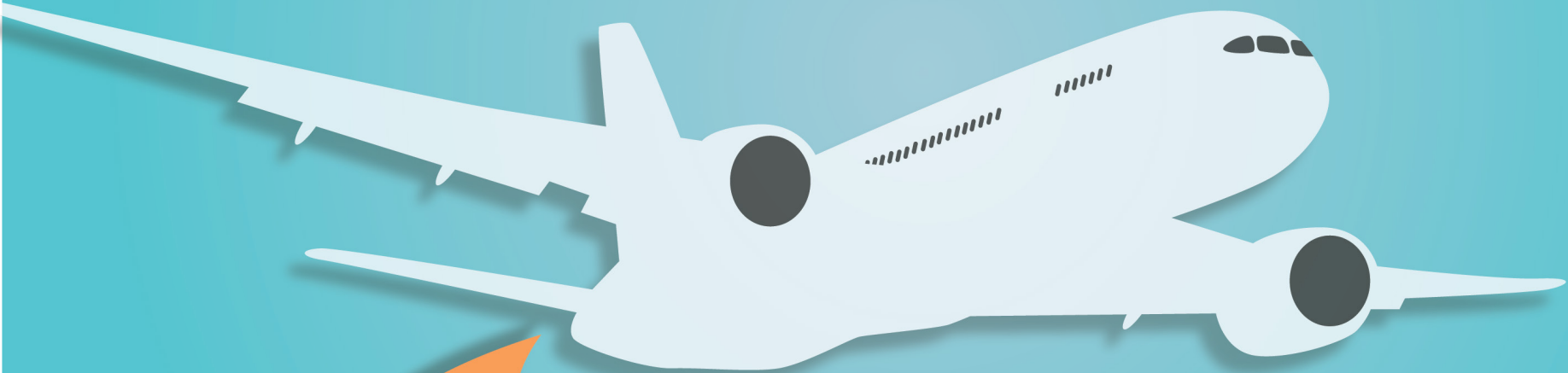


# OKLAHOMA

AVIATION AND AEROSPACE ECONOMIC IMPACT STUDY

## *Executive Summary*



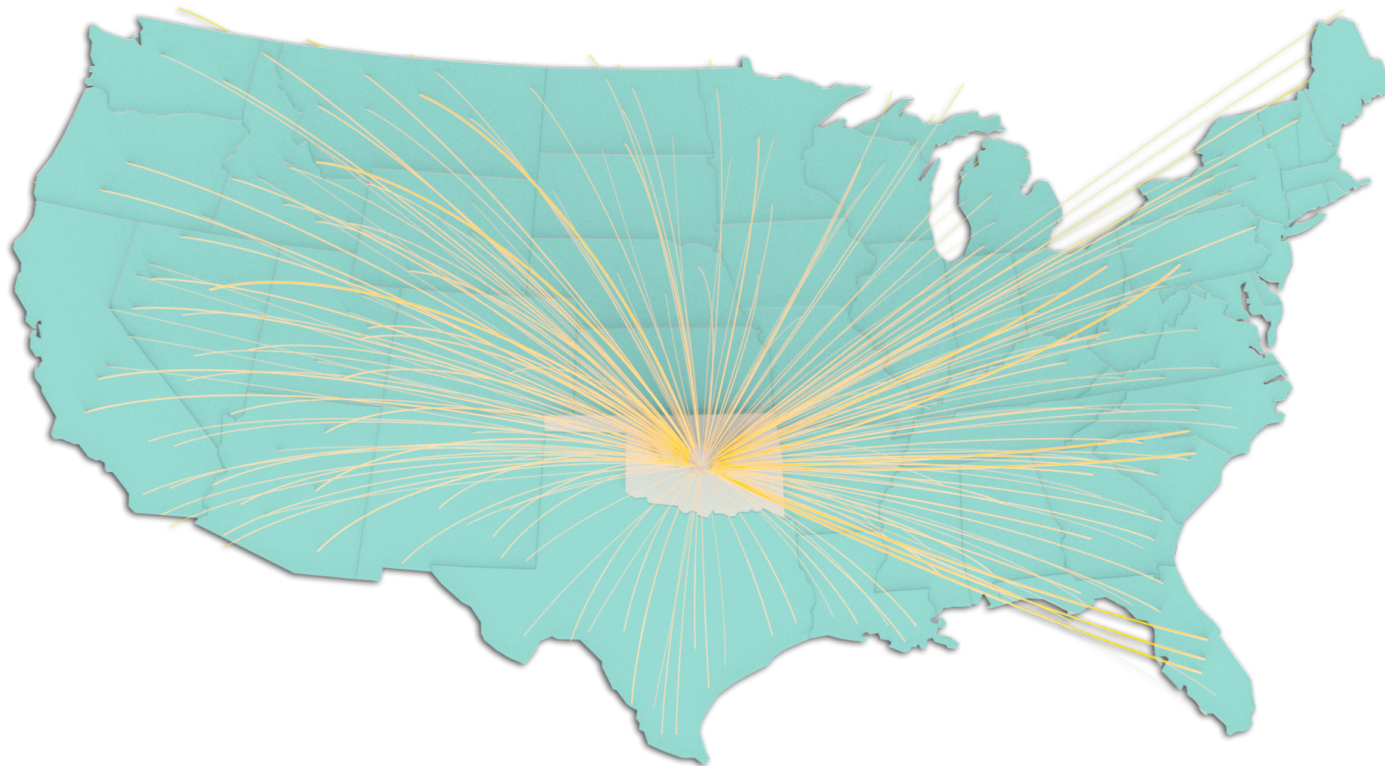
OKLAHOMA AERONAUTICS COMMISSION

## OVERVIEW

The State of Oklahoma has an extensive system of public airports and a vast array of aviation and aerospace-related activities. Aviation is essential to the state's transportation network and economic ecosystems. Some benefits, such as the ability to reach hundreds of domestic and international locations on a commercial airline flight, are highly visible. Many benefits of aviation and aerospace, such as aeromedical evacuations, however, are not as well known.

Starting in the fall of 2015, the Oklahoma Aeronautics Commission (OAC), in partnership with the Federal Aviation Administration (FAA)

and communities across Oklahoma, undertook steps to start the process to conduct comprehensive research to estimate economic impacts and other benefits associated with aviation and aerospace in Oklahoma. Study research started in the summer of 2016; this study represents the most comprehensive research conducted on the aviation and aerospace industries since similar studies completed in 1994 and 1999. This report provides a summary of OAC's most current economic impact research. Details of the study can be obtained on the Commission's website: [oac.ok.gov](http://oac.ok.gov)



**ON ANY GIVEN DAY, AS THIS MAP SHOWS, OKLAHOMA AIRPORTS SUPPORT NON-STOP COMMERCIAL AIRLINE AND GENERAL AVIATION FLIGHTS THAT CONNECT BUSINESSES AND RESIDENTS TO DESTINATIONS THROUGHOUT THE U.S.**

## STUDY RESULTS

OAC's Statewide Aviation and Aerospace Economic Impact Study measured economic impacts associated with three key contributors: 109 public general aviation and commercial airports; off-airport employers engaged in aviation/aerospace activities; and military aviation. Total annual statewide economic impacts for each of these three groups are shown here.

### TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS

	EMPLOYMENT	PAYROLL	SPENDING	ECONOMIC ACTIVITY
ALL 109 STUDY AIRPORTS	74,002	\$3.6B	\$7.0B	\$10.6B
OFF-AIRPORT AVIATION/ AEROSPACE EMPLOYERS	58,958	\$3.4B	\$10.5B	\$13.9B
MILITARY AVIATION	72,648	\$4.7B	\$14.6B	\$19.3B

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*

This summary provides an overview of the process used to estimate the impacts shown here. The summary highlights impacts and benefits associated with other activities that Oklahoma airports support. The study also considers how non-aviation businesses throughout the state improve their efficiency by using aviation.



