

Colorado Aviation Economic Impact Study

Prepared for



Colorado Department of Transportation Division of Aeronautics
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Chapter 1. Introduction

1.1. Study Overview

The Colorado Department of Transportation (CDOT) Division of Aeronautics undertook the 2020 Colorado Aviation Economic Impact Study (CEIS) to calculate and document the quantitative contributions of aviation to the state. The CEIS results demonstrate the significant impact the state’s airport system has on each airport community as well as the statewide economy. The CEIS and its companion Colorado Aviation System Plan (CASP) also included research and documentation of the qualitative impacts and stories of how airports contribute to the state and its residents beyond the economic impact.

The Colorado public-use airport system supports and contributes to the state and regional economies of Colorado. The airports themselves play a vital role in the state’s transportation system by providing both commercial airline and GA service within the state, throughout the U.S., and across the globe. They are also important job centers and gateways for out-of-state visitors to reach all corners of the state. Together the operation of airports (including airport administration, airport tenants, and capital improvements) and visitor spending from those using both commercial airline service and general aviation (GA) aircraft and airports contribute to the state’s economy.

1.2. Study Airports

There are both publicly-owned and privately-owned airports in Colorado, with the Federal Aviation Administration’s (FAA) data indicating nearly 450 facilities in the state. The emphasis of the CEIS, however, is on the public-use airports, which can include both types of ownership. While the CASP focuses on the publicly owned, public-use airports, plus Meadow Lake (which is a privately owned, public-use airport but included in the CASP due to its recognition by the FAA as essential to the national air transportation system), the CEIS contains several privately owned, public-use airports to demonstrate the benefits of the public-use airport system. According to the FAA’s Form 5010 Airport Master Record, 74 of the state’s airports are public-use. These 74 airports are considered the “Colorado System” for purposes of the CEIS. These airports are shown in **Figure 1.1**.

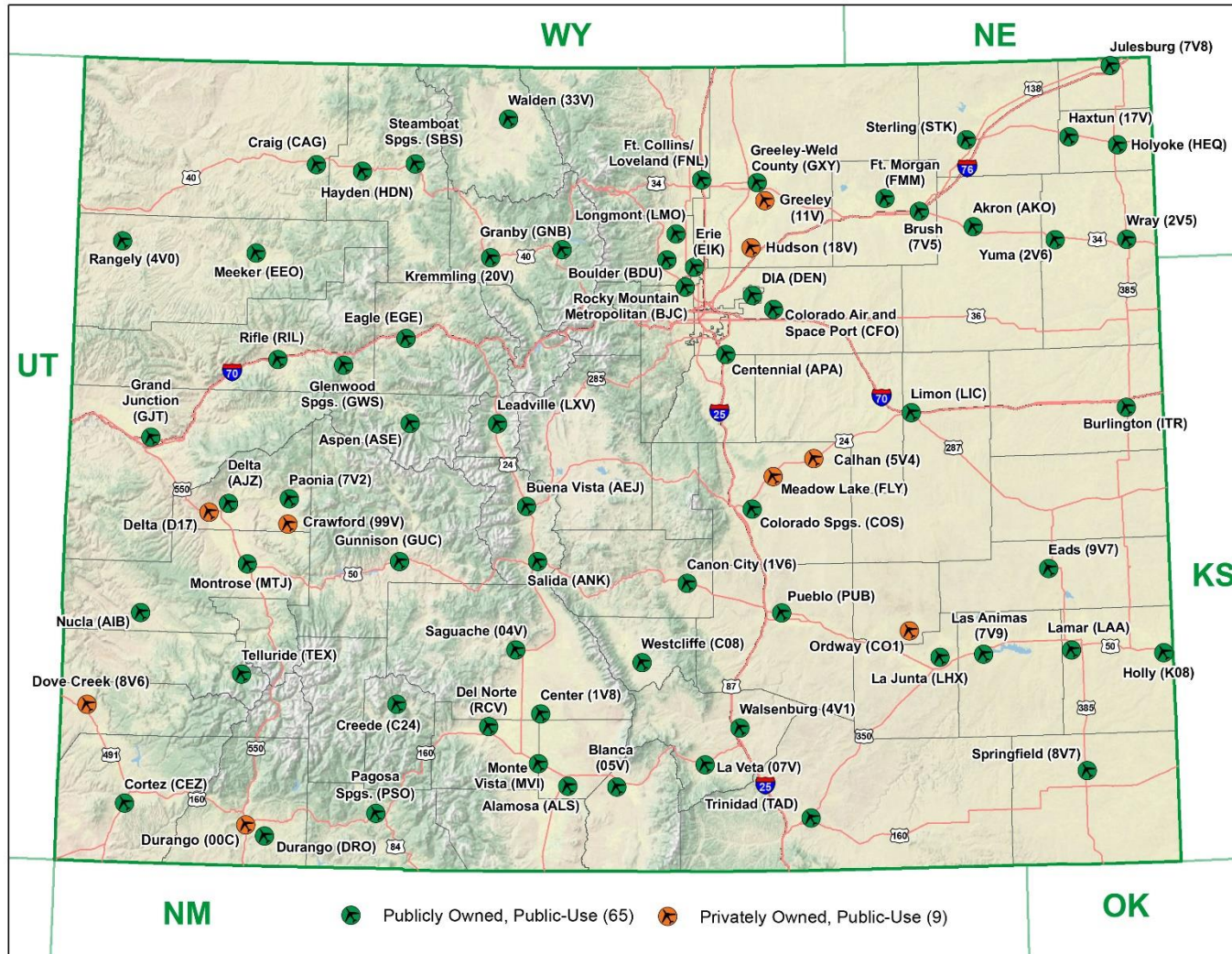
Of the 74 public-use airports in the study, four were not included in the CEIS. Three airports, Dove Creek (8V6), Easton Valley-View (11V), and Platte Valley Airpark (18V), either declined participation or did not respond to survey requests. Lake Meredith Seaplane Base (C01) was not included as it changed from private-use to public-use after site visits and surveys had already been conducted. The four airports not included in the study are listed in **Table 1.1**.

Table 1.1. Colorado Airports Excluded From CEIS

Associated City	Airport Name	FAA ID
Dove Creek	Dove Creek	8V6
Greeley	Easton Valley View	11V
Hudson	Platte Valley	18V
Ordway	Lake Meredith SPB	C01

Sources: CDOT Division of Aeronautics; Kimley-Horn, 2019

Figure 1.1. Colorado Public-Use Airports



Sources: CDOT Division of Aeronautics; Kimley-Horn, 2019

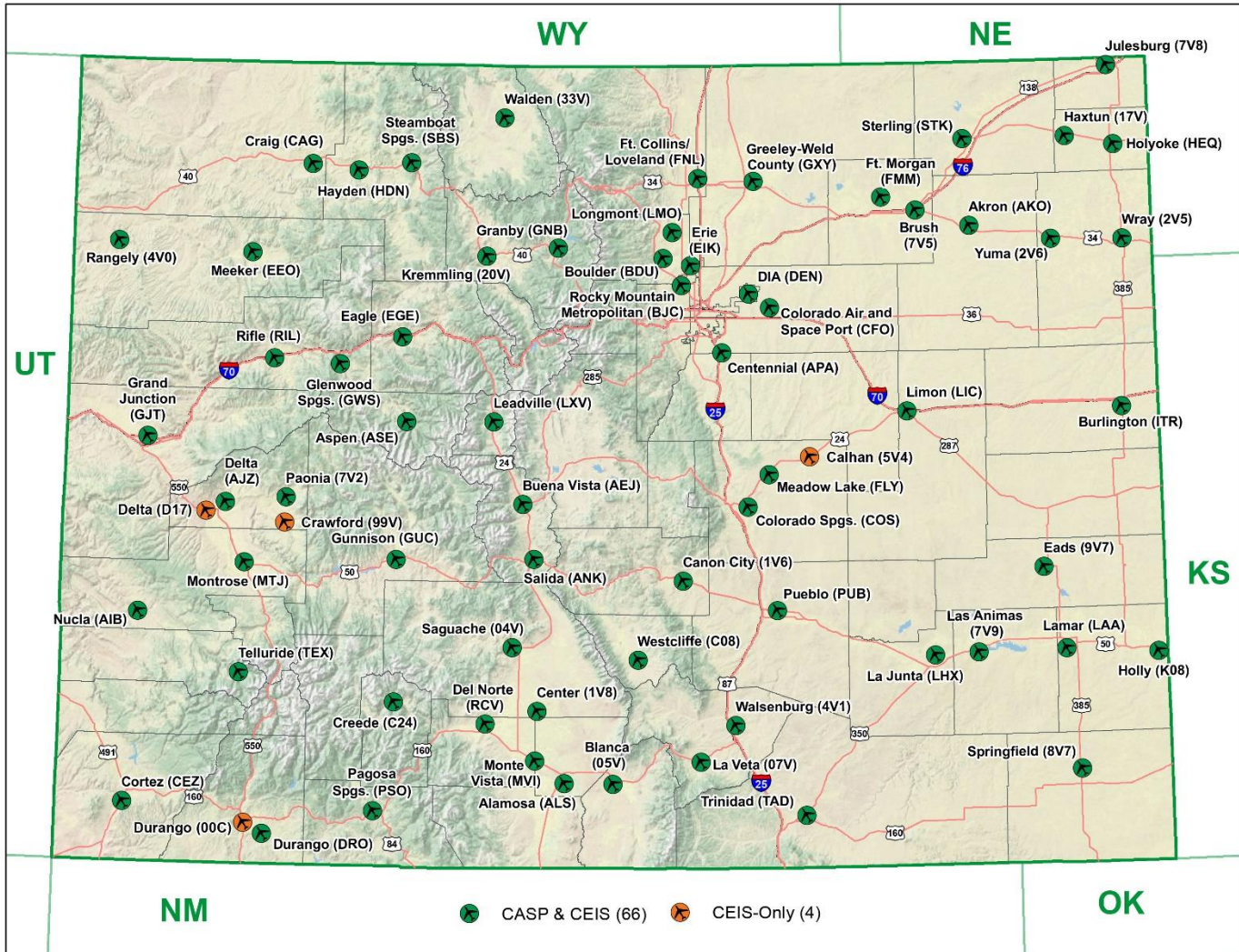
Therefore, the 2020 CEIS documents the results of the 65 publicly owned and five privately owned (including FLY), public-use airports, whereas the CASP system includes 66 airports (65 publicly owned and one privately owned). The four airports included in the CEIS that are not included in the CASP are depicted in orange in **Figure 1.2**. Those airports include:

- Animas Airpark (00C)
- Calhan (5V4)
- Crawford (99V)
- Westwinds (D17)

The 70 airports included in the CEIS are depicted in **Figure 1.2** and are presented alphabetically by associated city in **Table 1.2** starting with the commercial service airports, followed by the GA airports. Fourteen of the 70 CEIS airports support scheduled Part 121, Part 135, or Part 380 commercial airline service, although Northern Colorado Regional (FNL) did not have scheduled commercial airline service in 2018. The remaining 56 support primarily GA operations.¹

¹ In subsequent chapters, FNL is included in the listing of Commercial Service airports, however, there is no commercial service visitor spending for FNL for 2018. All other components of economic were calculated for FNL and are presented as part of the summary of commercial service activity.

Figure 1.2. 2020 CEIS Airports



Sources: CDOT Division of Aeronautics; Kimley-Horn, 2019

Table 1.2. 2020 CEIS Airports²

Associated City	Airport Name	FAA ID	NPIAS Status	Ownership	Use
Commercial Service					
Alamosa	San Luis Valley Regional/Bergman Field	ALS	NPIAS	Public	Public
Aspen	Aspen-Pitkin County/Sardy Field	ASE	NPIAS	Public	Public
Colorado Springs	City of Colorado Springs Municipal	COS	NPIAS	Public	Public
Cortez	Cortez Municipal	CEZ	NPIAS	Public	Public
Denver	Denver International	DEN	NPIAS	Public	Public
Durango	Durango-La Plata County	DRO	NPIAS	Public	Public
Eagle	Eagle County Regional	EGE	NPIAS	Public	Public
Grand Junction	Grand Junction Regional	GJT	NPIAS	Public	Public
Gunnison	Gunnison-Crested Butte Regional	GUC	NPIAS	Public	Public
Hayden	Yampa Valley	HDN	NPIAS	Public	Public
Fort Collins/Loveland	Northern Colorado Regional	FNL	NPIAS	Public	Public
Montrose	Montrose Regional	MTJ	NPIAS	Public	Public
Pueblo	Pueblo Memorial	PUB	NPIAS	Public	Public
Telluride	Telluride Regional	TEX	NPIAS	Public	Public
General Aviation					
Akron	Colorado Plains Regional	AKO	NPIAS	Public	Public
Blanca	Blanca	05V	Non-NPIAS	Public	Public
Boulder	Boulder Municipal	BDU	NPIAS	Public	Public
Brush	Brush Municipal	7V5	Non-NPIAS	Public	Public
Buena Vista	Central Colorado Regional	AEJ	NPIAS	Public	Public
Burlington	Kit Carson County	ITR	NPIAS	Public	Public
Calhan	Calhan	5V4	Non-NPIAS	Private	Public
Canon City	Fremont County	1V6	NPIAS	Public	Public
Center	Leach	1V8	Non-NPIAS	Public	Public
Colorado Springs	Meadow Lake	FLY	NPIAS	Private	Public
Craig	Craig-Moffat	CAG	NPIAS	Public	Public
Crawford	Crawford	99V	Non-NPIAS	Private	Public
Creede	Mineral County Memorial	C24	Non-NPIAS	Public	Public
Del Norte	Astronaut Kent Rominger	RCV	Non-NPIAS	Public	Public
Delta	Blake Field	AJZ	NPIAS	Public	Public
Delta	Westwinds	D17	Non-NPIAS	Private	Public
Denver	Centennial	APA	NPIAS	Public	Public
Denver	Rocky Mountain Metropolitan	BJC	NPIAS	Public	Public

² The airport names for the following will be modified for the remainder of the CEIS to reflect their more commonly referenced names as follows: San Luis Valley Regional, Aspen-Pitkin County, and Colorado Springs Municipal for commercial service airports; Las Animas-Bent County, Cuchara Valley, and Steamboat Springs for GA airports.



Associated City	Airport Name	FAA ID	NPIAS Status	Ownership	Use
Denver	Colorado Air and Space Port	CFO	NPIAS	Public	Public
Durango	Animas Airpark	00C	Non-NPIAS	Private	Public
Eads	Eads Municipal	9V7	Non-NPIAS	Public	Public
Erie	Erie Municipal	EIK	NPIAS	Public	Public
Fort Morgan	Fort Morgan Municipal	FMM	NPIAS	Public	Public
Glenwood Springs	Glenwood Springs Municipal	GWS	Non-NPIAS	Public	Public
Granby	Granby-Grand County	GNB	NPIAS	Public	Public
Greeley	Greeley-Weld County	GXY	NPIAS	Public	Public
Haxtun	Haxtun Municipal	17V	Non-NPIAS	Public	Public
Holly	Holly	K08	Non-NPIAS	Public	Public
Holyoke	Holyoke	HEQ	NPIAS	Public	Public
Julesburg	Julesburg Municipal	7V8	Non-NPIAS	Public	Public
Kremmling	Mc Elroy Airfield	20V	NPIAS	Public	Public
La Junta	La Junta Municipal	LHX	NPIAS	Public	Public
La Veta	Cuchara Valley at La Veta	07V	Non-NPIAS	Public	Public
Lamar	Lamar Municipal	LAA	NPIAS	Public	Public
Las Animas	Las Animas-Bent County	7V9	Non-NPIAS	Public	Public
Leadville	Lake County	LXV	NPIAS	Public	Public
Limon	Limon Municipal	LIC	NPIAS	Public	Public
Longmont	Vance Brand	LMO	NPIAS	Public	Public
Meeker	Meeker/Coulter Field	EEO	NPIAS	Public	Public
Monte Vista	Monte Vista Municipal	MVI	NPIAS	Public	Public
Nucla	Hopkins Field	AIB	NPIAS	Public	Public
Pagosa Springs	Stevens Field	PSO	NPIAS	Public	Public
Paonia	North Fork Valley	7V2	Non-NPIAS	Public	Public
Rangely	Rangely	4V0	NPIAS	Public	Public
Rifle	Rifle Garfield County	RIL	NPIAS	Public	Public
Saguache	Saguache Municipal	04V	Non-NPIAS	Public	Public
Salida	Harriet Alexander Field	ANK	NPIAS	Public	Public
Springfield	Springfield Municipal	8V7	Non-NPIAS	Public	Public
Steamboat Springs	Steamboat Springs/Bob Adams Field	SBS	NPIAS	Public	Public
Sterling	Sterling Municipal	STK	NPIAS	Public	Public
Trinidad	Perry Stokes	TAD	NPIAS	Public	Public
Walden	Walden-Jackson County	33V	Non-NPIAS	Public	Public
Walsenburg	Spanish Peaks Airfield	4V1	NPIAS	Public	Public
Westcliffe	Silver West	C08	Non-NPIAS	Public	Public
Wray	Wray Municipal	2V5	NPIAS	Public	Public
Yuma	Yuma Municipal	2V6	NPIAS	Public	Public

Sources: FAA's NPIAS 2019-2023; Kimley-Horn, 2019

Chapter 2. Economic Impact Methodology

2.1. Introduction

Colorado has been estimating the contribution of its airports to the state economy approximately every five years since 1996. Over that time span, the Colorado and national economies have changed, and modeling tools and state-of-the-art analytical practices have evolved. However, the basis of measurement—direct impacts and multiplier impacts—has remained constant and the core measures of economic impacts continue to be airport administration, airport tenants, airport construction, and spending from commercial service and GA visitors.

The major differences in this study from the preceding study published in 2013 are as follows:

- In 2020, regional economies are defined more acutely with 15 regions from the Colorado Office of Economic Development and International Trade (OEDIT), including a special updated region for Denver International Airport (DEN) compared to 2013 which identified only six regions, including a separate DEN-specific region.
- “Value Added” has been provided as an additional impact measure.³
- Terminology associated with impacts has been modified to make the language less technical to readers.

The study avoided using confusing economic jargon such as “indirect,” “induced,” and “output” to describe different levels of economic impacts. While these terms have specific economic meaning, the same words are also used in other contexts with different meanings. To avoid confusion and to use language more intuitive to most readers, this study used the common language. For clarification, the terminology used in this study compared to the terminology used in the 2013 study is shown in Table 2.1.

Table 2.1. Terminology Comparison

	2020 CEIS Study	2013 Study
Types of Impacts	Jobs	Jobs/Employment (use varied within study)
	Payroll	Payroll
	Value Added	---
	Business Revenues	Output
Measure of Impacts	Direct	Initial
	Supplier Sales Income Re-Spending	Multiplier
	Total	Total

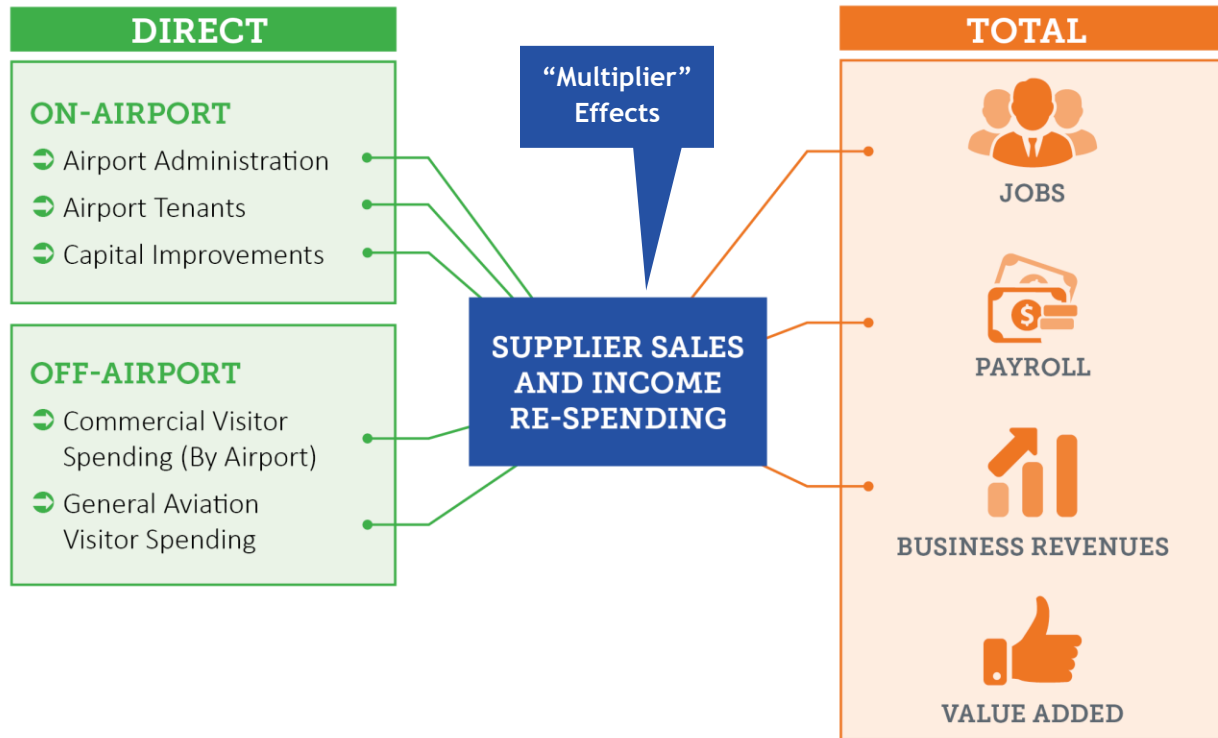
Source: EBP US, 2019

While value added is a new term compared to the prior 2013 study, the same impacts are being measured, even though terminology differs. For example, supplier sales and income re-spending are

³ Value added is a component of business revenues and while it has previously been accounted for in the economic impact analysis, it has not previously been presented.

two streams of impacts that together make up the “multiplier” effect as it was termed in the 2013 study. These are identified separately in the 2020 study to more precisely demonstrate how airports affect the Colorado economy. Definitions of terms used in the 2020 study are provided in the sections “Economic Impact Categories” and “Economic Impact Measures.” An illustration of how both the 2013 and 2020 studies account for economic impacts is provided in **Figure 2.1**.

Figure 2.1. 2020 and 2013 Calculation of Total Impacts

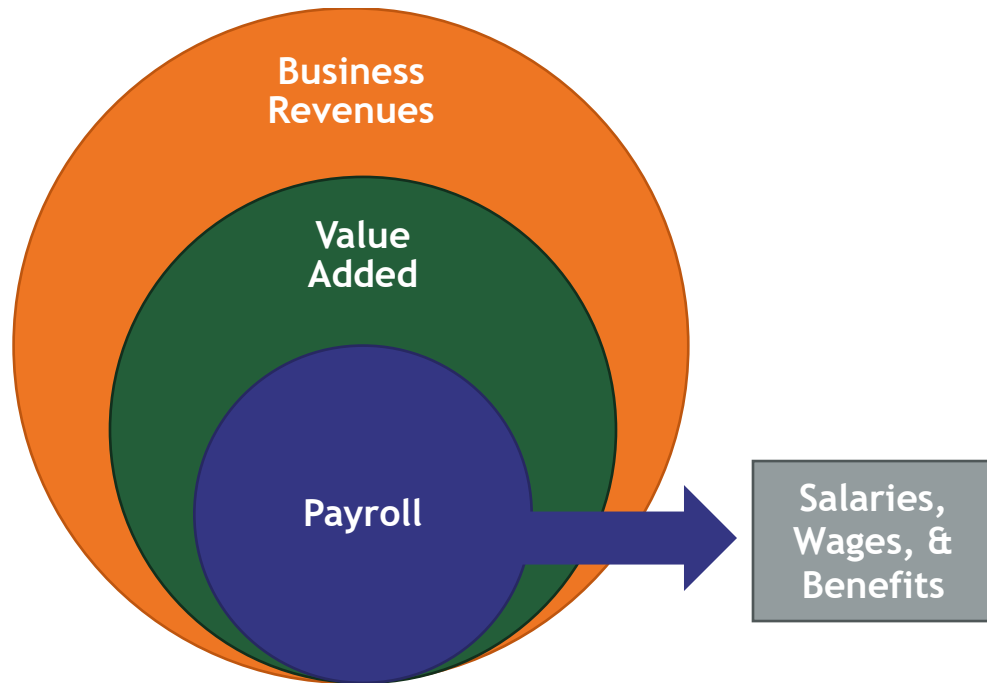


Source: EBP US, 2019

Value added is introduced in the 2020 study to add further depth to profiling the economic impacts of Colorado airports. The term refers to the level of added value contributed by each on-airport and off-airport business analyzed in this study in addition to the value of the goods and services that the businesses purchase. Thus, value added accounts for the components of business revenues used to pay workers and taxes, and accounts for profits and other income streams such as dividends and rents. Value added also accounts for the contribution of businesses and industries to Colorado’s Gross State Product (GSP or referred to as CSP) and the U.S. Gross Domestic Product (GDP).

Figure 2.2 is a graphical representation of the relationship of the three different dollar measures (not including jobs which are not measured in dollars) and how value added relates to both business revenues and payroll.

Figure 2.2. Economic Impact Measures of those Using Dollars



Source: EBP US, 2019

2.2. Economic Impact Categories

There are three categories or terms that are used to describe economic impacts and derive the total impacts by airport and for the state. **Table 2.2** presents the three terms or categories used in the 2020 CEIS with their meaning and the industry economic term for reference.

Table 2.2. Key Terms

Term Used in the 2020 CEIS	Meaning	Economic Term
Direct	Initial effects that occur on- and off-airport, by spending from visitors and by companies using air transportation services	Direct
Supplier Sales	Portions of direct revenues used to purchase goods and services from Colorado businesses	Indirect
Income Re-spending	Income earned by workers from direct and supplier sales transactions that are then spent in Colorado (household spending)	Induced

Source: EBP US, 2019

When the total economic impacts are presented, they represent the summation of the direct, supplier sales, and income re-spending effects for the state. In the 2013 study, the supplier and income re-spending effects were combined and presented as multiplier impacts.

2.3. Economic Impact Measures

The direct, supplier, and income re-spending impacts are defined using the following economic measures:

- **Business Revenues:** Business revenues incorporate expenditures needed to administer airports, sales of goods and services by airport tenants, budget expenditures by public sector agencies located on airports, the cost of capital expenditures, and visitor spending in Colorado’s hospitality-related sectors. This is also commonly referred to as business “output” or sales.
- **Value Added:** Value added measures the economic productivity of each aviation-related business establishment in Colorado (for purposes of the CEIS), calculated as business revenues earned minus the costs of purchasing goods and services from other businesses. Value added is a company or industry contribution to GSP, which is a local concept synonymous with GDP. It includes all labor compensation, profits, and business taxes paid.
- **Payroll:** For this study, payroll is defined as total employment compensation, including wages and other benefits (e.g. health care insurance payments, retirement contributions, etc.). Payroll is a subset of value added. This is also known as “labor income” or “total compensation.”
- **Jobs:** Jobs are the total number of persons employed that are associated with business revenues and payroll, regardless of whether they are full-time or part-time.

The dollar measures for business revenues, value added, and payroll cannot be added to each other because value added is a component of business revenues and payroll is a further component of value added as previously presented. Throughout this report, all dollar values have been rounded to thousands, and all monetary values are reported in 2018 dollars.

2.4. Geographies

This study was conducted on both a regional and statewide basis. The reason for utilizing a regional approach is to provide airport managers and area officials, residents, and stakeholders with a more localized profile of airports’ economic impacts than a broadly drawn statewide analysis, and to recognize that local economies vary across Colorado. Productivity factors, cost of living, and salaries differ in metropolitan districts, resort areas, and rural locations from the eastern to western, and northern to southern sections of the state. This means that across Colorado there are different industry mixes, wage rates, business revenues, and sales per employee. A regional approach best reflects these local economic characteristics that are supported by each airport. When direct impacts are estimated, the regional economies are used to determine the relationships of jobs, payroll, value added, and business revenue by business activity. For this reason, direct impacts are all estimated at regional levels.

As discussed in a subsequent section, a majority of the direct data obtained from surveys conducted in the CEIS included only one of the three measures: jobs, payroll, or business revenues; a handful of survey respondents (whether airports or other tenants/businesses) provided two of three; and only some of the survey respondents provided all three direct measures. Note that value added is always calculated. The economic relationships anchored in the regional economies are used to “fill-in” the direct data for each airport for values not assembled from the data collection efforts presented in **Chapter 3. Data Collection Process.**

The 14 regions of Colorado’s OEDIT agency were used for the 2020 CEIS in the regional analysis. In addition, a unique region was developed for DEN given its size and standing as Colorado’s only large hub airport and the state’s single largest economic generator. Supplier purchases and income re-spending are modeled at both a regional and statewide scale to allow for presentations of regional and statewide impacts for each airport, as well as statewide impacts for the Colorado airport system. Regional impacts of airports consist of the regional direct impacts plus regional multiplier impacts. Statewide impacts are the same regional direct impacts plus multiplier effects for all of Colorado. An explanation of differences in impacts from regional and statewide modeling is presented subsequently in this document.

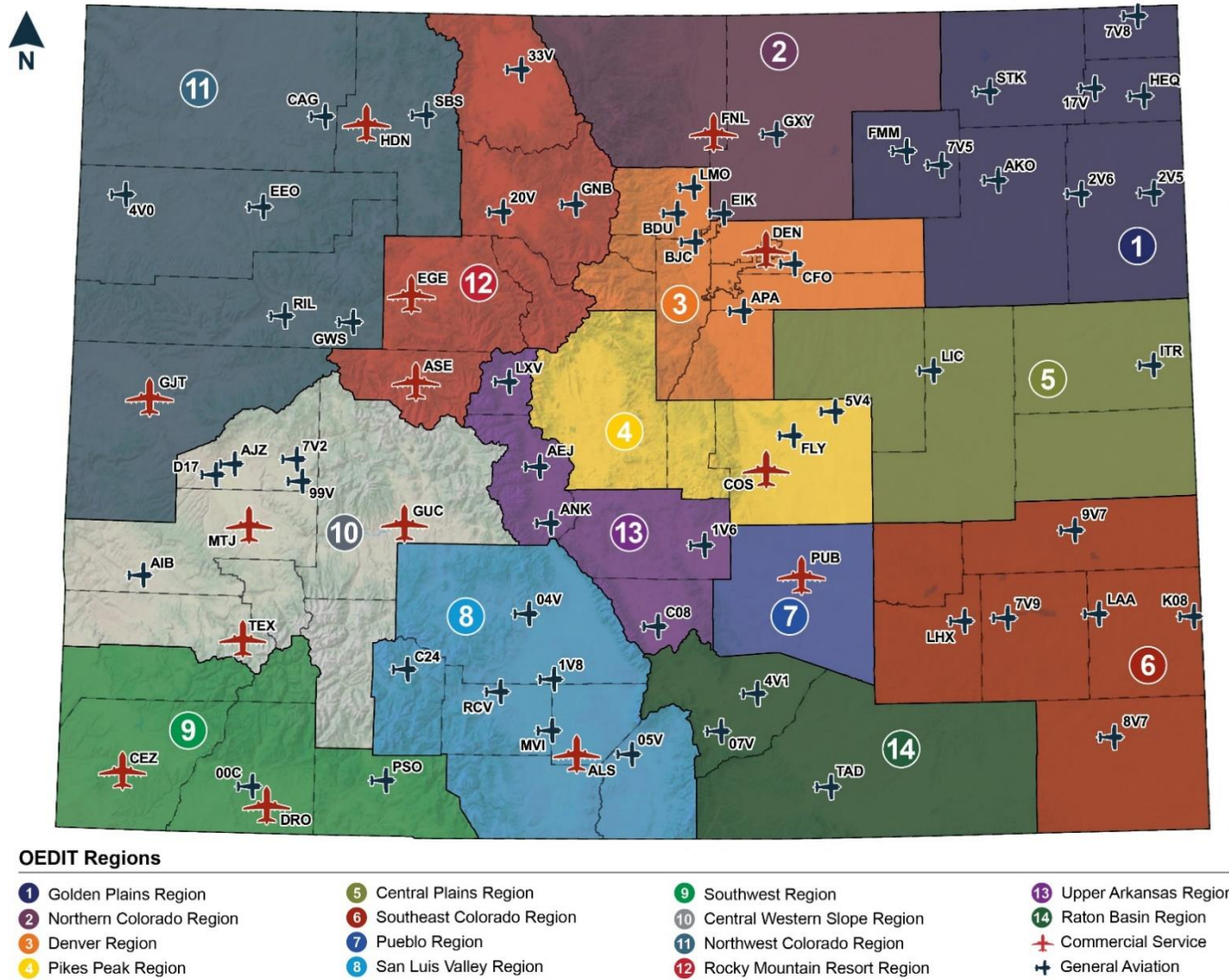
The counties within each OEDIT region and for the DEN region (which overlaps different OEDIT regions) are listed in **Table 2.3**. The OEDIT regions are depicted in **Figure 2.3**.

