



# KANSAS AVIATION ECONOMIC IMPACT STUDY

## EXECUTIVE SUMMARY



## INTRODUCTION

Aviation is deeply rooted in Kansas. The state is home to many aviation pioneers, including Clyde Cessna, Lloyd Stearman, and Walter and Olive Beech. Wichita's early commitment to aircraft manufacturing earned it the title "Air Capital of the United States." Without the rich history of aircraft manufacturing in Kansas, the aviation industry would not be what it is today, and the Kansas economy would likely be significantly smaller in size.



Air transportation remains essential to the Kansas economy and its position in the global marketplace. Airports in Kansas are the gateway to the nation's air transportation system and the world's economy. It supports the attraction and retention of aviation-related businesses throughout the state. Air transportation is not only important to businesses in Kansas, it also supports tourism, agriculture, emergency medical services, military, and public safety. Each airport is an important component of the Kansas Aviation System.

## STUDY OVERVIEW

The Kansas Department of Transportation, Division of Aviation initiated this study to highlight the significant economic contributions from aviation on the state's economy. This study quantifies the economic impacts from all aspects of aviation including airports, airport-related businesses, and aerospace manufacturing throughout the state.

Economic impacts were quantified for the seven commercial and 73 general aviation airports listed in the National Plan of Integrated Airports System (NPIAS) in Kansas. This study focuses on all aviation related economic benefits associated with airports, airport businesses, tenants, and aerospace manufacturing. Moreover, visitor spending associated with air travel, whether business or recreational, provided additional economic benefits to the state.

Overall, airports throughout Kansas contribute to its economy through a variety of activities including several unique industries that are not as easily quantified however they rely on aviation to support their mission or operation. As a result, the following areas were also highlighted for their contributions to the overall benefit of aviation to Kansas and local communities:

- Medical Operations
- Agricultural Application
- Aerospace Manufacturing
- Value Added Benefits from Off-Airport Businesses
- Qualitative Airport Benefits
- Kansas City International Airport

## STUDY METHODOLOGY

The Kansas Aviation Economic Impact Study uses an econometric input-output model to estimate the economic impacts of its 80 NPIAS airports. This input-output model assesses various economic impacts, such as those associated with on-airport activities, commercial service visitors, and general aviation visitors arriving at the airports. The following economic impact were measured:

**FIRST ROUND IMPACTS** include both direct and indirect impacts, and measures where on-airport activity (direct impacts) and visitor spending (indirect impacts) first begin circulating through the economy.

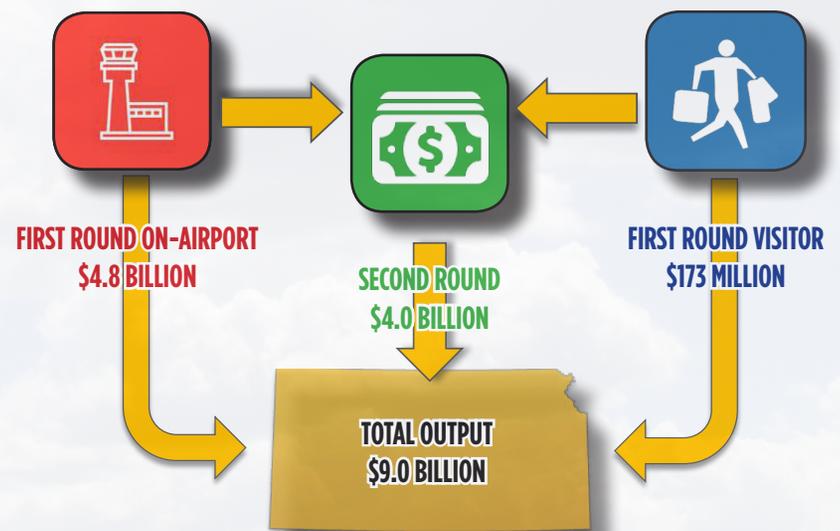
- **DIRECT IMPACTS** include employment, payroll, and spending from businesses such as fixed base operators (FBOs), flight schools, aircraft repair facilities, and on-airport government entities. Capital expenditures from these businesses and government entities are also considered direct impacts.
- **INDIRECT IMPACTS** include spending from visitors arriving in Kansas via air (both commercial service and GA), and generally occurring at off-airport locations. Visitor expenditures support employment and payroll in service-related industries such as lodging, food and beverage, retail, and entertainment.