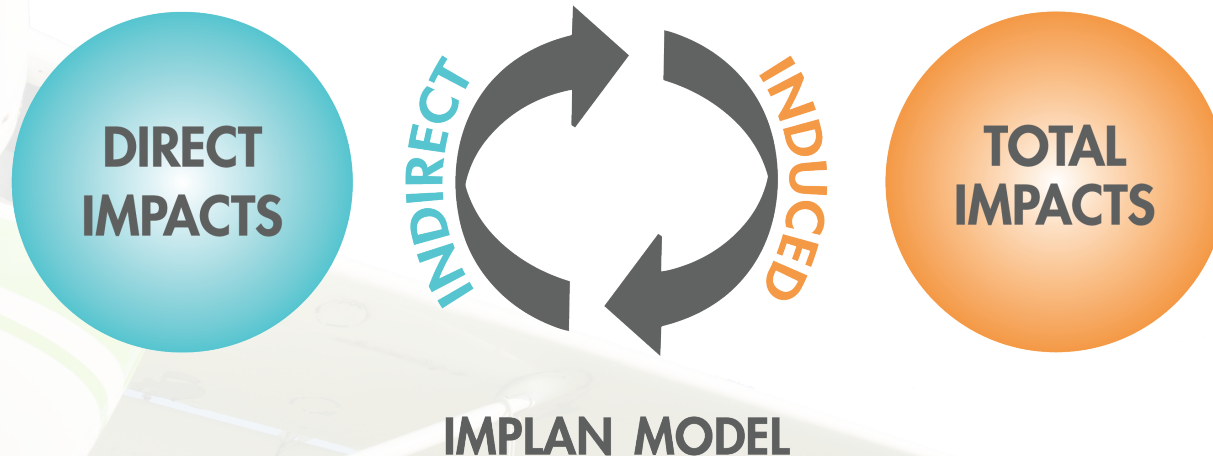
## APPROACH TO ESTIMATING ECONOMIC IMPACTS

Economic impact studies, such as this, reflect a “snapshot” of conditions that exist at the time the study is conducted. The aviation industry is dynamic and constantly changing, and economic impacts fluctuate with change. For each of the three major contributors to Oklahoma’s statewide economic impacts (airports, off-airport aviation and aerospace businesses, and military aviation), annual economic impacts were estimated using four measures: employment, payroll, spending, and economic activity. The economic activity measure (payroll + spending) captures the full benefit that economic impacts associated with aviation and aerospace have on the state’s economy.

For each of the impact measures (employment, payroll, spending, and economic activity), the first step in the process was to collect direct impacts. Direct impacts presented in this report were collected specifically for this study through face-to-face and phone interviews and through a variety of surveys.

IMPLAN, an FAA recognized input/output econometric model, was used to estimate indirect and induced impacts. As direct impacts from the employment, payroll, spending, and total economic activity categories enter Oklahoma’s economy, direct impacts re-circulate, generating additional indirect and induced impacts through a multiplier effect. Direct impacts, added to indirect and induced impacts, equal total annual economic impacts for the measures considered in this research.

### MULTIPLIER IMPACTS





## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FROM AIRPORT MANAGEMENT

Most of the 109 study airports have employees dedicated to the daily operation of the airport. In some instances, airport management employees are full-time, and in others, they are part-time or seasonal. Most airports in Oklahoma are owned by a public municipality. Consequently, many airports also have full-time or part-time employees who support the airport’s daily operation without being located at the airport. Off-airport jobs are often found in categories such as maintenance, administration, human resources, accounting, grants administration, and legal services.

In this study, for employment in all impact categories, part-time and seasonal jobs were converted to full-time equivalent jobs. This conversion was accomplished considering either the number of hours worked or the annual compensation for the less than full-time positions.

The table below shows all annual impacts identified for the airport management function at all 109 study airports. Annual economic activity, shown below, represents total annual airport spending for goods and services to operate the airport, plus annual payroll. Indirect and induced impacts were estimated using the IMPLAN model.

### TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS AIRPORT MANAGEMENT

	DIRECT	INDIRECT/INDUCED	TOTAL
EMPLOYMENT	517	319	836
PAYROLL	\$21.9M	\$14.7M	\$36.6M
SPENDING	\$46.2M	\$51.4M	\$97.6M
ECONOMIC ACTIVITY	\$68.1M	\$66.1M	\$134.2M

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*



## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS

### AIRPORT TENANTS

	DIRECT	INDIRECT/ INDUCED	TOTAL
EMPLOYMENT	21,708	24,790	46,499
PAYROLL	\$1.5B	\$1.3B	\$2.8B
SPENDING	\$2.6B	\$2.3B	\$4.9B
ECONOMIC ACTIVITY	\$4.1B	\$3.6B	\$7.6B

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*



## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FROM AIRPORT TENANTS

Many of the airports in Oklahoma have tenants or businesses that are engaged in providing aviation services, supporting aircraft, or providing services to airport customers. Oklahoma airports have a wide range of on-airport aviation tenants. Examples include, but are not limited to, aircraft maintenance, aircraft charter and rental, commercial airlines, concessionaires, flight instructors, emergency medical operators, state and federal entities, and agricultural aerial applicators. Some tenants only employ one or two individuals, while others employ thousands.

Statewide, there are over 440 different aviation-related tenants located at the 109 study airports. Each tenant was contacted to secure information on activities at their host airport. Information gathered through this study was used to estimate the annual economic impact of each tenant. Total annual statewide economic impacts for all tenants operating at the study airports are shown here.



## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FROM CAPITAL INVESTMENT

Each year through federal, state, local, and private investment, airports in Oklahoma undertake various capital improvement projects. These projects range from minor investments needed to maintain runways to significant investments to construct new runways and terminal buildings. When goods, materials, and services are purchased to implement capital projects, this spending supports employment and the payroll associated with the employment.

Economic impacts in this category have the propensity to change; capital investment spending often varies significantly year-to-year. An airport might complete a major project and then not undertake a project of similar magnitude for another 10 years. If the economic impact snapshot takes place in a time of high capital investment, economic impacts will be higher than in a period where limited investment occurs. For most airports, impacts in this category have the propensity to experience the most change between reporting periods.

To account for changes in annual capital investment, this study considered each airport's annual spending for the past five years. Five-year average annual spending was used to estimate economic impacts in this category. Research completed to support this OAC study showed that over the past five years, direct average capital spending (goods and labor) for all study airports has been about \$200 million annually. After establishing average annual capital investment, the IMPLAN model provides ratios for estimating employment and associated payroll supported by capital spending. Statewide average annual impacts in this category are shown here.

### TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS CAPITAL INVESTMENT

	DIRECT	INDIRECT/INDUCED	TOTAL
EMPLOYMENT	1,224	1,035	2,259
PAYROLL	\$47.3M	\$48.0M	\$95.3M
SPENDING	\$152.1M	\$124.7M	\$276.8M
ECONOMIC ACTIVITY	\$199.5M	\$172.7M	\$372.2M

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*



## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FROM GENERAL VISITOR SPENDING

This study estimates that approximately 440,000 visitors to Oklahoma arrive each year on general aviation aircraft. This estimate of annual general aviation visitors was derived from information supplied by study airports, AOPA, and OAC. Visitors come to Oklahoma for many reasons, including business or personal/leisure travel, which includes visits with friends and family. Many visitors travel to Oklahoma on general aviation aircraft for sporting events. This includes the teams themselves; for instance, the Oklahoma City Thunder travel to and from Oklahoma on chartered general aviation aircraft.

For this study, airports and fixed base operators (FBOs) distributed surveys to visitors who arrive on general aviation aircraft. Responses to this survey helped to segregate general aviation visitors and their travel and spending patterns into several categories. Surveys showed that general aviation visitors using airports in the state's two major metropolitan areas have travel and spending patterns that are different than those for the remainder of the state. General aviation visitors to the Tulsa and Oklahoma City metropolitan areas stay longer and spend more than their counterparts visiting other areas of the state. The surveys also confirmed that many visitors to Oklahoma, who arrive on general aviation aircraft, stay only for the day or even a few hours. While these shorter trips limit spending associated with those visitors, such day trips are often vital to a company's ability to ensure efficient business travel.

For those visitors who do stay overnight, most have expenditures for lodging, food, ground transportation, entertainment, and retail purchases. Visitor spending helps to support many jobs and the payroll associated with these jobs in the state's hospitality industry. Once annual general aviation visitor spending is estimated, the IMPLAN model provides information for estimating the number of jobs and the payroll this spending supports. Statewide average annual impacts in this category are shown here.

### TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS GENERAL AVIATION VISITOR SPENDING

	DIRECT	INDIRECT/INDUCED	TOTAL
EMPLOYMENT	1,940	699	2,639
PAYROLL	\$42.9M	\$30.7M	\$73.6M
SPENDING	\$118.5M	\$61.1M	\$179.6M
ECONOMIC ACTIVITY	\$161.4M	\$91.8M	\$253.2M

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*

# TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FROM COMMERCIAL VISITOR SPENDING

Oklahoma has four airports that have scheduled commercial airline service: Will Rogers World Airport, Tulsa International, Lawton—Fort Sill Regional, and Stillwater Regional. In 2016, airport records indicated that all four airports served a total of 2.9 million boarding passengers or enplanements. Some of these enplanements are residents and some are visitors. The United States Department of Transportation (USDOT) collects information for the commercial airports that indicates which portion of the airport’s enplanements are related to residents versus visitors; this information was used in this study. Based on airport and USDOT data, it is estimated that more than 1.2 million visitors arrived in Oklahoma in 2016 on a commercial airline flight.

Commercial airports in Oklahoma helped to collect information from their visitors regarding trip purpose, trip duration, and average spending per trip. Estimated spending patterns show that the roughly 1.2 million commercial visitors collectively spent approximately \$1 billion in 2016. This estimate represents direct spending for lodging, food, ground transportation, entertainment, retail spending, and other purchases. As with spending associated with general aviation visitors, the IMPLAN model was used to identify jobs and payroll in Oklahoma’s hospitality industry supported by spending associated with visitors to Oklahoma who arrive on a commercial airline flight. Total estimated annual economic impacts associated with commercial airline visitors are shown here.



## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FROM COMMERCIAL VISITOR SPENDING

	DIRECT	INDIRECT/INDUCED	TOTAL
<b>EMPLOYMENT</b>	<b>15,755</b>	<b>6,015</b>	<b>21,770</b>
<b>PAYROLL</b>	<b>\$361.5M</b>	<b>\$268.5M</b>	<b>\$630M</b>
<b>SPENDING</b>	<b>\$1.02B</b>	<b>\$528.2M</b>	<b>\$1.55B</b>
<b>ECONOMIC ACTIVITY</b>	<b>\$1.4B</b>	<b>\$796.7M</b>	<b>\$2.2B</b>

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*

	EMPLOYMENT	PAYROLL	SPENDING	ECONOMIC ACTIVITY
<b>OKC WILL ROGERS WORLD AIRPORT</b>	<b>11,721</b>	<b>\$343.8M</b>	<b>\$840.2M</b>	<b>\$1.2B</b>
<b>TULSA INTERNATIONAL AIRPORT</b>	<b>9,599</b>	<b>\$273M</b>	<b>\$680.5M</b>	<b>\$953.5M</b>
<b>LAWTON - FT. SILL REGIONAL AIRPORT</b>	<b>240</b>	<b>\$7.0M</b>	<b>\$17.2M</b>	<b>\$24.3M</b>
<b>STILLWATER REGIONAL AIRPORT</b>	<b>210</b>	<b>\$6.2</b>	<b>\$15.1M</b>	<b>\$21.2M</b>

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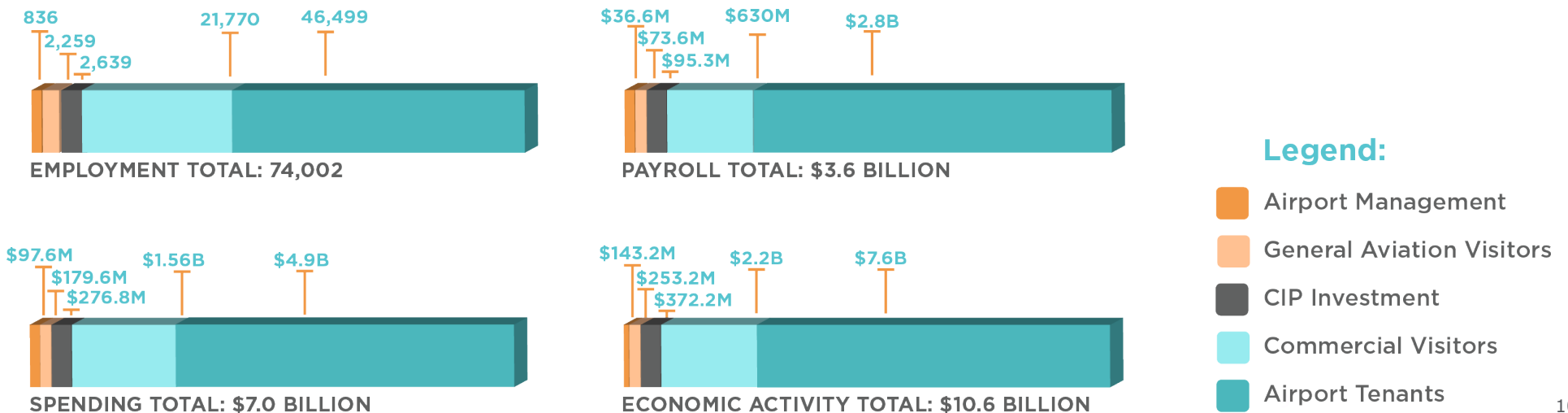
# SUMMARY OF TOTAL ANNUAL ECONOMIC IMPACTS FOR STUDY AIRPORTS

As discussed, the 109 public airports in Oklahoma may have economic impacts associated with one or more of the following categories: airport management, airport tenants, capital investment, general aviation visitor spending, and/or commercial visitor spending. Information here shows total annual statewide economic impacts for all five impact categories. As reflected, when direct and indirect/induced impacts for all categories are considered, the 109 study airports:


- Support a total of 74,002 jobs
- Support annual payroll of \$3.6 billion
- Support annual spending estimated at \$7.0 billion
- Support total annual economic activity (payroll plus spending) estimated at \$10.6 billion

The next pages of this summary show the estimated annual economic impact for each study airport. It is important to remember that all airports may not have activities that support impacts in each of the five categories analyzed in this research and that total impact shown for each airport reflect both direct and indirect/induced impacts.

## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS FOR STUDY AIRPORTS BY CATEGORY



\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.