Table 2.3. Counties within Each OEDIT Region

Region	Name	Counties
1	Golden Plains	Logan, Morgan, Phillips, Sedgwick, Washington, Yuma
2	Northern Colorado	Larimer, Weld
3	Denver (excluding DEN)	Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Gilpin, Jefferson
4	Pikes Peak	El Paso, Park, Teller
5	Central Plains	Lincoln, Elbert, Kit Carson, Cheyenne
6	Southeast Colorado	Baca, Bent, Crowley, Kiowa, Otero, Prowers
7	Pueblo	Pueblo
8	San Luis Valley	Alamosa, Conejos, Costilla, Mineral, Rio Grande, Saguache
9	Southwest	Archuleta, Dolores, La Plata, Montezuma, San Juan
10	Central Western Slope	Delta, Gunnison, Hinsdale, Montrose, Ouray, San Miguel
11	Northwest Colorado	Garfield, Mesa, Moffat, Rio Blanco, Routt
12	Rocky Mountain Resort	Eagle, Grand, Jackson, Pitkin, Summit
13	Upper Arkansas	Lake, Chaffee, Fremont, Custer
14	Raton Basin	Huerfano, Las Animas
	Denver International	Adams, Arapahoe, Boulder, Cheyenne, Clear Creek, Denver, Douglas, Eagle, El Paso, Elbert, Gilpin, Grand, Jackson, Jefferson, Kit Carson, Larimer, Lincoln, Logan, Morgan, Park, Phillips, Sedgwick, Summit, Washington, Weld, Yuma

Source: Colorado OEDIT, 2018; DEN; EBP US, 2019

Figure 2.3. OEDIT Regions in Colorado



Sources: Colorado OEDIT; EBP US; DEN; Kimley-Horn, 2019

2.5. Approach to Data Calculation

To quantify the economic contribution of Colorado’s airports, a variety of primary and secondary data sources were collected. The primary data source for this economic impact study was a series of surveys designed to gather key information for activities generating direct on- and off-airport economic activity. **Chapter 3. Data Collection Process** provides details on the data collection methods and the surveys conducted for the CEIS, including the following groups that were surveyed as part of the primary data collection:

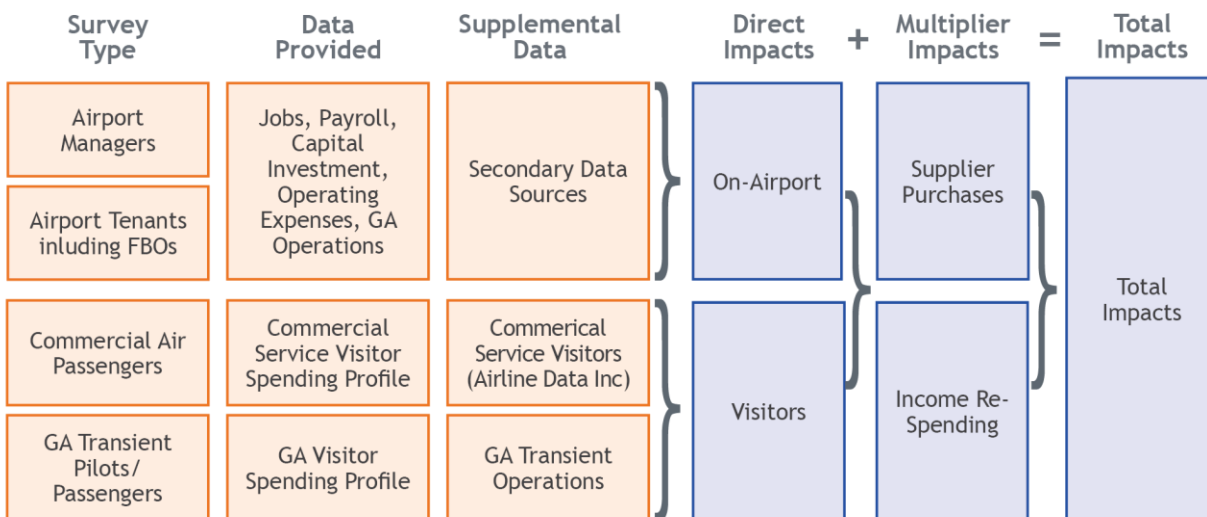
- Airport managers
- Tenants on airport premises
- Out-of-state visitors using commercial air transportation service and GA transportation

When necessary, additional secondary data were used to fill in any missing information from the surveys for on- and off-airport business activity and visitor spending. These data included establishment-level geographic information system (GIS) databases such as Reference USA and ESRI, as well as federal data sources such as the Bureau of Economic Analysis (BEA) and FAA.

Combining primary and secondary data sources established the foundation for estimating the direct economic impacts of each airport and visitor spending. These data were then integrated into the IMPLAN economic model, which is discussed in detail in **Section 2.6**, to estimate the multiplier effects generated from supplier purchases and employee re-spending.

Figure 2.4 presents an overview of the data collection and economic modeling process.

Figure 2.4. Overview of Data Collection and Economic Modeling Process



Sources: EBP US; Kimley-Horn, 2019

2.5.1. On-Airport Data

As shown in **Figure 2.4**, on-airport impacts consist of those created by airport administration, construction expenditures, and airport tenants. Descriptions of data from these sources are provided below.

Airport Administration. Airport administration includes airport managers, immediate subordinates and staff required to operate airports, including business operations (which may be on the airport or in a city or county office who is the airport sponsor), grounds care (including snow removal and lawn care), routine building maintenance, contractors who receive IRS Form 1099-MISC from the airport and other jobs. Data received for airport administration often included jobs, payroll, and annual budgets of airports. On occasion only jobs were provided, and regional averages (county-level data primarily from the BEA assembled by IMPLAN) were used when needed to estimate payroll and business revenues (equivalent to budget expenditures).⁴

Construction. Capital expenditures, as reported by airport managers, were averaged across the previous four years (2015-2018). Averaging smooths out any anomalies (schedule, weather, financing, or others) in capital expenditures over the time which may be very high for some years and lower in others. Additional expenditures were gathered through the airport tenant survey, in which tenants were asked if they had paid for capital improvements such as building out concession space or constructing a hangar. All data were converted into 2018 nominal dollars. Construction data only accounted for expenditures, which were treated as direct business revenues (these are revenues that are received by companies that perform the construction work). IMPLAN regional relationships between construction revenues and jobs, payroll and value added were used to develop the full profile of direct impacts resulting from capital expenditures on construction.

Airport Tenants. As part of the Airport Manager Survey, the managers were asked to provide names and contact information for all tenants, as well as employment estimates if known. These lists obtained from managers were the basis for outreach to the tenants. After multiple rounds of contacting tenants, responses were received for roughly one in seven airport tenants across the Colorado airport system (excluding DEN). To supplement the tenants' survey and to ensure the accounting for all tenants, a Tenant Tracker was developed based on the lists provided by managers. Employment for tenants were based on survey responses, estimates from airport managers, and from the aforementioned secondary data sources such as Reference USA. Of the 720 tenants of Colorado airports (excluding DEN), the observations from each data source were as follows:

- Tenants responding to the survey that were also included in the tenant tracker data: 99
- Tenants that were included in the tenant tracker, but did not respond the survey: 615
- Tenants with survey responses who were not included in the tenant tracker: 6

For tenants with observations in both data sources, the survey data was assumed to reflect a more accurate estimate of employment and description of business activity since the survey response came directly from the tenants themselves. In addition, a portion of the survey responses included total payroll data and tenant-financed construction expenditures which were used if provided.

Each tenant was assigned an industry classification based on their survey responses, description of business activity noted in the tenant tracker, web-based research, and/or coordination with CDOT Division of Aeronautics staff. Classifying each tenant by industry is important to establish the correct

⁴ BEA provides estimates of GDP, personal income, and employment by state, metropolitan area, and county through its Regional Economic Information System (REIS). These data are used by IMPLAN, LLC and other input/output vendors to develop county-level industry tables.

levels of direct economic activity (jobs, payroll, value added, and business revenues) and to estimate supplier sales and income re-spending associated with each business.

For tenants, two levels of data were obtained per business:

1. Employment (number of jobs) only; or
2. Employment and payroll.

As discussed above under the Geography **Section 2.4**, direct values for payroll and business revenues were calculated using IMPLAN if they were not reported through a survey. In instances when employment and payroll were both obtained, the IMPLAN model was adjusted to maintain the same ratio of business revenues to payroll as the shown by the default regional values in the model per region and industry.

Tenant Data Collection for DEN. Data collection for DEN was based on the Airport Manager Survey, the Commercial Air Passenger Survey, and the GA Transient Pilots and Passengers Survey. However, DEN has developed a strong centralized data management system for its tenants. Data for tenants at DEN were obtained from the Finance Department, which provided the following sources:

- **Security Badge Counts:** The badge data provided by DEN included company names, number of jobs, and type of business in “real-time.” Company types were divided into six categories: air carriers, city employees, contractors, Federal employees, tenants, and vendors. Since three of these categories have broad descriptions (contractors, tenants, and vendors), company names were used to further classify their business activity.
- **Real Estate Reports:** Two reports generated by the commercial real estate firm CBRE provided information about: (a) businesses at DEN and (b) businesses within a five-minute drive of the airport. Each report provided business names, an industry classification, the number of employees, and annual sales.
- **Concessions Reports:** The 2018 Revenue Management Concessions Gross Sales Report for DEN provided year-to-date sales for a variety of concessions businesses including retail, food and beverage, banking, insurance, advertising, and personal services.

There was significant coordination with DEN staff to assure that jobs were not double counted among the three sources of data.

2.5.2. Off-Airport Visitor Spending⁵

Facilitating visitor spending is an important contribution of Colorado airports to the economy of the state and its regions. Air visitors arrived by scheduled airline service in 2018 through one of Colorado’s commercial service airports and used GA aircraft at all 70 CEIS airports.⁶

This study counts visitors to Colorado from other states and from international locations who bring money into the state that is spent to support jobs and payroll in the hospitality sectors including lodging, restaurants, retail, entertainment, and local transportation services.⁷ For GA services, the

⁵ On-airport spending by visitors and other air passengers is captured as part of the previously discussed tenant analysis.

⁶ Northern Colorado Regional Airport (FNL) did not have airline service provided by a scheduled Part 121, Part 135, or Part 380 commercial service airline during 2018.

⁷ Intra-state air travel is not counted because spending by these travelers moves dollars from one part of the state to another and does not expand the economy of Colorado.

analysis is limited to transient activity that account for about 16 percent of total GA operations conducted in Colorado. For commercial services, this means that local travelers and passengers that connect through an airport are not counted unless the passengers' final destinations are in Colorado. For example, a visitor connecting through DEN with a final destination at Cortez Municipal (CEZ) will count as a visitor at CEZ, but a connection through DEN to Helena, Montana will not count as a visitor in Colorado. In both cases, spending by passengers in the DEN terminal is counted in the analysis of concessions.

2.5.2.1. Commercial Visitors

As described in **Chapter 3**, visitor spending data were collected from over 3,100 visitors who arrived in Colorado by airline using one of Colorado's commercial service airports. Of these visitors, nearly 2,900 yielded usable data. These data included elements such as the number of travelers in the party, spending for the trip by the entire party, number of nights stayed, and trip purpose among other items. Spending for 1,505 visitors were recorded at DEN and 1,386 visitors reported their spending at the state's additional 12 commercial service airports (not including FNL). The average spending of all usable commercial service passenger surveys is \$1,321 per visitor per trip, and excluding DEN, the average per visitor per trip is \$1,673. For DEN, average spending per visitor per trip is \$998. Per visitor per trip spending in DEN is lower likely because of the more general mix of visitors at the airport, including one-day business trips, stays with family and friends, and the prevalence of resort destinations in other regions of Colorado. It is important to note that for DEN, the average spending of \$998 per visitor per trip is weighted by average spending per visitor per trip for domestic visitors (from U.S. locations outside of Colorado) of \$978 and spending by international visitors of \$1,366 based on the number of domestic and international passengers in 2018.

The number of statewide visitor responses far exceeds a benchmark of 95 percent confidence interval and 5 percent margin of error.⁸ Among individual airports, responses received at DEN and Aspen-Pitkin County (ASE) exceeded the 95 percent/5 percent benchmark, while responses from Colorado Springs Municipal (COS), Eagle County Regional (EGE), Gunnison-Crested Butte Regional (GUC), Yampa Valley (HDN), and Montrose Regional (MTJ) achieved a 90 percent confidence interval with margins of error ranging from 5.5 percent to 7.8 percent. Estimates of spending by commercial service visitors for these and the remaining commercial service airports were determined by using the statewide results and adjusting based on other visitor spending data and input from the CDOT Division of Aeronautics staff who understand the mix of commercial service providers at Colorado airports.

Counts of domestic and international visitors to the commercial service airports in Colorado were provided by Airline Data, Inc. based on FAA reported data. The spending profiles were applied to the visitor estimates to determine the direct spending by out-of-state tourists coming to Colorado via these commercial service airports. **Table 2.4** shows the number of commercial service visitors to Colorado, the average spending per visitor per trip by airport, and the average number of nights spent by the visitors. It is important to note that in-person commercial service passenger surveys were conducted in January and February 2019 at nine airports, while airports served by a single airline including San Luis

⁸ Meaning that statistically, it is 95 percent certain that visitor spending will be within plus or minus 5 percent of the reported mean average.

Valley Regional (ALS), Cortez Municipal (CEZ), Pueblo Memorial (PUB), and Telluride Regional (TEX) only had hard copy surveys for visitors to return and were facilitated by airport managers and airline station managers. TEX had very limited commercial airline service at the time that visitor surveys were conducted, and no out-of-state surveys were received during the limited window of the surveys. Also relevant to the analysis, it is not possible to know if the spending reported for respondents that are second homeowners and others that had long-term stays is accurately reflected in the surveys that were received.

Table 2.4. Commercial Service Visitors and Spending Per Visitor Per Trip

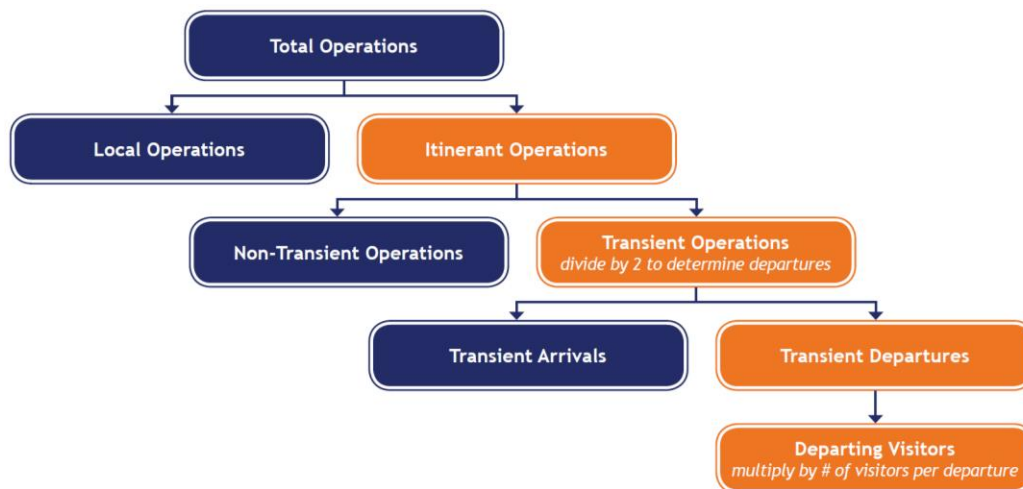
Associated City	Airport Name	FAA ID	2018 Visitors	Spending per Visitor Per Trip	Average Number of Nights per Trip
Alamosa	San Luis Valley Regional	ALS	3,379	\$475	4.3
Aspen	Aspen-Pitkin County	ASE	189,245	\$2,290	7.0
Colorado Springs	Colorado Springs Municipal	COS	378,112	\$758	6.4
Cortez	Cortez Municipal	CEZ	3,824	\$552	2.4
Denver	Denver International	DEN	9,853,919	\$998	4.1
Durango	Durango-La Plata County	DRO	94,058	\$1,200	6.6
Eagle	Eagle County Regional	EGE	134,159	\$1,930	6.6
Grand Junction	Grand Junction Regional	GJT	97,699	\$510	6.3
Gunnison	Gunnison-Crested Butte Regional	GUC	27,521	\$1,350	5.8
Hayden	Yampa Valley	HDN	75,131	\$1,300	6.4
Montrose	Montrose Regional	MTJ	86,591	\$1,325	5.0
Pueblo	Pueblo Memorial	PUB	3,677	\$471	2.4
Telluride	Telluride Regional	TEX	942	\$1,325	N/A

Sources: Commercial Visitor Survey; Airline Data, Inc.; consultations with CDOT Division of Aeronautics staff; EBP US, 2020

2.5.2.2. GA Visitors

GA visitors generate economic activity when they spend money that was generated out-of-state in the local economy of the GA airport they arrive and depart from. As shown in **Figure 2.5**, calculating the number of GA visitors by airport starts with examining the total number of GA operations that were recorded in 2018. The number of GA operations were derived from the 2020 Colorado Aviation System Plan (CASP) which utilized data from FAA sources and individual airports. These operations estimates were reviewed with CDOT Division of Aeronautics staff based on their knowledge of activity for validation before proceeding with the remaining steps in estimating GA visitor impacts. For 2018, total GA operations were determined to be over 1.5 million statewide.

Figure 2.5. Method for Determining Transient Departures and Visitors



Sources: EBP US; Kimley-Horn, 2019

Once the total number of GA operations for each airport was determined, the number of itinerant operations was separated from local operations. FAA generally defines an itinerant operation as a landing at an airport by an aircraft arriving from outside the airport area, or a departure from an airport that leaves the airport area. Under this definition, an itinerant operation does not necessarily reflect an operation by a visitor, especially visitors that are from outside Colorado, because the operation could reflect locally based aircraft leaving or returning to their home airport. Itinerant operations were also obtained from FAA sources and individual airports. It is important to note that since a takeoff and a landing are counted as two operations, the number of itinerant operations were divided in half, so that potential visitors and their associated spending are counted only once. Overall, 333,000, or 43 percent of all GA departures in Colorado were estimated to be itinerant in 2018.

In the third step, the number of departing itinerant operations were the basis for estimating the subgroup of itinerant operations that are “transient operations” conducted by out-of-state aircraft. Transient operations represent GA flights that bring out-of-state visitors to Colorado. For this estimation, industry standards of 50 percent of itinerant departures for Commercial Service Airports and 30 percent for airports that support only GA service were utilized. Since most GA airports do not have air traffic control towers and there is no requirement to report activity, there is no accurate method to confirm the percentages, however, these are widely accepted for purposes of estimating GA visitor economic impacts. Because of these calculations, the total number of transient departures in Colorado was estimated at over 121,000 in 2018, which accounted for 16 percent of all GA departures and 36 percent of itinerant departures.

Finally, airport managers estimated the number of passengers in each transient flight based on fleet mix. The CASP classification of each airport was also considered in determining this number (see Table 2.5). Using the identified steps, over 599,000 out-of-state visitors were estimated to have arrived in Colorado using GA aircraft in 2018, an average of almost five visitors per flight.

Table 2.5. Average Passengers per GA Operation by Airport Classification

Airport Classification	Passengers per GA Operation
Commercial Service	4.8
GA-National	6
GA-Regional	5
GA-Local	3.5
GA-Community	3
GA-Rural	2

Source: Kimley-Horn, 2019

The GA Transient Pilot and Passenger Survey (see **Chapter 3. Data Collection Process**) established a baseline for average GA visitor spending across Colorado of \$442 per visitor per trip. This estimate was used to establish a statewide total for GA visitor spending when applied to total statewide transient departures and passengers. However, the GA Transient Pilot and Passenger Survey did not return responses sufficient to estimate spending by airport, OEDIT region, or by different classifications of airports. To address airport-specific spending levels, the following steps were undertaken:

1. Established a statewide baseline of \$264.8 million in total spending for GA visitors, calculated by multiplying \$442 per GA visitor times 599,114 visitors.
2. Adjusted the economic activity and spending rates by airport by comparing the share of GSP for each Colorado county that hosts an airport. Using the statewide baseline of \$264.8 million as an overall control total, the average of \$442 per GA visitor trip was adjusted up or down based on per capita GSP for the airport’s associated county compared to per capita GSP across the state. (For example, if the per capita of GSP of the airport’s associated county was higher than the statewide average GSP, the average spending per GA visitor trip for that airport was adjusted up to reflect this.)
3. Reviewed results and adjusted GA spending per visitor based on airport classifications from the CASP; knowledge of specific airports; and their locations within Colorado counties, such as situated in rural versus urban areas.
4. Finally, the adjusted GA visitor spending per passenger was applied to estimate the direct and indirect spending impacts.

2.6. Economic Modeling Process

The IMPLAN Version 3 2017 economic model system was used to help gain insight of each airport’s multiple contributions to its regional economy and the Colorado economy.⁹ IMPLAN is the most widely used input-output model in the United States with data derived from the BEA, Bureau of Labor Statistics (BLS), U.S. Census, and U.S. Department of Commerce. The model reflects the current economic measures (e.g., jobs, payroll, value added, and business revenues) for over 536 industry classifications, which roughly corresponds to two- to five-digit groups in the North American Industry Classification System (NAICS).

⁹ All dollars were adjusted to 2018 values. IMPLAN updates typically occur late in the next year such that the 2018 model was not available at the time of the analysis.

An IMPLAN economic model was calibrated for each Colorado OEDIT region and for the rest of the state. The economies of each OEDIT region vary between industry mix, productivity of industries, and average payroll per job by industry. Therefore, the effects of business revenues in one OEDIT region may differ from the effects of the same level of business revenues in another. Supplier sales and income re-spending “multiplier” effects were calculated for each OEDIT region and the rest of Colorado to produce both OEDIT region-specific and statewide effects. For example, the economic impacts of airports in OEDIT Region 1, Golden Plains include:

- (a) direct impacts based on the economy of the Golden Plains region
- (b) supplier sales and income re-spending multiplier effects within Golden Plains
- (c) supplier sales and income re-spending effects in the rest of Colorado, which in this example is effectively OEDIT regions 2 - 14

Data at these different spatial scales enables each airport to be profiled by its **regional impact (a + b)** and its **state impact (a + b + c)**. Moreover, airports in each region can be totaled to show the overall impact of Colorado airports by region as well as statewide.

The multiplier effects of supplier sales and income re-spending vary by the combination of counties that constitute regions, and the size and industry mixes of economies in each region. A larger region means that the marketplace for supplier sales and workers’ re-spending is larger, and the opposite is true for a smaller region. For example, an airplane repair company at an airport in a rural region that needs to buy a manufactured product may have to make the purchase in a neighboring urbanized county because the industry is not present in enough scale in its home region, in which case the dollars would not be counted in the regional multiplier. Similarly, workers may shop for goods and services in that more urbanized county. However, if that airport (and airplane repair company) were part of a larger region that included the urbanized county, then the purchases and sales would be part of the regional multiplier. For this reason, multiplier effects of supplier sales and income re-spending are larger when modeling impacts across the state of Colorado compared to those in a given sub-state region.

2.6.1. Use of IMPLAN

The IMPLAN modeling system was used during the CEIS to:

1. Fill in data gaps to estimate direct impacts. This was partially discussed above and is more fully described below.
2. Calculate value added as parts of direct, supplier sales and income re-spending effects (see **Section 2.1** above for an explanation of value added).
3. Apply retail margining to isolate only the economic activity associated with the retail industry.
4. Derive multiplier impacts by estimating the additional economic activity associated with supplier purchases and worker re-spending.

Filling in Data Gaps to Estimate Direct Impacts. IMPLAN was used to estimate payroll and business revenues for on-airport tenants and budget expenditures for public entities that only provided employment totals. IMPLAN was also used to determine employment and payroll values based on visitor spending. Payroll, business sales, and expenditures per worker ratios are derived primarily from

county-specific U.S. Department of Commerce and Department of Labor data sets. These ratios reflect a measure of productivity (business output per employee) and income level based on the number of jobs for each industry on-airport and in hospitality sectors. These ratios are used to fill in any missing measurements from the survey data (i.e., jobs, payroll, or business revenues). For example, in cases where payroll was not directly provided by tenants, it was calculated based on average (mean) payroll per worker by industry and Colorado OEDIT region as reported by IMPLAN. The regional OEDIT values were used over the statewide averages, as the regional values are more reflective of the local economies in which these airports operate and where visitors spend their money.

For any business or economic activity that could not be filled with survey or other existing economic data, IMPLAN was used to estimate the subsequent missing direct jobs, payroll, or business revenues. Adjustments required to fill in the missing direct impacts and aggregate industries for the IMPLAN modeling are described as follows:

- **Single Industry Payroll Data Provided.** Payroll information reported by tenant or airport manager surveys were used for the direct payroll impacts. The industry-specific default regional ratio of payroll to business revenues from IMPLAN was applied to the payroll data to estimate business revenues. In these cases, jobs were also provided in the survey responses.
- **Single Industry Payroll Data Not Provided.** When payroll information was not reported through tenant or airport manager surveys, regional payroll to job and business revenues to job ratios from IMPLAN were applied to the number of reported jobs. In circumstances when IMPLAN did not account for an industry in an airport's region that a tenant or airport manager identified, the operating assumption was that first-hand collected data is a better representation of the airport and region than the IMPLAN county data sets. In these circumstances, Colorado state data from IMPLAN were used to fill in the missing information since regional data were not available. In these cases, jobs were also provided in the survey responses.
- **Aggregated Industry Payroll Data Provided.** To allocate the payroll data reported by tenant or airport manager surveys within an aggregated industry, the total business revenues were proportioned. For example, in a three-industry aggregation, industry A might account for 50 percent of the regional revenues, industry B: 30 percent, and industry C: 20 percent. The reported payroll information was then allocated based on these calculated percentages. Business revenues were estimated according to the relationship between payroll and business revenues. In these cases, jobs were provided in the survey response. An example of this is an aerospace airport tenant that provided both payroll and employment, and includes three industries: aircraft manufacturing, aircraft engine and engine parts manufacturing, and other aircraft parts and auxiliary equipment manufacturing. Note that all these industries are included in the 536 classifications identified in IMPLAN.
- **Aggregated Industry Payroll Data Not Provided.** If payroll information was not reported by tenant or airport manager surveys, the jobs data was used to estimate payroll. Jobs provided in the survey responses were allocated to each industry within an aggregated industry using the percentages of regional revenues described above (e.g. 50 percent, 30 percent, and 20 percent). Regional IMPLAN payroll to job ratios for individual industries were then applied to these jobs to calculate the payroll for each individual industry. After these calculations were completed, the aggregated industry was then re-totaled to present jobs, payroll, and business revenues. Most airport tenants provided jobs without payroll.
- **Only Revenue Data Provided.** For construction expenditures and visitor spending, the only data collected were spending (which equates to total business revenues) without employment or payroll. Airport managers and tenants were asked to provide construction spending for four

years such that an average of construction spending would be represented in this study. Visitors were asked how much money they spent while in Colorado either when using commercial airline service and/or GA. This method of using spending to work backward to determine jobs and payroll is used since airport managers, tenants, and visitors are unable to quantify anything other than spending. Using IMPLAN, the spending or business revenues were used to drive regional and state models to generate jobs and payroll, as well as value added. It is important to note that construction impacts are those in Colorado and the retail expenditures were margined.

- **Retail Margining.** While spending on retail reflects the value of the item sold, only a portion of the sale is actual revenue for the retail store. This portion, referred to as margin costs, reflects the “mark-up” value that retail stores add to the price of goods to cover their operating costs and profit. Only the mark-up produces revenue and economic activity for local retailers. Revenue generated by that mark-up supports employee payroll and operating costs of the business (e.g., rents, utilities, capital, and other business expenses)—not gross revenue collected by the retail business or industry. To isolate the revenues that accrue to retailers, the margin percentage was applied to the value of all retail goods sold. For example, if retail sales total \$1 million, only \$300,000 of these sales may be the mark-up earned by retail establishments, since it may have cost the stores \$700,000 to purchase the items for sale from wholesalers or distributors. The retail margin rates from the BEA range from 31 percent to 37 percent across CDOT regions. This approach was used to accurately reflect the economic impacts of retail spending. Margining was done when working with retail sales data to estimate jobs and payroll. When jobs were provided for retail establishments on-airports, the jobs represent direct effects after margining has occurred and additional margining was not required.
- **Derive Multiplier Impacts.** IMPLAN is an Input/Output (I/O) model widely used in economic impact analysis. I/O models trace the flows of money in an economy of varying sizes by the patterns of industry purchases and sales with other industries (for supplier sales effects) and household spending (used to calculate income re-spending effects), which help explain how revenues earned in direct transactions have additional impacts in an economy. For this study, the economic geographies were determined to be 15 multi-county regions and at a statewide level. At each geographic level, IMPLAN is used to trace the circulation of business revenues to calculate the extent that supplier purchases and income re-spending support jobs and payroll for the people of Colorado, additional revenues for businesses, and additional value added, which adds to CSP.

Multiplier effects begin with businesses on-airport or those engaged directly with visitors that use part of their gross revenues to purchase goods and services from other businesses. For example, a restaurant may buy produce from farmers, dry goods from wholesalers, office equipment at stores or manufacturers, and utilize and pay for accounting services. To the extent that these purchases stay in Colorado, they provide business revenues to other businesses in an airport’s home region or to the rest of the state. These revenues are then used by businesses in the supply chain in part to hire workers and pay them wages, and to purchase additional business supplies. Successive rounds of supplier sales occur until the dollars are expelled from Colorado. In instances when airport tenants or hospitality businesses initially purchase goods or services from outside the state, then the dollars are lost to Colorado and are not part of the multiplier effects. Similarly, workers at directly affected businesses or part of the supply chain of the direct businesses use their wages to purchase goods and services (also known as household spending) in Colorado. Purchases run the full gamut of consumer spending, ranging from

furniture to health care and groceries, providing business revenues from income re-spending if the dollars used for the purchases stay in state.

2.6.2. Industry Sectoring

Table 2.6 and **Table 2.7** profile the sectors used for this study out of the 536 contained in IMPLAN. Across Colorado airports, 47 sectors were used to capture the breadth of on-airport industries and six sectors were used to define visitor spending patterns.

On-Airport. Modeling of on-airport and visitor spending impacts spanned the sectors shown in **Table 2.6**. In some cases, generalized descriptions of certain business activities were not specific and therefore were assigned to an aggregated industry (e.g. retail, entertainment, aerospace manufacturing, etc.). Aggregation leads to averaging measures across industries by region, which avoids large inaccuracies when measuring small or large industries in an economic impact study. Across Colorado airports, 53 percent of all tenant jobs are related to companies providing air transportation, aerospace, air freight, and aviation support services (e.g., fixed-base operators [FBOs]). Excluding DEN with its relatively high ratio of terminal-related jobs, 69 percent of airport tenant jobs are represented by these sectors.

Table 2.6. Industries and Sectors Modeled for On-Airport Economic Impacts

Industries and Sectors		
Aerospace	Federal government	Oil/gas drilling
Architectural & engineering services	Food & beverage	Other educational services
Auto repair & maintenance	Freight aviation	Photographic services
Aviation	Ground transportation	Real estate
Business & professional associations	Hospitals	Reliant services
Car rental	Hotels	Retail
Cattle ranching	Labor & civic organizations	Retail - Motor vehicle & parts dealers
Commercial rental & leasing	Legal services	Retail - Non-store retailers
Construction	Management consulting services	Security
Crop farming	Management of companies	Services to buildings
Crop spraying	Manufacturing	State & local government
Data processing	Marketing research	Transportation support services
Distribution	Miscellaneous manufacturing	Vehicle parts manufacturing
Electric power	Office administrative services	Wholesale trade
Entertainment	Offices of physicians	Wireless telecommunications
Environmental services		

Source: EBP US using the 2017 IMPLAN economic model, 2019

Visitor Spending. As described earlier, visitor spending data comes from surveys of airport visitors, both those arriving via commercial service and GA aircraft.

Table 2.7 displays the sectors used to categorize the visitor spending. Visitor spending includes six primary sectors made up of 47 separate industries. The heavy use of aggregation is because a visitor at an airport cannot be realistically asked to divide food expenditures among different types of food and beverage establishments, let alone parse out spending of different types of retail or entertainment. Categories need to be general to present visitors with surveys that they can and are willing to quickly answer.

Table 2.7. Industries and Sectors Modeled for Visitor Spending Classifications

Visitor Spending Categories	Industry Sector
Accommodations	Hotels & motels, including casino hotels
	Other accommodations
Car Rental engaged off airport	Automotive equipment rental & leasing
Entertainment	Performing arts companies
	Commercial sports except racing
	Racing & track operation
	Independent artists, writers, & performers
	Museums, historical sites, zoos, & parks
	Amusement parks & arcades
	Gambling industries (except casino hotels)
	Other amusement & recreation industries (including skiing)
	Fitness & recreational sports centers
	Bowling centers
Food & Beverage	Full-service restaurants
	Limited-service restaurants
	All other food & drinking places
Ground Transportation, other than car rental	Retail - Gasoline stores
	Transit & ground passenger transportation
	Transportation support activities
Retail	Retail - Electronics & appliance stores
	Retail - Food & beverage stores
	Retail - Health & personal care stores
	Retail - Clothing & clothing accessories stores
	Retail - Sporting goods, musical instruments, & books
	Retail - General merchandise stores
	Retail - Miscellaneous store retailers

Source: EBP US using the 2017 IMPLAN economic model, 2019

Chapter 3. Data Collection Process

3.1. Data Collection Methods

To quantify each airport's individual economic impact as well as the total statewide economic impact, each CEIS airport's 2018 direct impacts had to first be determined. An airport's direct impact is generated from data associated with airport administration, on-airport tenants, and capital improvement spending. Additional off-airport impacts were also quantified which included commercial service and GA visitor spending. 2018 direct data was gathered through surveys completed by airport managers, on-airport tenants, commercial service passengers, FBOs, transient GA pilots and passengers, businesses that own or lease aircraft (non-tenants), and businesses that rely on Colorado airports. Both electronic and hard-copy versions of the surveys were distributed to each CEIS airport during the 66 site visits conducted from November 2018 through January 2019.¹⁰ Further, a project website was established to disseminate information and updates about the project, as well as to help facilitate survey distribution. All surveys were also provided on the project website. Additionally, quick-response (QR) codes were supplied which led directly to the online version of the forms (in SurveyMonkey) for ease of completion. The following sections describe the purpose, approach, and key data related to each CEIS survey.

3.2. Airport Manager Survey

The purpose of the airport manager survey was two-fold. First, to identify information related to airports' employment, payroll, operating expenses, and capital expenses. Second, to obtain contact information from specific users at each airport, including on-airport tenants, to conduct follow-on surveys that assist in generating the full story of economic impact at Colorado airports. A complete airport manager survey at each CEIS airport was imperative as the information from this survey drove the rest of the data collection efforts at each airport.

3.2.1. Approach

Airports were contacted in October and November 2018 by members of the project team to schedule a date and time to conduct an in-person meeting (site visit). The site visits were conducted November 2018 through January 2019. The duration of the meeting depended on the size and complexity of each airport, but typically lasted approximately three hours. Airport managers were provided a partially complete survey, with primary facility-related data input from FAA sources. Before the survey was reviewed and completed with each manager during the site visit, surveys were distributed to the airports electronically to allow the manager time to become familiar with the data being requested. Airport managers were initially asked to provide general airport information (types of activity, based aircraft, aircraft operations, etc.). The second component of the airport manager survey asked for airport managers to provide data related to airport sponsor employment. Third, airports were asked to provide tenant names and contact information, including FBOs, and company names and contacts for aviation and non-aviation businesses that they know are reliant on their airport(s). Fourth, managers were asked to summarize unique, anecdotal stories about the airport. Finally, managers were asked to

¹⁰ Four airports were surveyed via telephone.

provide information regarding non-quantifiable benefits provided at the airport (e.g., stand-by medical services, air shows, or aerial firefighting). This survey was sent to, and completed by, all 70 airports in hard copy and included data necessary for the CEIS as well as data for CASP analyses.

3.2.1.1. Key Data

The airport manager survey was the foundation of the CASP and CEIS data collection effort. Responses to the surveys specific to the CEIS consisted of airport-specific information including the following:

- General airport information
 - Airport administration contact information
 - Types of aviation services
 - Types of airport activity
- Economic impact (calendar year [CY] 2018-specific)
 - Airport sponsor employment (full-time vs. part-time) by occupational category
 - Number of individuals outsourced or on contract
 - Expenditures
 - *Annual wages and benefits to all employees or average annual salary/wage per employee*
 - *Airport capital improvements (2015-2018)*
 - *Operating expenses (2018)*
 - Airport visitors
 - *Percentage of 2018 transient (non-local) GA traffic*
 - *Average number of passengers (including pilots) for each 2018 transient GA operation*
 - *Average length of stay for each 2018 transient GA operation*
 - *Purpose of each 2018 transient GA operation*
- Contact information and employment estimates for each on-airport tenant
- Contact information and employment estimates for each off-airport business that based an aircraft at the airport
- Contact information for each non-local business that relies on the airport
- Contact information for each local business that relies on the airport

3.3. Airport Tenant Surveys

Airport tenants (also referred to as on-airport businesses to differentiate from those that only have based aircraft but no employees) typically provide the greatest economic impact at airports. CDOT Division of Aeronautics and the consultant team recognize that some of the data requested is confidential and/or many tenants are not interested in providing certain details to ensure their privacy; however, specific individual business information is necessary to quantify economic impact at each airport. To honor the privacy of individual business owners, certain information is not presented in this report, summary brochure, or individual airport brochures. Rather, an aggregated airport total is presented to summarize the economic impacts of each airport and for the system.