**SECOND ROUND IMPACTS**, or Induced Impacts, are the economic benefits resulting from the recirculation of dollars from direct and indirect impacts within the economy, and referred to as the multiplier effect. For example, airport employees spend their salary for housing, food, and services. Portions of these dollars circulate through the economy resulting in increased spending, payroll, and employment throughout Kansas. Over time, as these dollars continue to circulate, their impact lessens as they leave the community. The economic model uses parameters specific to Kansas to estimate the leakage effect associated with these second round impacts.

**TOTAL IMPACTS** are the sum of all first round (direct and indirect) and second round (induced) economic activities attributable to airports or aviation-related activities. First round impacts are measured through surveys of businesses, government agencies, and visitor spending. Second round impacts are more difficult to estimate, therefore, it becomes necessary to use a reliable method for economic modeling.

Data used for economic modeling input were gathered from the airports and their tenants. A survey also sampled general aviation visitors' spending habits while traveling to determine their indirect benefits. Kansas-specific multipliers were used to convert this spending into jobs and payroll. As these first round benefits are released into the statewide economy, additional second round benefits are created. For example, when airport employees use their salary to buy groceries, their dollar supports additional economic activity. Each time this dollar is used, its effect is diminished. As a result, the dollar continues circulating throughout the economy until the benefits ultimately leak outside of Kansas.

Second round benefits were calculated using Kansas specific multipliers. For example, for every \$100 of first round benefits generated by aviation-related businesses, an additional second round benefit of \$55 is created. The total economic benefit is the sum of first round and second round benefits, which would equal \$155.



## IMPACT MEASURES

Economic impacts (output) are expressed in terms of employment, payroll, and total economic activity. For each of these activities, first round and second round impacts were calculated.

### EMPLOYMENT

Thousands of jobs in Kansas are directly created by businesses, tenants, and other activities located at commercial service and general aviation airports. In addition to on-airport jobs, spending by Kansas visitors arriving via commercial service or general aviation airports support additional indirect employment. Jobs were defined in terms of full-time equivalents (FTE), while two part-time jobs equal one FTE. Overall, Kansas airports support 34,000 jobs.

### PAYROLL

Each job generates annual wages, salaries, and benefits that contribute to the overall payroll impacts. These findings reveal that the commercial service and general aviation airports generate an estimated \$1.8 Billion in annual payroll benefits.

### OUTPUT

The value of the goods and services produced by airports and related aviation activities is the economic output of that airport. The output of on-airport businesses is estimated as the sum of annual gross revenues and average capital expenditures. For organizations that do not produce revenues (such as corporate flight departments), annual payroll and expenses are substituted for annual revenues. This study revealed that Kansas airports contribute \$9.0 billion in total economic impacts each year, while Aerospace manufacturing accounts for 46 percent of this output to the state and local economies.

#### COMMERCIAL SERVICE AIRPORTS

<b>Jobs</b>	<b>22,530</b>
<b>Payroll</b>	<b>\$1.3 Billion</b>
<b>Output</b>	<b>\$5.2 Billion</b>

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#### GENERAL AVIATION AIRPORTS

<b>Jobs</b>	<b>11,470</b>
<b>Payroll</b>	<b>\$574 Million</b>
<b>Output</b>	<b>\$3.8 Billion</b>

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#### TOTAL IMPACTS

<b>Jobs</b>	<b>34,000</b>
<b>Payroll</b>	<b>\$1.8 Billion</b>
<b>Output</b>	<b>\$9.0 Billion</b>