AIRPORT NAME	CITY	TOTAL EMPLOYMENT	TOTAL ANNUAL PAYROLL	TOTAL ANNUAL SPENDING	TOTAL ANNUAL ECONOMIC ACTIVITY
LAWTON-FT. SILL REGIONAL	Lawton	538	\$19,090,865	\$36,125,065	\$55,215,930
WILL ROGERS WORLD	Oklahoma City	29,960	\$1,480,908,921	\$2,588,869,963	\$4,069,778,885
STILLWATER REGIONAL	Stillwater	663	\$26,264,825	\$44,129,448	\$70,394,273
TULSA INTERNATIONAL	Tulsa	36,531	\$1,847,804,235	\$3,891,472,001	\$5,739,276,236
<b>TOTAL COMMERCIAL SERVICE AIRPORTS</b>		<b>67,692</b>	<b>\$3,374,068,847</b>	<b>\$6,560,596,477</b>	<b>\$9,934,665,323</b>
ADA MUNICIPAL	Ada	213.6	\$7,660,603	\$14,135,965	\$21,796,568
ALTUS/QUARTZ MOUNTAIN REGIONAL	Altus	73.6	\$3,113,654	\$8,777,352	\$11,891,006
ALVA REGIONAL	Alva	73.9	\$2,327,622	\$4,055,862	\$6,383,484
ANADARKO MUNICIPAL	Anadarko	4.3	\$142,794	\$526,424	\$669,218
ANTLERS MUNICIPAL	Antlers	4.5	\$93,567	\$298,048	\$391,615
ARDMORE DOWNTOWN EXECUTIVE	Ardmore	59.9	\$2,748,832	\$3,305,811	\$6,054,642
ARDMORE MUNICIPAL	Ardmore	278.8	\$10,477,462	\$16,703,899	\$27,181,360
ATOKA MUNICIPAL	Atoka	5.5	\$215,730	\$348,559	\$564,289
BARTLESVILLE MUNICIPAL	Bartlesville	116.8	\$5,222,242	\$9,787,249	\$15,009,491
BEAVER MUNICIPAL	Beaver	1.5	\$57,557	\$43,871	\$101,428
BLACKWELL-TONKAWA MUNICIPAL	Blackwell	10.3	\$649,869	\$1,605,621	\$2,255,490
BOISE CITY	Boise City	5.8	\$161,389	\$376,786	\$538,175
JONES MEMORIAL	Bristow	71.4	\$2,631,524	\$4,529,955	\$7,161,479
BROKEN BOW	Broken Bow	1.5	\$62,167	\$196,649	\$258,817
BUFFALO MUNICIPAL	Buffalo	3.0	\$82,253	\$215,090	\$297,343
CARLTON LANDING FIELD	Canadian	4.0	\$149,873	\$423,995	\$573,868
CARNEGIE MUNICIPAL	Carnegie	3.5	\$111,149	\$250,083	\$361,232
CHANDLER REGIONAL	Chandler	10.0	\$417,244	\$1,412,493	\$1,829,737
CHATTANOOGA SKY HARBOR	Chattanooga	4.0	\$91,882	\$226,429	\$318,311
CHEROKEE MUNICIPAL	Cherokee	4.0	\$95,750	\$241,329	\$337,079
MIGNON LAIRD MUNICIPAL	Cheyenne	1.0	\$27,067	\$58,413	\$85,481
CHICKASHA MUNICIPAL	Chickasha	44.2	\$1,953,615	\$2,775,061	\$4,728,676
CLAREMORE REGIONAL	Claremore	85.3	\$3,375,387	\$5,160,516	\$8,535,903

AIRPORT NAME	CITY	TOTAL EMPLOYMENT	TOTAL ANNUAL PAYROLL	TOTAL ANNUAL SPENDING	TOTAL ANNUAL ECONOMIC ACTIVITY
CLEVELAND MUNICIPAL	Cleveland	11.0	\$697,280	\$914,042	\$1,611,322
CLINTON REGIONAL	Clinton	31.3	\$1,365,374	\$2,018,286	\$3,383,659
CLINTON-SHERMAN	Clinton	42.0	\$1,399,298	\$3,817,688	\$5,216,986
TENKILLER LAKE AIRPARK	Cookson	2.0	\$27,808	\$66,221	\$94,029
CORDELL MUNICIPAL	Cordell	3.5	\$112,810	\$227,302	\$340,111
CUSHING MUNICIPAL	Cushing	64.9	\$2,772,074	\$2,891,214	\$5,663,288
HALLIBURTON FIELD	Duncan	46.4	\$2,090,122	\$2,572,907	\$4,663,028
DURANT REGIONAL - EAKER FIELD	Durant	74.0	\$2,832,724	\$5,078,091	\$7,910,815
EL RENO REGIONAL	El Reno	59.5	\$2,669,565	\$2,583,127	\$5,252,691
ELK CITY REGIONAL BUSINESS	Elk City	56.4	\$2,969,229	\$2,724,424	\$5,693,653
ENID WOODRING REGIONAL	Enid	293.3	\$11,349,947	\$17,851,796	\$29,201,743
EUFULA MUNICIPAL	Eufaula	3.5	\$103,777	\$293,322	\$397,099
FOUNTAINHEAD LODGE AIRPARK	Eufaula	1.0	\$17,944	\$42,185	\$60,129
FAIRVIEW MUNICIPAL	Fairview	15.4	\$592,293	\$1,676,178	\$2,268,471
FREDERICK REGIONAL	Frederick	16.0	\$583,710	\$1,639,775	\$2,223,484
GAGE	Gage	3.0	\$87,210	\$204,262	\$291,472
DAVID JAY PERRY	Goldsby	13.0	\$456,202	\$1,300,663	\$1,756,865
GRANDFIELD MUNICIPAL	Grandfield	6.3	\$270,365	\$880,214	\$1,150,579
GROVE REGIONAL	Grove	35.1	\$1,401,759	\$2,566,125	\$3,967,884
GUTHRIE-EDMOND REGIONAL	Guthrie	194.8	\$7,706,689	\$11,526,847	\$19,233,536
GUYMON MUNICIPAL	Guymon	59.0	\$2,150,403	\$3,959,118	\$6,109,521
HEALDTON MUNICIPAL	Healdton	1.0	\$14,972	\$4,264	\$19,236
HENRYETTA MUNICIPAL	Henryetta	1.5	\$50,218	\$79,737	\$129,956
HINTON MUNICIPAL	Hinton	5.0	\$168,733	\$404,208	\$572,941
HOBART REGIONAL	Hobart	13.7	\$505,072	\$879,220	\$1,384,292
HOLDENVILLE MUNICIPAL	Holdenville	7.3	\$321,560	\$349,060	\$670,620
HOLLIS MUNICIPAL	Hollis	12.8	\$579,904	\$508,689	\$1,088,593
HOMINY MUNICIPAL	Hominy	2.0	\$36,359	\$66,960	\$103,319

AIRPORT NAME	CITY	TOTAL EMPLOYMENT	TOTAL ANNUAL PAYROLL	TOTAL ANNUAL SPENDING	TOTAL ANNUAL ECONOMIC ACTIVITY
HOOKER MUNICIPAL	Hooker	7.4	\$297,774	\$656,344	\$954,119
STAN STAMPER MUNICIPAL	Hugo	29.0	\$1,418,062	\$1,663,354	\$3,081,416
MCCURTAIN COUNTY REGIONAL	Idabel	18.2	\$629,665	\$1,519,433	\$2,149,099
SOUTH GRAND LAKE REGIONAL	Ketchum	20.0	\$783,880	\$1,561,780	\$2,345,660
KINGFISHER	Kingfisher	12.5	\$432,438	\$939,220	\$1,371,657
LAKE TEXOMA STATE PARK	Kingston	1.0	\$20,591	\$48,642	\$69,233
LAVERNE MUNICIPAL	Laverne	3.4	\$74,980	\$443,635	\$518,615
LINDSAY MUNICIPAL	Lindsay	3.0	\$105,646	\$291,607	\$397,254
MADILL MUNICIPAL	Madill	6.5	\$180,367	\$299,589	\$479,956
SCOTT FIELD	Mangum	4.0	\$127,115	\$323,322	\$450,437
MCALESTER REGIONAL	Mc Alester	105.6	\$4,483,842	\$6,495,992	\$10,979,834
MEDFORD MUNICIPAL	Medford	6.6	\$199,221	\$315,475	\$514,696
MIAMI REGIONAL	Miami	33.3	\$1,571,016	\$2,752,796	\$4,323,812
MOORELAND MUNICIPAL	Mooreland	1.0	\$46,370	\$153,878	\$200,249
MUSKOGEE DAVIS REGIONAL	Muskogee	69.6	\$2,140,169	\$5,647,717	\$7,787,885
UNIVERSITY OF OK. WESTHEIMER	Norman	394.4	\$16,598,404	\$20,830,453	\$37,428,857
CHRISTMAN AIRFIELD	Okeene	15.7	\$692,342	\$748,340	\$1,440,681
OKEMAH FLYING FIELD	Okemah	3.0	\$198,932	\$578,137	\$777,069
CLARENCE E PAGE MUNICIPAL	Oklahoma City	117.8	\$4,377,830	\$7,216,655	\$11,594,486
WILEY POST	Oklahoma City	1,636.3	\$79,593,938	\$108,148,341	\$187,742,279
OKMULGEE REGIONAL	Okmulgee	166.1	\$7,543,185	\$8,429,768	\$15,972,953
PAULS VALLEY MUNICIPAL	Pauls Valley	30.6	\$1,394,872	\$3,852,485	\$5,247,357
PAWHUSKA MUNICIPAL	Pawhuska	4.7	\$133,253	\$209,513	\$342,766
PERRY MUNICIPAL	Perry	29.1	\$1,529,763	\$2,696,251	\$4,226,014
PONCA CITY REGIONAL	Ponca City	61.2	\$3,722,334	\$6,385,824	\$10,108,157
ROBERT S KERR	Poteau	16.3	\$624,800	\$1,646,807	\$2,271,607
PRAGUE MUNICIPAL	Prague	6.0	\$187,172	\$531,614	\$718,786
MID-AMERICA INDUSTRIAL	Pryor	25.9	\$1,133,914	\$2,113,219	\$3,247,134