3.3.1. Approach

As previously mentioned, airport tenants were initially identified during the airport manager survey portion of the data collection process. Airport managers provided general information about each tenant to the best of their ability (contact information including email address and full-time versus

part-time employment estimates). Once all airport site visits were complete, tenant contact information was compiled by airport into a single tenant database. Once the contact list was compiled, CDOT Division of Aeronautics and Kimley-Horn emailed a tenant survey transmittal letter and survey attachment to each tenant identified at each airport.

Employment numbers and type of business were the largest factor in quantifying the economic impact of each tenant. While the plan was for every tenant to complete a full tenant survey, there were many who did not respond after multiple attempts to reach them via email and phone. If tenants were unresponsive, full-time and part-time employment numbers were obtained from airport manager estimates. Over 800 tenants were identified for all airports in the CEIS and only 166 completed a full tenant survey.¹¹ However, employment estimates and type of business were obtained for all 800 tenants. Since many tenants did not complete surveys, the project team relied on employment estimates and business types provided by the airport manager. Estimates of payroll and business revenues were obtained using IMPLAN. There were subtle differences in IMPLAN between different business sectors and their associated payroll and business revenues. The project team worked closely with CDOT Division of Aeronautics to review all data from IMPLAN. **Chapter 2** provides additional information related to IMPLAN and developing direct impacts.

Once the initial tenant data collection process was complete, the consultant team compiled a list of tenants by airport and submitted information via email to each airport manager for confirmation. This included confirmation of each tenant's company name, business type, and full-time and part-time employment. Additionally, the correspondence included a comparison to the tenant data recorded in the *2013 Economic Impact Study for Colorado Airports*. The consultant team began modeling the tenant data after it was confirmed by airport managers.

3.3.1.1. Key Data

The responses to the tenant surveys consisted of business-specific information including:

- General business/company contact information
- Type of business conducted at the airport (both for aviation- and non-aviation-related)
- Number of 2018 full-time and part-time employees
- Expenditures
 - Total annual payroll (2018)
 - Real estate taxes (2018)
 - Capital improvements (2014-2018)
 - Any additional economic benefits/services provided to the local community

3.4. Commercial Air Passenger Survey

Commercial service airports act as gateways to the state of Colorado, allowing visitors traveling on airlines from all over the world to experience what the state has to offer. Visitors utilize commercial aviation services to conduct business or enjoy vacation time in Colorado. Surveys of the commercial air

¹¹ Not including DEN tenants.

passengers were conducted to develop spending profiles for all out-of-state visitors, which assisted in quantifying the statewide economic impacts of Colorado's commercial service airports.

3.4.1. Approach

Commercial air passenger surveys were deployed in the form of intercept surveys at the nine FAA-designated Primary commercial service airports in Colorado. Staff from the consultant team were stationed near the ticketing counters pre-security and surveyed departing passengers who were visiting from out-of-state using tablets and hard-copy surveys.¹² The airport managers and the airline station managers facilitated the survey effort at the FAA-designated Nonprimary commercial service airports (ALS, CEZ, PUB, and TEX) because of the limited, single-airline service.¹³ The commercial air passenger surveys enabled the consultant team to fully tell the story of how Colorado's airports support the state's premier tourist attractions and numerous businesses that rely on commercial airline service by surveying over 3,100 out-of-state visitors to Colorado.

3.4.1.1. Key Data

The responses to the commercial air passenger surveys consisted of passenger-specific, out-of-state visitor expenditures including:

- Airport which the survey was received
- Out-of-state/in-state:
 - City/state of primary residence
 - Expenditures made in Colorado by type (lodging, entertainment, etc.)
- Size of traveling party
- Length of trip
- Purpose of trip (business, vacation, etc.)
- Travel contingency plans had the airport not been available for use

3.5. Fixed-Based Operator (FBO) Survey

Within the Colorado airport system there are 40 private FBOs that provide on-airport aeronautical services such as fueling, tie-down, aircraft maintenance, and flight instruction services. These businesses are on-airport tenants, but their economic impact is generally greater than that of a typical business tenant. As such, the FBO survey was created to explore the business aspects of this service deeper.

3.5.1. Approach

Each private FBO was visited after conducting the airport manager surveys. During the visit, a member of the consultant team informed the FBO manager of the CEIS and its benefit to the airport and statewide system. The FBO managers were provided a hard-copy survey and directed to the project website, which included a SurveyMonkey link if the FBO manager/owner preferred to complete a digital

¹² Surveyors at DEN were granted access post-security with temporary security badges.

¹³ Northern Colorado Regional (FNL) was not included because there was no commercial air service at the time of the survey effort.

copy. Of the 40 identified FBOs, 14 completed a full survey. Employment data were obtained from airport management for all remaining FBOs as this information is essential to the CEIS.

Like the tenant surveys, FBO business information was necessary to quantify economic impact at each airport; however, individual FBO business information is not presented in this report, summary brochure, or individual airport brochures. Rather, the FBOs are included as an aggregated total presented by airport.

3.5.1.1. Key Data

The responses to the FBO surveys consisted of business-specific information including:

- General FBO contact information
- 2018 airport operations by type
- Number of 2018 full-time and part-time employees
- FBO expenditures
 - 2018 total annual payroll
 - 2018 real estate taxes
 - Capital improvements (2015-2018)
- Contact information for businesses that own or lease aircraft that are based at the airport

3.6. GA Transient Pilots and Passengers Survey

Like the commercial air passenger survey, the GA transient pilot and passenger survey focused on departing, out-of-state visitors. The key difference is that this survey captured responses from pilots and passengers using GA aircraft. It is widely accepted that commercial service airports are used as a gateway for many leisure and business travelers who utilize airlines, but GA airports accommodate many of the same types of travelers flying in GA aircraft of all sizes to all the Colorado airports, including commercial service airports. The GA transient pilots and passenger survey was deployed to accurately quantify the types of spending by people using GA aircraft.

3.6.1. Approach

This survey was conducted by distributing both hard-copy and electronic versions to FBOs and airport management for pilots and passengers to complete, and by setting up posters in the GA terminal buildings. The posters contained a QR code and a link to the online survey (via SurveyMonkey) for ease of completion. FBOs were requested to encourage participation, especially by out-of-state visitors prior to departing the airport. The posters and hard-copy surveys were placed in highly-visible, frequently used areas such as pilot's lounges, front desks, and lobby areas. FBO managers and airport managers maintained the hard-copy surveys and sent batches of completed surveys to the project team at their convenience. Some surveys were completed via SurveyMonkey which made results accessible to the consultant team instantaneously. Over 160 surveys were received throughout the six-month survey period which started in November 2018 and concluded in May 2019. Data on spending from in-state visitors could not be used since the focus of the surveys was on new money being brought into Colorado because of out-of-state visitors using the airports. After filtering through the out-of-state visitors, 59 surveys provided data on over 200 out-of-state visitors who arrived via GA aircraft.

3.6.1.1. Key Data

The responses to the GA transient pilot and passenger survey consisted of visitor expenditure information including:

- Airport in which the survey was received
- Status as an out-of-state visitor, and if from out-of-state:
 - City/state of primary residence
 - Expenditures made in Colorado by type (lodging, entertainment, etc.)
- Size of traveling party
- Length of trip in terms of nights spent in Colorado
- Trip purpose (business, vacation, etc.)
 - If purpose was business-related, additional questions were asked about the company's major product/service, as well as the major product/service of the company being visited
- Travel contingency plans had the airport been unavailable for use
- Any additional comments/recommendations regarding Colorado airports

3.7. Businesses that Own or Lease Aircraft Survey

As mentioned previously, air transportation is vital to many Colorado businesses. Whether air travel is utilized to collaborate with vendors or clients, or shipping products and communications, air transport services are a key part of Colorado's infrastructure. The businesses that own or lease an aircraft survey was deployed to help the consultant team understand the business's experiences and views regarding commercial and GA airports in Colorado. It should be noted that data obtained from this survey was used to quantify a statewide benefit, not the impact of any one airport. These businesses consist of those that may be based at a Colorado airport or frequently utilize a Colorado airport, but are not considered a tenant with employees on the airport where they are based.

3.7.1. Approach

Generating a list of businesses that own or lease aircraft came from more than one source. Initially, these users were identified during the site visit by the airport manager, but additional businesses were identified based on conversations with FBO staff since the FBOs are typically the party to handle GA business aviation activity. In some instances, FBOs were reluctant to provide business names or specific contact information to keep their privacy intact. Many businesses were identified during site visits; however, only a limited number of completed surveys were obtained. Additional information on business use and activity was obtained through the airport managers and discussions with FBOs, although this information is more qualitative in nature. It is important to note that the businesses that own or lease aircraft survey was deployed to help understand the additional statewide economic impact of these users that could frequent multiple airports.

3.7.1.1. Key Data

The responses to the businesses that own or lease aircraft survey consisted of business-specific information including:

- General business information
- Information about based aircraft either owned or leased by the business
- Number of 2018 full-time and part-time employees
- Estimated percentage of employees who relied on GA to conduct their business in 2018

- Business's estimated split of GA and commercial service trips in 2018
- Estimated percentage of GA trips taken in/to/from Colorado in 2018 on company-owned/leased aircraft
- Company's three most common destinations in company-owned/leased aircraft in 2018
- Company's three most used Colorado airports in company-owned/leased aircraft in 2018
- Client use of company-owned/leased aircraft to visit office locations in 2018
- Air cargo information
- Which Colorado airports need improvements
- Influence of business location factors (cost of living, tax incentives, proximity to clients, etc.)
- Final thoughts on the ability of Colorado's airports to support business aviation needs

3.8. Businesses that Rely on Colorado Airports Survey

Like the businesses that own or lease aircraft survey, the businesses that rely on Colorado airports survey was deployed to quantify a statewide impact. For example, businesses in the Denver Metropolitan area may rely on Centennial Airport (APA), Rocky Mountain Metropolitan Airport (BJC), Colorado Air and Space Port (CFO), and DEN. The questions to these surveys were for understanding the types of businesses that rely on Colorado airports and the airport-related factors that influence business location.

3.8.1. Approach

The final portion of the airport manager survey was reserved for identifying local and non-local businesses that rely on the airport. Airport managers were asked to provide contact information to include email addresses so that business reliance surveys could be distributed to the identified businesses. Responses varied as rural, GA airport managers were only familiar with one or two businesses that relied on the airport. In contrast, the staff at APA were familiar with hundreds of reliant businesses. For airports in the Denver Metropolitan Area, airports were asked to only list the most significant businesses that rely on the airport.

Once the contact list was formed, the consultant team and CDOT Division of Aeronautics distributed the survey via the OEDIT in the hopes that it would yield greater results than a survey from a consultant or CDOT Division of Aeronautics, whom many of the businesses may not be familiar with. However, a limited survey response was achieved even with this method of distribution. This is like other electronic surveys where it is challenging to obtain a high response rate given the abundance of electronic mail. All information obtained through this survey provides more qualitative insight into the importance of airports to business activity in Colorado.

3.8.1.1. Key Data

The responses to the business reliance survey consisted of business-specific information including:

- General business information
- Number of 2018 full-time and part-time employees
- Elaboration on how the business is reliant on aviation
- Business use of aviation
- Commercial service use details
- GA use details
- Air cargo information



- Which Colorado airports need improvements made to them (facilities, services, commercial flights, freight access, etc.)
- Influence of business location factors (cost of living, tax incentives, proximity to clients, etc.)
- Final thoughts on the ability of Colorado's airports to support business aviation need

Chapter 4. The Economic Role of Air Cargo

4.1. Introduction

The CEIS primarily focuses on activities that occur on-airport or as a result of operating the airport system. These activities include but are not limited to aircraft operations and terminal activities that support passenger traffic, both commercial service and GA. The economic impact of air cargo documents the off-airport activities supported by air cargo services at airports. Air cargo’s “off-airport-related impacts” are the business revenues earned due to these long-distance sales, and the subsequent jobs, payroll, and value added attributable to those sales. These impacts are earned by a wide range of manufacturing and agriculture companies who rely on Colorado’s airports to ship products out-of-state.

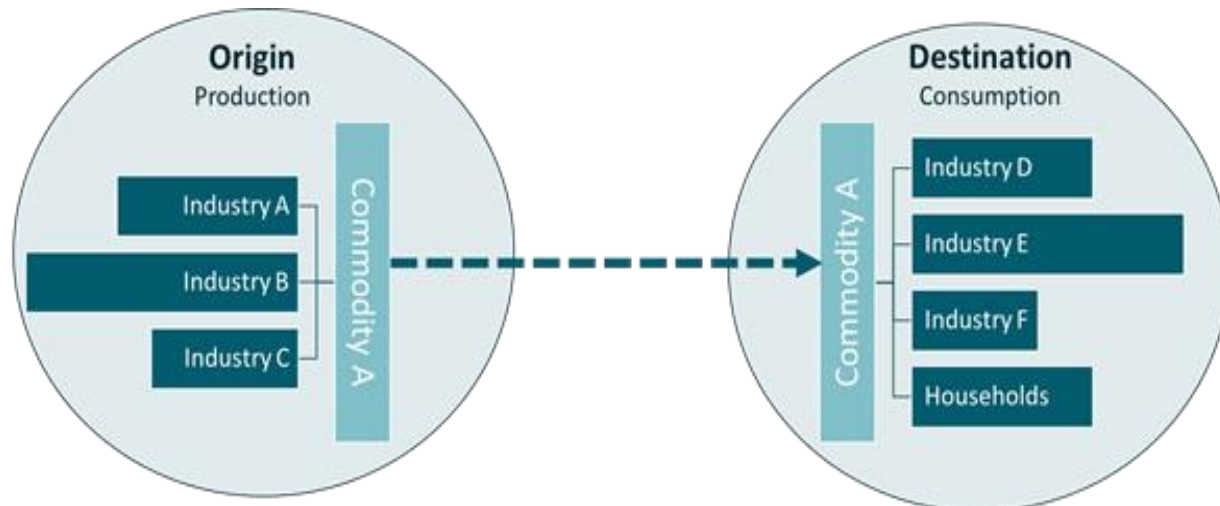
The value of shipped commodities is equivalent to the sale of goods from businesses in Colorado to customers in long-distance markets. Without air cargo support, Colorado companies that produce and ship products would have limited markets and curtailed market shares, leading to an overall reduction in economic activity for the state. The following sections describe how airports impact and support economic development by enabling Colorado firms to sell products out-of-state, across the U.S., and throughout the world, thereby maximizing their market share of national and international trade and bringing revenues from those sales into Colorado.

This analysis is based on industry-specific data—from the U.S. Census Bureau’s Foreign Trade Division (collected by WISERTrade) and the Freight Analysis Framework (FAF), jointly produced by the Bureau of Transportation Statistics (BTS) and Federal Highway Administration (FHWA)—and county-level economic output (business revenue) data by industry sectors, assembled by IMPLAN from federal sources (primarily the U.S. Bureau of Economic Analysis or BEA). Using these data allows commodities produced by Colorado industries and sold out-of-state to be estimated and avoids counting tonnage flown within Colorado.

4.2. Allocating Air Cargo to Industries of Production

Figure 4.1 illustrates the relationship between industries and commodities and the process of shipping commodities for sale to points of purchase. Commodities produced in Colorado by one or more industries are shipped to subsequent ultimate destinations. Once they reach those destinations, the commodities are consumed by one or more (potentially different) industries as inputs to their production (usually referred to as “intermediate inputs”), or as final demand for households. An example of an intermediate input may be plastic produced in Colorado and flown to Michigan where it is used as part of automobile production. An example of a product shipped for “final demand” is a pharmaceutical product manufactured in Colorado and flown to Florida; the product itself may be handled by wholesalers and retailers, but it is purchased directly by consumers at drug stores without any further production required.

Figure 4.1. Schematic Presentation of Inter-industry Commodity Flows (Cargo Flows) Between Regions



Source: EBP US, 2020

4.3. Data Sources

Base data used to develop a detailed profile of air shipments from Colorado, by commodity and origin of movement, was provided by WISERTrade and FAF. WISERTrade is port-specific and provides the point of origin by state. WISERTrade reports commodities and value of air cargo shipped to international destinations from Colorado airports that have points of origin in the state. On the other hand, FAF is not port-specific. Rather, FAF data are provided on commodity origin broken out by the Denver metropolitan statistical area (MSA) and the “rest of state” for commodities shipped by air. Neither source, however, provides county-level data on where shipped commodities are produced. Therefore, to determine point-of-origin data at the commodity level, U.S. Department of Commerce data assembled by IMPLAN were used to calculate the ratios of business revenue by commodity for Colorado counties compared to the total revenues produced in the state. This calculation provides an estimate of the “share” of Colorado-produced air shipments with an approximate point of origin by county.

The FAF integrates data from a variety of sources to create a comprehensive picture of cargo movement between geographic zones—major metropolitan areas and remaining nonmetropolitan areas of each state. FAF provides this data by all modes of transportation, including aviation. The latest version of FAF (FAF4) provides estimates for tonnage value (and ton-miles) by regions of origin and destination, commodity type, and mode.

FAF classifies commodities according to the two-digit level of the Standard Classification of Transported Goods (SCTG) codes, and WISERTrade classifies commodity data in terms of value and weight according to the Harmonized System.¹⁴ IMPLAN, meanwhile, tracks commodity flows between

¹⁴ The Harmonized System is the predominant international commodity classification usage for international trade and is used by over 200 countries for assessing tariffs. EBP has developed a crosswalk between the two commodity codes for cohesive reporting and analysis.

industries using a different set of 536 sectors. A crosswalk between WISERTrade, FAF, and IMPLAN made it possible to estimate the value of air cargo commodities produced by county and shipped from Colorado airports.

WISERTrade provides commodity flow data in terms of value and weight according to commodity type and was used to estimate the weight and value of goods produced in Colorado and exported from DEN to international markets.¹⁵ The Foreign Trade Division, through WISERTrade, provides data on total exports by commodity, state of origin, and the total value of exports shipped. WISERTrade aggregates total value and weight by commodity for all shipments from DEN, including at a commodity-level by state point of origin.¹⁶

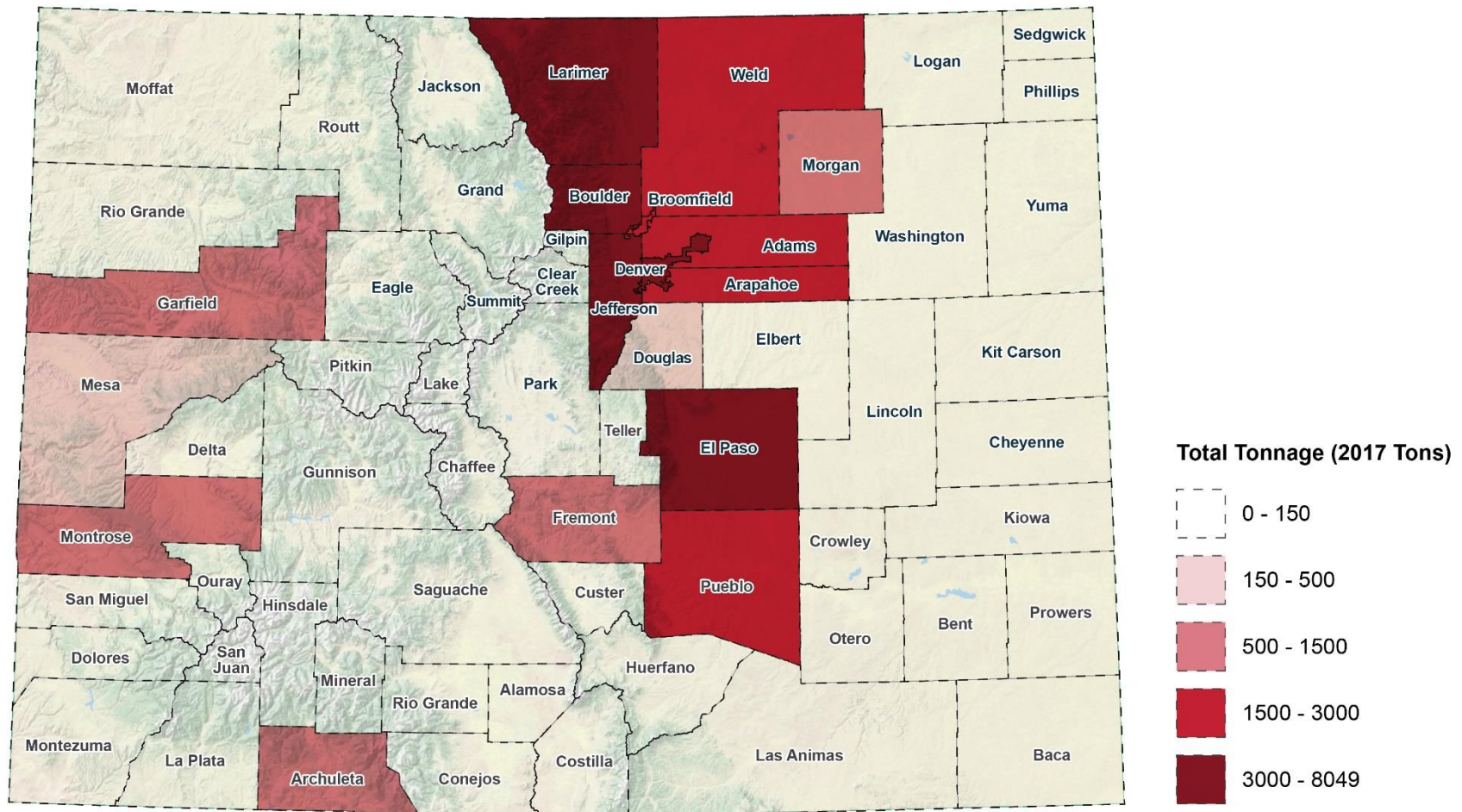
4.4. Cargo Activity

Using the FAF and WISERTrade data described above, **Figure 4.2** shows the location by county of Colorado industries that produce goods shipped through Colorado airports to out-of-state domestic and international destinations, with darker red counties indicating greater tonnage of air cargo flowing out of that county.

¹⁵ DEN is the only Colorado airport showing 2018 international trade shipments.

¹⁶ EBP has entered into a special data agreement with WISERTrade to be able to trace commodities by state of origin and port of export.

Figure 4.2. Tonnage Produced by County and Flown to Markets



Sources: WISERTrade data from the U.S. Census Bureau Foreign Trade Division; FAF Data from the BTS and FHWA, 2017; IMPLAN modeling system; calculations by EBP US, 2020

Table 4.1 compares domestic cargo to international cargo activity produced and shipped from Colorado in terms of value and tonnage by commodity group. Domestic cargo exceeds international cargo in both value and weight and comprises a similar set of commodity types. The top value commodity is the same for both domestic and international cargo (precision instruments) as is the third-highest value commodity (electronics). Beyond these two commodity types, however, domestic and international cargo differs, with transport equipment, printed products, and base metal articles comprising the other most valuable domestic commodity flows, whereas machinery, pharmaceuticals, and basic chemicals comprise the other high-value commodities for international cargo.

Table 4.1. Comparison of Domestic and International Cargo in Terms of Current Value and Tonnage

Domestic Commodities				International Commodities			
SCTG	Description	Tons	Value	SCTG	Description	Tons	Value
38	Precision Instruments	4,317	\$842,745,000	38	Precision Instruments	1,180	\$286,220,000
37	Transport Equipment	1,477	\$480,384,000	34	Machinery	1,296	\$114,596,000
35	Electronics	6,660	\$353,662,000	35	Electronics	507	\$66,243,000
29	Printed Products	8,094	\$117,291,000	21	Pharmaceuticals	164	\$62,252,000
33	Articles-Base Metal	6,005	\$108,454,000	20	Basic Chemicals	87	\$34,916,000
21	Pharmaceuticals	2,633	\$45,607,000	37	Transport Equipment	41	\$28,025,000
36	Motorized Vehicles	861	\$33,243,000	40	Misc. Mfg. Products	83	\$17,062,000
34	Machinery	607	\$16,782,000	23	Chemical Products	311	\$15,486,000
24	Plastics/Rubber	361	\$12,289,000	24	Plastics/Rubber	250	\$6,790,000
40	Misc. Mfg. Products	1,387	\$9,600,000	31	Non-Metal Min. Products	86	\$6,104,000
	Rest of Commodities	2,412	\$20,481,000		Rest of Commodities	772	\$20,812,000
TOTAL		34,813	\$2,040,538,000	TOTAL		4,777	\$658,506,000

Sources: WISERTrade data from the U.S. Census Bureau Foreign Trade Division; FAF Data from the Bureau of Transportation Statistics and Federal Highway Administration, 2017; and Calculations by EBP, 2020

Total Air Cargo Impact Table 4.2 provides a summary of total air cargo-related economic impacts for Colorado. The business revenues shown represent earnings of Colorado businesses from sales of commodities that were shipped out-of-state by air. These earnings are enabled by Colorado airports supporting state industries. The air cargo impacts shown in Table 4.2 include both domestic and international air cargo, as well as the two streams of multiplier effects that account for supplier sales and income re-spending in Colorado as a result of the commodity production and income earned by workers due to the sales.

Table 4.2. Total Statewide Economic Impact of Air Cargo Movement from Colorado



Total Statewide Economic Impact of Air Cargo				
	Jobs	Payroll	Value Added	Business Revenues
Direct	6,079	\$672,030,000	\$1,174,293,000	\$2,699,044,000
Supplier Sales	3,493	\$293,738,000	\$462,488,000	\$809,087,000
Income Re-spending	4,988	\$248,390,000	\$524,712,000	\$881,530,000
TOTAL	14,560	\$1,214,158,000	\$2,161,493,000	\$4,389,661,000

Note: Columns and rows may not add due to rounding.

Sources: Data from FAF; WISERTrade; and IMPLAN assembled and calculated by EBP US, 2020

DEN and Colorado Springs Municipal (COS) support the overwhelming proportion of air cargo shipped out-of-state by Colorado producers, and account for 98.6 percent of direct business revenues earned by state businesses from their exports. DEN, by itself, accounts for almost 94 percent of direct business revenues generated by exports.

Table 4.3 presents the statewide economic impacts of air cargo shipped out-of-state through DEN, COS, and airports in the rest of Colorado. **Table 4.2** and **Table 4.3** demonstrates the scale of the economic impacts resulting from air cargo in Colorado. Considering direct effects and subsequent supplier sales and income re-spending, air cargo produced in Colorado and shipped from state airports generates almost \$4.4 billion in business revenues. These revenues support over 14,500 jobs, more than \$1.2 billion in payroll, and almost \$2.2 billion in value added.

Table 4.3. Economic Support to Businesses in Colorado by Airport from Providing Air Cargo Services

State Economic Impact by Airport/Region				
	COS	DEN	Rest of State	Total Impacts
Jobs				
Direct	354	5,603	122	6,079
Supplier Sales	140	3,332	21	3,493
Income Responding	194	4,770	24	4,988
TOTAL	687	13,705	168	14,560
Payroll				
Direct	\$32,041,000	\$632,007,000	\$7,981,000	\$672,030,000
Indirect	\$11,683,000	\$280,331,000	\$1,723,000	\$293,738,000
Induced	\$9,659,000	\$237,554,000	\$1,177,000	\$248,390,000
TOTAL	\$53,382,000	\$1,149,893,000	\$10,882,000	\$1,214,158,000
Value Added				
Direct	\$50,220,000	\$1,112,328,000	\$11,746,000	\$1,174,293,000
Indirect	\$18,185,000	\$441,524,000	\$2,780,000	\$462,488,000
Induced	\$20,404,000	\$501,822,000	\$2,486,000	\$524,712,000
TOTAL	\$88,809,000	\$2,055,674,000	\$17,011,000	\$2,161,493,000
Output				
Direct	\$131,191,000	\$2,530,399,000	\$37,455,000	\$2,699,044,000
Indirect	\$32,790,000	\$771,210,000	\$5,087,000	\$809,087,000
Induced	\$34,279,000	\$843,075,000	\$4,176,000	\$881,530,000
TOTAL	\$198,260,000	\$4,144,684,000	\$46,718,000	\$4,389,661,000

Note: Columns and rows may not add due to rounding.

Sources: Data from FAF; WISERTrade; IMPLAN; assembled and calculated by EBP US, 2020

4.5. Comparison to Prior Impacts

While the off-airport air cargo-related economic impact valuation methodologies used in both the 2013 and 2020 studies are similar, comparing the results presents a significant challenge. Relative to the current air cargo data obtained for this study, the 2013 report showed much lower tonnage, but a much higher value per ton for several important commodities.

Table 4.4 depicts the 2017 cargo volumes and value from FAF supporting the economic impacts presented previously in **Table 4.2** and compares them to the volume and value for Colorado according to the 2011 FAF, which was the basis for the prior economic impact report. While the 2017 FAF cargo volumes and values are roughly comparable to those in the 2013 FAF, a major change occurred between 2011 and 2013, as the FAF methodology was revised.

By drawing this comparison, **Table 4.4** demonstrates why it is difficult to compare the current off-airport air cargo-related economic impacts to the prior report. Specifically, the total tonnage reported for Colorado increased from 11,000 tons in 2011 FAF to 37,080 tons in 2013 FAF, while the value of those commodities dropped from \$3.5 billion to \$2.0 billion. In other words, the reported tonnage

increased by over three-fold, yet the value of goods produced decreased by more than 40 percent in just a two-year period. The 2017 FAF report for Colorado is consistent with 2013.

FAF data indicates a major change occurred in estimating tonnage and in the value of commodities per ton. For example, from 2011 to 2017, the value per ton of the top commodity in the current report—precision instruments—fell 90 percent, from \$1,975,800 per ton to \$195,200 per ton. Similarly, the second top commodity in the current report—transportation equipment—fell in value from \$2,352,300 per ton to just \$325,300 per ton, an 86 percent reduction. As a result, the estimated total value of the air cargo in 2017 is much lower than it was in the previous report which used the 2011 FAF, even though reported tonnage has increased. This drop-in value per ton also translates to the lower economic impacts reported in 2018 for off-airport cargo-related activity.

It is natural to wonder why a similar dataset might produce such wildly different values in two different years. Understanding this change requires understanding FAF. As noted above, the FAF integrates data from a variety of sources to create a comprehensive national picture of cargo movements among states and major metropolitan areas (by air and by other modes of transportation). The current analysis used FAF4 (the fourth database of its kind), while the 2013 economic impact study used FAF3.

Since FAF2, the database has relied on the U.S. Census Bureau's Commodity Flow Survey (CFS) for much of its commodity and mode detail. The CFS surveys business establishments every five years and produces commodity flow data based on samples from the surveys. The CFS collects data on shipments, including commodity type, originating from a wide range of industries. FAF4 relied on the 2012 CFS, while FAF3 relied on the 2007 CFS. The reasons for changes in data from FAF3 to FAF4 are not clearly stated. However, changes in the CFS, such as redefining the minimum weight that constitutes an air shipment, may have changed aspects of FAF4. The BTS noted that changes in geography, commodities, and modes in the 2012 CFS have impacts on FAF4 in comparison to historical FAF data series.¹⁷

¹⁷ BTS, *Effects of Changes in 2012 Commodity Flow Survey*. Updated: November 2017.
https://www.bts.gov/archive/subject_areas/freight_transportation/faf/faf4/effects

Table 4.4. Comparison of Cargo Volumes and Value (Past and Present), Organized by Top Commodities in 2017 FAF

Comparison of Underlying Freight Volumes and Value (Past & Present)														
2017 FAF					2013 FAF					2011 FAF (Used in Prior Report)				
SCTG	Description	Tons (1,000s)	Value	Value/Ton	SCTG	Description	Tons (1,000s)	Value	Value/Ton	SCTG	Description	Tons (1,000s)	Value	Value/Ton
38	Precision Instruments	4.32	\$842,744,900	\$195,215	38	Precision Instruments	4.40	\$817,353,400	\$185,703	38	Precision Instruments	0.21	\$424,606,000	\$1,975,831
37	Transport Equipment	1.48	\$480,383,600	\$325,265	37	Transport Equipment	1.50	\$458,110,400	\$305,672	37	Transport Equipment	1.01	\$2,377,223,900	\$2,352,290
35	Electronics	6.66	\$353,662,200	\$53,104	35	Electronics	6.73	\$362,518,600	\$53,856	35	Electronics	1.85	\$228,446,600	\$123,732
29	Printed Products	8.09	\$117,291,200	\$14,491	29	Printed Products	10.37	\$149,158,700	\$14,390	29	Printed Products	1.52	\$22,601,600	\$14,918
33	Articles-Base Metal	6.01	\$108,453,500	\$18,061	33	Articles-Base Metal	5.86	\$104,917,700	\$17,911	33	Articles-Base Metal	0.08	\$28,413,300	\$359,662
21	Pharmaceuticals	2.63	\$45,607,400	\$17,319	21	Pharmaceuticals	2.65	\$34,137,100	\$12,879	21	Pharmaceuticals	0.98	\$194,164,200	\$198,026
36	Motorized Vehicles	0.86	\$33,243,400	\$38,597	36	Motorized Vehicles	0.75	\$27,736,900	\$36,752	36	Motorized Vehicles	1.37	\$34,948,400	\$25,454
34	Machinery	0.61	\$16,781,700	\$27,661	34	Machinery	0.67	\$17,622,100	\$26,365	34	Machinery	0.00	\$11,107,400	\$3,966,929
24	Plastics/Rubber	0.36	\$12,288,600	\$34,012	24	Plastics/Rubber	0.35	\$11,726,900	\$33,922	24	Plastics/Rubber	0.71	\$14,249,400	\$20,195
40	Misc. Mfg. Prods.	1.39	\$9,600,000	\$6,924	40	Misc. Mfg. Prods.	1.34	\$8,782,900	\$6,574	40	Misc. Mfg. Products	0.55	\$105,269,300	\$191,992
39	Furniture	0.16	\$6,651,800	\$41,316	20	Basic Chemicals	1.02	\$8,305,100	\$8,176	39	Furniture	0.01	\$3,329,000	\$252,197
20	Basic Chemicals	0.86	\$6,217,100	\$7,256	39	Furniture	0.15	\$5,933,200	\$39,060	30	Textiles/Leather	0.30	\$2,369,500	\$7,930
30	Textiles/Leather	0.53	\$3,749,100	\$7,124	30	Textiles/Leather	0.55	\$3,782,700	\$6,928	31	Non-Metal Min. Products	0.56	\$1,120,500	\$1,985
7	Other Foodstuffs	0.03	\$1,175,100	\$43,044	7	Other Foodstuffs	0.02	\$1,028,400	\$42,496	23	Chemical Prods.	0.02	\$18,905,200	\$964,551
31	Non-Metal Min. Products	0.56	\$1,175,100	\$2,089	31	Non-Metal Min. Products	0.45	\$818,500	\$1,839	43	Mixed Freight	1.29	\$21,661,000	\$16,799
23	Chemical Prods.	0.08	\$861,700	\$11,383	23	Chemical Prods.	0.08	\$922,800	\$11,323	32	Base Metals	0.01	\$2,709,100	\$371,110
43	Mixed Freight	0.18	\$357,500	\$2,043	43	Mixed Freight	0.17	\$346,200	\$2,010	28	Paper Articles	0.00	\$1,585,700	\$880,944
32	Base Metals	0.03	\$178,700	\$7,008	32	Base Metals	0.03	\$223,900	\$7,668	26	Wood Prods.	0.03	\$457,100	\$15,654
28	Paper Articles	0.00	\$114,700	\$104,273	28	Paper Articles	0.00	\$108,300	\$98,455	13	Nonmetallic Minerals	0.51	\$49,200	\$97
19	Coal-N.E.C.	0.00	\$100	\$333	19	Coal-N.E.C.	0.00	\$100	\$250	99	Unknown	0.00	\$21,500	\$7,963
TOTAL		34.81	\$2,040,537,400	\$58,614	TOTAL		37.08	\$2,013,533,900	\$54,306	TOTAL		11.01	\$3,493,237,900	\$317,310

Sources: Freight Analysis Framework for Domestic Shipments from Colorado using Air Mode, 2011, 2013, and 2017

Chapter 5. Airport Economic Impact Findings

5.1. Introduction to Impacts

The goal of the CEIS is to quantify the economic impacts of aviation activities. The following sections present the contribution of Colorado’s airports to the state economy in 2018 based on the three main generators of economic activity:

- **On-Airport Activity:** Airports function as regional job centers by providing services to airlines, airline passengers, and GA pilots and their aircraft, as well as by providing other support and facility services. Airports also support the economy through capital expenditures for construction drawn from federal, state, and local governments and by tenants such as those building out terminal concession areas.
- **Visitor Spending:** Airports serve as gateways for out-of-state-tourists and business travelers. These commercial service and GA visitors spend money on lodging, food, retail, entertainment, and local transportation and support the Colorado hospitality industry.
- **Business Reliance on Air Cargo:** Airports connect Colorado’s industries to markets across the United States and around the world. Businesses rely on airports to expand their markets to long-distance domestic and international customers. Sales enabled by air cargo bring money from these long-distance markets into Colorado, which in turn support jobs in industries across the state.