## ANNUAL ECONOMIC IMPACT OF COMMERCIAL SERVICE AIRPORTS

Associated City	Airport	Total Employment	Total Payroll	Total Output
Dodge City	Dodge City Regional Airport	174	\$6,745,000	\$30,418,200
Garden City	Gardern City Regional Airport	232	\$8,692,600	\$36,295,900
Hays	Hays Regional	170	\$4,192,400	\$17,976,900
Liberal	Liberal Mid-America Regional	237	\$7,711,500	\$38,023,000
Manhattan	Manhattan Regional	494	\$14,263,400	\$56,008,200
Salina	Salina Regional	640	\$26,034,500	\$90,443,800
Wichita	Wichita Dwight D. Eisenhower National	20,583	\$1,206,733,800	\$4,978,579,200
<b>COMMERCIAL SERVICE AIRPORTS TOTALS</b>		<b>22,530</b>	<b>\$1,274,373,200</b>	<b>\$5,247,745,200</b>

## ANNUAL ECONOMIC IMPACT OF GENERAL AVIATION AIRPORTS

Associated City	Airport	Total Employment	Total Payroll	Total Output
Abilene	Abilene Municipal	30	\$895,200	\$2,642,800
Anthony	Anthony Municipal	1	\$39,700	\$246,500
Atchison	Amelia Earhart Memorial	9	\$224,000	\$887,500
Atwood	Atwood-Rawlins County City-County	34	\$966,200	\$10,295,500
Augusta	Augusta Municipal	283	\$13,090,200	\$60,253,800
Belleville	Belleville Municipal	3	\$121,200	\$1,130,300
Beloit	Moritz Memorial	17	\$470,200	\$2,213,400
Burlington	Burlington-Coffey County	26	\$1,006,900	\$6,456,500
Chanute	Chanute - Martin Johnson	20	\$699,000	\$2,905,400
Cimarron	Cimarron Municipal	<1	\$2,100	\$18,200
Clay Center	Clay Center Municipal	22	\$843,300	\$4,076,100
Coffeyville	Coffeyville Municipal	11	\$202,700	\$874,300
Colby	Shalz Field	20	\$631,300	\$5,318,400
Concordia	Blosser Municipal	7	\$206,200	\$656,100
El Dorado	El Dorado/Capt. Jack Thomas Memorial	22	\$879,400	\$6,115,400
Elkhart	Elkhart-Morton County	6	\$190,100	\$1,702,500
Ellsworth	Ellsworth Municipal	5	\$186,700	\$1,543,900