AIRPORT NAME	CITY	TOTAL EMPLOYMENT	TOTAL ANNUAL PAYROLL	TOTAL ANNUAL SPENDING	TOTAL ANNUAL ECONOMIC ACTIVITY
PURCELL MUNICIPAL	Purcell	7.0	\$229,005	\$627,613	\$856,619
SALLISAW MUNICIPAL	Sallisaw	34.3	\$1,571,377	\$1,993,823	\$3,565,200
WILLIAM R. POGUE MUNICIPAL	Sand Springs	38.5	\$1,358,869	\$3,334,392	\$4,693,262
SAYRE MUNICIPAL	Sayre	4.0	\$126,782	\$284,681	\$411,463
SEMINOLE MUNICIPAL	Seminole	46.5	\$1,884,906	\$2,674,240	\$4,559,147
SHAWNEE REGIONAL	Shawnee	97.1	\$3,719,156	\$8,147,265	\$11,866,421
SKIATOOK MUNICIPAL	Skiatook	12.7	\$510,196	\$1,057,276	\$1,567,472
STIGLER REGIONAL	Stigler	11.0	\$322,773	\$779,091	\$1,101,864
STROUD MUNICIPAL	Stroud	3.0	\$117,556	\$339,060	\$456,617
SULPHUR MUNICIPAL	Sulphur	2.0	\$63,672	\$173,762	\$237,434
TAHLEQUAH MUNICIPAL	Tahlequah	26.2	\$1,974,041	\$3,735,176	\$5,709,217
TALIHINA MUNICIPAL	Talihina	2.5	\$38,187	\$99,115	\$137,302
TEXHOMA MUNICIPAL	Texhoma	5.0	\$165,016	\$189,603	\$354,619
THOMAS MUNICIPAL	Thomas	29.9	\$2,043,286	\$2,039,508	\$4,082,794
TIPTON MUNICIPAL	Tipton	1.0	\$17,504	\$18,121	\$35,625
TISHOMINGO AIRPARK	Tishomingo	3.0	\$117,898	\$307,945	\$425,843
RICHARD LLOYD JONES JR	Tulsa	885.1	\$35,911,377	\$59,026,874	\$94,938,251
VINITA MUNICIPAL	Vinita	4.5	\$156,977	\$399,188	\$556,165
HEFNER-EASLEY	Wagoner	4.5	\$105,511	\$238,060	\$343,571
WALTERS MUNICIPAL	Walters	4.8	\$200,200	\$325,948	\$526,148
WATONGA REGIONAL	Watonga	13.2	\$521,348	\$765,567	\$1,286,916
WAYNOKA MUNICIPAL	Waynoka	2.0	\$76,724	\$212,195	\$288,920
THOMAS P STAFFORD	Weatherford	48.2	\$2,243,742	\$4,057,688	\$6,301,430
WESTPORT	Westport	1.0	\$23,310	\$55,264	\$78,574
WILBURTON MUNICIPAL	Wilburton	3.0	\$118,078	\$314,421	\$432,499
WEST WOODWARD	Woodward	36.8	\$1,387,753	\$2,274,389	\$3,662,142
<b>TOTAL GENERAL AVIATION AIRPORTS</b>		<b>6,310</b>	<b>\$270,449,757</b>	<b>\$422,551,837</b>	<b>\$693,001,594</b>
<b>TOTAL ALL AIRPORTS</b>		<b>74,002</b>	<b>\$3,644,518,604</b>	<b>6,983,148,314</b>	<b>\$10,627,666,918</b>

\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING. 14

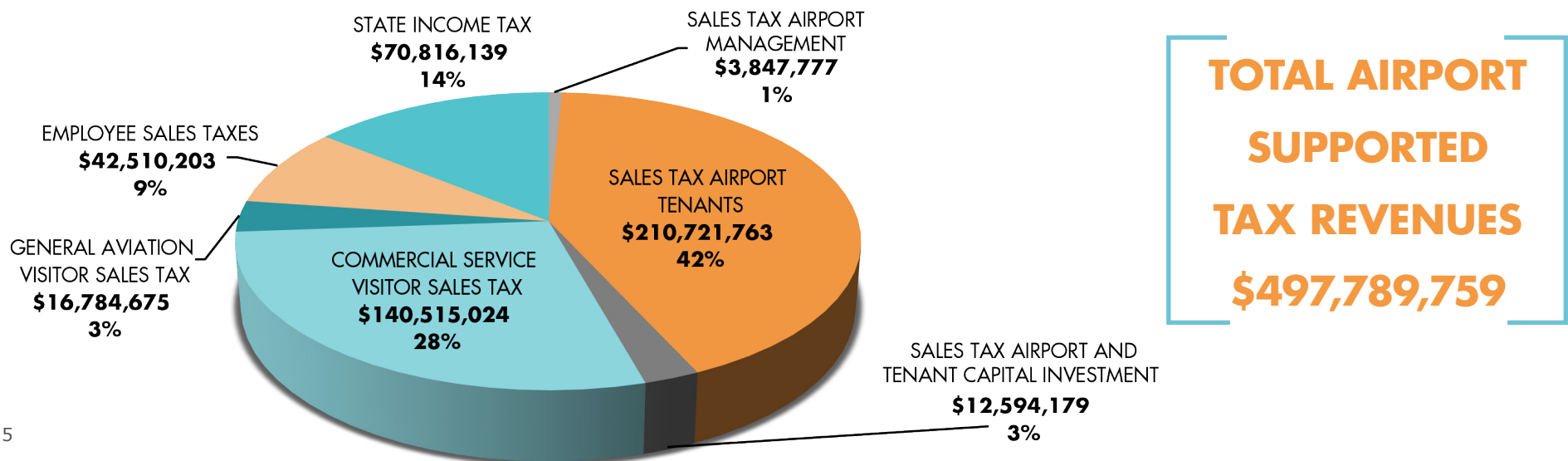
# ANNUAL STATE TAX REVENUES FROM AIRPORT SUPPORTED ACTIVITIES

As documented in this summary, the 109 study airports have a significant annual economic impact in Oklahoma; this impact is estimated at \$10.6 billion. In addition, airports and the activities they support are also important contributors to Oklahoma’s tax revenues. Aviation-related tax revenues are associated with sales tax events and state income tax payments.

Airports and airport supported activities contribute to sales tax revenues. Taxable events are related to the following:

- When visitors come to Oklahoma by air, they pay sales tax on their spending for lodging, food, rental cars, entertainment, and retail purchases.
- Airports and their tenants have annual purchases for supplies to operate their businesses; some of these annual purchases contribute to sales tax revenues.
- When capital improvement projects are implemented, purchases made for materials needed for construction are also subject to a sales tax.
- This study estimates that airport management, airport tenants, capital projects, and visitor spending at the 109 study airports support a total of 47,144 direct jobs. Part of the payroll associated with all direct airport supported jobs is spent on items subject to sales tax.
- The direct jobs supported by Oklahoma airports also pay state income tax.

When these taxable events are considered, it is estimated that airports and airport supported activities contribute **almost \$500 million** in annual tax revenues in Oklahoma. It is important to note that this estimate is based only on direct impacts estimated in this study.





## OTHER BENEFITS SUPPORTED BY AVIATION

Oklahoma airports support many health, business, agricultural, educational, and safety related activities. There are many ways that airports in Oklahoma improve the quality of life for residents throughout the state, even if they themselves never use an airport. The following pages provide examples of these additional benefits.

### PIPELINE PATROLS

Oklahoma is designated as the primary oil delivery point in the country. Moving oil by pipeline is most cost-effective, and Oklahoma has almost 1,000 miles of pipelines. For safety, pipelines must be monitored on a routine basis. It is far more efficient to conduct inspections from the air, using general aviation aircraft. As part of this study, 22 different Oklahoma airports were identified as supporting this activity.