Table 5.1 summarizes the economic impact generated by Colorado’s airports by type. As shown, Colorado airports provide nearly 346,000 jobs and generate over \$16.2 billion in payroll, \$27.0 billion in value added, and \$48.6 billion in business revenues. Figure 5.1 illustrates the share of impacts from on-airport activity, visitor spending, and off-airport cargo by each impact type. As depicted in Figure 5.1, visitor spending is responsible for 57 percent of total jobs and 42 percent of payroll.

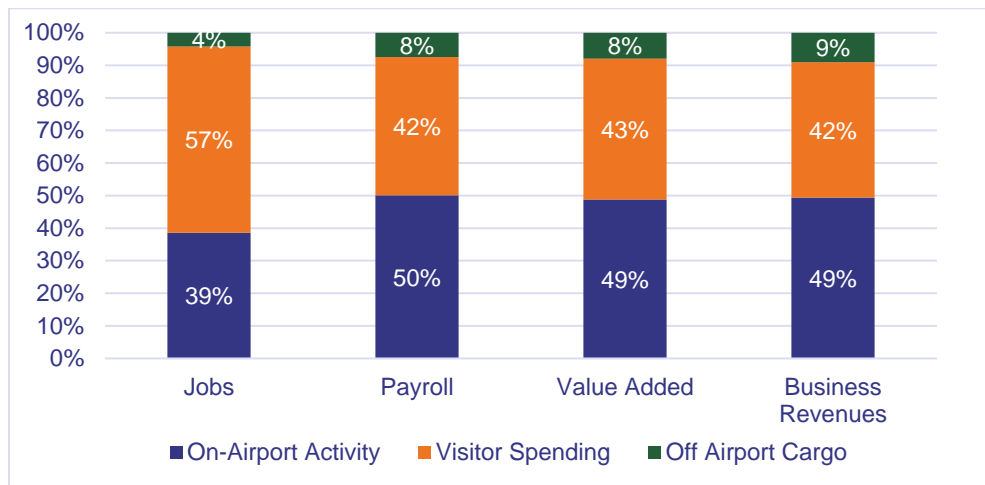
Table 5.1. Summary of Economic Impacts by Type

Type	Jobs	Payroll	Value Added	Business Revenues
On-Airport Activity	133,240	\$8,107,924,000	\$13,177,537,000	\$23,992,521,000
Visitor Spending	197,861	\$6,850,953,000	\$11,686,164,000	\$20,231,017,000
Off-Airport Cargo	14,560	\$1,214,158,000	\$2,161,493,000	\$4,389,661,000
TOTAL	345,661	\$16,173,035,000	\$27,025,194,000	\$48,613,199,000

Note: Columns and rows may not add due to rounding.

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Figure 5.1. Share of Economic Impacts by Category



Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Colorado airports support between seven and nine percent of the state economy as shown in Table 5.2. Note that the higher percent of jobs and lower percent of payroll is primarily attributed to retail and restaurant jobs located on-airport and from visitor spending.

Table 5.2. Colorado Airports Contribution to the State Economy

Measure	State Economy	Total Aviation Impacts	Percent of Economy Supported by Aviation
Jobs	3,864,154	345,661	8.9%
Payroll	\$238,097,518,000	\$16,173,035,000	6.8%
Value Added	\$371,749,600,000	\$27,025,194,000	7.3%
Business Revenues	\$614,688,778,000	\$48,613,199,000	7.9%

Sources: U.S. BEA for jobs, payroll, and value added; Business Revenues from data assembled by IMPLAN 2017 Colorado database and inflated to 2018 value; 2019 Statewide Impacts, 2019

The combined economic contribution of on-airport activity, visitor spending, and off-airport cargo reflects the total economic activity generated on airport property, as well as the subsequent multiplier effects of supplier purchases and income re-spending throughout the state. This section provides greater detail on impacts to the statewide economy, including impacts by type (on-airport, visitor spending, and off-airport cargo), by measure (jobs, payroll, value added, and business revenues), as well as an examination of impacts from supplier sales and income re-spending.

5.1.1. Impacts of On-Airport Activity, Visitor Spending, and Off-Airport Cargo

This section discusses the three types of economic impacts analyzed: on-airport, visitor spending, and off-airport cargo, and provides detailed results for impacts of each type.

5.1.1.1. On-Airport Activity

Airports are economic generators because of the jobs and income created by providing air travel and related services at both commercial service and GA airports. On-airport activity is classified into three main service categories:

- **Airport Administration:** Airport operations, management, and the budget associated with operating the airport, which may include facility and grounds maintenance and other administrative needs.
- **Airport Tenants (commercial service and GA):** Airlines, FBOs, maintenance, repair, and overhaul companies (MROs), avionics and other aircraft service companies, terminal concessions (e.g. restaurants and retailers), as well as on-airport warehouses/trucking, hotels, and other types of businesses that pay rent or fees to the airport and have establishments on airport property. Airport tenants may also include surface transportation providers (companies that move passengers to and from airports including taxis, transportation network carriers [TNCs], private busses/vans, and public transportation) and air cargo (FedEx/UPS/other) that operate at a Colorado airport.
- **Capital Improvements:** Airport infrastructure improvements and tenant construction.

Table 5.3 presents the total 2018 economic impacts of on-airport activity by measure (jobs, payroll, value added, and business revenues), and is broken out by direct impacts, supplier sales, and income re-spending. On-airport activity at Colorado airports generated \$13.2 billion in business revenues, which led to almost \$11 billion in additional business revenues in Colorado due to supplier sales and income re-spending. The nearly \$24 billion in total business revenues included \$8.1 billion in payroll, which supported more than 133,000 jobs with an average compensation of \$61,000 per worker. In addition, Colorado airports contributed \$13.2 billion in value added to the Colorado GSP.

Table 5.3. Economic Impacts of On-Airport Activity

	Jobs	Payroll	Value Added	Business Revenues
Direct	58,723	\$4,591,548,000	\$7,317,577,000	\$13,192,693,000
Supplier Sales	30,202	\$1,660,230,000	\$2,452,658,000	\$4,657,190,000
Income Re-spending	44,316	\$1,856,146,000	\$3,407,302,000	\$6,142,637,000
TOTAL	133,240	\$8,107,924,000	\$13,177,537,000	\$23,992,520,000

Note: Columns and rows may not add due to rounding.

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Across Colorado, jobs on airports offer higher pay than those found in the overall state economy and the pay is about even with the state averages when multiplier effects are considered. The average payroll per on-airport direct job is \$78,000 and the overall average generated by on-airport activity including direct as well as supplier sales and income re-spending is \$61,000. In comparison, the average labor compensation for all workers in Colorado in all industries was \$61,600 in 2018.¹⁸

5.1.1.2. Visitor Spending

Airports in Colorado function as gateways for out-of-state visitors who travel to Colorado for personal and business reasons. These visitors use both commercial service and GA airports to arrive at their destinations and typically spend money in the following categories:

¹⁸ U.S. Bureau of Economic Analysis for 2018, Table SAINC4.

- Accommodations
- Food and beverage
- Local ground transportation
- Retail
- Entertainment

Spending by commercial service and GA visitors brought \$11.6 billion into Colorado from international and domestic out-of-state locations. This spending supports local businesses, creates jobs, and provides income earned by employees that work in these hospitality-oriented businesses. Spending by visitors also generates multiplier effects as hospitality businesses purchase goods and services from Colorado-based suppliers and as employees spend their income on household purchases.

Commercial Service Airport Visitor Spending

Thirteen of the 70 Colorado airports covered in this study supported commercial airline service in 2018.¹⁹ Commercial travelers can be parsed into three general categories: (1) Colorado residents traveling out-of-state or to a destination within Colorado; (2) out-of-state or international travelers who may deplane at a Colorado airport and obtain a connection to their ultimate destination without leaving the airport; and (3) *out-of-state domestic or international residents who are visiting Colorado for personal or business reasons*.

This study counts the spending of the third category as contributing to the Colorado economy. Among groups one and two mentioned above, Colorado residents are not bringing new money into the Colorado economy; therefore, not impacting the state economy (only local or regional economies), and connecting passengers are not spending money in communities of the state. Terminal spending of these passengers is counted in the impacts of on-airport businesses. Secondly, if a passenger, for example, connects through DEN to another commercial airport in Colorado, the impacts of visitor spending are counted in the region of the destination airport in Colorado.

Commercial service airport visitor spending is a function of total number of visitors described in the third category above and the amount of spending per visitor as developed from the commercial air passenger survey administered for this study and described in **Section 3.4**.

Table 5.4 reports total spending by commercial service airport visitors attributed to each commercial service airport in Colorado. This table reports “gross spending,” as the dollars that leave visitors’ pockets before retail margins are applied to determine true economic impacts.²⁰ Overall, commercial service airport visitors to Colorado spent \$11.2 billion off-airport, shown by airport in **Table 5.4** and illustrated by spending category in **Figure 5.2**.

¹⁹ A 14th commercial service airport, FNL, did not offer commercial airline service in 2018.

²⁰ As discussed in more detail in the “Methodology” section, though spending on retail reflects the values of items sold, only a portion of the sales is actual revenue for the retail store. This portion, referred to as margined costs, reflects the “mark-up” value that retail stores add to the price of goods to cover their operating costs and profit. Only the mark-up produces revenue and economic activity for local retailers.



Table 5.4. Commercial Service Airport Visitor Spending Attributed to Each Airport

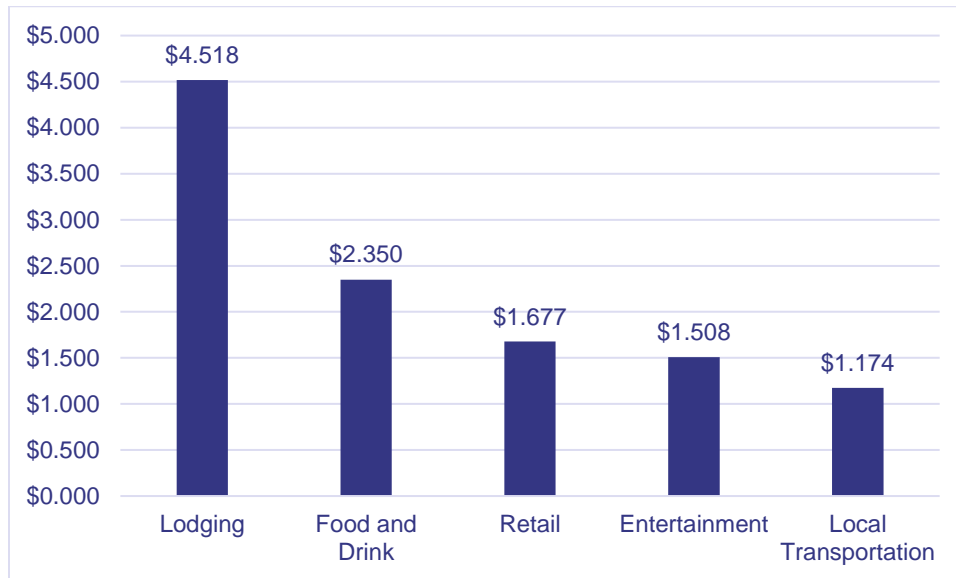
Associated City	Airport Name	FAA ID	2018 Visitors	2018 Spending per Visitor	Total Spending Prior to Accounting for Retail Margining ²
Alamosa	San Luis Valley Regional	ALS	3,379	\$475	\$1,605,000
Aspen	Aspen-Pitkin County	ASE	189,245	\$2,290	\$433,371,000
Colorado Springs	Colorado Springs Municipal	COS	378,112	\$758	\$286,609,000
Cortez	Cortez Municipal	CEZ	3,824	\$552	\$2,111,000
Denver	Denver International	DEN	9,853,919	\$998	\$9,834,211,000
Durango	Durango-La Plata County	DRO	94,058	\$1,200	\$112,870,000
Eagle	Eagle County Regional	EGE	134,159	\$1,930	\$258,928,000
Grand Junction	Grand Junction Regional	GJT	97,699	\$510	\$49,826,000
Gunnison	Gunnison-Crested Butte Regional	GUC	27,521	\$1,350	\$37,153,000
Hayden	Yampa Valley	HDN	75,131	\$1,300	\$97,670,000
Montrose	Montrose Regional	MTJ	86,591	\$1,325	\$114,733,000
Pueblo	Pueblo Memorial	PUB	3,677	\$471	\$1,732,000
Telluride	Telluride Regional	TEX	942	\$1,325	\$1,248,000
TOTALS			10,948,257		\$11,232,067,000

Note: Data subject to rounding. Columns and rows may not add due to rounding

Sources: CO Commercial Service Airport Visitor Spending Survey; Airline Data, Inc.; calculations by EBP US, 2019

Figure 5.2 displays the distribution of visitor spending based on the commercial air passenger survey. More than 40 percent of all spending goes to lodging, including hotels and motels, traditional bed and breakfasts, and temporary rentals booked through the internet. Of the additional sectors, 21 percent is in food and drinking establishments (including take-out and deliveries), 15 percent is devoted to entertainment, 13 percent to local transportation, and 10 percent for retail purchases.

Figure 5.2. Direct Visitor Spending by Commercial Visitors (Millions)



Note: Data subject to rounding.

Sources: CO Commercial Visitor Spending Survey, Airline Data, Inc. and calculations by EBP, 2019

General Aviation Visitor Spending

All 70 airports in this study support GA service. Like commercial service, the analysis for GA visitors counts only out-of-state arrivals to Colorado, called “transient operations” or “true visitors.” The proportion of true visitors from all airport operations, and the number of passengers per operation, are estimates based on the GA passenger survey conducted for this study, knowledge obtained from airport managers, CDOT staff, and from FAA data sources, and are averaged according to airport classification (Table 5.5).

Table 5.5. True Visitors by Transient Operation per Airport Classification

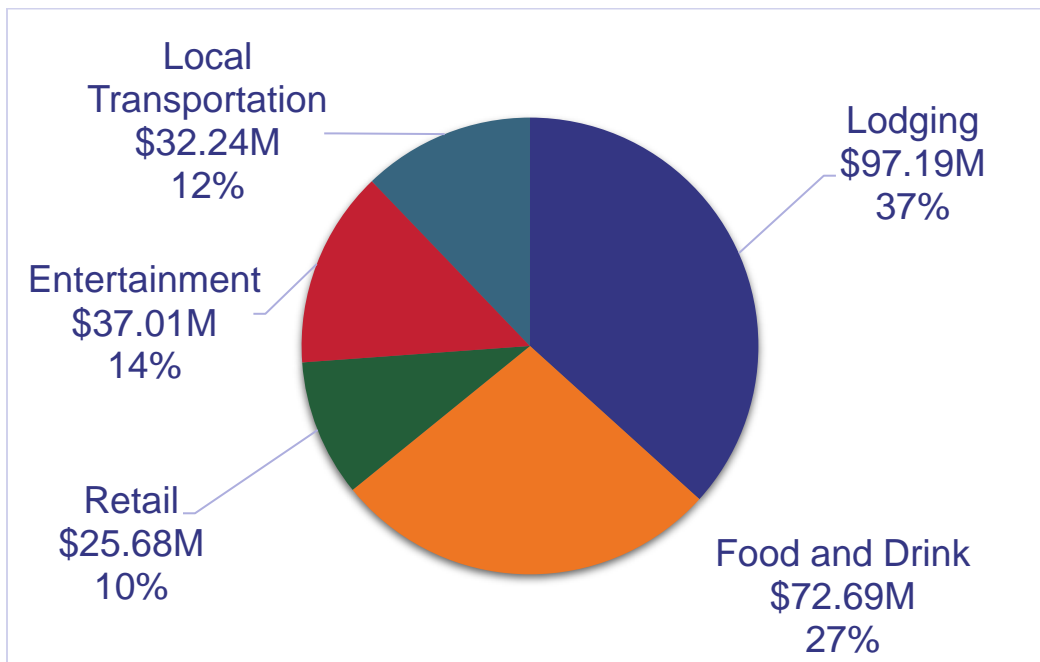
Airport Classification	True Visitors per Transient Operation
Commercial Service	4.8
GA-National	6.0
GA-Regional	5.0
GA-Local	3.5
GA-Community	3.0
GA-Rural	2.0

Source: Kimley Horn, 2019

Overall, about \$265 million (one-quarter of a billion dollars) were spent by GA visitors that visited Colorado in 2018. Many are business travelers who arrive for a day, conduct their business, and leave. Others are vacationers who arrive to enjoy the amenities that Colorado offers or simply attend a major event. The breakout of GA visitor spending by sector is found in Figure 5.3. Overall, the profile of visitor spending shows lodging slightly less than by commercial service airport visitors at 37 percent of

all spending, while 27 percent of GA visitors’ spending was directed to food and drinking establishments compared to 21 percent for commercial service airport visitors. Spending by GA visitors on retail, entertainment, and local transportation were equivalent to Colorado visitors arriving via commercial airlines. The big difference between GA and commercial service airport visitor spending, in terms of impact on the Colorado economy, is that GA spending is based on 599,000 visitors spending an average of \$442 each, while more than one million commercial service visitors spent on average more than \$1,100 per visitor per visit.

Figure 5.3. GA Visitor Spending by Sector



Note: Data subject to rounding.

Sources: GA Visitor Spending Survey; Airline Data, Inc.; calculations by EBP US, 2019

Economic Impacts of Visitor Spending

In 2018, out-of-state commercial service and GA visitors spent more than \$20 billion in the Colorado economy, which ultimately supported nearly 200,000 jobs after multiplier effects are considered. This spending is the equivalent of \$20.2 billion added to the Colorado economy after accounting for the impacts of retail margining.

Table 5.6 shows that the total impact of commercial service and GA passengers’ spending in Colorado accounts for nearly \$7 billion in payroll, almost \$12 billion in value added, and more than \$20 billion in business revenues. Approximately 65 percent of all jobs are generated by direct visitor spending, compared to 57 percent of payroll impacts, 56 percent of value added, and 53 percent of total business revenues after retail margins are calculated.

The relatively high ratio of direct jobs and low ratio of revenues are because the hospitality sector includes a high number of part time and minimum or near minimum wage jobs compared to the

economy as a whole. The average payroll for visitor spending is \$30,000 for direct jobs, \$45,000 for jobs related to supplier sales, and \$41,000 for jobs related to income re-spending.

Table 5.6. Economic Impacts of Visitor Spending

	Jobs	Payroll	Value Added	Business Revenues After Margined Effect
Direct	128,851	\$3,892,795,000	\$6,575,748,000	\$10,700,664,000
Supplier Sales	31,706	\$1,431,813,000	\$2,301,641,000	\$4,410,184,000
Income Re-spending	37,304	\$1,526,345,000	\$2,808,775,000	\$5,120,168,000
TOTAL	197,861	\$6,850,953,000	\$11,686,164,000	\$20,231,016,000

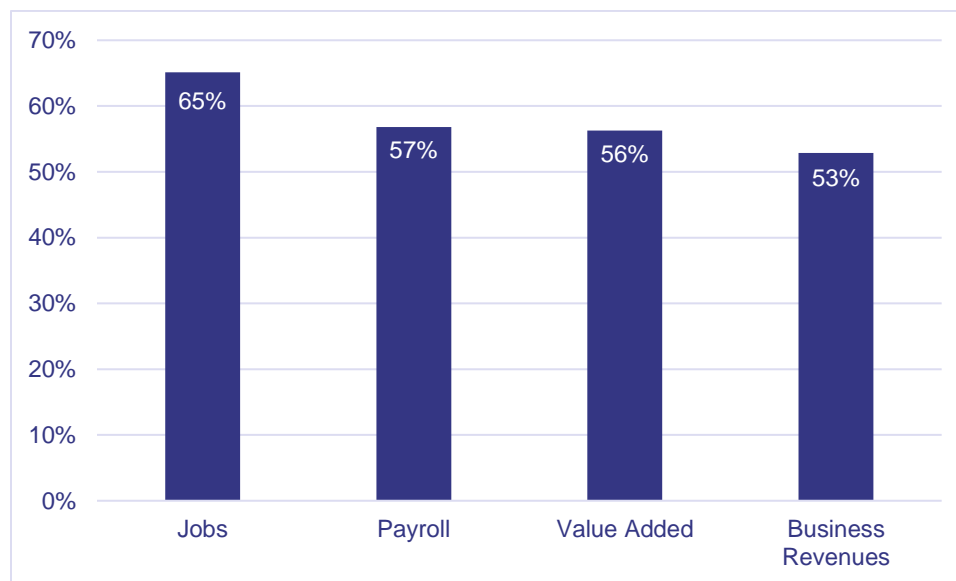
Note: Columns and rows may not add due to rounding.

See footnote #2 above for a discussion of margined effects and economic impacts.

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Figure 5.4 presents direct visitor spending impacts as a proportion of total impacts including multipliers.

Figure 5.4. Direct Economic Impacts of Visitor Spending as a Share of Total Visitor Spending Impacts



Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

5.1.1.3. Off-Airport Cargo

As presented in **Chapter 4. The Economic Role of Air Cargo**, beyond creating impacts of their own as a matter of their operation, Colorado airports play an additional critical role in the state economy by enabling manufacturers and agricultural producers to transport commodities and finished goods to customers located in both long-distance domestic and international markets. The economic impact of air cargo documents the off-airport activities that are supported by air cargo services at airports. Air cargo’s “off-airport related impacts” are the \$2.7 billion in business revenues earned due to these



long-distance sales, which are earned by a wide range of manufacturing and agriculture companies that rely on Colorado’s airports to ship products out-of-state. After accounting for downstream supplier sales and income re-spending, the total contribution of air cargo to the state economy is almost 15,000 jobs and \$4.4 billion in business revenues. **Table 5.7** provides a summary of total domestic and international air cargo-related economic impacts for Colorado.²¹

Table 5.7. Economic Impacts of Off-Airport Cargo Activity

	Jobs	Payroll	Value Added	Business Revenues
Direct	6,079	\$672,030,000	\$1,174,293,000	\$2,699,044,000
Supplier Sales	3,493	\$293,738,000	\$462,488,000	\$809,087,000
Income Re-spending	4,988	\$248,390,000	\$524,712,000	\$881,530,000
TOTAL	14,560	\$1,214,158,000	\$2,161,493,000	\$4,389,661,000

Note: Columns and rows may not add due to rounding.

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

5.1.2. Impacts by Measure

This section presents greater detail regarding the economic impacts of Colorado’s aviation system in terms of direct impacts, as well as the multiplier effects of supplier sales and income re-spending incurred in Colorado because of direct business revenues. This section reports statewide direct impacts by airport and total impacts by airport.

5.1.2.1. Direct Impacts by Airport

Table 5.8 presents direct impacts to jobs, payroll, value added, and business revenues by airport, in descending order by business revenues. The top 10 airports on this list account for over 97 percent of direct impacts across the four types of impacts, and the top two—DEN and COS—account for around 86 percent of direct impacts of jobs, payroll, and value added and 83 percent of direct business revenues.

²¹ **Table 4.3** presented the impacts for COS, DEN, and the rest of state along with total statewide impacts that are reflected here. Calculations are not available for all airports given that DEN and COS account for the majority of air cargo shipped out-of-state.

Table 5.8. Direct Impacts by Airport Ranked by Business Revenues (Ordered According to Business Revenues)

Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues
Denver	Denver International	DEN	147,410	\$6,239,985,000	\$10,458,092,000	\$17,861,594,000
Colorado Springs	Colorado Springs Municipal	COS	15,201	\$1,014,222,000	\$1,480,640,000	\$1,949,773,000
Denver	Centennial	APA	3,876	\$298,914,000	\$489,084,000	\$1,184,358,000
Aspen	Aspen-Pitkin County	ASE	4,839	\$204,928,000	\$334,466,000	\$533,428,000
Denver	Rocky Mountain Metropolitan	BJC	1,318	\$101,984,000	\$160,781,000	\$444,841,000
Grand Junction	Grand Junction Regional	GJT	1,636	\$90,209,000	\$150,476,000	\$437,482,000
Eagle	Eagle County Regional	EGE	3,150	\$133,338,000	\$212,143,000	\$343,903,000
Montrose	Montrose Regional	MTJ	1,812	\$56,531,000	\$97,522,000	\$173,252,000
Hayden	Yampa Valley	HDN	1,727	\$59,275,000	\$93,726,000	\$163,336,000
Durango	Durango-La Plata County	DRO	1,799	\$59,099,000	\$92,770,000	\$156,874,000
Fort Collins/Loveland	Northern Colorado Regional	FNL	611	\$26,786,000	\$41,123,000	\$89,275,000
Greeley	Greeley-Weld County	GXY	587	\$24,470,000	\$36,682,000	\$72,319,000
Gunnison	Gunnison-Crested Butte Regional	GUC	669	\$24,451,000	\$37,080,000	\$64,639,000
Denver	Colorado Air and Space Port	CFO	539	\$30,217,000	\$41,202,000	\$64,522,000
Pueblo	Pueblo Memorial	PUB	427	\$20,839,000	\$24,937,000	\$52,982,000
Longmont	Vance Brand	LMO	258	\$14,275,000	\$19,280,000	\$35,971,000
Boulder	Boulder Municipal	BDU	112	\$8,451,000	\$12,651,000	\$29,430,000
Telluride	Telluride Regional	TEX	243	\$9,114,000	\$13,549,000	\$26,681,000
Colorado Springs	Meadow Lake	FLY	149	\$6,655,000	\$9,738,000	\$26,371,000
Rifle	Rifle Garfield County	RIL	144	\$9,220,000	\$11,981,000	\$21,291,000
Erie	Erie Municipal	EIK	115	\$5,825,000	\$9,172,000	\$20,773,000
Alamosa	San Luis Valley Regional	ALS	114	\$4,682,000	\$7,410,000	\$18,448,000
Glenwood Springs	Glenwood Springs Municipal	GWS	73	\$2,952,000	\$7,123,000	\$17,886,000
Steamboat Springs	Steamboat Springs	SBS	94	\$4,149,000	\$6,096,000	\$12,841,000
Akron	Colorado Plains Regional	AKO	59	\$3,008,000	\$4,766,000	\$8,600,000
Buena Vista	Central Colorado Regional	AEJ	40	\$1,585,000	\$2,549,000	\$7,536,000
Cortez	Cortez Municipal	CEZ	63	\$3,347,000	\$4,426,000	\$7,520,000

Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues
La Junta	La Junta Municipal	LHX	31	\$1,155,000	\$1,700,000	\$5,402,000
Durango	Animas Airpark	00C	19	\$1,981,000	\$2,662,000	\$5,372,000
Canon City	Fremont County	1V6	27	\$1,444,000	\$1,817,000	\$4,686,000
Craig	Craig-Moffat	CAG	24	\$1,015,000	\$1,873,000	\$4,092,000
Salida	Harriet Alexander Field	ANK	21	\$844,000	\$1,328,000	\$3,694,000
Delta	Blake Field	AJZ	25	\$1,634,000	\$1,903,000	\$3,572,000
Pagosa Springs	Stevens Field	PSO	19	\$1,807,000	\$2,080,000	\$3,389,000
Yuma	Yuma Municipal	2V6	33	\$1,726,000	\$1,972,000	\$2,950,000
Del Norte	Astronaut Kent Rominger	RCV	14	\$492,000	\$933,000	\$2,874,000
Trinidad	Perry Stokes	TAD	22	\$1,059,000	\$1,322,000	\$2,723,000
Fort Morgan	Fort Morgan Municipal	FMM	28	\$1,087,000	\$1,530,000	\$2,710,000
Leadville	Lake County	LXV	15	\$728,000	\$1,030,000	\$2,276,000
Rangely	Rangely	4V0	19	\$911,000	\$1,227,000	\$2,252,000
Holyoke	Holyoke	HEQ	21	\$1,165,000	\$1,380,000	\$2,079,000
Nucla	Hopkins Field	AIB	17	\$927,000	\$1,005,000	\$2,032,000
Wray	Wray Municipal	2V5	23	\$1,272,000	\$1,536,000	\$2,023,000
Burlington	Kit Carson County	ITR	21	\$874,000	\$1,248,000	\$1,863,000
Crawford	Crawford	99V	11	\$925,000	\$895,000	\$1,582,000
Lamar	Lamar Municipal	LAA	11	\$718,000	\$846,000	\$1,532,000
Meeker	Meeker/Coulter Field	EEO	12	\$462,000	\$703,000	\$1,277,000
Sterling	Sterling Municipal	STK	9	\$512,000	\$723,000	\$1,200,000
Kremmling	Mc Elroy Airfield	20V	9	\$345,000	\$562,000	\$1,067,000
Delta	Westwinds	D17	7	\$506,000	\$583,000	\$1,028,000
Calhan	Calhan	5V4	3	\$138,000	\$197,000	\$788,000
Limon	Limon Municipal	LIC	7	\$282,000	\$397,000	\$672,000
Creede	Mineral County Memorial	C24	4	\$165,000	\$250,000	\$660,000
Granby	Granby-Grand County	GNB	6	\$230,000	\$321,000	\$616,000
Monte Vista	Monte Vista Municipal	MVI	7	\$266,000	\$299,000	\$551,000

Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues
Walsenburg	Spanish Peaks Airfield	4V1	6	\$177,000	\$238,000	\$484,000
Brush	Brush Municipal	7V5	1	\$79,000	\$303,000	\$386,000
Eads	Eads Municipal	9V7	10	\$268,000	\$282,000	\$329,000
Paonia	North Fork Valley	7V2	2	\$134,000	\$172,000	\$297,000
Las Animas	Las Animas-Bent County	7V9	4	\$132,000	\$114,000	\$239,000
Center	Leach	1V8	4	\$95,000	\$105,000	\$209,000
Springfield	Springfield Municipal	8V7	4	\$71,000	\$84,000	\$130,000
Westcliffe	Silver West	C08	3	\$26,000	\$45,000	\$97,000
Julesburg	Julesburg Municipal	7V8	2	\$77,000	\$67,000	\$87,000
Holly	Holly	K08	3	\$47,000	\$54,000	\$77,000
Walden	Walden-Jackson County	33V	6	\$27,000	\$35,000	\$61,000
Blanca	Blanca	05V	2	\$14,000	\$17,000	\$34,000
Saguache	Saguache Municipal	04V	1	\$11,000	\$12,000	\$23,000
Haxtun	Haxtun Municipal	17V	3	\$2,000	\$8,000	\$11,000
La Veta	Cuchara Valley	07V	1	\$2,000	\$1,000	\$5,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019



5.1.2.2. Total Impacts by Airport

Total impacts are comprised of both direct impacts (presented above) and multiplier effects (supplier sales and income re-spending). **Table 5.9** presents total statewide impacts to jobs, payroll, value added, and business revenues by airport, in descending order by business revenues. As with direct impacts discussed in the previous section, the top 10 airports on this list account for over 97 percent of total statewide impacts across the four types of impacts—with DEN and COS accounting for around 85 percent of impacts of each type. However, within the top 10 (ranked by business revenues), BJC, Grand Junction Regional (GJT), and MTJ rank higher as measured by total statewide impacts (**Table 5.9**) than by direct impacts (**Table 5.8**).