## ANNUAL ECONOMIC IMPACT OF GENERAL AVIATION AIRPORTS - CONTINUED

ASSOCIATED CITY	AIRPORT	TOTAL EMPLOYMENT	TOTAL PAYROLL	TOTAL OUTPUT
Emporia	Emporia Municipal	55	\$2,324,000	\$10,328,500
Eureka	Lt. William M. Milliken	8	\$294,300	\$1,148,700
Fort Scott	Fort Scott Municipal	16	\$620,700	\$3,472,100
Gardner	Gardner Municipal	6	\$212,200	\$677,300
Garnett	Garnett Industrial	8	\$216,700	\$905,100
Goodland	Renner Field - Goodland Municipal	128	\$4,415,300	\$24,320,500
Great Bend	Great Bend Municipal	137	\$4,701,800	\$18,128,400
Herington	Herington Regional	9	\$229,200	\$1,789,400
Hill City	Hill City Municipal	17	\$426,600	\$2,509,400
Hugoton	Hugoton Municipal	22	\$649,600	\$4,358,100
Hutchinson	Hutchinson Municipal	155	\$4,928,800	\$18,365,300
Independence	Independence Municipal	2,142	\$103,305,800	\$751,852,500
Iola	Allen County	5	\$162,600	\$767,700
Johnson	Stanton County Municipal	28	\$777,500	\$6,400,100
Junction City	Freeman Field	44	\$2,637,400	\$12,025,300
Kingman	Kingman - Clyde Cessna Field	9	\$282,600	\$1,057,400
Lakin	Kearny County	12	\$500,400	\$2,003,200
Larned	Larned - Pawnee County	17	\$596,200	\$5,634,600
Lawrence	Lawrence Municipal	97	\$4,012,800	\$13,300,200
Leoti	Mark Hoard Memorial	11	\$371,600	\$3,576,900
Lyons	Lyons - Rice County Municipal	24	\$670,700	\$4,265,600
Marysville	Marysville Municipal	8	\$367,400	\$1,104,700
McPherson	McPherson	33	\$860,000	\$2,822,500
Meade	Meade Municipal	4	\$146,300	\$1,288,100
Medicine Lodge	Medicine Lodge	1	\$17,600	\$117,000
Ness City	Ness City Memorial	<1	\$4,200	\$10,700
Newton	Newton City/County	781	\$28,284,400	\$152,784,900
Norton	Norton Municipal	12	\$298,700	\$3,002,200
Oakley	Oakley Municipal	26	\$815,200	\$5,877,200
Oberlin	Oberlin Municipal	19	\$398,600	\$2,370,000
Olathe	Johnson County Executive	421	\$11,489,400	\$51,912,400

## ANNUAL ECONOMIC IMPACT OF GENERAL AVIATION AIRPORTS - CONTINUED

ASSOCIATED CITY	AIRPORT	TOTAL EMPLOYMENT	TOTAL PAYROLL	TOTAL OUTPUT
Olathe	New Century AirCenter	728	\$34,122,800	\$160,265,000
Osage City	Osage City Municipal	46	\$2,372,500	\$9,393,300
Oswego	Oswego Municipal	6	\$254,200	\$1,754,400
Ottawa	Ottawa Municipal	34	\$1,424,800	\$5,863,700
Paola	Miami County	29	\$1,086,300	\$4,299,100
Parsons	Tri-City	11	\$243,800	\$1,392,400
Phillipsburg	Phillipsburg Municipal	18	\$692,800	\$5,105,300
Pittsburg	Atkinson Municipal	47	\$1,709,100	\$8,945,200
Pratt	Pratt Regional	49	\$1,417,800	\$7,260,600
Russell	Russell Municipal	6	\$179,900	\$1,557,900
Sabetha	Sabetha Municipal	2	\$39,600	\$156,100
Satanta	Satanta Municipal	29	\$1,071,700	\$10,598,800
Scott City	Scott City Municipal	17	\$672,700	\$4,760,700
Smith Center	Smith Center Municipal	10	\$312,300	\$2,655,400
St. Francis	St. Francis-Cheyenne County	18	\$360,500	\$2,073,900
Stockton	Rooks County Regional	18	\$499,400	\$3,518,400
Syracuse	Syracuse - Hamilton County Municipal	19	\$587,000	\$4,481,300
Topeka	Philip Billard Municipal	201	\$8,365,800	\$20,248,700
Topeka	Topeka Regional	1,774	\$77,620,800	\$162,994,700
Tribune	Tribune Municipal	8	\$622,400	\$2,666,600
Ulysses	Ulysses	36	\$1,186,500	\$6,659,300
WaKeeney	Trego WaKeeney	18	\$516,400	\$4,779,200
Wellington	Wellington Municipal	972	\$48,035,800	\$197,418,700
Wichita	Col. James Jabara	1,053	\$40,884,800	\$156,315,600
Winfield	Strother Field	1,543	\$154,489,900	\$1,784,693,800
<b>GENERAL AVIATION AIRPORTS TOTALS</b>		<b>11,463</b>	<b>\$574,442,600</b>	<b>\$3,785,370,700</b>
<b>ALL AIRPORTS TOTAL</b>		<b>33,993</b>	<b>\$1,848,815,800</b>	<b>\$9,033,115,900</b>

## ADDITIONAL ECONOMIC BENEFITS TO KANSANS

Airports in Kansas provide benefits beyond those directly associated with on-airport businesses or aviation. Some benefits are difficult to quantify and not included in the traditional economic model previously discussed. However, it is important to recognize these benefits because the total value of an airport system extends well beyond employment, payroll, and output impacts.