#### OKLAHOMA AIRPORTS SUPPORTING PIPELINE INSPECTIONS



### SAFETY NEEDS

The state of Oklahoma covers almost 69,000 square miles. Much of the state's 4 million residents are in the Tulsa and Oklahoma City metropolitan areas, the remainder reside in smaller communities scattered across the state. Without the ability to support its services by air, the Oklahoma Highway Patrol (OHP) and other law enforcement agencies would not be able to provide effective protection for citizens across the state. This study identified 30 different airports that support OHP and various law enforcement activities.

#### OKLAHOMA AIRPORTS SUPPORTING THE OKLAHOMA HIGHWAY PATROL



### RECREATIONAL NEEDS

The OAC study identified 20 airports that support specific recreational activities. Airports provide access to Oklahoma's nationally known destinations for hunting and fishing; the Oklahoma Department of Agriculture estimates these activities contribute over \$1.5 billion each year to the state's economy. The state's lakes, parks, and golf courses are also often reached via airports. Many pilots and aircraft owners use study airports for recreational flying; every airport in Oklahoma supports some type of recreational flying.

## ECONOMIC IMPACTS FROM AERIAL APPLICATORS

Crops and livestock production are staples for Oklahoma's economy. Aerial applicators treat both ranchlands and crops, helping to increase yields and contribute to the success of agriculture in Oklahoma. Aerial applicators that support agricultural interests in Oklahoma are often based at one of the study airports. Based aerial applicators provide services in their local market area and in other areas of the state. There are also out of state aerial applicators that are licensed to provide services in Oklahoma. For this study, airports were classified as having based or transient (visiting) aerial applicators; and in some cases, airports have both, as shown on the map. Impacts of the based aerial applicators are included in each airport's total annual economic impacts from airport tenants.

When aerial applicators are operating on a transient or visiting basis, individuals providing services are much like a visitor to the community where they are operating. Often, transient aerial applicators are in a host community for weeks at a time. During their visit, transient aerial applicators have expenditures for lodging, food, and other items. In this study, these expenditures were included in the previously reported general aviation visitor spending impacts.

### This study collected the following information on aerial applicators who operate in Oklahoma:

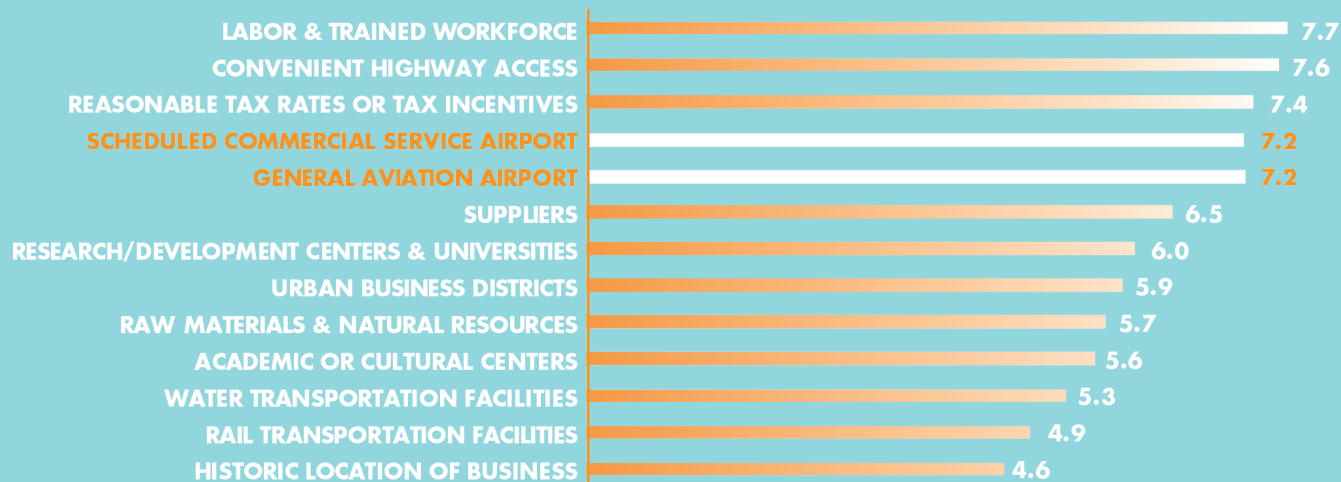
- There are 35 different applicators based at study airports; aerial applicators based at Oklahoma airports support 134 jobs with an annual payroll estimated at \$7.0 million.
- Based aerial applicators spend an estimated \$12.7 million each year to operate their businesses; total annual economic activity supported by based aerial applicators is estimated at \$19.7 million.
- Annual statewide spending by transient aerial applicators in Oklahoma is estimated at \$1.4 million. This spending supports an additional 25 jobs that have a total annual payroll estimated at \$643,300.
- Combined, based and transient aerial applicators support 159 jobs, \$7.6 million in payroll, and have over \$21.7 million in total annual impact.

### OKLAHOMA STUDY AIRPORTS WITH BASED & TRANSIENT AERIAL APPLICATORS



## ADDED BUSINESS EFFICIENCY FROM AVIATION USE

There are many factors that draw employers to a community; sometimes, one of these factors is an airport. Aviation is an important tool to improve business efficiency. When Oklahoma companies use aviation, travel time can often be reduced from days to hours. Many Oklahoma employers have customers or suppliers from outside the state who fly to do businesses with them. Air transportation expands the market area for Oklahoma businesses, helping to increase their financial viability. Using ratings from 10 to 1, as part of a statewide business survey, Oklahoma employers ranked the importance of various factors relative to their location in the state. The results are shown below.



**RELATIVE  
IMPORTANCE OF  
VARIOUS FACTORS  
TO THE LOCATION  
OF BUSINESSES IN  
OKLAHOMA**

The survey revealed how important proximity to a commercial or general aviation airport is to the location of the responding business. The survey also collected information on how aviation benefits employers in the state. Responding businesses provided the following information:

- 89% of responding businesses rely on commercial aviation to improve their efficiency
- 51% of responding businesses rely on general aviation to improve their efficiency
- 48% of responding businesses rely on air cargo/overnight shipping to improve their efficiency

Considering all facets of aviation, this study identified 34,787 non-aviation jobs across the state that have improved efficiency from their use of aviation. These jobs are in addition to the direct, induced, and indirect jobs identified for the study airports, the military, and Oklahoma's off-airport aviation and aerospace employers. All 109 study airports support at least some local, visiting, or local and visiting business related flights.