Table 5.9. Total Statewide Impacts by Airport (Ordered According to Business Revenues)

Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues
Denver	Denver International	DEN	259,084	\$11,110,914,000	\$18,724,455,000	\$33,509,152,000
Colorado Springs	Colorado Springs Municipal	COS	25,093	\$1,523,173,000	\$2,359,205,000	\$3,426,931,000
Denver	Centennial	APA	10,341	\$593,537,000	\$974,495,000	\$2,087,182,000
Aspen	Aspen-Pitkin County	ASE	7,886	\$363,569,000	\$603,899,000	\$988,982,000
Denver	Rocky Mountain Metropolitan	BJC	3,312	\$193,442,000	\$312,144,000	\$730,848,000
Grand Junction	Grand Junction Regional	GJT	3,399	\$189,721,000	\$312,318,000	\$710,960,000
Eagle	Eagle County Regional	EGE	5,147	\$237,607,000	\$388,976,000	\$642,042,000
Montrose	Montrose Regional	MTJ	2,850	\$111,356,000	\$188,900,000	\$327,264,000
Hayden	Yampa Valley	HDN	2,724	\$111,500,000	\$181,887,000	\$311,882,000
Durango	Durango-La Plata County	DRO	2,707	\$107,011,000	\$173,791,000	\$293,694,000
Fort Collins/Loveland	Northern Colorado Regional	FNL	1,072	\$51,914,000	\$83,188,000	\$160,874,000
Greeley	Greeley-Weld County	GXY	926	\$42,392,000	\$67,373,000	\$125,132,000
Gunnison	Gunnison-Crested Butte Regional	GUC	1,054	\$44,857,000	\$71,083,000	\$121,878,000
Denver	Colorado Air and Space Port	CFO	915	\$46,371,000	\$69,043,000	\$116,428,000
Pueblo	Pueblo Memorial	PUB	775	\$38,661,000	\$55,209,000	\$103,708,000
Longmont	Vance Brand	LMO	490	\$24,097,000	\$36,439,000	\$68,036,000
Boulder	Boulder Municipal	BDU	299	\$16,766,000	\$26,276,000	\$54,732,000
Telluride	Telluride Regional	TEX	414	\$18,270,000	\$28,523,000	\$51,884,000
Colorado Springs	Meadow Lake	FLY	273	\$13,442,000	\$20,865,000	\$45,010,000
Rifle	Rifle Garfield County	RIL	277	\$16,348,000	\$23,654,000	\$40,945,000
Glenwood Springs	Glenwood Springs Municipal	GWS	202	\$10,029,000	\$18,338,000	\$36,674,000
Erie	Erie Municipal	EIK	214	\$11,231,000	\$18,087,000	\$35,925,000
Alamosa	San Luis Valley Regional	ALS	229	\$10,794,000	\$17,531,000	\$35,298,000
Steamboat Springs	Steamboat Springs	SBS	184	\$9,021,000	\$14,029,000	\$26,113,000
Akron	Colorado Plains Regional	AKO	102	\$5,399,000	\$8,655,000	\$15,090,000
Buena Vista	Central Colorado Regional	AEJ	90	\$4,212,000	\$6,983,000	\$14,853,000
Cortez	Cortez Municipal	CEZ	111	\$5,905,000	\$8,639,000	\$14,619,000
La Junta	La Junta Municipal	LHX	65	\$2,912,000	\$4,716,000	\$10,388,000
Durango	Animas Airpark	00C	49	\$3,584,000	\$5,309,000	\$9,815,000

Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues
Canon City	Fremont County	1V6	51	\$2,729,000	\$3,967,000	\$8,288,000
Craig	Craig-Moffat	CAG	50	\$2,411,000	\$4,263,000	\$8,103,000
Delta	Blake Field	AJZ	48	\$2,861,000	\$3,912,000	\$6,939,000
Salida	Harriet Alexander Field	ANK	44	\$2,068,000	\$3,278,000	\$6,937,000
Pagosa Springs	Stevens Field	PSO	42	\$2,998,000	\$4,007,000	\$6,629,000
Del Norte	Astronaut Kent Rominger	RCV	31	\$1,361,000	\$2,440,000	\$5,383,000
Yuma	Yuma Municipal	2V6	49	\$2,557,000	\$3,411,000	\$5,375,000
Fort Morgan	Fort Morgan Municipal	FMM	44	\$1,932,000	\$2,939,000	\$5,077,000
Trinidad	Perry Stokes	TAD	36	\$1,789,000	\$2,563,000	\$4,772,000
Rangely	Rangely	4V0	34	\$1,651,000	\$2,528,000	\$4,440,000
Leadville	Lake County	LXV	29	\$1,463,000	\$2,227,000	\$4,286,000
Holyoke	Holyoke	HEQ	34	\$1,818,000	\$2,473,000	\$3,901,000
Nucla	Hopkins Field	AIB	29	\$1,565,000	\$2,060,000	\$3,815,000
Wray	Wray Municipal	2V5	35	\$1,858,000	\$2,558,000	\$3,745,000
Burlington	Kit Carson County	ITR	32	\$1,428,000	\$2,203,000	\$3,469,000
Crawford	Crawford	99V	23	\$1,582,000	\$1,926,000	\$3,299,000
Lamar	Lamar Municipal	LAA	22	\$1,307,000	\$1,780,000	\$3,077,000
Meeker	Meeker/Coulter Field	EEO	19	\$889,000	\$1,411,000	\$2,473,000
Sterling	Sterling Municipal	STK	17	\$916,000	\$1,409,000	\$2,349,000
Kremmling	Mc Elroy Airfield	20V	16	\$750,000	\$1,211,000	\$2,151,000
Delta	Westwinds	D17	14	\$896,000	\$1,224,000	\$2,098,000
Limon	Limon Municipal	LIC	11	\$491,000	\$750,000	\$1,263,000
Calhan	Calhan	5V4	6	\$302,000	\$459,000	\$1,227,000
Granby	Granby-Grand County	GNB	10	\$451,000	\$678,000	\$1,214,000
Creede	Mineral County Memorial	C24	7	\$325,000	\$510,000	\$1,094,000
Monte Vista	Monte Vista Municipal	MVI	10	\$449,000	\$600,000	\$1,054,000
Walsenburg	Spanish Peaks Airfield	4V1	8	\$308,000	\$459,000	\$848,000
Brush	Brush Municipal	7V5	4	\$236,000	\$552,000	\$800,000
Eads	Eads Municipal	9V7	13	\$359,000	\$445,000	\$601,000
Paonia	North Fork Valley	7V2	4	\$239,000	\$345,000	\$586,000
Las Animas	Las Animas-Bent County	7V9	6	\$211,000	\$241,000	\$450,000

Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues
Center	Leach	1V8	6	\$181,000	\$240,000	\$432,000
Springfield	Springfield Municipal	8V7	6	\$112,000	\$153,000	\$245,000
Westcliffe	Silver West	C08	5	\$60,000	\$99,000	\$188,000
Julesburg	Julesburg Municipal	7V8	4	\$111,000	\$122,000	\$179,000
Holly	Holly	K08	5	\$72,000	\$95,000	\$145,000
Walden	Walden-Jackson County	33V	8	\$48,000	\$70,000	\$119,000
Blanca	Blanca	05V	4	\$27,000	\$37,000	\$68,000
Saguache	Saguache Municipal	04V	3	\$21,000	\$27,000	\$48,000
Haxtun	Haxtun Municipal	17V	5	\$6,000	\$15,000	\$22,000
La Veta	Cuchara Valley	07V	3	\$4,000	\$4,000	\$10,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

5.1.3. Supplier Sales/Income Re-spending Impacts

This section describes how multiplier effects associated with on-airport and visitor spending flow throughout the Colorado economy. Multiplier effects are made up of two streams of revenues:

- **Supplier Sales:** Circulation of dollars generated by the purchase of goods/services by direct businesses (businesses that generate direct impacts) from other Colorado businesses;
- **Income Re-spending:** Household spending from payroll earned by workers at businesses that generate direct and supplier sale effects.

Table 5.10 presents a summary of multiplier effects relative to total economic impacts. With approximately 65,400 jobs from supplier sales, and more than 86,600 jobs from income re-spending, total multiplier effects to jobs exceed 152,000, with associated payroll of more than \$7 billion. Total multiplier effects also include nearly \$12.0 billion in value added and \$22.0 billion in business revenues. Across types of impacts, multiplier effects account for around 44 percent of total economic impacts, and the implied multiplier effect is about 1.8 for all economic impact measures.

Table 5.10. Multiplier Effects as a Share of Total Economic Impacts

	Jobs	Payroll	Value Added	Business Revenues
Direct Impacts	193,653	\$9,156,373,000	\$15,067,617,000	\$26,592,401,000
<i>Multiplier Effects</i>				
Supplier Sales	65,401	\$3,385,781,000	\$5,216,787,000	\$9,876,462,000
Income Re-spending	86,608	\$3,630,881,000	\$6,740,789,000	\$12,144,336,000
Total Multiplier Effects	152,008	\$7,016,662,000	\$11,957,576,000	\$22,020,798,000
TOTAL IMPACTS	345,661	\$16,173,035,000	\$27,025,193,000	\$48,613,199,000
<i>Multiplier Effects as a % of Total Impacts</i>	44.0%	43.4%	44.2%	45.3%
<i>Implied State Multiplier Effect</i>	1.78	1.77	1.79	1.83

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

5.1.3.1. Supplier Sales/Income Re-spending Impacts to Colorado Industries

This section highlights the extent to which industries across the Colorado economy are supported by supplier sales and income re-spending that are generated from direct on-airport and visitor spending impacts. Table 5.11 presents the jobs by industry across the state attributed to these multiplier effects and Table 5.12 presents the same comparison by impacts of business revenues. Some industries, prominently real estate, rental, and leasing sectors have significant overlap in job and revenue impacts from both multiplier streams. In general, however, jobs generated due to supplier sales support business-serving sectors such as professional, scientific, and technical services, whereas income re-spending affects population-serving industries such as health care, social assistance, retail trade, and restaurants and drinking establishments.

Table 5.11. Top Industries in Colorado by Supplier Sales and Income Re-spending by Jobs

Impacts from Supplier Sales in CO			Impacts from Income Re-spending in CO		
NAICS Codes	Industry Description	Jobs Generated	NAICS Codes	Industry Description	Jobs Generated
541	Professional, Scientific, & Technical	9,539	621-624	Health Care and Social Assistance	13,077
561-562	Business Services (Admin, Support, Waste)	8,837	441-454	Retail Trade	11,843
531-533	Real Estate, Rental, & Leasing	6,407	722	Restaurants & Drinking Establishments	10,513
491-492	Couriers, Messengers, & Postal Service	4,632	811-814	Other Services	7,742
711-713	Arts, Entertainment, & Recreation	3,911	521-525	Finance & Insurance	6,714
722	Restaurants & Drinking Establishments	3,683	531-533	Real Estate, Rental, & Leasing	5,991
521-525	Finance & Insurance	3,515	541	Professional, Scientific, & Technical	5,026
487-488	Scenic & Sightseeing Transport Support	3,329	561-562	Business Services (Admin, Support, Waste)	4,640
420	Wholesale Trade	2,382	711-713	Arts, Entertainment, & Recreation	3,193
551	Management Services	2,290	611	Education Services	2,548
	Sub-Total - Top Industries	48,523		Sub-Total - Top Industries	71,287
	Sub-Total - All Other Industries	16,878		Sub-Total - All Other Industries	15,321
	TOTAL - All Industries	65,401		TOTAL - All Industries	86,608

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019



Table 5.12. Top Industries by Supplier Sales and Income Re-spending by Business Revenues

Impacts from Supplier Sales in CO			Impacts from Income Re-spending in CO		
NAICS Codes	Industry Description	Business Revenues Generated	NAICS Codes	Industry Description	Business Revenues Generated
531-533	Real Estate, Rental, & Leasing	\$1,150,632,000	531-533	Real Estate, Rental, & Leasing	\$2,388,312,000
541	Professional, Scientific, & Technical	\$1,055,835,000	521-525	Finance & Insurance	\$1,379,099,000
511-519	Media & Information	\$733,854,000	621-624	Health Care and Social Assistance	\$1,310,410,000
521-525	Finance & Insurance	\$680,239,000	441-454	Retail Trade	\$1,049,674,000
561-562	Business Services (Admin, Support, Waste)	\$662,754,000	722	Restaurants & Drinking Establishments	\$675,725,000
487-488	Scenic & Sightseeing Transport Support	\$576,506,000	511-519	Media & Information	\$649,135,000
551	Management Services	\$522,496,000	541	Professional, Scientific, & Technical	\$547,838,000
491-492	Couriers, Messengers, & Postal Service	\$484,771,000	811-814	Other Services	\$506,399,000
420	Wholesale Trade	\$471,834,000	420	Wholesale Trade	\$491,980,000
221	Utilities	\$356,770,000	561-562	Business Services (Admin, Support, Waste)	\$329,911,000
	Sub-Total - Top Industries	\$6,695,691,000		Sub-Total - Top Industries	\$9,328,483,000
	Sub-Total - All Other Industries	\$3,180,771,000		Sub-Total - All Other Industries	\$2,815,853,000
	TOTAL - All Industries	\$9,876,462,000		TOTAL - All Industries	\$12,144,336,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

5.2. Regional Impacts

As discussed above, the combined economic contribution of on-airport activity, visitor spending, and off-airport cargo reflects the total economic activity generated on airport property, as well as the subsequent multiplier effects of supplier purchases and income re-spending throughout the state. This section examines the economic contribution of airport activity on regional economies throughout the state.

5.2.1. Regional Impacts by Region

Colorado airports play an important role in their respective regional economies. Other than a special region custom-designed for DEN, the regional definitions used by the OEDIT were employed for the CEIS. The OEDIT regions were depicted previously in Figure 2.3.



Table 5.13 summarizes total economic impacts within each region. By all accounts, the special DEN region accounts for the largest share of impacts (and is the largest region), at nearly 236,900 jobs and more than \$32.5 billion in business revenues. The regions with the next highest impacts are the Denver OEDIT region that captures the other airports in the metropolitan Denver area, and Pikes Peak where COS is located. **Appendix B** provides greater detail regarding regional economic impacts, including total impacts by airport within each region. It is important to recognize that regional impacts are lower than statewide impacts as the regional impacts only consider supplier sales and income re-spending that occurs within the region as opposed to those that occur throughout the state.

Table 5.13. Total Regional Impacts

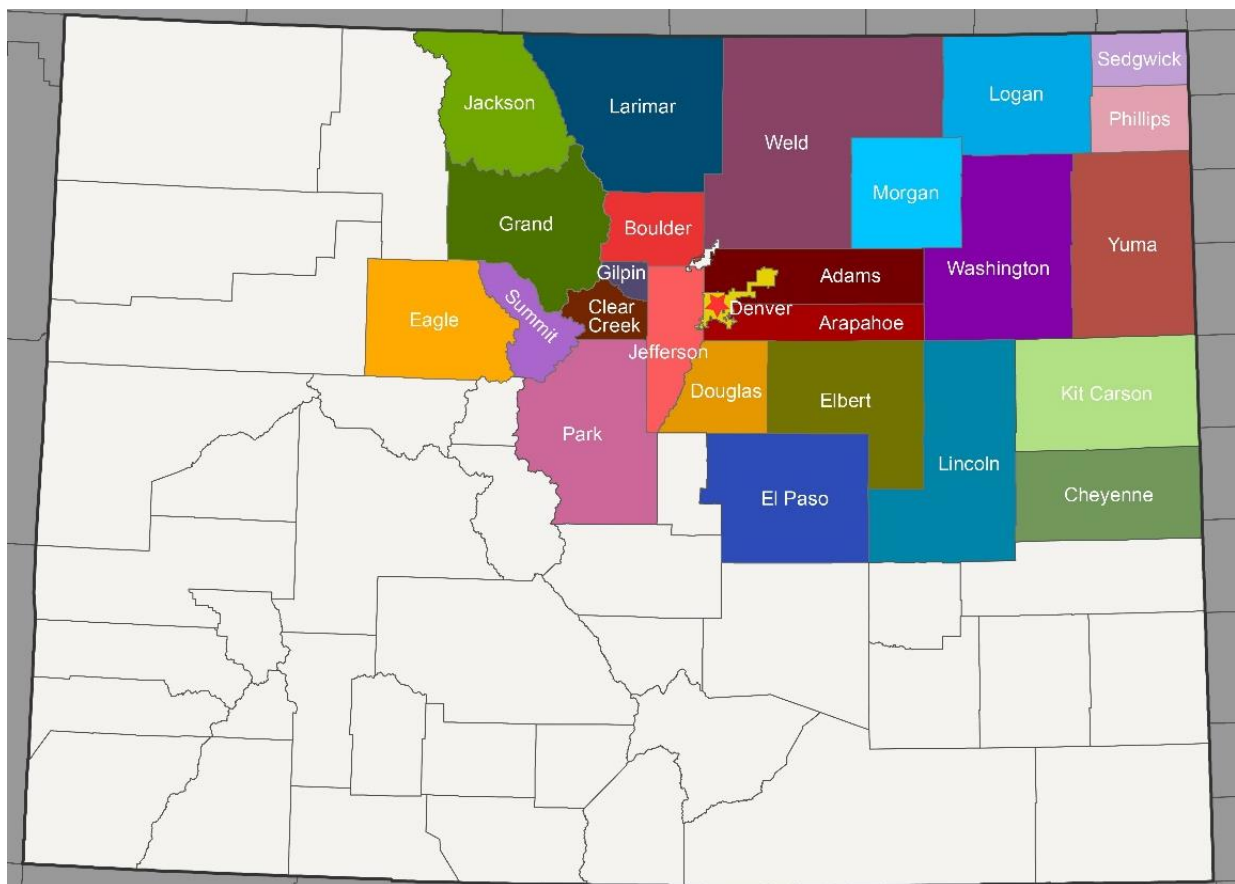
#	Region	Jobs	Payroll	Value Added	Business Revenues
1	Golden Plains	241	\$11,208,000	\$16,200,000	\$27,503,000
2	Northern Colorado	1,916	\$82,229,000	\$130,562,000	\$260,564,000
3	Denver (excluding DEN)	13,435	\$846,120,000	\$1,371,889,000	\$2,948,159,000
	DEN (special region)	236,852	\$10,782,279,000	\$18,200,119,000	\$32,509,564,000
4	Pikes Peak	22,744	\$1,325,933,000	\$2,037,412,000	\$2,931,499,000
5	Central Plains	36	\$1,360,000	\$2,054,000	\$3,337,000
6	Southeast Colorado	90	\$3,219,000	\$4,552,000	\$10,719,000
7	Pueblo	640	\$29,249,000	\$39,315,000	\$79,123,000
8	San Louis Valley	238	\$9,123,000	\$14,757,000	\$34,029,000
9	Southwest	2,661	\$96,389,000	\$154,587,000	\$271,546,000
10	Central Western Slope	3,934	\$136,351,000	\$226,943,000	\$414,027,000
11	Northwest Colorado	6,124	\$267,189,000	\$440,950,000	\$967,181,000
12	Rocky Mountain Resort	10,853	\$470,475,000	\$790,055,000	\$1,287,705,000
13	Upper Arkansas	172	\$6,697,000	\$10,472,000	\$25,781,000
14	Raton Basin	39	\$1,504,000	\$2,076,000	\$4,261,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

5.3. Impacts of DEN

The systemwide results in the prior tables demonstrate the key role of DEN in contributing to the economic impacts of Colorado’s aviation system. DEN is Colorado’s only large hub airport and is the fifth largest airport in the U.S. by passenger enplanements.²² As such, the catchment area of DEN extends beyond the nine-county Denver region identified by OEDIT (Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Gilpin, and Jefferson counties) and encompasses 26 counties in Colorado, shown in **Figure 5.5**. This region was developed in concert with DEN staff based on where employees live and where passengers travel to and from to use DEN as an arrival and departure airport (as opposed to connecting passengers).

Figure 5.5. Customized DEN Region



Source: DEN; EBP US, 2018

In 2018, DEN accounted for 62 percent of total statewide direct on-airport jobs and for 85 percent of total visitor spending (87 percent of spending by commercial service airport visitors based on having accounted for 90 percent²³ of all commercial air visitor arrivals to the state).

²² FAA, CY18-Commercial Service Enplanements

²³ Source: Airline Data Inc.

Table 5.14 summarizes the direct impacts of DEN in terms of jobs, payroll, value added, and business revenues, and Table 5.15 summarizes the total statewide impact of DEN. In addition, Figure 5.6 illustrates the importance of DEN in generating jobs, payroll, value added, and business revenues within the state airport system.

Table 5.14. Direct Economic Impacts of DEN on Colorado's Economy

Category	Jobs	Payroll	Value Added	Business Revenues
On-Airport Activity	36,455	\$2,918,784,000	\$4,877,687,000	\$8,754,263,000
Visitor Spending	110,955	\$3,321,201,000	\$5,580,405,000	\$9,107,331,000
TOTAL	147,410	\$6,239,985,000	\$10,458,092,000	\$17,861,594,000

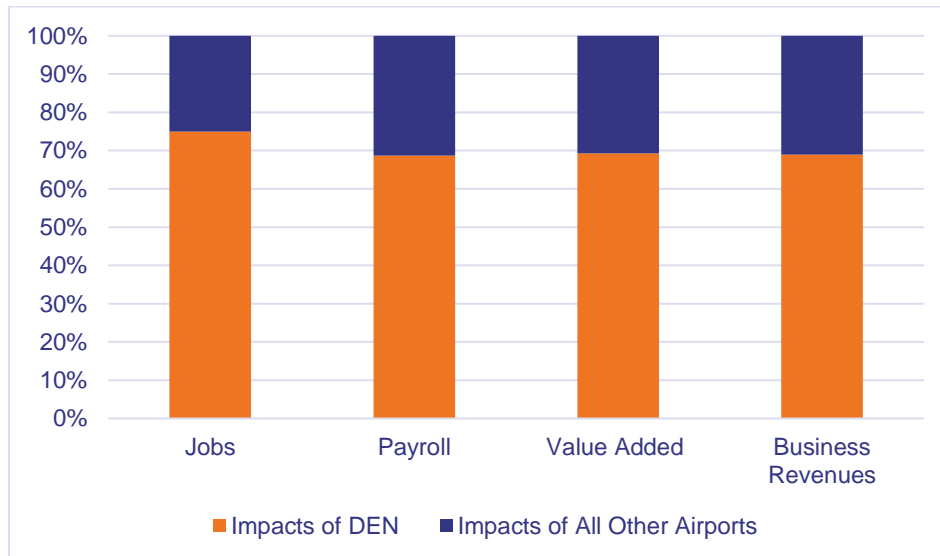
Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Table 5.15. Total Economic Impacts of DEN

Category	Jobs	Payroll	Value Added	Business Revenues
Direct	147,410	\$6,239,985,000	\$10,458,092,000	\$17,861,594,000
Supplier Sales	50,652	\$2,431,689,000	\$3,766,312,000	\$7,342,057,000
Income Re-spending	61,022	\$2,439,240,000	\$4,500,051,000	\$8,305,501,000
TOTAL	259,084	\$11,110,914,000	\$18,724,455,000	\$33,509,152,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Figure 5.6. Economic Impacts of DEN Relative to All Other Airports



Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Chapter 6. Tax Revenue Analysis

6.1. Introduction and Summary Results

This section of the CEIS estimates annual tax revenues that state and local governments realized from direct activity at commercial service and GA airports and from the first-round spending by visitors. As with other aspects of economic impact, multiple rounds of spending (supplier sales and income re-spending) result in additional revenues to the tax base.

In 2018, Colorado airports and airport-supported activities contributed an estimated \$1.8 billion in sales and state income tax revenues. This contribution is up substantially from the 2013 aviation economic impact study which estimated direct tax revenues in these categories at \$1.2 billion. The changes in tax revenues are attributable to a combination of factors including:

- Exceptional growth at DEN and many of the other commercial service airports in terms of passenger activity, visitor spending, and tenant activity
- Increases in local sales tax rates
- Inflation in average wages subject to state income taxes
- A larger proportion of received wages after social security benefits that are taxable (0.83 percent in 2012 versus 0.86 percent in 2018)
- Reductions to estimates of GA visitor activity caused by refinements to the methodology that distinguished transient visitors from the whole category of itinerant traffic (which can also include local passengers)

This chapter is organized to discuss:

- Taxable aviation activity
- Relevant taxes
- Results of the analysis

6.2. Taxable Aviation Activity

Taxable aviation activity comes from a wide variety of sources. For example, when a pilot purchases fuel for an aircraft, the fuel is subject to aviation fuel taxes. On-airport concessions collect sales taxes for food or goods sold directly to customers. Rental car companies also charge sales tax on rentals (in addition to other fees). Supplies purchased by on-airport businesses for products they are making or for resale to customers are sales tax exempt.

This study also estimates purchases of goods and services off-airport by visitors that arrive by air at Colorado airports. Visitor expenditures are the largest single category of aviation activity that generates tax revenues to state and local governments. These activities include lodging, restaurants, entertainment, local transportation, and retail sales off-airport.

Another significant component of direct tax generation is income and sales tax generated by employees that work either on the airport or at establishments in communities frequented by visitors who arrived by air.

Figure 6.1 summarizes the most important aviation activities that contribute to state and local tax basis and that are included in this analysis.

Figure 6.1. Aviation Activities Subject to Taxes



Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020

6.3. Relevant Taxes

For this tax analysis, four types of taxes come into play with on-airport and visitor activities:

- Aviation fuel tax
- Sales and use tax
- Lodging tax
- State income tax

There are other taxes such as corporate tax, property taxes, and federal income taxes that were not included in the statewide analysis.

6.3.1. Aviation Fuel Taxes

The following section details state aviation taxes specific to fuel flowage at Colorado airports. Per section 18 of Title X of the Colorado State Constitution, and C.R.S. 43-10-109, 100% of aviation fuel tax revenues are credited to the aviation fund exclusively for aviation uses.

6.3.1.1. Overview of Aviation Fuel Taxes

Aviation fuel taxes in Colorado include an excise tax and a sales tax as follows:

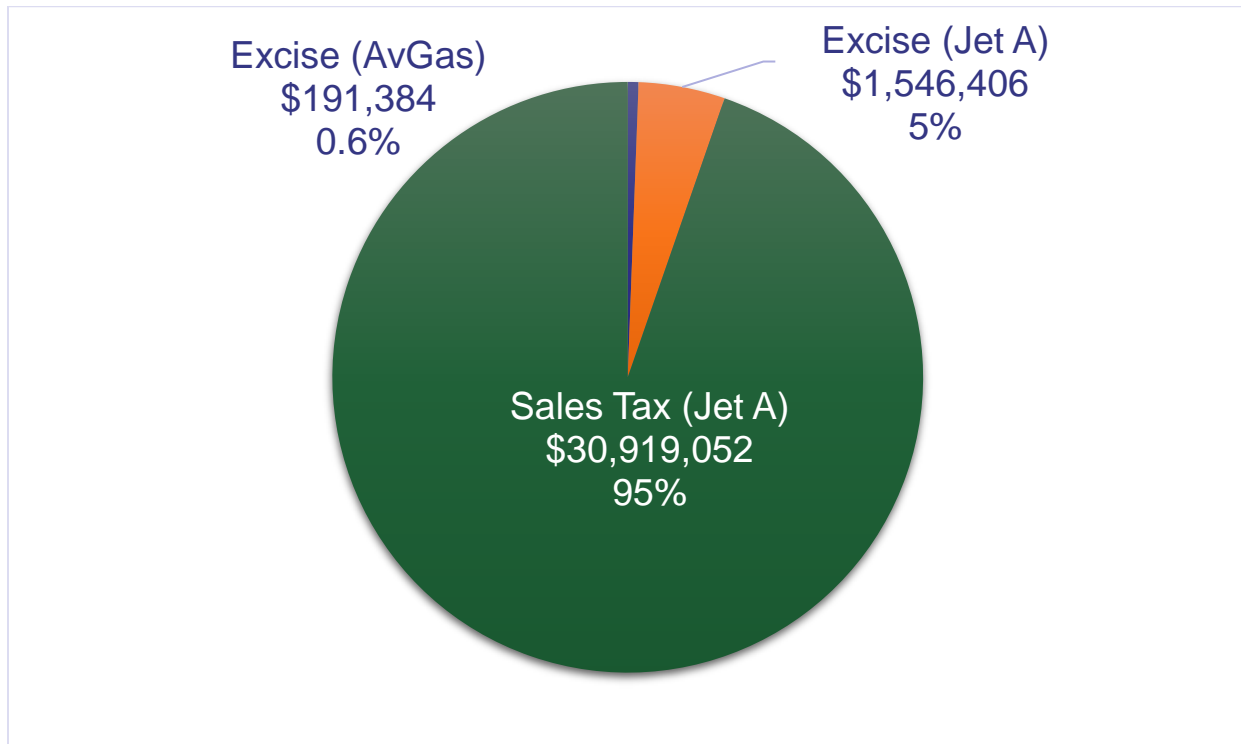
- Excise Tax on AvGas - 6 cents per gallon
- Excise Tax on jet fuel for private aircraft - 4 cents per gallon
- Sales Tax on jet fuel for both private aircraft and commercial aircraft - 2.9 percent of the purchase value

Excise tax receipts directly correlate with gallons of fuel sold; sales tax receipts fluctuate with the price of fuel and the amount of fuel purchased. Of the two taxes, sales tax on jet fuel is the largest revenue source, representing approximately 95 percent of fuel tax receipts, with DEN generating most of the sales tax on fuel purchased for commercial operations.

6.3.1.2. Statewide Aviation Fuel Sales and Tax Revenues

Figure 6.2 shows the revenue collected by tax source in fiscal year (FY) 2019 which began on July 1, 2018 and ended on June 30, 2019. In this FY, a total of \$32.7 million in aviation fuel tax revenues were collected.

Figure 6.2. Aviation Fuel Tax Revenues, FY 2019



Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020

Table 6.1, Table 6.2, and Table 6.3 show aviation fuel gallons sold, tax revenues received, and disbursements to airports of tax revenues from FY 2015 to FY 2019. Looking at trends, it is best to view the data over multiple years. Tax revenues received, and gallons sold do show year-to-year fluctuations because of changes in fuel prices, incomplete airport filings in relation to reporting both gallons sold and tax payments in the same time period, and vendors reconciling prior under or overpaid filings.

Table 6.1. Gallons of Aviation Fuel Sold as Reported to CDOT

	Gallons Sold			Total
	Excise (AvGas)	Excise (Jet A)	Sales Tax (Jet A)	
FY 15	2,651,404	26,104,004	494,417,918	523,173,326
FY 16	2,902,324	34,738,039	456,412,200	494,052,563
FY 17	2,752,901	31,981,979	532,716,231	567,451,111
FY 18	3,398,353	40,469,562	536,879,768	580,747,683
FY 19	3,189,736	38,660,161	625,096,130	666,946,027

Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020



Table 6.2. Aviation Fuel Tax Revenues Received

Revenues Collected				
	Excise (AvGas)	Excise (Jet A)	Sales Tax (Jet A)	Total
FY15	\$159,084	\$1,044,160	\$29,966,670	\$31,169,914
FY16	\$174,139	\$1,389,522	\$16,412,583	\$17,976,244
FY17	\$165,174	\$1,279,279	\$18,819,602	\$20,264,055
FY18	\$203,901	\$1,618,782	\$22,936,795	\$24,759,478
FY19	\$191,384	\$1,546,406	\$30,919,052	\$32,656,842

Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020

Table 6.3. Fuel Tax Revenues Disbursed to Airports

Revenues Disbursed				
	Excise (AvGas)	Excise (Jet A)	Sales Tax (Jet A)	Total
FY15	\$106,056	\$1,044,160	\$19,478,336	\$20,628,552
FY16	\$116,093	\$1,389,522	\$10,668,179	\$12,173,793
FY17	\$110,116	\$1,279,279	\$12,281,356	\$13,670,752
FY18	\$135,934	\$1,618,782	\$14,928,598	\$16,683,315
FY19	\$127,589	\$1,546,406	\$20,097,384	\$21,771,379

Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020

6.3.1.3. Top Airports for Fuel Tax Revenues

Figure 6.3 shows the top five airport revenue generators for each category of fuel tax. Table 6.4 shows the top Colorado airports in terms of fuel sales and aviation fuel tax generation. It is noteworthy that these nine airports generate 99 percent of total fuel sales and tax revenues, although AvGas fuel sales are far less concentrated within this group.

Figure 6.3. Top Five Airports for Aviation Fuel Tax Revenues, FY 2019

AvGas Excise Tax	Jet A Private Aircraft Excise and Sales Tax	Total Fuel Taxes Collected
<ul style="list-style-type: none"> •Centennial (APA) •Rocky Mountain Metropolitan (BJC) •Pueblo (PUB) •Colorado Air and Space Port (CFO) •Grand Junction (GJT) 	<ul style="list-style-type: none"> •Centennial (APA) •Aspen (ASE) •Colorado Springs (COS) •Eagle (EGE) •Rocky Mountain Metropolitan (BJC) 	<ul style="list-style-type: none"> •Denver International (DEN) •Centennial (APA) •Colorado Springs (COS) •Aspen-Pitkin County (ASE) •Eagle (EGE)

Sources: CDOT Division of Aeronautics; KRAMER aerotek inc., 2020

Table 6.4. Top Colorado Airports for Aviation Fuel Tax Revenues, FY 2019

Rank	Airport	AvGas Excise Tax		Jet A Excise Tax		Jet A Sales Tax		Total	
		Gallons	Tax Revenues	Gallons	Tax Revenues	Gallons	Tax Revenues	Gallons	Tax Revenues
1	Denver International	-	\$0	2,799,267	\$111,971	532,839,519	\$25,648,432	535,638,786	\$25,760,402
2	Centennial	670,256	\$40,215	12,367,931	\$494,717	21,284,271	\$1,215,970	34,322,458	\$1,750,903
3	Colorado Springs Municipal	135,872	\$8,152	3,695,930	\$147,837	15,125,524	\$864,121	18,957,326	\$1,020,111
4	Aspen-Pitkin County	23,607	\$1,416	3,797,277	\$151,891	12,119,141	\$692,367	15,940,025	\$845,674
5	Eagle County Regional	51,226	\$3,074	3,394,973	\$135,799	9,665,905	\$552,213	13,112,104	\$691,086
6	Rocky Mountain Metropolitan	360,148	\$21,609	3,204,252	\$128,170	5,626,060	\$321,417	9,190,459	\$471,196
7	Grand Junction Regional	161,261	\$9,676	896,335	\$35,853	5,115,232	\$292,233	6,172,828	\$337,762
8	Montrose Regional	58,615	\$3,517	703,825	\$28,153	4,119,334	\$235,338	4,881,774	\$267,007
9	Yampa Valley	11,393	\$684	864,545	\$34,582	3,326,915	\$190,067	4,202,853	\$225,332
10	Rifle Garfield County	25,993	\$1,560	1,537,446	\$61,498	2,205,606	\$145,131	3,769,045	\$208,188
11	Durango-La Plata County	85,079	\$5,105	575,339	\$23,014	2,648,196	\$151,291	3,308,613	\$179,410
12	Telluride Regional	31,045	\$1,863	492,788	\$19,712	2,205,606	\$126,006	2,729,439	\$147,580
13	Pueblo Memorial	256,444	\$15,387	743,855	\$29,754	1,664,094	\$95,070	2,664,392	\$140,210
14	Northern Colorado Regional	78,244	\$4,695	821,037	\$32,841	1,751,986	\$100,091	2,651,266	\$137,627
15	Gunnison-Crested Butte Regional	23,745	\$1,425	354,741	\$14,190	1,136,682	\$64,939	1,515,167	\$80,553
	Subtotal	1,972,928	\$118,376	36,249,539	\$1,449,982	620,834,069	\$30,694,685	659,056,536	\$32,263,042
	Total Colorado	3,189,736	\$191,384	38,660,161	\$1,546,406	625,096,130	\$30,909,052	666,946,027	\$32,656,842
	Top 15 Airports	62%	62%	94%	94%	99%	99%	99%	99%

Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020

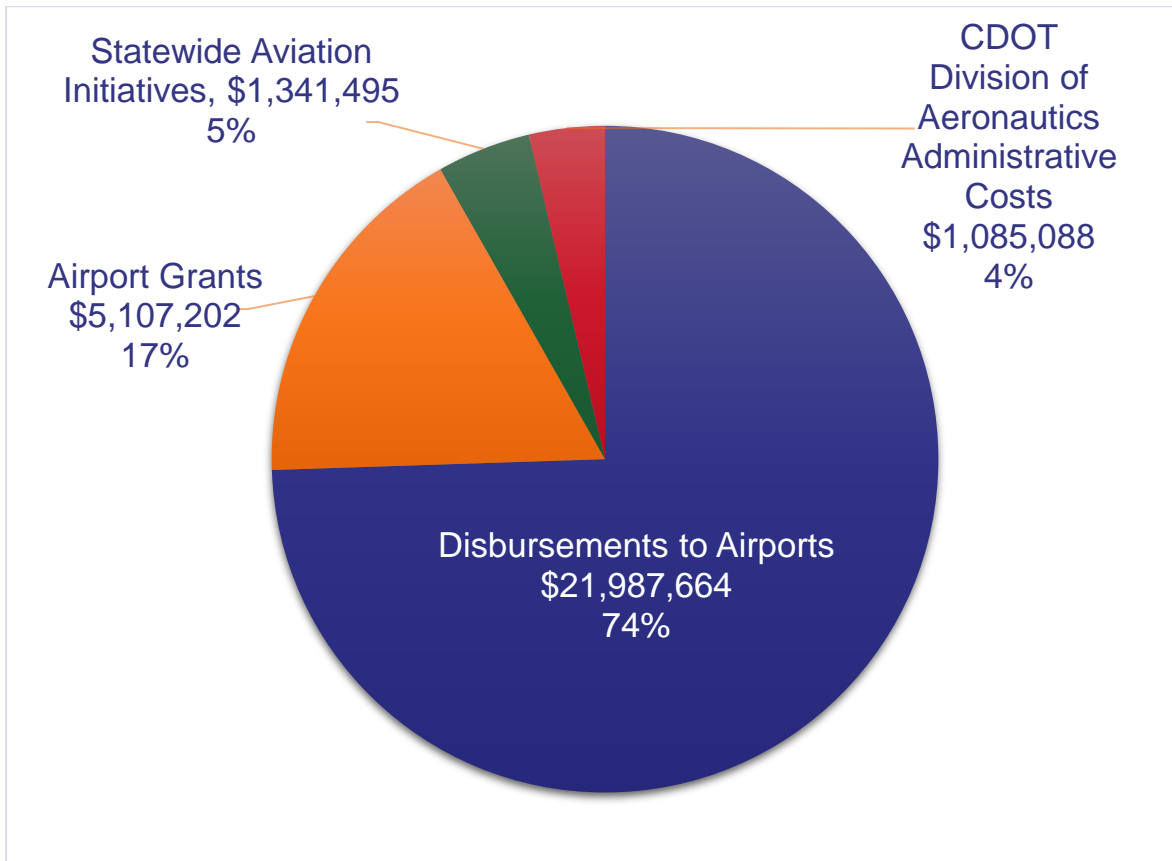
6.3.1.4. Use of Fuel Tax Revenues

Aviation fuel tax revenues help support all Colorado airports. Pursuant to Colorado Revised Statutes (CRS), CRS 43-10-109 and CRS 43-10-110, each different aviation fuel tax has its own distribution requirements as follows.