**Economic Impact for Airports and Heliport Use by Hospitals**

**Lives, Health, Service**

### MEDICAL OPERATIONS

Aviation provides a critical role assisting communities, especially those in rural areas, with access to medical services. The ability to rapidly and safely move patients, medical personnel, and equipment throughout Kansas is an aviation benefit that is vital to the well-being and quality of life throughout the state. Lives are improved, and in some cases saved, however its economic value is difficult to quantify.

**PATIENT TRANSFERS:** Nearly 94 percent of responding hospitals indicate that they regularly use air ambulance services to transport patients from a hospital helipad or local airport.

**SPECIALTY CLINICS:** Specialty clinics consist of consultations and treatments by doctors, nurses, and other healthcare practitioners in a variety of specialized areas. Many hospitals, especially those located in the more rural areas, find that the demand and salaries to maintain a full-time specialist on staff are not warranted. Therefore, the most cost-effective approach to provide specialized care is offering periodic on-site clinics.

**AIR CARGO:** Hospitals also indicate they rely on aviation to transport medication and medical supplies. Approximately one-third of responding hospitals revealed that they use express air or air cargo to move a variety of medical items and important documentation from place to place.

## AGRICULTURAL APPLICATION

Aviation is a critical part of the Kansas agricultural industry. Overall, aerial applicators are estimated to preserve or enhance crop value of Kansas agriculture by approximately \$490.5 million. As part of the "Grain Belt," Kansas plays a major role in the production of agricultural products worldwide. Unlike ground-based rigs, aerial agricultural applicators have the ability to accurately and efficiently apply pesticides without damaging nearby plants or crops.



**Economic Impact Attributed from Agricultural Applicators:**

**Up to \$490.5 Million**

And, aerial agricultural applicators also respond quickly to outbreaks of plant disease or insect infestation. Without these capabilities, some or even all of the economic value of a crop may be lost.

## OFF-AIRPORT AEROSPACE MANUFACTURING

Kansas is a global leader in aerospace manufacturing. With a rich aviation history, it is no surprise that aerospace manufacturing plays such an important role in the Kansas economy. According to the Kansas Department of Commerce, nearly 70 percent of the world's embedded aircraft fleet was manufactured in Kansas, while producing over a quarter million aircraft since 1919. As such, aerospace manufacturing comprises a large sector of the Kansas economy. Many of these firms exist to support the extensive aircraft manufacturing industry in Kansas.



**Off-Airport Aerospace Manufacturing**

<b>Jobs</b>	<b>47,000</b>
<b>Payroll</b>	<b>\$1.6 Billion</b>
<b>Output</b>	<b>\$9.5 Billion</b>

## VALUE-ADDED BENEFITS FROM OFF-AIRPORT BUSINESSES



### Off Airport Aerspase Manufacturing

Jobs	47,000
Payroll	\$1.6 Billion
Output	\$9.5 Billion

Air transportation supports business operations throughout the United States to increase productivity and meet their goals. Similarly, many businesses in Kansas, while not located at an airport, benefit from the proximity and availability of the state's NPIAS airports.

A survey of Kansas businesses in the region depend on the state's airports for the transport of employees, clients and suppliers as well as goods. Without access to these airports, some companies would be forced to

reduce employment or possibly relocate elsewhere. Based on this survey, an estimated 253,000 jobs are linked to the airports and the efficiencies gained for their business roles.

