Gateway	155,408	43		617	19,992,127	55,362,917	41	674,037	2,758,478	658	20,666,164	58,121,395	1,220	35,072,132	114,796,513
Winslow Municipal	27,000	15		46	965,224	3,011,291	6	97,506	375,024	52	1,062,730	3,386,315	111	2,274,458	6,803,966
Yuma International	106,108	86	68,800	375	10,658,116	38,174,517	597	6,121,532	24,807,222	972	16,779,648	62,981,739	1,861	29,288,000	102,243,000

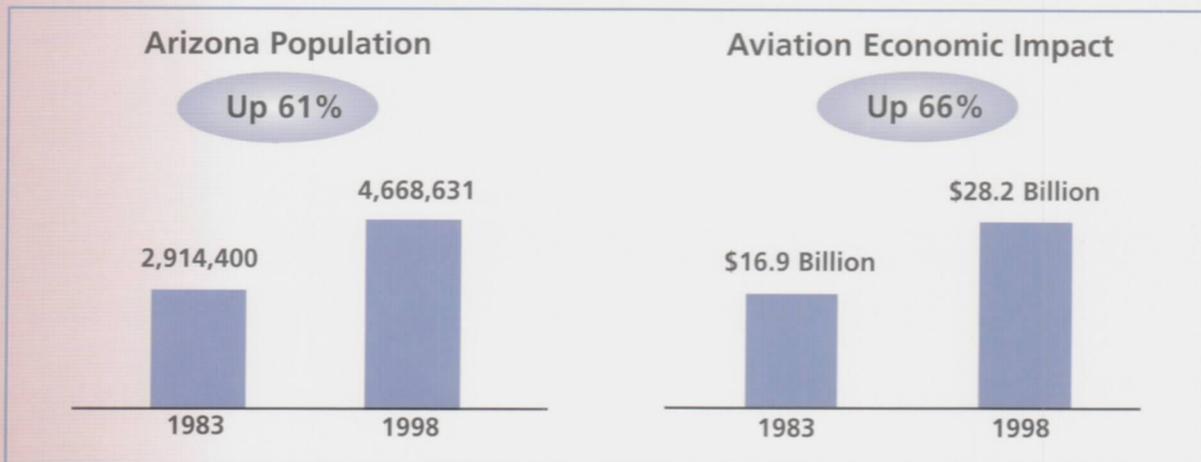
Notes:
 On-airport category includes aviation-related businesses, government agencies and construction based on five year average.
 Some airport activity measures include industrial employers or users of aviation services with on-airport facilities.
 * Figure for Safford Municipal calculated and provided by City of Safford. **Impact may be understated because not all on-airport employers participated in the survey.

Aviation Has Grown Faster Than the Overall Arizona Economy



Arizona ranks among the leaders in population gains and employment growth. But in the past fifteen years, aviation in Arizona has grown even more rapidly.

Between 1983 and 1998, Arizona's population increased by 61 percent, second in the nation only behind Nevada. The impact of aviation, rose to \$28.2 billion from \$16.9 billion (in 1998 dollars), an increase of 66%. These results suggest that aviation responds strongly not only to population growth, but other changes in the economy as well, including industry mix and technological change.



Arizona's Future Rides on Aviation

Economic development in Arizona depends on aviation. Suppliers of aviation services move cargo and passengers in and out of the state and around the globe. The state's position as a leader in job creation and population gains is linked to continued expansion of the reach of Arizona commerce.

While Arizona's population is forecast to increase 20% by the year 2010, passenger traffic at Arizona airports is projected to rise by more than 70%.

The total impact of aviation on the state will exceed \$40 billion by 2010 with over 650,000 jobs linked in some way to the supply or use of aviation services.

Projections



	1998		2005		2010		2020	
	Employment	Economic Activity (\$ 1998 Mil)						
COMMERCIAL AVIATION								
Air Carriers	50,731	4,047.7	66,759	5,326.5	76,271	6,085.5	99,555	7,943.3
Air Cargo	3,044	237.0	4,006	311.9	4,576	356.3	5,974	465.1
Airport Businesses	12,090	775.4	15,910	1,020.4	18,177	1,165.8	23,726	1,521.7
Ground Trans.	4,281	236.3	5,634	311.0	436	355.3	8,401	463.7
Govt. Services	1,117	110.4	1,470	145.3	1,679	166.0	2,192	216.7
Airport Admin.	1,747	111.8	2,299	147.1	2,627	168.1	3,428	219.4
Airport Construction	2,071	116.7	2,725	153.6	3,114	175.5	4,064	229.0
GENERAL AVIATION								
Nonscheduled Carriers	3,025	229.8	3,570	271.1	3,962	301.0	4,794	364.2
Aircraft Sales/Service	16,737	1,085.5	19,750	1,280.9	21,922	1,421.8	26,526	1,720.3
Aerial Services	1,456	72.2	1,718	85.2	1,907	94.6	2,307	114.4
Government Services	370	35.7	437	42.1	485	46.8	587	56.6
Airport Admin.	277	17.3	327	20.4	363	22.7	440	27.5
Construction	463	25.5	547	30.1	607	33.4	734	40.4
Aviation Education	7,965	249.2	9,956	311.5	11,549	361.3	15,130	473.4
Air Travelers	185,167	9,007.1	243,667	11,852.7	344,257	16,745.7	449,352	21,857.9
Aerospace								
Manufacturing	99,664	9,429.4	118,469	11,209.0	137,338	12,994.0	184,571	17,463.0
Military Aviation	30,641	2,386.0	30,641	2,386.0	30,641	2,386.0	30,641	2,386.0
TOTALS	420,847	28,173.0	527,883	34,904.3	665,911	42,879.3	862,422	55,562.0



Mary E. Peters, Director
Arizona Department of Transportation

Gary Adams, Director
Aeronautics Division



College of Business
ARIZONA STATE UNIVERSITY

Lee McPheters, Project Director
Robin Sobotta-Douglas, Research Associate
Colleen M. Crosby, Graphic Designer

Photos courtesy of City of Phoenix, City of Glendale, Mike Eller, Robin Sobotta-Douglas,
Colleen M. Crosby, Boeing and Scenic Airlines.