- Sales tax on jet fuel (2.9 percent of fuel price)
 - 65 percent of fuel tax revenues go back to the airports where the fuel was sold
 - 35 percent goes to the Aviation Fund which supports the Colorado Discretionary Aviation Grant Program (CDAG) as well as various statewide aviation initiatives. These programs support maintenance, capital equipment, and developmental needs of Colorado's eligible 66 public-use airports. This percentage also supports the administrative costs of the CDOT Division of Aeronautics.
- Excise tax on business jet fuel (4 cents per gallon)
 - 100 percent goes back to the airports where the fuel was sold
- Excise tax on Avgas (6 cents per gallon)
 - 4 cents per gallon goes back to the airports where the fuel was sold
 - 2 cents per gallon goes to the Aviation Fund

Because airport projects are often completed over multiple years, CDOT Division of Aeronautics does not necessarily disburse 100 percent of annual aviation fuel tax revenues in a particular year. **Figure 6.4** shows the use of aviation fuel tax revenues in FY 2019.

Figure 6.4. Uses of Aviation Fuel Tax Revenues, FY 2019



Sources: CDOT Division of Aeronautics; KRAMER aerotek, inc., 2020

6.3.2. Sales and Use Taxes

Sales taxes are a key component of aviation-related taxes. Jet fuel purchases are one of the largest contributors to state sales tax revenues, accounting for \$32.6 million in FY 2019. Other notable contributors include visitor expenditures (i.e., lodging, food, retail, rental cars), on-airport businesses, construction companies, and aviation-related employees who make retail purchases that are subject to Colorado sales tax.

6.3.2.1. Structure of Colorado’s Sales and Use Taxes

Sales taxes are levied at the state, county, and local levels. Total sales tax rates are the sum of applicable sales taxes for the jurisdiction where the purchase takes place. For example, a retail purchase in Colorado Springs would include the following sales tax components:

State of Colorado	2.90%
El Paso County	1.23%
City of Colorado Springs	3.12%
Pikes Peak Rural Transportation Authority (RTA)	<u>1.00%</u>
Total Sales Tax	8.25%

Because sales tax rates are primarily set by local governments, sales taxes vary throughout the state. For example, in Springfield the sales tax rate is 4.9 percent; in Aspen, it's 9.3 percent. If state sales taxes were the only consideration, Colorado has one of the lowest sales taxes in the country. However, when taking local sales taxes also into consideration, Colorado ranks 16th according to the Tax Foundation. Some states such as Washington have high sales taxes but no income tax. Oregon is the opposite with no sales tax, but high-income tax rates. **Table 6.5** compares average combined sales tax rates for all the states.

Table 6.5. State and Local Sales Tax Rates as of January 1, 2019

Rank	State	State Tax Rate	Avg. Local Tax Rate (a)	Combined Rate
1	Tennessee	7.0%	2.5%	9.5%
2	Alabama	4.0%	5.1%	9.1%
3	Louisiana	4.5%	5.0%	9.4%
4	Arkansas	6.5%	2.9%	9.4%
5	Washington	6.5%	2.7%	9.2%
6	Oklahoma	4.5%	4.4%	8.9%
7	Illinois	6.3%	2.5%	8.7%
8	Kansas	6.5%	2.2%	8.7%
9	California (b)	7.3%	1.3%	8.6%
10	New York	4.0%	4.5%	8.5%
11	Arizona	5.6%	2.8%	8.4%
12	Texas	6.3%	1.9%	8.2%
13	Nevada	6.9%	1.3%	8.1%
14	Missouri	4.2%	3.9%	8.1%
15	New Mexico (c)	5.1%	2.7%	7.8%
16	Colorado	2.9%	4.7%	7.6%
17	South Carolina	6.0%	1.4%	7.4%
18	Minnesota	6.9%	0.6%	7.4%
19	Georgia	4.0%	3.3%	7.3%
20	Ohio	5.8%	1.4%	7.2%
21	Mississippi	7.0%	0.1%	7.1%
22	Florida	6.0%	1.0%	7.0%
23	Indiana	7.0%	0.0%	7.0%
24	Rhode Island	7.0%	0.0%	7.0%
25	North Carolina	4.8%	2.2%	7.0%
26	Utah (b)	6.0%	1.0%	6.9%
27	Nebraska	5.5%	1.4%	6.9%
28	North Dakota	5.0%	1.8%	6.8%
29	Iowa	6.0%	0.8%	6.8%
30	New Jersey (e)	6.6%	0.0%	6.6%
31	South Dakota (c)	4.5%	1.9%	6.4%
32	West Virginia	6.0%	0.4%	6.4%
33	Connecticut	6.4%	0.0%	6.4%
34	Pennsylvania	6.0%	0.3%	6.3%
35	Massachusetts	6.3%	0.0%	6.3%



Rank	State	State Tax Rate	Avg. Local Tax Rate (a)	Combined Rate
36	Vermont	6.0%	0.2%	6.2%
37	Idaho	6.0%	0.0%	6.0%
38	Kentucky	6.0%	0.0%	6.0%
39	Maryland	6.0%	0.0%	6.0%
40	Michigan	6.0%	0.0%	6.0%
41	District of Columbia	6.0%	0.0%	6.0%
42	Virginia (b)	5.3%	0.3%	5.6%
43	Maine	5.5%	0.0%	5.5%
44	Wisconsin	5.0%	0.4%	5.4%
45	Wyoming	4.0%	1.4%	5.4%
46	Hawaii (c)	4.0%	0.4%	4.4%
47	Alaska	--	1.4%	1.4%
48	Delaware	--	0.0%	0.0%
49	Montana (d)	--	0.0%	0.0%
50	New Hampshire	--	0.0%	0.0%
51	Oregon	--	0.0%	0.0%

- (a) City, county, and municipal rates vary. These rates are weighted by population to compute an average local tax rate.
- (b) Three states levy mandatory, statewide, local add-on sales taxes at the state-level: California (1.25%), Utah (1.25%), and Virginia (1%). We include these in their state sales tax.
- (c) The sales taxes in Hawaii, New Mexico, North Dakota, and South Dakota have broad bases that include many business-to-business services.
- (d) Special taxes in local resort areas are not counted here.
- (e) Certain jurisdictions are not subject to statewide sales tax rates and collect a local rate of 3.3125%. New Jersey's local score is represented as a negative.

Note: D.C.'s ranks do not affect states' ranks, but the figures in parentheses indicate where it would rank if included.

Sources: *Sales Tax Clearinghouse; Tax Foundation calculations, 2020*

6.3.2.2. Aviation Sales Tax Exemptions

In Colorado, there are several exemptions to sales taxes for certain aviation activities. These sales tax exemptions include:

- Manufacturing aircraft
- Selling aircraft for commercial interstate commerce
- Selling new or used aircraft to a person who is not a resident of the state. The aircraft must be removed from Colorado within 120 days after the sale and not be in the state for more than 73 days in any three calendar years
- Aircraft parts that are permanently affixed to an aircraft or attached as a component; otherwise the price of parts is taxable; labor is exempt when separately stated on the invoice
- Colorado has no aircraft registration fee or pilot registration fee

6.3.2.3. Lodging Taxes

Lodging taxes are a specific type of sales tax that local jurisdictions establish and then add to regular sales taxes for the use of hotels, motels, and other accommodations rented for less than 30 consecutive days. The philosophy behind a lodging tax is they help offset the cost of services provided to visitors versus residents and thus distributes more equally the tax burden across various users of public services. Lodging is a large air visitor expenditure within the state and generator of tax revenues. Not every community imposes a lodging tax, but for destination cities such as Denver, Aspen, Telluride, or Gunnison, the lodging tax can help support visitors, air service development, and promote

the areas. Lodging tax rates vary. For example, in Denver, the lodging tax is 14.85 percent; in Aspen, 11.3 percent; and in Telluride, 12.65 percent.

6.3.2.4. Other Sales Taxes

Car rentals, as well as food and beverages, are also subject to sales taxes both on- and off-airports. From the state's perspective, the sales tax rates remain the same at 2.9 percent, but many local jurisdictions will approve additional sales taxes to specific purchases such as car rentals or restaurant expenditures.

6.3.3. Colorado Income Tax

Colorado income tax is the other tax included in this analysis. All wages earned by people with jobs at Colorado airports, at off-airport air cargo facilities, and at visitor establishments are required to pay state income taxes.

This tax is Colorado's largest source of revenue. It was originally set up as a graduated tax (in 1937), but in 1987, the state legislature enacted a single, flat tax of 4.63 percent applied across all income brackets.

6.4. Aviation Tax Impacts

6.4.1. Overview of the Methodology

As described in **Chapter 2**, aviation economic impact studies estimate the number of jobs, payroll, value added, and business revenues generated by different groups engaged directly in aviation activities or in visitor services. These direct estimates are the building blocks of the tax analysis. To complete the tax analysis, each impacted group was considered separately:

- On-Airport
 - Airport administration
 - Airport tenants
 - Construction and capital improvements
- Off-Airport
 - Commercial air visitor spending
 - GA visitor spending
 - Air cargo

A bottom-up methodology was adopted to estimate tax impacts for each impacted group at each airport. **Table 6.6** shows which taxes applied. As noted previously, the tax analysis was limited to direct impacts and to sales tax, as well as to state income tax. There are other Colorado and local taxes, notably property tax and corporate taxes that would add to tax revenues generated by aviation activity, but these were not included here because of the complexity of allocating these tax impacts to specific regions.



Table 6.6. Direct Taxes Estimated for Aviation Activity

Group	State/Local Sales Taxes	Colorado Income Tax
Government		
Airport Administration	Exempt	
Airport Employees	X	X
Military	Exempt	
Companies		
Airport Tenants	X	
Tenant Employees	X	X
Construction Companies	X	
Construction Employees	X	X
Visitors & Visitor Support		
GA Visitors	X	
Commercial Service Visitors	X	
Visitor Support Employees	X	X
Off-Airport Air Cargo		
Domestic Outbound	X	X
International Exports	X	X

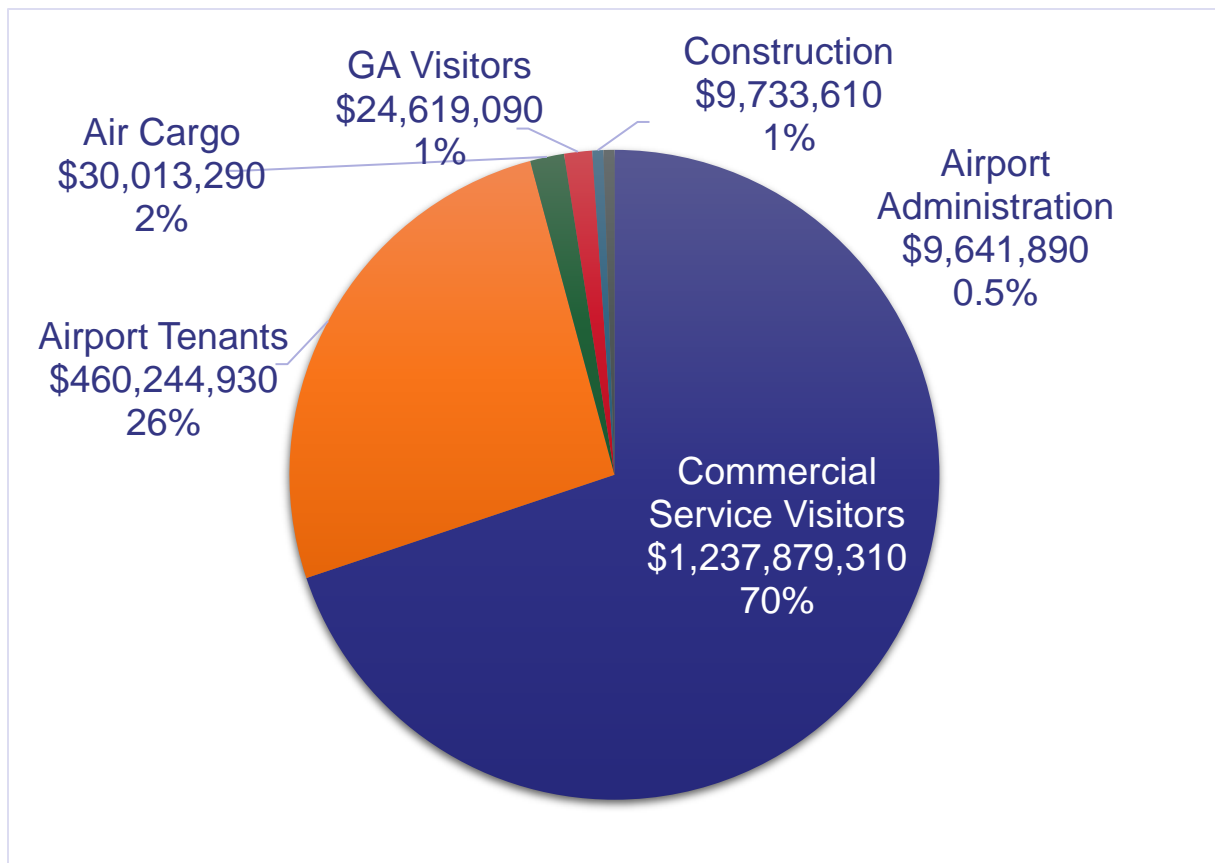
Source: KRAMER aerotek, inc., 2020

Actual local and state tax rates were applied to estimated business revenues for on-airport tenants and to estimated visitor expenditures based on survey data developed for this study. Sales tax rates for construction activity, air cargo, and local transportation were provided by IMPLAN. Effective income tax rates applied to employee wages (by income brackets) came directly from the Colorado Department of Revenue, *2018 Tax Profile and Expenditure Report*.

6.4.2. Tax Analysis Findings

Considering sales tax and state income tax revenues, direct aviation activity in Colorado contributed \$1.8 billion in tax revenues in 2018. If multiplier effects, corporate taxes, and property taxes were included, estimates of aviation’s contributions to Colorado’s tax base would be substantially larger. Most tax revenues come directly from air visitor expenditures for lodging, shopping, food, and entertainment once they leave the airport. In addition, visitors spend money at airports. These taxable events are reported by airport tenants. Together, visitor expenditures and airport tenants account for 96.5 percent of all aviation-related tax revenue as shown in Figure 6.5.

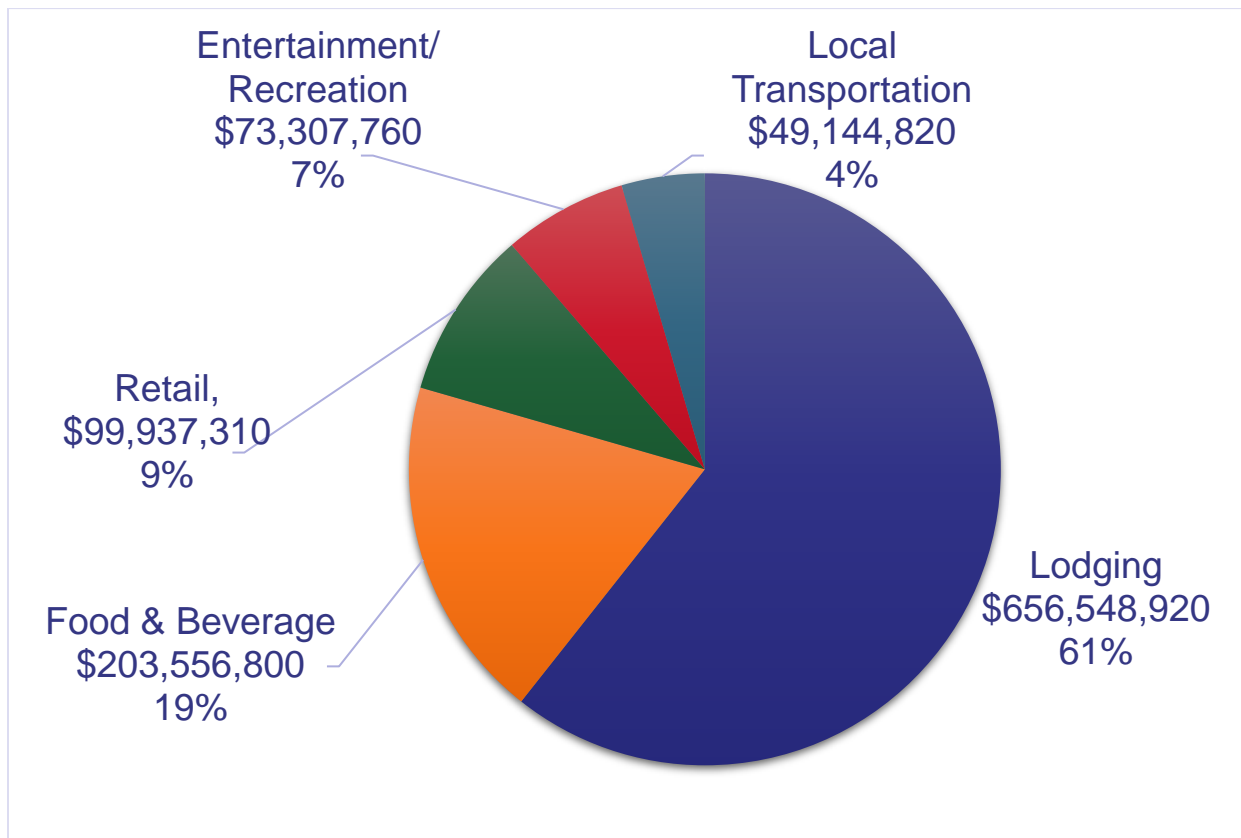
Figure 6.5. Total Direct Aviation Tax Revenues by Contributing Groups, 2018



Source: KRAMER aerotek, inc., 2020

Figure 6.6 takes a closer look at off-airport tax revenues from visitor expenditures. By far, lodging sales taxes bring in the largest amount of tax revenue; a significant component of this goes to local jurisdictions to support visitor activities and marketing. Food and beverage tax receipts are the second largest contributor (19 percent), followed by entertainment and recreation including skiing. In total, air visitor expenditures off-airport bring in approximately \$1.1 billion in sales tax revenues.

Figure 6.6. Off-Airport Visitor Tax Generation, 2018

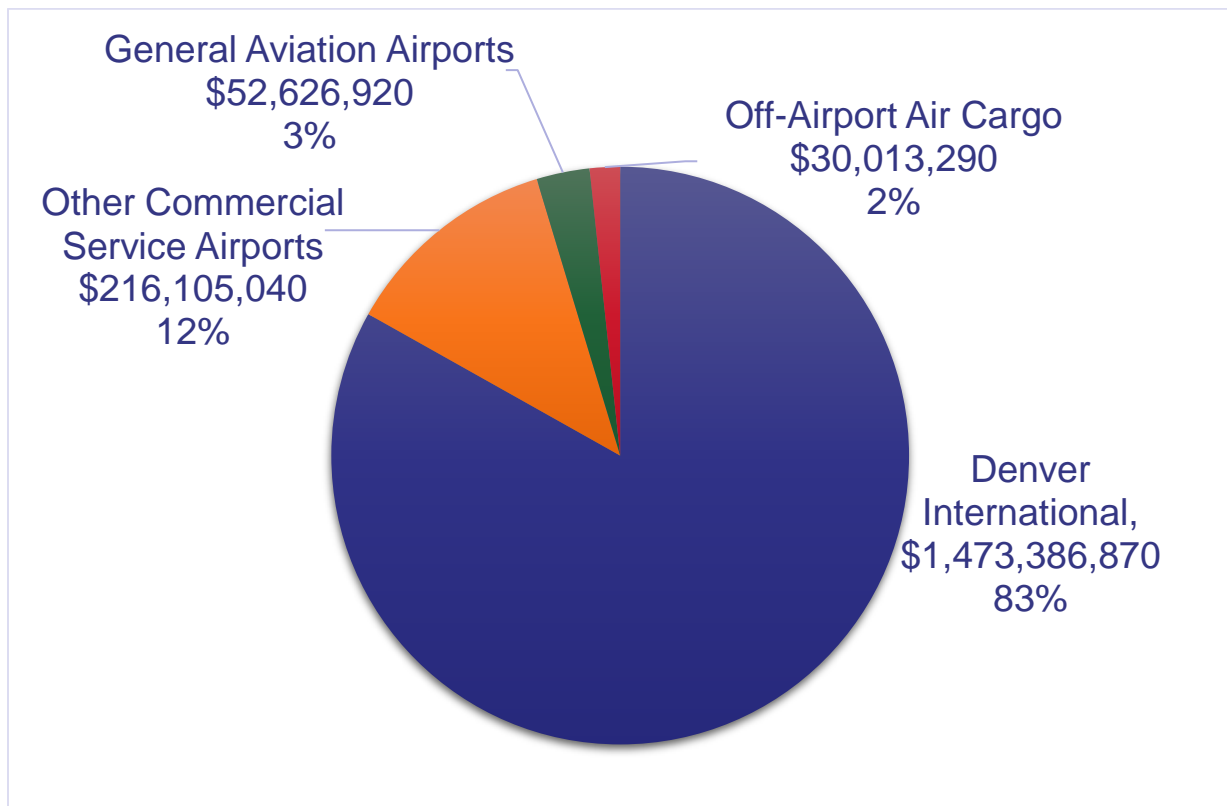


Source: KRAMER Aerotek, inc., 2020

Figure 6.7 separates DEN from other commercial service airports, GA airports, and off-airport air cargo activity. Since the last aviation economic impact study in 2012, tax revenue generating activity at DEN has grown and has become more concentrated in the state. DEN now accounts for 83 percent of all estimated aviation taxes. Other commercial service airports contribute an additional 12 percent; GA airports, 3 percent; and off-airport air cargo, 2 percent.

Table 6.7 provides a more detailed look at sales tax and state income tax generation by each airport group and by activity. Individual airport data is presented in Table 6.8 through Table 6.11.

Figure 6.7. Sales and Income Tax Generation by DEN and Other Colorado Airports, 2018



Source: KRAMER aerotek, inc., 2020

Table 6.7. Summary of Estimated Tax Revenues by Airport Group and By Activity, 2018

Airports				
Taxes Revenues from:	Denver International	Other Commercial	General Aviation	Total
Sales and Use Tax				
Airport Tenants	\$248,582,660	\$20,730,040	\$17,492,840	\$286,805,540
Construction	\$675,080	\$284,420	\$102,550	\$1,062,050
Commercial Service Visitor Expenditures	\$941,798,720	\$120,184,490	\$0	\$1,061,983,210
GA Visitor Expenditures	\$426,530	\$9,373,370	\$10,712,500	\$20,512,400
Airport Employee Purchases	\$3,917,650	\$567,190	\$226,750	\$4,711,590
Tenant Employee Purchases	\$55,462,870	\$13,647,200	\$9,586,410	\$78,696,480
Construction Employee Purchases	\$2,739,300	\$1,182,010	\$417,400	\$4,338,710
Air Cargo Employee Purchases*	NA	NA	NA	\$13,222,930
CS Visitor Employee Purchases	\$114,235,680	\$14,820,130	\$0	\$129,055,810
GA Visitor Employee Purchases	\$54,510	\$1,191,280	\$1,730,210	\$2,976,000
Sales Tax Total	\$1,367,893,000	\$181,980,130	\$40,268,660	\$1,603,364,720
Colorado Income				
Airport Employees	\$4,154,600	\$555,510	\$220,190	\$4,930,300
Tenant Employees	\$58,817,480	\$24,795,490	\$11,129,940	\$94,742,910
Construction Employees	\$2,904,990	\$1,019,990	\$407,870	\$4,332,850
Air Cargo Employees*	NA	NA	NA	\$16,790,360
CS Visitor Support Employees	\$39,597,910	\$7,242,380	\$0	\$46,840,290
GA Visitor Support Employees	\$18,890	\$511,540	\$600,260	\$1,130,690
Colorado Income Tax Total	\$105,493,870	\$34,124,910	\$12,358,260	\$168,767,400
Grand Total	\$1,473,386,870	\$216,105,040	\$52,626,920	\$1,772,132,120

Note: Air cargo activities are off-airport and not assigned to a specific airport but represent statewide totals.

Source: KRAMER aerotek, inc., 2020

6.4.3. Conclusions

This analysis focused on direct sales and state income tax revenues attributable to aviation activity at Colorado airports. In 2018, aviation activity generated an estimated \$1.8 billion in sales tax and state income tax revenues.

Colorado, its counties, and municipalities each benefit from taxes levied on aviation activities. These benefits include state and local taxes levied on visitor and tenant expenditures, fuel taxes, and income and sales taxes paid by over 187,570 (up from 150,000 in 2012) direct employees associated with airports, air cargo, or visitor-supported establishments. Taxes collected on aviation fuel help maintain and improve facilities at Colorado public-use airports and often leverage additional federal funding from the FAA's Airport Improvement Program (AIP).



DEN, as the state's largest airport, transfers extensive benefits to the Front Range region in terms of employment, sales, and tax revenues. DEN is responsible for an estimated \$1.5 billion in tax revenues considered in this study. The other commercial airports contribute \$216 million, and GA airports, \$52 million in tax revenues.

Table 6.8. Local and State Sales Taxes Paid by Companies and Visitors, 2018

Associated City	Airport Name	FAA ID	Companies		Visitors		Total
			Airport Tenants	Construction	CS Visitors	GA Visitors	
<i>Commercial Service</i>							
Alamosa	San Luis Valley	ALS	\$288,440	\$1,180	\$156,210	\$108,880	\$554,710
Aspen	Aspen-Pitkin County	ASE	\$2,411,310	\$7,980	\$41,207,530	\$1,726,970	\$45,353,790
Colorado Springs	Colorado Springs Municipal	COS	\$6,469,280	\$187,430	\$22,379,680	\$1,145,530	\$30,181,920
Cortez	Cortez Municipal	CEZ	\$95,340	\$60	\$159,630	\$102,820	\$357,850
Denver	Denver International	DEN	\$248,582,660	\$675,080	\$941,798,720	\$426,530	\$1,191,482,990
Durango	Durango-La Plata County	DRO	\$985,830	\$9,190	\$9,338,640	\$495,380	\$10,829,040
Eagle	Eagle County Regional	EGE	\$2,442,820	\$17,460	\$21,034,020	\$971,160	\$24,465,460
Fort Collins/Loveland	Northern Colorado Regional	FNL	\$924,960	\$1,920	\$0	\$2,138,320	\$3,065,200
Grand Junction	Grand Junction Regional	GJT	\$2,811,780	\$10,260	\$5,798,560	\$798,760	\$9,419,360
Gunnison	Gunnison-Crested Butte Regional	GUC	\$415,650	\$6,580	\$3,375,870	\$344,730	\$4,142,830
Hayden	Yampa Valley Regional	HDN	\$1,378,900	\$13,600	\$7,356,030	\$220,700	\$8,969,230
Montrose	Montrose Regional	MTJ	\$1,419,160	\$13,520	\$9,103,150	\$236,320	\$10,772,150
Pueblo	Pueblo Memorial	PUB	\$805,060	\$5,690	\$151,840	\$346,260	\$1,308,850
Telluride	Telluride Regional	TEX	\$281,510	\$9,550	\$123,330	\$737,540	\$1,151,930
Total Commercial Service Airport Sales Taxes			\$269,312,700	\$959,500	\$1,061,983,210	\$9,799,900	\$1,342,055,310
<i>General Aviation</i>							
Akron	Colorado Plains Regional	AKO	\$158,280	\$750		\$75,260	\$234,290
Blanca	Blanca	05V	\$0	\$0		\$710	\$710
Boulder	Boulder Municipal	BDU	\$312,330	\$200		\$195,050	\$507,580
Brush	Brush Municipal	7V5	\$0	\$0		\$960	\$960
Buena Vista	Central Colorado Regional	AEJ	\$138,940	\$870		\$952,000	\$1,091,810
Burlington	Kit Carson County	ITR	\$0	\$410		\$47,200	\$47,610
Calhan	Calhan	5V4	\$0	\$0		\$4,400	\$4,400

Colorado Aviation Economic Impact Study



Associated City	Airport Name	FAA ID	Companies		Visitors		Total
			Airport Tenants	Construction	CS Visitors	GA Visitors	
Canon City	Fremont County	1V6	\$45,450	\$410		\$2,890	\$48,750
Center	Leach	1V8	\$3,450	\$0		\$440	\$3,890
Colorado Springs	Meadow Lake	FLY	\$181,770	\$540		\$296,420	\$478,730
Craig	Craig-Moffat County	CAG	\$93,380	\$300		\$56,290	\$149,970
Crawford	Crawford	99V	\$27,700	\$0		\$2,320	\$30,020
Creede	Mineral County Memorial	C24	\$0	\$200		\$6,000	\$6,200
Del Norte	Astronaut Kent Rominger	RCV	\$64,140	\$210		\$11,540	\$75,890
Delta	Blake Field	AJZ	\$51,450	\$2,410		\$7,890	\$61,750
Delta	Westwinds Airpark	D17	\$19,790	\$30		\$6,390	\$26,210
Denver	Centennial	APA	\$12,269,550	\$15,580		\$4,582,070	\$16,867,200
Denver	Colorado Air and Space Port	CFO	\$1,394,000	\$3,040		\$547,870	\$1,944,910
Denver	Rocky Mountain Metropolitan	BJC	\$286,440	\$25,820		\$1,790,390	\$2,102,650
Durango	Animas Airpark	00C	\$62,980	\$350		\$680	\$64,010
Eads	Eads Municipal	9V7	\$0	\$20		\$530	\$550
Erie	Erie Municipal	EIK	\$77,150	\$640		\$224,520	\$302,310
Fort Morgan	Fort Morgan Municipal	FMM	\$11,090	\$2,230		\$57,340	\$70,660
Glenwood Springs	Glenwood Springs Municipal	GWS	\$474,290	\$300		\$59,040	\$533,630
Granby	Granby-Grand County	GNB	\$3,350	\$430		\$5,550	\$9,330
Greeley	Greeley-Weld County	GXY	\$529,390	\$5,330		\$761,140	\$1,295,860
Haxtun	Haxtun Municipal	17V	\$0	\$0		\$190	\$190
Holly	Holly	K08	\$0	\$0		\$1,150	\$1,150
Holyoke	Holyoke Municipal	HEQ	\$0	\$890		\$21,880	\$22,770
Julesburg	Julesburg Municipal	7V8	\$0	\$0		\$450	\$450
Kremmling	McElroy Field	20V	\$10,060	\$210		\$16,730	\$27,000
La Junta	La Junta Municipal	LHX	\$131,460	\$640		\$30,300	\$162,400
La Veta	Cuchara Valley	07V	\$0	\$0		\$10	\$10

Colorado Aviation Economic Impact Study



Associated City	Airport Name	FAA ID	Companies		Visitors		Total
			Airport Tenants	Construction	CS Visitors	GA Visitors	
Lamar	Lamar Municipal	LAA	\$27,480	\$210		\$11,350	\$39,040
Las Animas	Las Animas-Bent County	7V9	\$0	\$270		\$620	\$890
Leadville	Lake County	LXV	\$0	\$3,350		\$8,830	\$12,180
Limon	Limon Municipal	LIC	\$0	\$10		\$31,190	\$31,200
Longmont	Vance Brand Municipal	LMO	\$544,860	\$12,230		\$440,270	\$997,360
Meeker	Meeker	EEO	\$7,290	\$540		\$39,270	\$47,100
Monte Vista	Monte Vista Municipal	MVI	\$3,450	\$360		\$8,550	\$12,360
Nucla	Hopkins Field	AIB	\$0	\$3,110		\$18,890	\$22,000
Pagosa Springs	Stevens Field	PSO	\$25,240	\$3,410		\$15,650	\$44,300
Paonia	North Fork Valley	7V2	\$0	\$0		\$8,710	\$8,710
Rangely	Rangely	4V0	\$32,810	\$150		\$37,040	\$70,000
Rifle	Rifle Garfield County	RIL	\$237,710	\$6,650		\$150,840	\$395,200
Saguache	Saguache Municipal	04V	\$0	\$0		\$40	\$40
Salida	Harriet Alexander	ANK	\$44,360	\$550		\$45,980	\$90,890
Springfield	Springfield Municipal	8V7	\$0	\$0		\$3,700	\$3,700
Steamboat Springs	Steamboat Springs	SBS	\$212,110	\$200		\$24,210	\$236,520
Sterling	Sterling Municipal	STK	\$11,090	\$280		\$17,980	\$29,350
Trinidad	Perry Stokes	TAD	\$0	\$5,190		\$16,470	\$21,660
Walden	Walden-Jackson County	33V	\$0	\$0		\$2,450	\$2,450
Walsenburg	Spanish Peaks Airfield	4V1	\$0	\$780		\$8,760	\$9,540
Westcliffe	Silver West	C08	\$0	\$60		\$1,570	\$1,630
Wray	Wray Municipal	2V5	\$0	\$130		\$42,590	\$42,720
Yuma	Yuma Municipal	2V6	\$0	\$3,260		\$11,940	\$15,200
Total GA Airport Sales Taxes			\$17,492,840	\$102,550	\$0	\$10,712,500	\$28,307,890
Grand Total of Sales Taxes			\$286,805,540	\$1,062,050	\$1,061,983, 210	\$20,512,400	\$1,370,363, 200