## KANSAS CITY INTERNATIONAL AIRPORT



### Kansas Impacts:

Jobs	15,100
Payroll	\$462 Million
Output	\$1.6 Billion

Kansas City International Airport (MCI), located near the Kansas state line, draws a substantial portion of its employees and airline passengers from Kansas. Because of its proximity to Kansas, MCI provides additional economic impacts to the state and its residents. The Economic Impact of Kansas City International Airport FY 2014, was used to estimate the portion of MCI's 2015 economic impacts that benefit Kansas in terms of employment, payroll, and total output.

The results of this analysis indicated that MCI is responsible for more than 15,100 total jobs in Kansas, or more than 35 percent of the airport's total employment impact. Those Kansas-based employees earned approximately \$462 million in total wages and benefits, or more than 32 percent of the payroll attributed to the airport. Finally, MCI was estimated to produce over \$1.6 billion in total output for Kansas, or approximately 31 percent of the total economic output of the airport.

## QUALITATIVE AIRPORT BENEFITS

Qualitative benefits are those activities which take place regularly at an airport that adds to the quality of life of Kansas' citizens. Because these benefits typically enhance the health, safety, or welfare of individuals in the airport's market area, they cannot be readily assigned a dollar value.



### Qualitative Benefits of Aviation at Kansas System Airports

The following are examples of the qualitative benefits Kansas aviation supports:

- Agriculture (offering the option to access aerial applicators)
- Emergency medical transport
- Staging area for community events
- Prisoner transport
- Military training/exercises
- Police support
- Search-and-rescue operations
- Aerial surveying, photography, and inspection operations
- Flight training activities
- Youth education and outreach activities (e.g. Young Eagles)

## SUMMARY

In 2017, \$20.6 billion in annual economic benefit was supported by aviation and aviation-related activities in Kansas, supported nearly 91,300 jobs, and generated more than \$4.4 billion in annual payroll. The table below provides a detailed breakdown of the impact for each sector:

<b>ECONOMIC IMPACTS OF AVIATION ACTIVITY IN KANSAS</b>			
	<b>First Round Impacts</b>	<b>Second Round Impacts</b>	<b>Total Impacts</b>
<b>EMPLOYMENT</b>			
<b>Employment</b>			
<b>Off-Airport Aerospace Manufacturing</b>	18,610	23,538	42,148
<b>Kansas NPIAS Airports</b>	16,161	17,832	33,993
<b>Kansas City International Airport Impacts in Kansas</b>	8,560	6,578	15,138
<b>Aerial Applicator Value to Kansas Agriculture (Note 1)</b>	N/A	N/A	N/A
<b>Total</b>	<b>43,331</b>	<b>47,948</b>	<b>91,279</b>
<b>PAYROLL</b>			
<b>Off-Airport Aerospace Manufacturing</b>	\$1,172,099,400	\$932,261,100	\$2,104,360,500
<b>Kansas NPIAS Airports</b>	\$1,042,017,800	\$806,798,000	\$1,848,815,800
<b>Kansas City International Airport Impacts in Kansas (Note 2)</b>	\$216,000,000	\$246,000,000	\$462,000,000
<b>Aerial Applicator Value to Kansas Agriculture (Note 1)</b>	N/A	N/A	N/A
<b>Total</b>	<b>\$2,430,117,200</b>	<b>\$1,985,059,100</b>	<b>\$4,415,176,300</b>
<b>OUTPUT</b>			
<b>Off-Airport Aerospace Manufacturing</b>	\$6,622,891,700	\$2,846,686,400	\$9,469,578,100
<b>Kansas NPIAS Airports</b>	\$5,000,314,400	\$4,032,801,500	\$9,033,115,900
<b>Kansas City International Airport Impacts in Kansas (Note 2)</b>	\$777,000,000	\$824,000,000	\$1,601,000,000
<b>Aerial Applicator Value to Kansas Agriculture (Note 1)</b>	N/A	N/A	\$490,461,000
<b>Total</b>	<b>\$12,400,206,100</b>	<b>\$7,703,487,900</b>	<b>\$20,594,155,000</b>