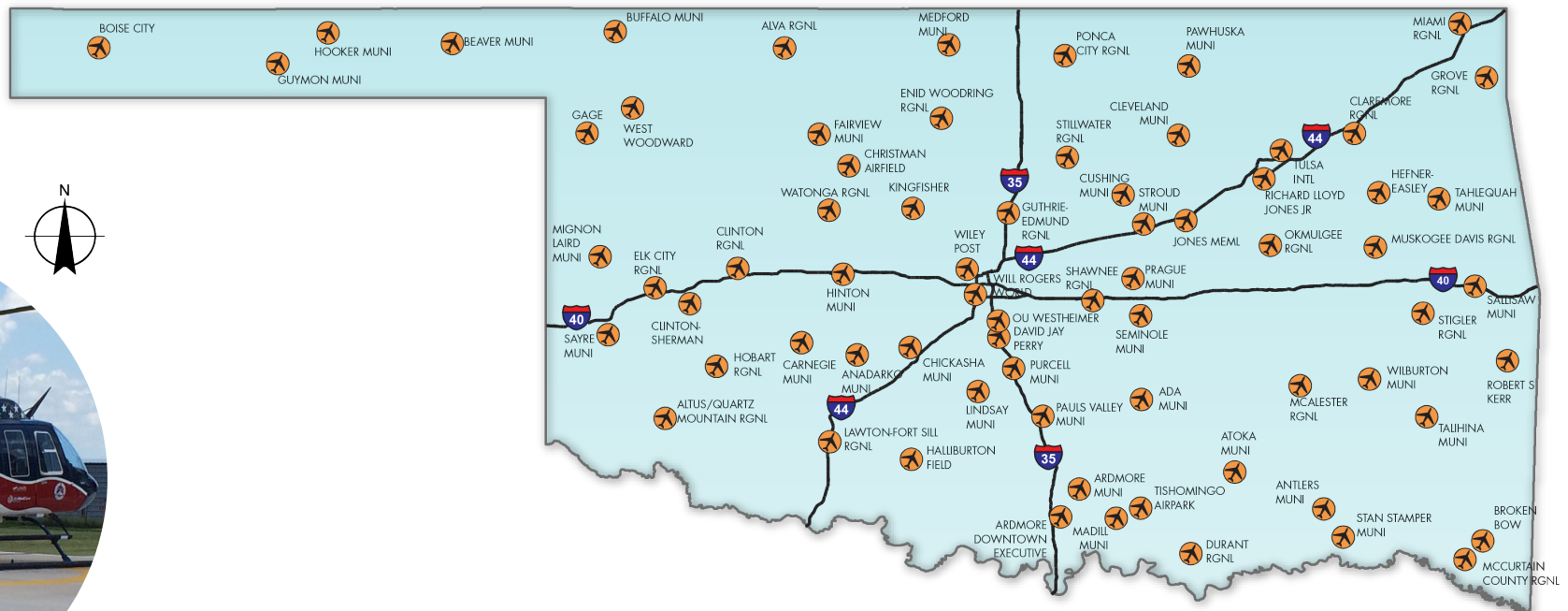
# EMERGENCY MEDICAL & HEALTHCARE NEEDS SUPPORTED BY AIRPORTS

Aviation plays an important role in supporting the health and well-being of the residents of Oklahoma. Airports are utilized to transport patients from remote healthcare facilities to state-of-the-art hospitals, primarily in Oklahoma City and Tulsa. General aviation helicopters are used to airlift patients from accident sites for life-saving treatment. Physicians and nurse practitioners fly to rural parts of the state to provide patients with local healthcare options. Teams of doctors fly on general aviation aircraft to recover and prepare organ donations for transplants.

Many clinicians rely on general aviation to reach patients in rural parts of Oklahoma. Integris Heart Hospital in Oklahoma City has an aircraft based at Wiley Post, and they use this plane to fly cardiologists around Oklahoma to see heart patients at their cardiology clinics. Physicians and specialists across the country fly to Tulsa International to see patients at the world-renowned Cancer Treatment Center of America. Over 30 hospitals in Oklahoma have doctors that rely on general aviation to fly to see patients throughout the state.

Thirty-eight (38) hospitals in rural and urban areas across Oklahoma noted that they use public airports in Oklahoma for transporting patients on both fixed-wing aircraft and helicopters. Of the 109 study airports, almost 70 reported that they have flights that support healthcare or some type of emergency medical services.

## OKLAHOMA AIRPORTS SUPPORTING HEALTHCARE SERVICES



## AVIATION EDUCATION & TRAINING SUPPORT



Oklahoma is a national leader in aviation education and training. Students from around the country and the world choose to receive their aviation education in Oklahoma because of the excellent reputation of the state's aviation schools and programs. Oklahoma plays an important role in training tomorrow's pilots and aviation professionals. Statewide, there are many colleges, universities, technical training centers, institutions, individuals, and other entities that provide some type of aviation-related training or education. An estimated 50 different Oklahoma airports support some type of aviation training or educational activities. Programs include pilot training, training for aircraft mechanics, and training for airport managers. Oklahoma is also home to FAA's largest training center, the Mike Monroney Aeronautical Center, located at Will Rogers World Airport. The center attracts students from around the world; the center has almost 950 employees providing aviation-related training and education for an estimated 1,000 domestic and international students on any given day.



The synergies between aviation educational providers in Oklahoma and the state's aerospace/aviation industries and its major military airfields are vital to ensuring a skilled workforce. Students receiving pilot training from Southeastern Oklahoma State University's Department of Aviation Science Institute can transition directly into a job with a regional carrier affiliated with American Airlines. Students training to become aircraft mechanics at Southwest Technology Center located in Altus often transition directly into civilian jobs at one of Oklahoma's three Air Force Bases.

Statewide, it is estimated that 1,570 people have jobs that are directly supported by aviation-related education and training; roughly 1,330 of these jobs are on an airport. The educational jobs noted here are only direct jobs; they have not been increased to show a multiplier effect. Since most of these jobs are associated with employers who are classified as an airport tenant, their total annual economic impacts were reported earlier in the airport tenant category.

## UAS/UAV ACTIVITIES IN OKLAHOMA

Aerospace has long been a cornerstone of Oklahoma's economy. Therefore, it is not surprising that the state has taken steps to be at the forefront of the Unmanned Aerial Systems (UAS) / Unmanned Aerial Vehicle (UAV) industry. In February 2009, Oklahoma established its own chapter of the Association for Unmanned Vehicle Systems International (AUVSI), known as UAS-OK. UAS-OK supports small companies involved in research, development, testing, evaluation, and production of unmanned systems. The establishment of UAS-OK was followed in the summer of 2011 with Governor Mary Fallin's organization the Governor's Unmanned Aerial System's Council. Oklahoma is a UAS/UAV friendly state, with open airspace to support the development of this emerging technology.

In March 2013, AUVSI published their Economic Impact of Unmanned Aircraft System Integration in the United States. At the time of the release of this report, AUVSI estimated that by 2025 Oklahoma could see 637 new jobs and \$805 million in annual economic activity from UAS/UAV activities.

Nationwide and in Oklahoma, UASs/UAVs being used for commercial purposes are not typically launched from an airport; therefore, effective mechanisms to determine current volumes of UAS/UAV activity are somewhat lacking. Firms engaged in UAS/UAV activities are most often multi-faceted, making it difficult to identify which companies in Oklahoma are engaged in UAS/UAV activities. Many of the state's major aerospace companies such as Boeing, Northrop Grumman, and General Electric are engaged in UAS/UAV research and development. According to information collected for the OAC study by the Oklahoma Department of Commerce, there are an estimated 110 companies in the state that are engaged in some facet of UAS/UAV research, testing, development, or flight.

Oklahoma is in the top five states for UAS/UAV activities concerning academics for this industry. Oklahoma's prominence in this area is a result of research teams from The University of Oklahoma and Oklahoma State University. Oklahoma State University is one of the first universities in the country to offer a graduate engineering degree specifically tailored to the UAS/UAV field. The two universities have over 30 teaching staff involved in UAS/UAV education. Over 75 students are currently training in UAS/UAV engineering and pilot programs. Oklahoma expects continued growth in this important sector of technology and transportation.



# ANNUAL ECONOMIC IMPACTS FROM MILITARY AVIATION

Oklahoma's three Air Force Bases (Altus, Tinker, and Vance) are vital to the nation's security. Oklahoma's military airfields play important roles in training the next generation of Air Force pilots, particularly at Altus and Vance Air Force Bases. Tinker Air Force Base is considered the largest military MRO (maintenance, repair, and overhaul) facility in the world. Although Tinker has many missions, its main function is to provide depot level maintenance to keep our nation's military aircraft in the air. Beyond contributing to many facets of national security, the Air Force Bases in Oklahoma have a tremendous economic impact in the state. The three bases are economic engines that support thousands of military and civilian jobs in Oklahoma.

Economic impacts for the Altus, Tinker, and Vance Air Force Bases are related to activities that the three installations supported at the time this study was conducted. Their annual economic impact estimate reflects impacts associated not only with the operation of each base, but also from capital spending to improve and maintain each of the bases.

In addition to the three Air Force Bases, the Oklahoma Army Air Guard also has a presence in Oklahoma. Annual economic impacts for the Guard units were also estimated as part of the OAC study and are shown here. Combined, activities associated with military aviation in Oklahoma support the following annual impacts:

- Military aviation supports a total of 72,648 jobs.
- These jobs have a total annual payroll estimated at \$4.7 billion.
- Total annual spending infused into the state's economy from military aviation is estimated at \$14.6 billion.
- Total annual economic activity from military aviation estimated in this study is \$19.3 billion.