Source: KRAMER aerotek, inc. 2020

Table 6.9. Local and State Taxes Paid by Employees at Airport or Visitor Establishments, 2018

Associated City	Airport Name	FAA ID	Airport Administration	Airport Tenants	Construction	Air Cargo	CS Visitors	GA Visitors	Total
<i>Commercial Service</i>									
Alamosa	San Luis Valley	ALS	\$4,450	\$94,390	\$4,330	\$0	\$16,140	\$12,940	\$132,250
Aspen	Aspen-Pitkin County	ASE	\$82,410	\$735,350	\$30,010	\$0	\$4,419,230	\$208,410	\$5,475,410
Colorado Springs	Colorado Springs Municipal	COS	\$165,560	\$8,108,540	\$804,360	\$629,660	\$3,149,380	\$152,410	\$13,009,910
Cortez	Cortez Municipal	CEZ	\$3,320	\$40,930	\$210	\$0	\$21,650	\$16,170	\$82,280
Denver	Denver International	DEN	\$3,917,650	\$55,462,870	\$2,739,300	\$12,420,150	\$114,235,680	\$54,510	\$188,830,160
Durango	Durango-La Plata County	DRO	\$34,950	\$361,040	\$36,930	\$28,360	\$1,270,260	\$70,340	\$1,801,880
Eagle	Eagle County Regional	EGE	\$45,220	\$713,240	\$70,850	\$0	\$2,675,920	\$124,670	\$3,629,900
Fort Collins/Loveland	Northern Colorado Regional	FNL	\$16,430	\$371,120	\$7,940	\$0	\$0	\$288,200	\$683,690
Grand Junction	Grand Junction Regional	GJT	\$42,740	\$1,438,760	\$41,280	\$143,220	\$562,500	\$87,200	\$2,315,700
Gunnison	Gunnison-Crested Butte Regional	GUC	\$17,630	\$228,870	\$24,270	\$0	\$405,070	\$42,910	\$718,750
Hayden	Yampa Valley Regional	HDN	\$82,400	\$571,090	\$54,710	\$0	\$1,011,650	\$28,360	\$1,748,210
Montrose	Montrose Regional	MTJ	\$26,430	\$412,960	\$49,880	\$0	\$1,274,630	\$33,860	\$1,797,760
Pueblo	Pueblo Memorial	PUB	\$22,070	\$475,510	\$21,990	\$0	\$0	\$37,580	\$557,150
Telluride	Telluride Regional	TEX	\$23,580	\$95,400	\$35,250	\$0	\$13,700	\$88,230	\$256,160
Total Commercial Service Airport Sales Taxes			\$4,484,840	\$69,110,070	\$3,921,310	\$13,221,390	\$129,055,810	\$1,245,790	\$221,039,210
<i>General Aviation</i>									
Akron	Colorado Plains Regional	AKO	\$1,600	\$51,160	\$3,150	\$0		\$13,660	\$69,570
Blanca	Blanca	05V	\$660	\$0	\$0	\$0		\$0	\$660
Boulder	Boulder Municipal	BDU	\$1,510	\$147,570	\$830	\$0		\$28,630	\$178,540
Brush	Brush Municipal	7V5	\$1,600	\$0	\$0	\$0		\$0	\$1,600
Buena Vista	Central Colorado Regional	AEJ	\$4,640	\$30,360	\$3,290	\$0		\$4,990	\$43,280
Burlington	Kit Carson County	ITR	\$2,050	\$9,580	\$1,750	\$0		\$9,570	\$22,950
Calhan	Calhan	5V4	\$1,270	\$1,320	\$0	\$0		\$0	\$2,590
Canon City	Fremont County	1V6	\$3,790	\$32,490	\$1,560	\$0		\$930	\$38,770
Center	Leach	1V8	\$1,320	\$1,530	\$0	\$0		\$0	\$2,850
Colorado Springs	Meadow Lake	FLY	\$0	\$145,450	\$2,310	\$0		\$42,840	\$190,600
Craig	Craig-Moffat County	CAG	\$1,620	\$19,490	\$1,200	\$0		\$7,090	\$29,400
Crawford	Crawford	99V	\$5,290	\$12,640	\$0	\$0		\$0	\$17,930
Creede	Mineral County Memorial	C24	\$640	\$1,910	\$720	\$0		\$960	\$4,230
Del Norte	Astronaut Kent Rominger	RCV	\$550	\$13,520	\$850	\$0		\$1,860	\$16,780
Delta	Blake Field	AJZ	\$2,120	\$23,460	\$8,910	\$0		\$1,010	\$35,500
Delta	Westwinds Airpark	D17	\$770	\$9,020	\$120	\$0		\$1,030	\$10,940
Denver	Centennial	APA	\$48,990	\$5,273,120	\$64,320	\$1,540		\$862,850	\$6,250,820
Denver	Colorado Air and Space Port	CFO	\$28,160	\$598,670	\$12,560	\$0		\$116,590	\$755,980
Denver	Rocky Mountain Metropolitan	BJC	\$31,240	\$1,710,990	\$106,580	\$0		\$296,320	\$2,145,130
Durango	Animas Airpark	00C	\$590	\$33,950	\$1,420	\$0		\$200	\$36,160

Associated City	Airport Name	FAA ID	Airport Administration	Airport Tenants	Construction	Air Cargo	CS Visitors	GA Visitors	Total
Eads	Eads Municipal	9V7	\$70	\$8,980	\$70	\$0		\$200	\$9,320
Erie	Erie Municipal	EIK	\$1,720	\$95,660	\$2,640	\$0		\$39,780	\$139,800
Fort Morgan	Fort Morgan Municipal	FMM	\$1,200	\$10,790	\$9,370	\$0		\$9,260	\$30,620
Glenwood Springs	Glenwood Springs Municipal	GWS	\$1,470	\$70,980	\$1,090	\$0		\$8,220	\$81,760
Granby	Granby-Grand County	GNB	\$2,000	\$1,300	\$1,750	\$0		\$1,030	\$6,080
Greeley	Greeley-Weld County	GXY	\$10,810	\$674,550	\$21,980	\$0		\$118,380	\$825,720
Haxtun	Haxtun Municipal	17V	\$70	\$0	\$20	\$0		\$70	\$160
Holly	Holly	K08	\$860	\$1,000	\$0	\$0		\$0	\$1,860
Holyoke	Holyoke Municipal	HEQ	\$4,790	\$14,150	\$3,750	\$0		\$4,130	\$26,820
Julesburg	Julesburg Municipal	7V8	\$1,600	\$0	\$0	\$0		\$0	\$1,600
Kremmling	McElroy Field	20V	\$1,950	\$3,890	\$830	\$0		\$2,440	\$9,110
La Junta	La Junta Municipal	LHX	\$2,240	\$24,720	\$2,460	\$0		\$3,340	\$32,760
La Veta	Cuchara Valley	07V	\$120	\$0	\$0	\$0		\$0	\$120
Lamar	Lamar Municipal	LAA	\$300	\$12,520	\$820	\$0		\$1,580	\$15,220
Las Animas	Las Animas-Bent County	7V9	\$1,750	\$130	\$1,040	\$0		\$200	\$3,120
Leadville	Lake County	LXV	\$3,600	\$0	\$12,690	\$0		\$1,720	\$18,010
Limon	Limon Municipal	LIC	\$2,120	\$0	\$40	\$0		\$5,540	\$7,700
Longmont	Vance Brand Municipal	LMO	\$2,400	\$206,440	\$50,480	\$0		\$72,370	\$331,690
Meeker	Meeker	EEO	\$790	\$3,000	\$2,190	\$0		\$7,120	\$13,100
Monte Vista	Monte Vista Municipal	MVI	\$1,010	\$4,650	\$1,480	\$0		\$1,380	\$8,520
Nucla	Hopkins Field	AIB	\$7,060	\$0	\$11,460	\$0		\$3,130	\$21,650
Pagosa Springs	Stevens Field	PSO	\$5,130	\$10,510	\$13,720	\$0		\$2,860	\$32,220
Paonia	North Fork Valley	7V2	\$1,770	\$0	\$0	\$0		\$0	\$1,770
Rangely	Rangely	4V0	\$1,930	\$13,490	\$600	\$0		\$6,710	\$22,730
Rifle	Rifle Garfield County	RIL	\$6,960	\$151,960	\$26,740	\$0		\$21,990	\$207,650
Saguache	Saguache Municipal	04V	\$660	\$0	\$0	\$0		\$0	\$660
Salida	Harriet Alexander	ANK	\$2,300	\$15,830	\$2,090	\$0		\$7,330	\$27,550
Springfield	Springfield Municipal	8V7	\$1,790	\$960	\$0	\$0		\$0	\$2,750
Steamboat Springs	Steamboat Springs-Bob Adams Field	SBS	\$10,640	\$96,200	\$700	\$0		\$3,540	\$111,080
Sterling	Sterling Municipal	STK	\$3,190	\$4,890	\$1,180	\$0		\$2,860	\$12,120
Trinidad	Perry Stokes	TAD	\$1,330	\$3,300	\$21,050	\$0		\$2,310	\$27,990
Walden	Walden-Jackson County	33V	\$930	\$0	\$0	\$0		\$0	\$930
Walsenburg	Spanish Peaks Airfield	4V1	\$330	\$130	\$3,150	\$0		\$1,380	\$4,990
Westcliffe	Silver West	C08	\$430	\$0	\$240	\$0		\$600	\$1,270
Wray	Wray Municipal	2V5	\$1,600	\$17,550	\$530	\$0		\$9,700	\$29,380
Yuma	Yuma Municipal	2V6	\$1,420	\$22,600	\$13,670	\$0		\$2,510	\$40,200
Total GA Airport Sales Taxes			\$226,750	\$9,586,410	\$417,400	\$1,540	\$0	\$1,730,210	\$11,962,310
Grand Total of Airport Sales Taxes			\$4,711,590	\$78,696,480	\$4,338,710	\$13,222,930	\$129,055,810	\$2,976,000	\$233,001,520

Source: KRAMER aerotek, inc., 2020

Table 6.10. Estimated State Income Taxes Paid by Employees Engaged in Aviation-Related Activities, 2018

Associated City	Airport Name	FAA ID	Airport Administration	Airport Tenants	Construction	Air Cargo*	CS Visitors	GA Visitors	Total
<i>Commercial Service</i>									
Alamosa	San Luis Valley	ALS	\$4,720	\$69,830	\$3,650		\$5,590	\$4,490	\$88,280
Aspen	Aspen-Pitkin County	ASE	\$87,390	\$619,790	\$31,820		\$2,839,950	\$133,930	\$3,712,880
Colorado Springs	Colorado Springs Municipal	COS	\$175,570	\$19,794,100	\$677,960		\$1,091,680	\$52,830	\$21,792,140
Cortez	Cortez Municipal	CEZ	\$3,520	\$52,020	\$230		\$7,500	\$5,610	\$68,880
Denver	Denver International	DEN	\$4,154,600	\$58,817,480	\$2,904,990		\$39,597,910	\$18,890	\$105,493,870
Durango	Durango-LaPlata County	DRO	\$37,060	\$382,870	\$31,130		\$440,320	\$24,380	\$915,760
Eagle	Eagle County Regional	EGE	\$29,060	\$527,660	\$75,130		\$1,719,630	\$80,120	\$2,431,600
Fort Collins/Loveland	Northern Colorado Regional	FNL	\$10,560	\$393,570	\$8,420			\$99,900	\$512,450
Grand Junction	Grand Junction Regional	GJT	\$45,320	\$1,525,780	\$34,790		\$194,980	\$30,230	\$1,831,100
Gunnison	Gunnison-Crested Butte Regional	GUC	\$22,400	\$214,980	\$20,460		\$140,410	\$14,870	\$413,120
Hayden	Yampa Valley Regional	HDN	\$52,950	\$536,410	\$46,120		\$350,670	\$9,830	\$995,980
Montrose	Montrose Regional	MTJ	\$33,590	\$265,380	\$42,040		\$441,830	\$11,740	\$794,580
Pueblo	Pueblo Memorial	PUB	\$23,400	\$351,790	\$18,530		\$5,070	\$13,030	\$411,820
Telluride	Telluride Regional	TEX	\$29,970	\$61,310	\$29,710		\$4,750	\$30,580	\$156,320
Total Commercial Service Employee State Income Taxes			\$4,710,110	\$83,612,970	\$3,924,980		\$46,840,290	\$530,430	\$139,618,780
<i>General Aviation</i>									
Akron	Colorado Plains Regional	AKO	\$1,690	\$54,260	\$2,650			\$4,740	\$63,340
Blanca	Blanca	05V	\$70	\$0	\$0			\$0	\$70
Boulder	Boulder Municipal	BDU	\$1,600	\$187,520	\$880			\$9,920	\$199,920
Brush	Brush Municipal	7V5	\$1,690	\$0	\$0			\$0	\$1,690
Buena Vista	Central Colorado Regional	AEJ	\$3,910	\$19,510	\$2,770			\$1,730	\$27,920
Burlington	Kit Carson County	ITR	\$1,320	\$10,160	\$1,480			\$3,320	\$16,280
Calhan	Calhan	5V4	\$1,070	\$1,400	\$0			\$0	\$2,470
Canon City	Fremont County	1V6	\$4,020	\$24,040	\$1,320			\$100	\$29,480
Center	Leach	1V8	\$150	\$1,630	\$0			\$0	\$1,780
Colorado Springs	Meadow Lake	FLY	\$0	\$107,600	\$1,940			\$14,850	\$124,390
Craig	Craig-Moffat County	CAG	\$560	\$14,420	\$1,010			\$2,460	\$18,450
Crawford	Crawford	99V	\$6,720	\$16,060	\$0			\$0	\$22,780
Creede	Mineral County Memorial	C24	\$70	\$2,420	\$610			\$330	\$3,430
Del Norte	Astronaut Kent Rominger	RCV	\$90	\$6,910	\$550			\$640	\$8,190
Delta	Blake Field	AJZ	\$230	\$29,820	\$7,510			\$650	\$38,210
Delta	Westwinds Airpark	D17	\$90	\$11,460	\$100			\$360	\$12,010
Denver	Centennial	APA	\$62,260	\$6,700,780	\$68,210			\$299,090	\$7,130,340
Denver	Colorado Air and Space Port	CFO	\$29,860	\$562,320	\$13,320			\$40,410	\$645,910
Denver	Rocky Mountain Metropolitan	BJC	\$26,330	\$2,174,230	\$113,030			\$102,720	\$2,416,310
Durango	Animas Airpark	00C	\$200	\$51,900	\$1,190			\$20	\$53,310

Associated City	Airport Name	FAA ID	Airport Administration	Airport Tenants	Construction	Air Cargo*	CS Visitors	GA Visitors	Total
Eads	Eads Municipal	9V7	\$10	\$3,110	\$60			\$20	\$3,200
Erie	Erie Municipal	EIK	\$600	\$101,450	\$2,800			\$13,790	\$118,640
Fort Morgan	Fort Morgan Municipal	FMM	\$420	\$7,980	\$7,900			\$3,210	\$19,510
Glenwood Springs	Glenwood Springs Municipal	GWS	\$1,560	\$45,620	\$1,150			\$2,850	\$51,180
Granby	Granby-Grand County	GNB	\$690	\$1,380	\$1,850			\$360	\$4,280
Greeley	Greeley-Weld County	GXY	\$6,950	\$396,990	\$23,310			\$41,030	\$468,280
Haxtun	Haxtun Municipal	17V	\$10	\$0	\$20			\$10	\$40
Holly	Holly	K08	\$90	\$350	\$0			\$0	\$440
Holyoke	Holyoke Municipal	HEQ	\$5,080	\$15,010	\$3,160			\$1,430	\$24,680
Julesburg	Julesburg Municipal	7V8	\$1,690	\$0	\$0			\$0	\$1,690
Kremmling	McElroy Field	20V	\$240	\$4,130	\$880			\$1,570	\$6,820
La Junta	La Junta Municipal	LHX	\$780	\$15,890	\$1,580			\$1,160	\$19,410
La Veta	Cuchara Valley	07V	\$10	\$0	\$0			\$0	\$10
Lamar	Lamar Municipal	LAA	\$40	\$15,910	\$530			\$550	\$17,030
Las Animas	Las Animas-Bent County	7V9	\$2,220	\$10	\$670			\$20	\$2,920
Leadville	Lake County	LXV	\$3,040	\$0	\$10,690			\$600	\$14,330
Limon	Limon Municipal	LIC	\$3,250	\$0	\$50			\$1,920	\$5,220
Longmont	Vance Brand Municipal	LMO	\$2,030	\$218,930	\$53,540			\$25,090	\$299,590
Meeker	Meeker	EEO	\$270	\$3,180	\$1,840			\$2,470	\$7,760
Monte Vista	Monte Vista Municipal	MVI	\$650	\$2,370	\$950			\$480	\$4,450
Nucla	Hopkins Field	AIB	\$8,970	\$0	\$9,660			\$1,090	\$19,720
Pagosa Springs	Stevens Field	PSO	\$10,770	\$22,080	\$11,560			\$990	\$45,400
Paonia	North Fork Valley	7V2	\$2,250	\$0	\$0			\$0	\$2,250
Rangely	Rangely	4V0	\$670	\$14,310	\$510			\$2,330	\$17,820
Rifle	Rifle Garfield County	RIL	\$7,380	\$161,150	\$22,540			\$7,620	\$198,690
Saguache	Saguache Municipal	04V	\$70	\$0	\$0			\$0	\$70
Salida	Harriet Alexander	ANK	\$1,480	\$8,090	\$1,760			\$2,540	\$13,870
Springfield	Springfield Municipal	8V7	\$190	\$330	\$0			\$0	\$520
Steamboat Springs	Steamboat Springs	SBS	\$11,280	\$61,820	\$740			\$1,230	\$75,070
Sterling	Sterling Municipal	STK	\$3,390	\$5,190	\$990			\$990	\$10,560
Trinidad	Perry Stokes	TAD	\$140	\$1,940	\$17,740			\$800	\$20,620
Walden	Walden-Jackson County	33V	\$100	\$0	\$0			\$0	\$100
Walsenburg	Spanish Peaks Airfield	4V1	\$40	\$10	\$2,650			\$480	\$3,180
Westcliffe	Silver West	C08	\$50	\$0	\$200			\$60	\$310
Wray	Wray Municipal	2V5	\$1,690	\$22,300	\$450			\$3,360	\$27,800
Yuma	Yuma Municipal	2V6	\$160	\$23,970	\$11,520			\$870	\$36,520
Total GA Airport Employee State Income Taxes			\$220,190	\$11,129,940	\$407,870		\$0	\$600,260	\$12,358,260
Grand Total of Direct State Income Taxes			\$4,930,300	\$94,742,910	\$4,332,850	\$16,790,360	\$46,840,290	\$1,130,690	\$168,767,400

Note: Air cargo activities are off- and not assigned to a specific but represent statewide totals.
 Source: KRAMER aerotek, inc., 2020

Table 6.11. Summary of Sales and Income Taxes Generated by Airport Activity, 2018

Associated City	Airport Name	FAA ID	Sales Tax	State Income Tax	Total Direct Taxes
<i>Commercial Service</i>					
Alamosa	San Luis Valley	ALS	\$686,960	\$88,280	\$775,240
Aspen	Aspen-Pitkin County	ASE	\$50,829,200	\$3,712,880	\$54,542,080
Colorado Springs	Colorado Springs Municipal	COS	\$42,562,170	\$21,792,140	\$64,354,310
Cortez	Cortez Municipal	CEZ	\$440,130	\$68,880	\$509,010
Denver	Denver International	DEN	\$1,367,893,000	\$105,493,870	\$1,473,386,870
Durango	Durango-La Plata County	DRO	\$12,602,560	\$915,760	\$13,518,320
Eagle	Eagle County Regional	EGE	\$28,095,360	\$2,431,600	\$30,526,960
Fort Collins/Loveland	Northern Colorado Regional	FNL	\$3,748,890	\$512,450	\$4,261,340
Grand Junction	Grand Junction Regional	GJT	\$11,591,840	\$1,831,100	\$13,422,940
Gunnison	Gunnison-Crested Butte Regional	GUC	\$4,861,580	\$413,120	\$5,274,700
Hayden	Yampa Valley Regional	HDN	\$10,717,440	\$995,980	\$11,713,420
Montrose	Montrose Regional	MTJ	\$12,569,910	\$794,580	\$13,364,490
Pueblo	Pueblo Memorial	PUB	\$1,866,000	\$411,820	\$2,277,820
Telluride	Telluride Regional	TEX	\$1,408,090	\$156,320	\$1,564,410
Total Commercial Service Airport Direct Taxes			\$1,549,873,130	\$139,618,780	\$1,689,491,910
<i>General Aviation</i>					
Akron	Colorado Plains Regional	AKO	\$303,860	\$63,340	\$367,200
Blanca	Blanca	05V	\$1,370	\$70	\$1,440
Boulder	Boulder Municipal	BDU	\$686,120	\$199,920	\$886,040
Brush	Brush Municipal	7V5	\$2,560	\$1,690	\$4,250
Buena Vista	Central Colorado Regional	AEJ	\$1,135,090	\$27,920	\$1,163,010
Burlington	Kit Carson County	ITR	\$70,560	\$16,280	\$86,840
Calhan	Calhan	5V4	\$6,990	\$2,470	\$9,460
Canon City	Fremont County	1V6	\$87,520	\$29,480	\$117,000
Center	Leach	1V8	\$6,740	\$1,780	\$8,520
Colorado Springs	Meadow Lake	FLY	\$669,330	\$124,390	\$793,720
Craig	Craig-Moffat County	CAG	\$179,370	\$18,450	\$197,820
Crawford	Crawford	99V	\$47,950	\$22,780	\$70,730

Associated City	Airport Name	FAA ID	Sales Tax	State Income Tax	Total Direct Taxes
Creede	Mineral County Memorial	C24	\$10,430	\$3,430	\$13,860
Del Norte	Astronaut Kent Rominger	RCV	\$92,670	\$8,190	\$100,860
Delta	Blake Field	AJZ	\$97,250	\$38,210	\$135,460
Delta	Westwinds Airpark	D17	\$37,150	\$12,010	\$49,160
Denver	Centennial	APA	\$23,116,480	\$7,130,340	\$30,246,820
Denver	Colorado Air and Space Port	CFO	\$2,700,890	\$645,910	\$3,346,800
Denver	Rocky Mountain Metropolitan	BJC	\$4,247,780	\$2,416,310	\$6,664,090
Durango	Animas Airpark	00C	\$100,170	\$53,310	\$153,480
Eads	Eads Municipal	9V7	\$9,870	\$3,200	\$13,070
Erie	Erie Municipal	EIK	\$442,110	\$118,640	\$560,750
Fort Morgan	Fort Morgan Municipal	FMM	\$101,280	\$19,510	\$120,790
Glenwood Springs	Glenwood Springs Municipal	GWS	\$615,390	\$51,180	\$666,570
Granby	Granby-Grand County	GNB	\$15,410	\$4,280	\$19,690
Greeley	Greeley-Weld County	GXY	\$2,121,580	\$468,280	\$2,589,860
Haxtun	Haxtun Municipal	17V	\$350	\$40	\$390
Holly	Holly	K08	\$3,010	\$440	\$3,450
Holyoke	Holyoke Municipal	HEQ	\$49,590	\$24,680	\$74,270
Julesburg	Julesburg Municipal	7V8	\$2,050	\$1,690	\$3,740
Kremmling	McElroy Field	20V	\$36,110	\$6,820	\$42,930
La Junta	La Junta Municipal	LHX	\$195,160	\$19,410	\$214,570
La Veta	Cuchara Valley	07V	\$130	\$10	\$140
Lamar	Lamar Municipal	LAA	\$54,260	\$17,030	\$71,290
Las Animas	Las Animas-Bent County	7V9	\$4,010	\$2,920	\$6,930
Leadville	Lake County	LXV	\$30,190	\$14,330	\$44,520
Limon	Limon Municipal	LIC	\$38,900	\$5,220	\$44,120
Longmont	Vance Brand Municipal	LMO	\$1,329,050	\$299,590	\$1,628,640
Meeker	Meeker	EEO	\$60,200	\$7,760	\$67,960
Monte Vista	Monte Vista Municipal	MVI	\$20,880	\$4,450	\$25,330
Nucla	Hopkins Field	AIB	\$43,650	\$19,720	\$63,370
Pagosa Springs	Stevens Field	PSO	\$76,520	\$45,400	\$121,920
Paonia	North Fork Valley	7V2	\$10,480	\$2,250	\$12,730

Associated City	Airport Name	FAA ID	Sales Tax	State Income Tax	Total Direct Taxes
Rangely	Rangely	4V0	\$92,730	\$17,820	\$110,550
Rifle	Rifle Garfield County	RIL	\$602,850	\$198,690	\$801,540
Saguache	Saguache Municipal	04V	\$700	\$70	\$770
Salida	Harriet Alexander	ANK	\$118,440	\$13,870	\$132,310
Springfield	Springfield Municipal	8V7	\$6,450	\$520	\$6,970
Steamboat Springs	Steamboat Springs	SBS	\$347,600	\$75,070	\$422,670
Sterling	Sterling Municipal	STK	\$41,470	\$10,560	\$52,030
Trinidad	Perry Stokes	TAD	\$49,650	\$20,620	\$70,270
Walden	Walden-Jackson County	33V	\$3,380	\$100	\$3,480
Walsenburg	Spanish Peaks Airfield	4V1	\$14,530	\$3,180	\$17,710
Westcliffe	Silver West	C08	\$2,900	\$310	\$3,210
Wray	Wray Municipal	2V5	\$72,100	\$27,800	\$99,900
Yuma	Yuma Municipal	2V6	\$55,400	\$36,520	\$91,920
GA Airport Total Direct Taxes			\$40,268,660	\$12,358,260	\$52,626,920
Grand Total of Direct Taxes			\$1,603,364, 720	\$168,767,400	\$1,772,132,120

Source: KRAMER aerotek, inc., 2020

Chapter 7. Colorado's Agricultural Sector and Airports

Agriculture is a significant driver of Colorado's economy, generating \$7.5 billion in revenue, not including sales generated by food processing, biotechnology, and other industries in the state that use agricultural products.²⁴ A multibillion-dollar industry, crops produced in Colorado are sold across the United States and internationally. These sales expand the Colorado economy by bringing dollars from these markets into the state. In turn, earnings from the export of crops support jobs, wages, and profits in the agriculture sector and are used to purchase business supplies from other Colorado businesses and in the re-spending of wages and profits in local economies. Across Colorado, more than 70,000 people are classified as "producers" and almost 38,000 additional Coloradans are listed as hired farm labor. Of these, almost 27,000 producers' primary occupation is farming, and more than 16,000 hired laborers worked 150 days or more.²⁵

Aerial application businesses contribute significantly to the state economy as they are an important component of Colorado's agricultural sector. Specifically, aerial application helps by:

1. Preserve cropland value by preventing surface disruption associated with tractors.
2. Supports Colorado industries by employing pilots and enabling crop production.
3. Increases crop production yields efficiently and cost-effectively.

While not Colorado-specific, the importance of aerial application to crop protection was demonstrated after September 11, 2001. In the aftermath, all aircraft were initially grounded; however, agricultural aircraft were the first GA operators to be allowed back in the air. Subsequently, these aircraft were prohibited from operating on three separate occasions as the nation worked through national security concerns. During this time, it is estimated that nearly \$3 billion in California crops were at risk due to a pest infestation and the inability to provide aerial application and crop protection.²⁶

The following sections examine aerial application's statewide economic contribution in detail. This analysis demonstrates how aviation is important to Colorado's agricultural sector and a variety of other industries throughout the state. In total, Colorado's aerial application industry supports over 5,000 jobs and generates approximately \$864 million in annual business revenues, \$342 million of which contributes to Colorado's GSP.

7.1. Preserving Crop Value

According to the National Agricultural Aviation Association (NAAA), there are approximately 1,560 aerial application businesses located in 42 states.²⁷ Currently, Colorado has 40 aerial application businesses with 102 employees.²⁸ The U.S. Department of Agriculture (USDA) collects data about crop protection including within the state of Colorado. Among the state's major crops that receive various

²⁴ United States Department of Agriculture, 2017 Census of Agriculture, Table 2.

²⁵ Ibid, Tables 7 and 45.

²⁶ <https://www.agairupdate.com/ag-pilots-demonstrated-need-to-be-proactive-during-911/>

²⁷ National Agricultural Aviation Association, "Industry Facts," <https://www.agaviation.org/industryfacts>, accessed April 12, 2019.

²⁸ Email from Jessica Freeman, Executive Director, Colorado Agricultural Aviation Association, Inc., July 2, 2019.



applications (e.g., fertilizer, pesticides, herbicides), approximately 28 percent of harvested acres are treated by aerial applicators.

Increasingly, aircraft are used to apply liquid and dry fertilizer formulations (other application methods include tractors and chemigation through irrigation water).²⁹ Aerial seeding of cover crops is also a growing segment for aerial applicators. Cover crops are an environmental solution to improve soil health, reduce tillage, and provide a secondary crop or forage on a single plot of land.

To estimate the value of crops preserved in Colorado, an understanding of the extent of aerial application is needed. NAAA estimates that 28 percent of all cropland is treated by aerial applicators. By applying this national average to acres harvested in Colorado, it is estimated that 725,200 acres of corn, 547,120 acres of wheat, 204,400 acres of alfalfa, 15,400 acres of potatoes, and 1,960 acres of oats received aerial application at least once in 2018 (see Table 7.1).³⁰

Table 7.1. Colorado Field Crop Production and Protection in 2018

Colorado Field Crop Production and Protection in 2018			
Crop	Acres Harvested	Aerial Application	
		Acres Treated (percent)	Estimated Acres Treated
Corn	2,590,000	28%	725,200
Wheat	1,954,000		547,120
Alfalfa	730,000		204,400
Potatoes	55,000		15,400
Oats	7,000		1,960
Total major treated crops	4,606,000	28%	1,289,680

Sources: USDA 2018 Colorado State Agricultural Overview; NAAA, 2019

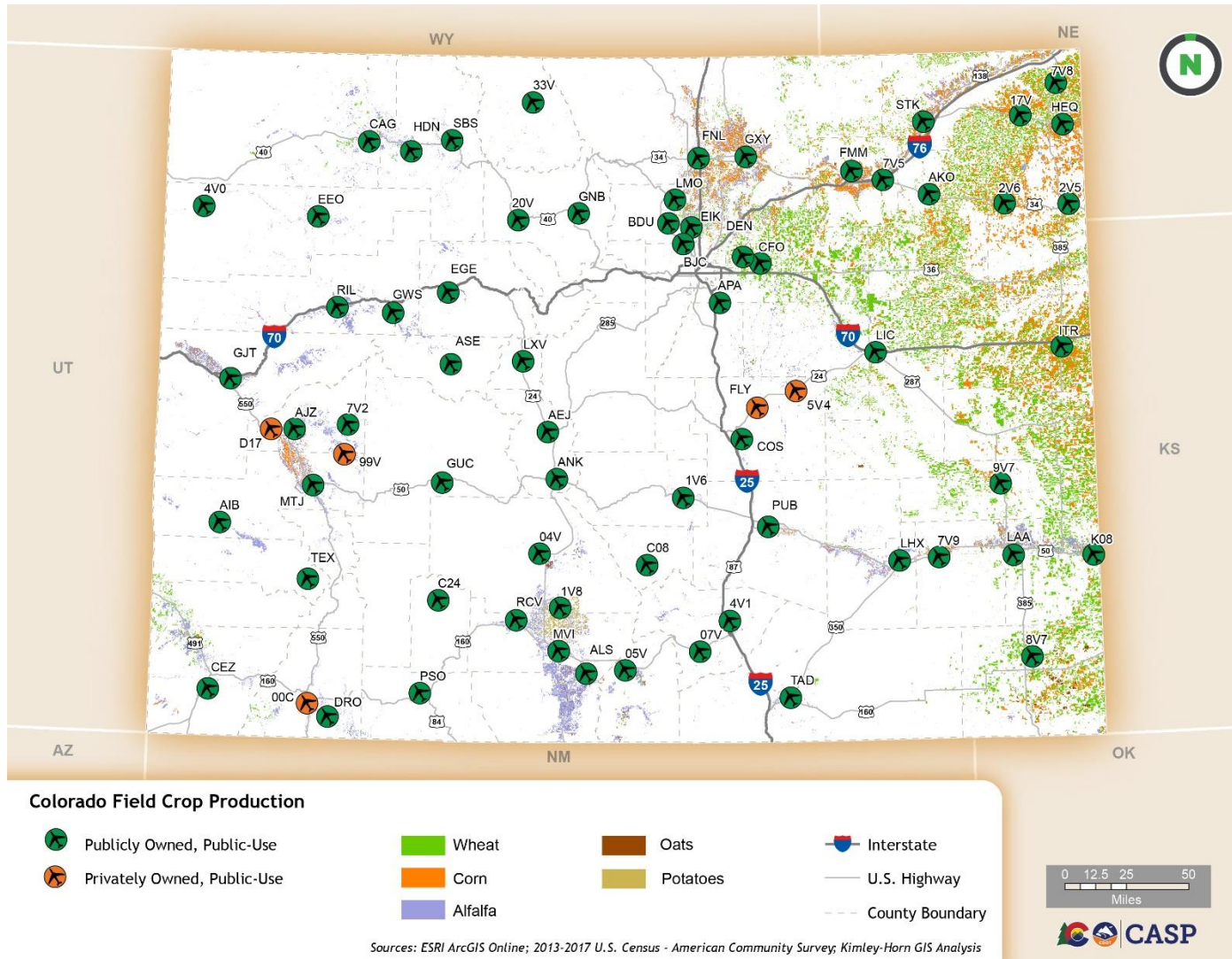
In addition to these major Colorado crops, specialty crops such as melons, sweet corn, chilies, and pumpkins are also treated through aerial application. More recently, hemp is a new crop that may receive aerial application once the Colorado Department of Agriculture provides final policy on approved treatments.

Figure 7.1 illustrates major crop field production in Colorado.

²⁹ Comments from Jessica Freeman, Executive Director, Colorado Agricultural Aviation Association, Inc., 2019.