It is worth noting that this study estimated that Air National Guard Units at Will Rogers World Airport and Tulsa International are responsible for an estimated \$91.5 million in annual economic activity. The annual economic impacts for the Oklahoma Army Air Guard, shown in the table below, are for units not based at one of the 109 study airports. Impacts from the Oklahoma Army Air Guard shown below are in addition to the military tenant impacts previously estimated for the study airports.

## ECONOMIC IMPACT OF MILITARY AVIATION IN OKLAHOMA

	TOTAL EMPLOYMENT	TOTAL ANNUAL PAYROLL	TOTAL ANNUAL SPENDING	TOTAL ANNUAL ECONOMIC ACTIVITY
<b>OKLAHOMA ARMY AIR GUARD</b>	<b>557</b>	<b>\$21.3M</b>	<b>\$11.2 M</b>	<b>\$32.5 M</b>
<b>VANCE AFB</b>	<b>6,310</b>	<b>\$301 M</b>	<b>\$624 M</b>	<b>\$925 M</b>
<b>TINKER AFB</b>	<b>56,901</b>	<b>\$3.9 B</b>	<b>\$13.2 B</b>	<b>\$17.1 B</b>
<b>ALTUS AFB</b>	<b>8,881</b>	<b>\$470 M</b>	<b>\$767 M</b>	<b>\$1.24 B</b>

*\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.*





# ECONOMIC IMPACTS FROM OTHER OFF-AIRPORT AVIATION & AEROSPACE EMPLOYERS

Oklahoma’s airports and military airfields have attracted other aviation and aerospace companies to the state. Following World War II, Oklahoma emerged as a center for aviation activity. Ever since that time, Oklahoma has continued its upward trajectory, attracting the nation’s most sophisticated aviation/aerospace developers, maintainers, and suppliers. As part of the OAC study, additional research was undertaken to identify other aviation and aerospace employers in Oklahoma who are not located at one of the 109 study airports. Annual economic impacts for aviation businesses located “inside the fence” at one of the study airports were presented previously in this summary.

Impacts presented in this section are those associated with aviation and aerospace companies operating in Oklahoma but not at one of the study airports. Impacts reported in this section are in addition to those identified for study airports or military aviation.

Research conducted as part of this study indicates, statewide, that there are over 870 businesses not located at one of the study airports that are engaged in some facet of aviation or aerospace as their core or primary business. These aviation and aerospace businesses have a significant economic impact on Oklahoma’s economy. Annual economic impact from these employers is summarized here.

## TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS OFF-AIRPORT AVIATION/AEROSPACE EMPLOYERS

	DIRECT	INDIRECT/INDUCED	TOTAL
EMPLOYMENT	26,654	32,303	58,957
PAYROLL	\$1.7B	\$1.7B	\$3.4B
SPENDING	\$7.1B	\$3.4B	\$10.5B
ECONOMIC ACTIVITY	\$8.8B	\$5.0B	\$13.9B

\*TOTALS MAY NOT SUM BECAUSE OF ROUNDING.



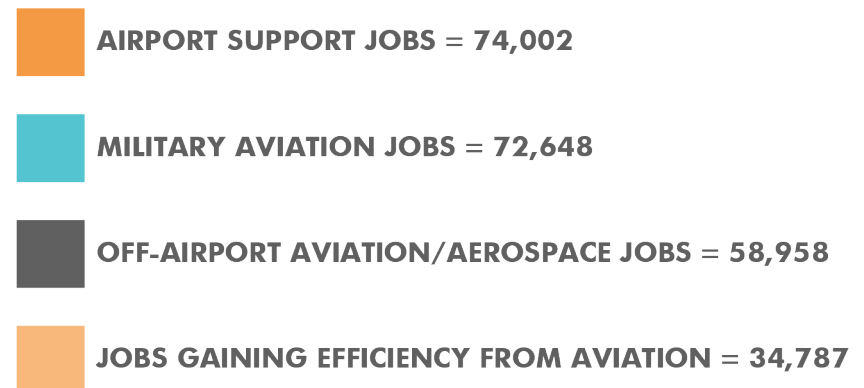
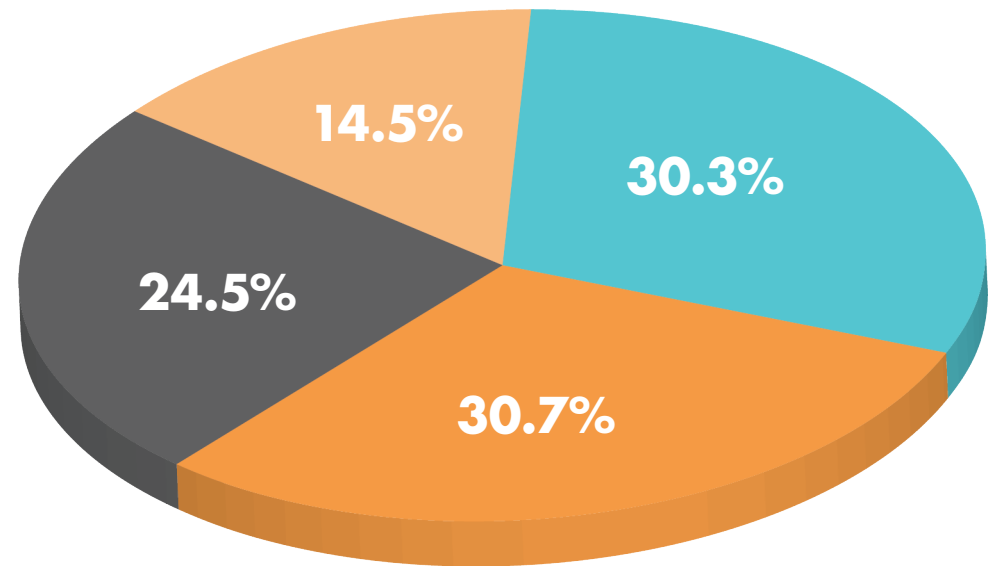
## SUMMARY OF ALL AIRPORT, AVIATION, & AEROSPACE IMPACTS

When all direct, indirect, and induced impacts from airports, military, and off-airport aviation/aerospace employers are considered, there are about 205,600 jobs in Oklahoma that in some way are supported by airports, aviation and aerospace. In addition to these jobs, there almost 34,800 jobs in Oklahoma that have improved efficiency from using aviation. Combined, there are an estimated 240,400 jobs in Oklahoma that in some way are supported by or that benefit from aviation and aerospace. These jobs represent 14.5 percent of all non-farm employment in the state.

The study also concluded that airports, military aviation, and off-airport aviation and aerospace companies, when combined support:



These estimates include all direct, indirect, and induced economic impacts identified in this study. The OAC study has clearly shown that all facets of aviation and aerospace are significant contributors to Oklahoma's economy. Combined, all categories examined in this study are contributing almost **\$44 billion** each year to Oklahoma's economy.



AVIATION & AEROSPACE HELP TO SUPPORT ALMOST 14.5% OF OKLAHOMA'S TOTAL JOBS

Input for this study was obtained from: Oklahoma airport representatives, Oklahoma airport tenants, USDOT, Oklahoma Businesses, the Oklahoma Department of Commerce, passengers using Oklahoma airports, the Oklahoma Aeronautics Commission (OAC), the Federal Aviation Administration (FAA), and other public and private sources. Analysis completed in this study was based on information collected between August 2016 and March 2017. The final report was released in August 2017. Preparation of this report was financed in part through a grant from the FAA as approved under the Airport and Airways Improvement Act of 1982. The contents of this report reflect the views of the Consultant Team, which is responsible for the facts and accuracy of the data depicted herein, and do not necessary reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein, nor does it indicate that the proposed development is environmentally acceptable in accordance with applicable public laws.

## OKLAHOMA AVIATION & AEROSPACE ECONOMIC IMPACT STUDY PROJECT ADVISORY COMMITTEE

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**Patricia Brace: FAA AR/OK Airports District Office**

**Tom Chandler: Aircraft Owners and Pilots Association**

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**Steve Hadley: National Business Aviation Association**

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# Oklahoma

AVIATION & AEROSPACE  
ECONOMIC IMPACT STUDY



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