³⁰ No Colorado-specific data were provided regarding aerial application rates by crop; therefore, the NAAA’s national average of 28 percent was applied to all Colorado acreage. It is assumed that similar crop protection practices are adopted across most states (i.e., farmers that grow certain crops know that aerial application provides certain benefits).

Figure 7.1. Colorado Crop Field Production



Sources: ESRI ArcGIS Online; 2013-2017 U.S. Census - American Community Survey; Kimley-Horn GIS Analysis, 2019

7.1.1. Value of Aerial-Treated Crops

Using the crop production information contained in **Table 7.1** combined with average per acre crop yields; average dollar value by crop; and dollar loss due to crop surface disruption, an estimate can be made of the agricultural value of aerial treatment in Colorado. Average corn yields in Colorado are 130 bushels per acre, meaning that the 725,200 aerial-treated acres from **Table 7.1** translates to an estimated 94.3 million bushels that are aerial-treated. Priced at \$3.75 per bushel in Colorado, the estimated value of the state’s aerial-treated corn crop in 2018 was \$353.6 million. Using the same methodology, the aerial-treated wheat crop is valued at \$92.1 million, alfalfa at \$152.2 million, potatoes at \$59.1 million, and oats at approximately \$358,000. The total value of Colorado’s major aerial-treated crops in 2018 was an estimated \$657.4 million as shown in **Table 7.2**.

Table 7.2. Colorado Field Crop Yields and Dollar Value (2018\$)

Colorado Field Crop Yields and Dollar Value (2018\$)				
Crop	Per Acre Yield	Aerial-Treated Cropland Yield (thousand units)	Price per Unit	Value of Aerial-Treated Cropland (millions \$)
Corn	130 bushels	94,300	\$3.75	\$353.6
Wheat	36.1 bushels	19,800	\$4.65	\$92.1
Alfalfa	3.4 tons	695	\$219.00	\$152.2
Potatoes*	395 Cwt	6,100	\$9.69	\$59.1
Oats	50 bushels	98	\$3.65	\$0.358
Total major treated crops		N/A	N/A	\$657.4

*Potatoes are measured in hundredweight (Cwt). One Cwt equals 100 pounds.

Source: USDA 2018 State Agriculture Overview for Colorado, 2019

7.1.2. Effect of Surface Disruption

Zero surface disruption is one of the primary advantages of aerial application. Surface disruption occurs when tractors equipped with sprayers decrease crop yields through crop trampling and soil compaction. Three percent of total crop yield is typically lost to surface disruption when tractors apply crop protection products.³¹ Using this figure, it is estimated that approximately 2.8 million bushels of corn, 594,000 bushels of wheat, 20,900 tons of alfalfa, 183,000 hundredweight (18.3 million pounds) of potatoes, and 2,900 bushels of oats would have been lost if not for aerial application in Colorado. This equates to over \$10.6 million worth of corn protected by aerial application in 2018. In addition, aerial application is estimated to have protected \$2.8 million worth of wheat, \$4.6 million worth of alfalfa, \$1.8 million worth of potatoes, and approximately \$10,700 worth of oats. As shown in **Table 7.3**, the annual value protected by aerial applicators for Colorado’s major treated crops is estimated at \$19.7 million.

³¹ Russ Gasper, “Agriculture, Aerial Applicators and Airports,” 2015, *Agricultural Aviation*, http://www.agaviationmagazine.org/agriculturalaviation/september_october_2015?pg=54#pg54.

Table 7.3. Effect of Surface Disruption on Colorado Crop Yields and Dollar Value (2018\$)

Effect of Surface Disruption on Colorado Crop Yields and Dollar Value (2018\$)					
Crop	Aerial-Treated Cropland Yield (thousand units)	Average Yield Loss Due to Surface Disruption	Estimated Loss Due to Surface Disruption (thousand units)	Price per Unit	Value of Loss Due to Surface Disruption
Corn	94,300	3%	2,829	\$3.75	\$10,608,800
Wheat	19,800		594	\$4.65	\$2,762,100
Alfalfa	695		20.9	\$219.00	\$4,577,100
Potatoes	6,100		183	\$9.69	\$1,773,300
Oats	98		2.9	\$3.65	\$10,700
Total major treated crops			N/A	N/A	\$19,732,000

Source: USDA 2018 State Agriculture Overview for Colorado, 2019

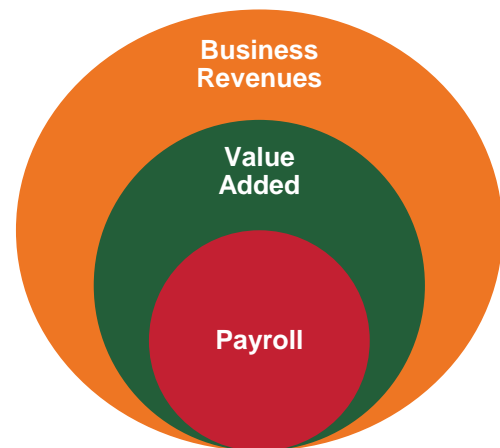
7.2. Supporting Colorado Industries

USDA and U.S. Department of Commerce data assembled by IMPLAN indicates that the industry providing support activities for Colorado’s agriculture and forestry sectors employs approximately 11,200 workers and generates \$376.5 million in payroll (including the value of benefits), \$384.5 million in value added, and \$427.5 million in business revenues (based on 2017 data). Payroll is a component of value added and value added is a component of business revenues (Figure 7.2).³²

As noted previously, Colorado’s 40 active aerial application businesses support 102 jobs. Using average state- and industry-specific business revenues-per-worker values, these jobs are associated with an estimated:

- \$2.86 million in payroll
- \$2.92 million in value added
- \$3.24 million in annual business revenues

Figure 7.2. Economic Impact Measures



7.2.1. Grain & Vegetable Farming

Crop production provides an important contribution to Colorado’s economy. The state’s grain farming industry, which includes wheat, and oat harvesting, provides nearly 3,200 jobs and generates \$57.5 million in payroll, \$47.8 million in value added, and \$1.1 billion in business revenues annually as shown in Table 7.4. The industry’s \$57.5 million in payroll includes \$26 million in employee compensation

³² Payroll is based on the U.S. Bureau of Economic Analysis concept of Personal Income (called Labor Income in IMPLAN), which includes compensation and the value of employer-provided benefits.

(wages and benefits) and \$31 million in owner income, an amount that likely reflects high rates of self-ownership in the agriculture sector.

The vegetable farming industry, which includes corn and potato, and alfalfa harvesting provides over 2,600 jobs and generates \$129.3 million in payroll, \$229.5 million in value added, and \$407.2 million in business revenues annually. The industry’s \$129.3 million in payroll includes \$97.5 million in employee compensation and \$31.8 million is owner income. Value added-per-worker is significantly higher in Colorado’s vegetable farming industry than in grain farming, primarily because the former pays higher wages.

Because aerial application covers only a portion of all cropland in Colorado, the direct economic contributions of grain farming and vegetable farming are adjusted using the 28 percent figure previously discussed. This percentage is applied to the total contribution of each industry to arrive at the value of farms receiving aerial application only. These farms generate an estimated \$431.5 million in annual business revenues that support 1,630 jobs and \$52.3 million in payroll, as well as \$77.6 million in value added (see **Table 7.4**).

Table 7.4. Direct Economic Contribution of Industries Producing Colorado’s Major Crops by Total & Aerial-Treated Crop Production (2018\$)

Direct Economic Contribution of Industries Producing Colorado’s Major Crops by Total & Aerial-Treated Crop Production (2018\$)				
Industry	Jobs	Payroll (millions \$)	Value Added (millions \$)	Business Revenues (millions \$)
All Crop Production				
Grain farming	3,190	\$57.5	\$47.8	\$1,134.0
Vegetable farming	2,640	\$129.3	\$229.5	\$407.2
Total, all crop production	5,830	\$186.8	\$277.3	\$1,541.2
Aerial-treated Crop Production				
Grain farming	890	\$16.1	\$13.4	\$317.5
Vegetable farming	740	\$36.2	\$64.2	\$114.0
Total, all crop production	1,630	\$52.3	\$77.6	\$431.5

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

7.2.2. Total Role of Aerial Spraying in the Colorado Economy

The total contribution of aerial spraying to the Colorado state economy—including jobs associated with aerial-treated crops and jobs in aerial application—amounts to over \$870 million in annual business revenues and 5,140 jobs as depicted in **Table 7.5**. This includes \$431.5 million in direct business revenues and over 1,600 direct jobs. These direct impacts represent the sales made by aerial applicators and farms plus the workers they employ full- and part-time.

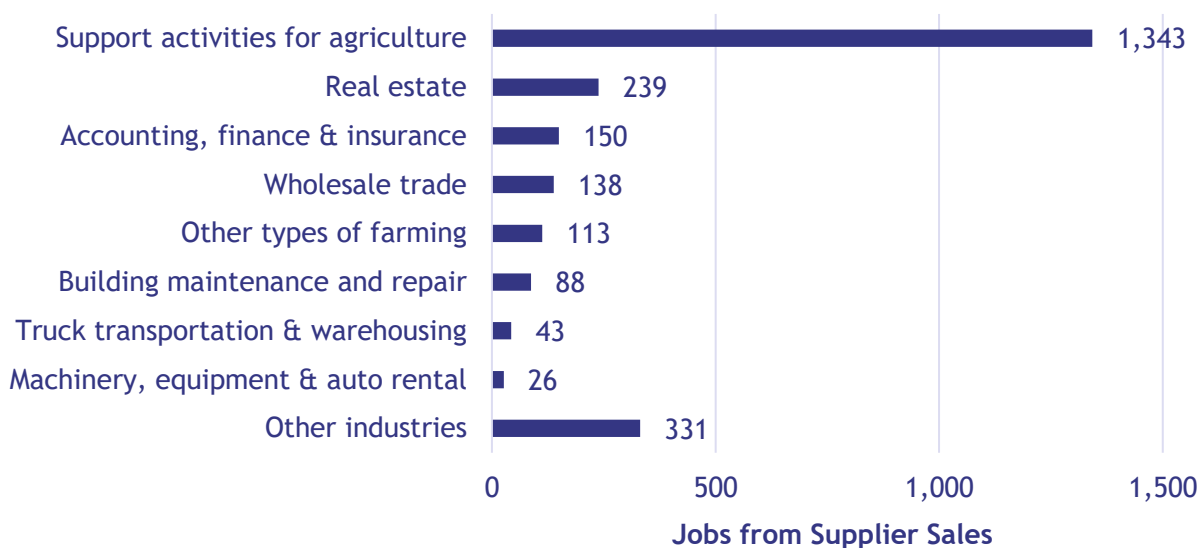
Table 7.5. Total Contribution of Aerial Application to the Colorado Economy (2018\$)

Total Contribution of Aerial Application to the Colorado Economy (2018\$)				
Impact Type	Jobs	Payroll (millions \$)	Value Added (millions \$)	Business Revenues (millions \$)
Direct impact	1,630	\$52.3	\$77.6	\$431.5
Supplier sales effect	2,470	\$113.8	\$176.2	\$284.6
Income re-spending effect	1,040	\$50.4	\$91.7	\$156.7
Total contribution	5,140	\$216.6	\$345.6	\$872.8

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

The direct activities of aerial applicators and farms involve purchasing supplies, equipment, and services from other Colorado businesses. These supplier sales support an additional 2,470 jobs. Over half of these additional jobs are in the industry that provides support activities for agriculture. This industry employs farmworkers and other laborers who operate equipment, maintain crops and nurseries, and care for farm animals, among other tasks.³³ The remaining jobs are in a range of industries that support aerial applicators as identified in **Figure 7.3**.

Figure 7.3. Jobs from Supplier Sales in Select Industries

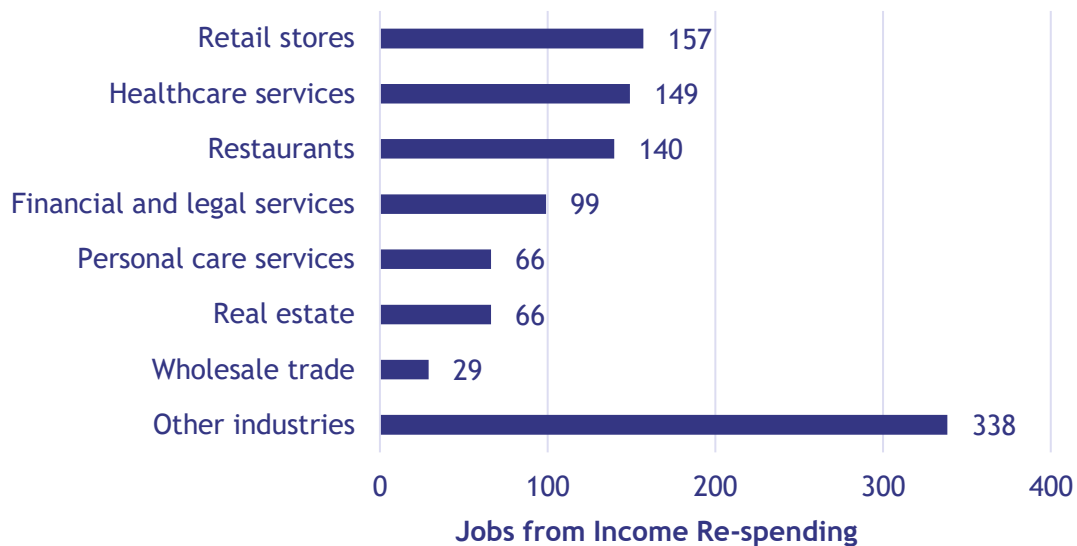


Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Income re-spending leads to an additional 1,040 jobs. These jobs are created when workers at aerial applicators and supplier companies spend their wages at Colorado businesses. As a result, these jobs exist in dozens of industries. The industries with the largest number of income re-spending jobs include retail, healthcare services, restaurants, financial and legal services, personal care services, real estate, and wholesale trade as shown in **Figure 7.4**.

³³ <https://www.bls.gov/iag/tgs/iag115.htm>

Figure 7.4. Jobs from Income Re-spending in Select Industries



Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

7.3. Summary

Aerial applicators generate significant economic activity in Colorado. They not only protect crop value by preventing surface disruption, but also support the state’s agricultural sector and a variety of other industries by purchasing supplies and paying wages that are spent at businesses throughout the state. The variety of industries supported by supplier sales and income re-spending within Colorado demonstrates the extensive reach of Colorado’s aerial application industry.

Appendix A. Glossary

Term	Definition
Business Revenues (Output)	In this study, the term “business revenues” is used to describe output, which is value added plus the cost of its intermediate inputs (including energy, raw materials, semi-finished goods, and services that are purchased from all sources). This is largely the value of sales or receipts and other operating income.
Direct Effects	The terminology around direct and multiplier effects are not uniform across studies. Defined in this study: direct effects take place in the industry immediately affected, whether it is on- or off-airport. These include on-airport activities, spending by air visitors off-airport, and the production of air cargo.
Economic Impacts	Economic impacts are effects on the level of economic activity in a given region, or in the case of this study, it is the contribution of airports to the level of economic activity in Colorado and each of 14 OEDIT regions and a special region for DEN. Economic impacts are shown as (1) jobs; (2) business revenues (essentially business sales and expenditures by public agencies); (3) payroll; and (4) value added (or GDP).
Jobs	Jobs are the sum of full and part-time workers, which is the same definition used by the BLS and the BEA. This is also referred to as a “headcount.” Jobs include wage and salary employees as well as proprietors.
NAICS (North American Industrial Classification System)	NAICS is the means used by federal statistical agencies to classify business establishments for collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS is organized by sectors and each sector is numbered. The specificity of a sector is analogous to the number of “digits” represented by that sector. For example, sector 48-49 (considered a two-digit sector) is “Transportation and Warehousing;” sector 481 is “Air Transportation;” and sector 4811 is “Scheduled Passenger Transportation.”



Term	Definition
On-airport	Activities occurring on an airport. These activities broadly include airside activities, terminal services to passengers (including concessions), air-related services by government agencies, construction, and airport administration.
Payroll	For this study, payroll is defined as total compensation for work including gross wages, salaries, proprietor income, employer-provided benefits, and taxes paid to governments on behalf of employees.
Supplier Sales and Income Re-spending Multiplier Effects	The terminology around multiplier effects is not uniform across studies. Defined in this study, multiplier impacts are made up of indirect and induced effects, which are labeled as “supplier sales” and “income re-spending” to carry intuitive descriptions of the two streams of effects. Supplier sales (indirect effects) measure the purchase of supplies and services needed to produce directly supplied products and services. Income re-spending (induced effects) measure the effects of the changes in household income, meaning the effects from the spending of wages earned by workers of directly and indirectly affected industries. Total impacts are the summation of direct and multiplier (supplier sales and income re-spending) effects.
Value Added/GSP/GDP	The value added of a company or an industry consists of compensation of employees, taxes paid on production and imports, and gross operating surplus. Value added equals the difference between an industry’s gross output and the cost of its intermediate inputs. Value added for companies across industries and across Colorado in the GSP and across the U.S. it is a measure of GDP.
Visitor Spending	In this study, “visitor spending” is defined as <u>off-airport</u> spending by out-of-state and international visitors who arrive by air to Colorado. Typical spending categories are retail purchases, food and drink, entertainment, lodging, and off-airport transportation. Spending by visitors on these items are counted as direct impacts, which then trigger additional impacts from supplier sales and income re-spending.

Appendix B. Direct and Total Economic Impacts by Airport

Associated City	Airport Name	FAA ID	Direct				Total			
			Jobs	Payroll	Value Added	Business Revenues	Jobs	Payroll	Value Added	Business Revenues
<i>Commercial Service</i>										
Alamosa	San Luis Valley Regional	ALS	114	\$4,682,000	\$7,410,000	\$18,448,000	229	\$10,794,000	\$17,531,000	\$35,298,000
Aspen	Aspen-Pitkin County	ASE	4,839	\$204,928,000	\$334,466,000	\$533,428,000	7,886	\$363,569,000	\$603,899,000	\$988,982,000
Colorado Springs	Colorado Springs Municipal	COS	15,201	\$1,014,222,000	\$1,480,640,000	\$1,949,773,000	25,093	\$1,523,173,000	\$2,359,205,000	\$3,426,931,000
Cortez	Cortez Municipal	CEZ	63	\$3,347,000	\$4,426,000	\$7,520,000	111	\$5,905,000	\$8,639,000	\$14,619,000
Denver	Denver International	DEN	147,410	\$6,239,985,000	\$10,458,092,000	\$17,861,594,000	259,084	\$11,110,914,000	\$18,724,455,000	\$33,509,152,000
Durango	Durango-La Plata County	DRO	1,799	\$59,099,000	\$92,770,000	\$156,874,000	2,707	\$107,011,000	\$173,791,000	\$293,694,000
Eagle	Eagle County Regional	EGE	3,150	\$133,338,000	\$212,143,000	\$343,903,000	5,147	\$237,607,000	\$388,976,000	\$642,042,000
Grand Junction	Grand Junction Regional	GJT	1,636	\$90,209,000	\$150,476,000	\$437,482,000	3,399	\$189,721,000	\$312,318,000	\$710,960,000
Gunnison	Gunnison-Crested Butte Regional	GUC	669	\$24,451,000	\$37,080,000	\$64,639,000	1,054	\$44,857,000	\$71,083,000	\$121,878,000
Hayden	Yampa Valley	HDN	1,727	\$59,275,000	\$93,726,000	\$163,336,000	2,724	\$111,500,000	\$181,887,000	\$311,882,000
Fort Collins/Loveland	Northern Colorado Regional	FNL	611	\$26,786,000	\$41,123,000	\$89,275,000	1,072	\$51,914,000	\$83,188,000	\$160,874,000
Montrose	Montrose Regional	MTJ	1,812	\$56,531,000	\$97,522,000	\$173,252,000	2,850	\$111,356,000	\$188,900,000	\$327,264,000
Pueblo	Pueblo Memorial	PUB	427	\$20,839,000	\$24,937,000	\$52,982,000	775	\$38,661,000	\$55,209,000	\$103,708,000
Telluride	Telluride Regional	TEX	243	\$9,114,000	\$13,549,000	\$26,681,000	414	\$18,270,000	\$28,523,000	\$51,884,000
<i>General Aviation</i>										
Akron	Colorado Plains Regional	AKO	59	\$3,008,000	\$4,766,000	\$8,600,000	102	\$5,399,000	\$8,655,000	\$15,090,000
Blanca	Blanca	05V	2	\$14,000	\$17,000	\$34,000	4	\$27,000	\$37,000	\$68,000
Boulder	Boulder Municipal	BDU	112	\$8,451,000	\$12,651,000	\$29,430,000	299	\$16,766,000	\$26,276,000	\$54,732,000
Brush	Brush Municipal	7V5	1	\$79,000	\$303,000	\$386,000	4	\$236,000	\$552,000	\$800,000
Buena Vista	Central Colorado Regional	AEJ	40	\$1,585,000	\$2,549,000	\$7,536,000	90	\$4,212,000	\$6,983,000	\$14,853,000
Burlington	Kit Carson County	ITR	21	\$874,000	\$1,248,000	\$1,863,000	32	\$1,428,000	\$2,203,000	\$3,469,000
Calhan	Calhan	5V4	3	\$138,000	\$197,000	\$788,000	6	\$302,000	\$459,000	\$1,227,000
Canon City	Fremont County	1V6	27	\$1,444,000	\$1,817,000	\$4,686,000	51	\$2,729,000	\$3,967,000	\$8,288,000
Center	Leach	1V8	4	\$95,000	\$105,000	\$209,000	6	\$181,000	\$240,000	\$432,000
Colorado Springs	Meadow Lake	FLY	149	\$6,655,000	\$9,738,000	\$26,371,000	273	\$13,442,000	\$20,865,000	\$45,010,000
Craig	Craig-Moffat	CAG	24	\$1,015,000	\$1,873,000	\$4,092,000	50	\$2,411,000	\$4,263,000	\$8,103,000
Crawford	Crawford	99V	11	\$925,000	\$895,000	\$1,582,000	23	\$1,582,000	\$1,926,000	\$3,299,000
Creede	Mineral County Memorial	C24	4	\$165,000	\$250,000	\$660,000	7	\$325,000	\$510,000	\$1,094,000
Del Norte	Astronaut Kent Rominger	RCV	14	\$492,000	\$933,000	\$2,874,000	31	\$1,361,000	\$2,440,000	\$5,383,000
Delta	Blake Field	AJZ	25	\$1,634,000	\$1,903,000	\$3,572,000	48	\$2,861,000	\$3,912,000	\$6,939,000
Delta	Westwinds	D17	7	\$506,000	\$583,000	\$1,028,000	14	\$896,000	\$1,224,000	\$2,098,000
Denver	Centennial	APA	3,876	\$298,914,000	\$489,084,000	\$1,184,358,000	10,341	\$593,537,000	\$974,495,000	\$2,087,182,000
Denver	Rocky Mountain Metropolitan	BJC	1,318	\$101,984,000	\$160,781,000	\$444,841,000	3,312	\$193,442,000	\$312,144,000	\$730,848,000
Denver	Colorado Air and Space Port	CFO	539	\$30,217,000	\$41,202,000	\$64,522,000	915	\$46,371,000	\$69,043,000	\$116,428,000
Durango	Animas Airpark	00C	19	\$1,981,000	\$2,662,000	\$5,372,000	49	\$3,584,000	\$5,309,000	\$9,815,000

Associated City	Airport Name	FAA ID	Direct				Total			
			Jobs	Payroll	Value Added	Business Revenues	Jobs	Payroll	Value Added	Business Revenues
Eads	Eads Municipal	9V7	10	\$268,000	\$282,000	\$329,000	13	\$359,000	\$445,000	\$601,000
Erie	Erie Municipal	EIK	115	\$5,825,000	\$9,172,000	\$20,773,000	214	\$11,231,000	\$18,087,000	\$35,925,000
Fort Morgan	Fort Morgan Municipal	FMM	28	\$1,087,000	\$1,530,000	\$2,710,000	44	\$1,932,000	\$2,939,000	\$5,077,000
Glenwood Springs	Glenwood Springs Municipal	GWS	73	\$2,952,000	\$7,123,000	\$17,886,000	202	\$10,029,000	\$18,338,000	\$36,674,000
Granby	Granby-Grand County	GNB	6	\$230,000	\$321,000	\$616,000	10	\$451,000	\$678,000	\$1,214,000
Greeley	Greeley-Weld County	GXY	587	\$24,470,000	\$36,682,000	\$72,319,000	926	\$42,392,000	\$67,373,000	\$125,132,000
Haxtun	Haxtun Municipal	17V	3	\$2,000	\$8,000	\$11,000	5	\$6,000	\$15,000	\$22,000
Holly	Holly	K08	3	\$47,000	\$54,000	\$77,000	5	\$72,000	\$95,000	\$145,000
Holyoke	Holyoke	HEQ	21	\$1,165,000	\$1,380,000	\$2,079,000	34	\$1,818,000	\$2,473,000	\$3,901,000
Julesburg	Julesburg Municipal	7V8	2	\$77,000	\$67,000	\$87,000	4	\$111,000	\$122,000	\$179,000
Kremmling	Mc Elroy Airfield	20V	9	\$345,000	\$562,000	\$1,067,000	16	\$750,000	\$1,211,000	\$2,151,000
La Junta	La Junta Municipal	LHX	31	\$1,155,000	\$1,700,000	\$5,402,000	65	\$2,912,000	\$4,716,000	\$10,388,000
La Veta	Cuchara Valley	07V	1	\$2,000	\$1,000	\$5,000	3	\$4,000	\$4,000	\$10,000
Lamar	Lamar Municipal	LAA	11	\$718,000	\$846,000	\$1,532,000	22	\$1,307,000	\$1,780,000	\$3,077,000
Las Animas	Las Animas-Bent County	7V9	4	\$132,000	\$114,000	\$239,000	6	\$211,000	\$241,000	\$450,000
Leadville	Lake County	LXV	15	\$728,000	\$1,030,000	\$2,276,000	29	\$1,463,000	\$2,227,000	\$4,286,000
Limon	Limon Municipal	LIC	7	\$282,000	\$397,000	\$672,000	11	\$491,000	\$750,000	\$1,263,000
Longmont	Vance Brand	LMO	258	\$14,275,000	\$19,280,000	\$35,971,000	490	\$24,097,000	\$36,439,000	\$68,036,000
Meeker	Meeker/Coulter Field	EEO	12	\$462,000	\$703,000	\$1,277,000	19	\$889,000	\$1,411,000	\$2,473,000
Monte Vista	Monte Vista Municipal	MVI	7	\$266,000	\$299,000	\$551,000	10	\$449,000	\$600,000	\$1,054,000
Nucla	Hopkins Field	AIB	17	\$927,000	\$1,005,000	\$2,032,000	29	\$1,565,000	\$2,060,000	\$3,815,000
Pagosa Springs	Stevens Field	PSO	19	\$1,807,000	\$2,080,000	\$3,389,000	42	\$2,998,000	\$4,007,000	\$6,629,000
Paonia	North Fork Valley	7V2	2	\$134,000	\$172,000	\$297,000	4	\$239,000	\$345,000	\$586,000
Rangely	Rangely	4V0	19	\$911,000	\$1,227,000	\$2,252,000	34	\$1,651,000	\$2,528,000	\$4,440,000
Rifle	Rifle Garfield County	RIL	144	\$9,220,000	\$11,981,000	\$21,291,000	277	\$16,348,000	\$23,654,000	\$40,945,000
Saguache	Saguache Municipal	04V	1	\$11,000	\$12,000	\$23,000	3	\$21,000	\$27,000	\$48,000
Salida	Harriet Alexander Field	ANK	21	\$844,000	\$1,328,000	\$3,694,000	44	\$2,068,000	\$3,278,000	\$6,937,000
Springfield	Springfield Municipal	8V7	4	\$71,000	\$84,000	\$130,000	6	\$112,000	\$153,000	\$245,000
Steamboat Springs	Steamboat Springs	SBS	94	\$4,149,000	\$6,096,000	\$12,841,000	184	\$9,021,000	\$14,029,000	\$26,113,000
Sterling	Sterling Municipal	STK	9	\$512,000	\$723,000	\$1,200,000	17	\$916,000	\$1,409,000	\$2,349,000
Trinidad	Perry Stokes	TAD	22	\$1,059,000	\$1,322,000	\$2,723,000	36	\$1,789,000	\$2,563,000	\$4,772,000
Walden	Walden-Jackson County	33V	6	\$27,000	\$35,000	\$61,000	8	\$48,000	\$70,000	\$119,000
Walsenburg	Spanish Peaks Airfield	4V1	6	\$177,000	\$238,000	\$484,000	8	\$308,000	\$459,000	\$848,000
Westcliffe	Silver West	C08	3	\$26,000	\$45,000	\$97,000	5	\$60,000	\$99,000	\$188,000
Wray	Wray Municipal	2V5	23	\$1,272,000	\$1,536,000	\$2,023,000	35	\$1,858,000	\$2,558,000	\$3,745,000
Yuma	Yuma Municipal	2V6	33	\$1,726,000	\$1,972,000	\$2,950,000	49	\$2,557,000	\$3,411,000	\$5,375,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Appendix C. Comparison of 2020 and 2013 CEIS Results

2020 Colorado Aviation Economic Impact Study - Airport Economic Impacts

Airport		Current Study (2018 Data)					2013 Study (2012 Data)				Difference Current-2013				
		Total Impacts					Total Impacts								
Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues 2018	Jobs 2013	Payroll 2013	Value Added 2013	Business Revenues 2012	Jobs Comparison	Payroll Comparison	Value Added Comparison	Business Revenues Comparison	Change in Business Revenues
<i>Commercial Service</i>															
Alamosa	San Luis Valley Regional	ALS	229	\$10,794,000	\$17,531,000	\$35,298,000	176	\$6,669,000	N/P	\$23,533,000	53	\$4,125,000	N/A	\$11,765,000	49.99%
Aspen	Aspen-Pitkin County	ASE	7,886	\$363,569,000	\$603,899,000	\$988,982,000	8,310	\$283,004,000	N/P	\$841,143,000	(424)	\$80,565,000	N/A	\$147,839,000	17.58%
Colorado Springs	Colorado Springs Municipal	COS	25,093	\$1,523,173,000	\$2,359,205,000	\$3,426,931,000	27,720	\$2,040,191,000	N/P	\$3,692,057,000	(2,627)	\$517,018,000	N/A	\$265,126,000	-7.18%
Cortez	Cortez Municipal	CEZ	111	\$5,905,000	\$8,639,000	\$14,619,000	129	\$5,683,000	N/P	\$16,939,000	(18)	\$222,000	N/A	\$2,320,000	-13.70%
Denver	Denver International	DEN	259,084	\$11,110,914,000	\$18,724,455,000	\$33,509,152,000	183,878	\$8,478,226,000	N/P	\$25,815,248,000	75,206	\$2,632,688,000	N/A	\$7,693,904,000	29.80%
Durango	Durango-La Plata County	DRO	2,707	\$107,011,000	\$173,791,000	\$293,694,000	2,646	\$94,484,000	N/P	\$282,256,000	61	\$12,527,000	N/A	\$11,438,000	4.05%
Eagle	Eagle County Regional	EGE	5,147	\$237,607,000	\$388,976,000	\$642,042,000	6,294	\$217,511,000	N/P	\$635,901,000	(1,147)	\$20,096,000	N/A	\$6,141,000	0.97%
Grand Junction	Grand Junction Regional	GJT	3,399	\$189,721,000	\$312,318,000	\$710,960,000	2,871	\$130,776,000	N/P	\$380,040,000	528	\$58,945,000	N/A	\$330,920,000	87.08%
Gunnison	Gunnison-Crested Butte Regional	GUC	1,054	\$44,857,000	\$71,083,000	\$121,878,000	938	\$34,744,000	N/P	\$98,532,000	116	\$10,113,000	N/A	\$23,346,000	23.69%
Hayden	Yampa Valley	HDN	2,724	\$111,500,000	\$181,887,000	\$311,882,000	3,034	\$104,935,000	N/P	\$299,330,000	(310)	\$6,565,000	N/A	\$12,552,000	4.19%
Fort Collins/Loveland	Northern Colorado Regional	FNL	1,072	\$51,914,000	\$83,188,000	\$160,874,000	826	\$24,825,000	N/P	\$129,426,000	246	\$27,089,000	N/A	\$31,448,000	24.30%
Montrose	Montrose Regional	MTJ	2,850	\$111,356,000	\$188,900,000	\$327,264,000	2,035	\$77,425,000	N/P	\$221,760,000	815	\$33,931,000	N/A	\$105,504,000	47.58%
Pueblo	Pueblo Memorial	PUB	775	\$38,661,000	\$55,209,000	\$103,708,000	827	\$22,521,000	N/P	\$85,009,000	(52)	\$16,140,000	N/A	\$18,699,000	22.00%
Telluride	Telluride Regional	TEX	414	\$18,270,000	\$28,523,000	\$51,884,000	686	\$27,350,000	N/P	\$78,553,000	(272)	\$9,080,000	N/A	\$26,669,000	-33.95%
<i>General Aviation</i>															
Akron	Colorado Plains Regional	AKO	102	\$5,399,000	\$8,655,000	\$15,090,000	40	\$1,012,000	N/P	\$3,960,000	62	\$4,387,000	N/A	\$11,130,000	281.06%
Blanca	Blanca	05V	3	\$27,000	\$37,000	\$68,000	1	\$49,000	N/P	\$67,000	2	\$22,000	N/A	\$1,000	1.49%

2020 Colorado Aviation Economic Impact Study - Airport Economic Impacts

Airport		Current Study (2018 Data)					2013 Study (2012 Data)				Difference Current-2013				
		Total Impacts					Total Impacts								
Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues 2018	Jobs 2013	Payroll 2013	Value Added 2013	Business Revenues 2012	Jobs Comparison	Payroll Comparison	Value Added Comparison	Business Revenues Comparison	Change in Business Revenues
Boulder	Boulder Municipal	BDU	299	\$16,766,000	\$26,276,000	\$54,732,000	340	\$19,636,000	N/P	\$69,928,000	(41)	\$2,870,000	N/A	\$15,196,000	-21.73%
Brush	Brush Municipal	7V5	4	\$236,000	\$552,000	\$800,000	1	\$61,000	N/P	\$124,000	3	\$175,000	N/A	\$676,000	545.16%
Buena Vista	Central Colorado Regional	AEJ	90	\$4,212,000	\$6,983,000	\$14,853,000	26	\$901,000	N/P	\$3,079,000	64	\$3,311,000	N/A	\$11,774,000	382.40%
Burlington	Kit Carson County	ITR	32	\$1,428,000	\$2,203,000	\$3,469,000	22	\$584,000	N/P	\$2,595,000	10	\$844,000	N/A	\$874,000	33.68%
Calhan	Calhan	5V4	6	\$302,000	\$459,000	\$1,227,000	2	\$72,000	N/P	\$374,000	4	\$230,000	N/A	\$853,000	228.07%
Canon City	Fremont County	1V6	51	\$2,729,000	\$3,967,000	\$8,288,000	65	\$1,684,000	N/P	\$6,775,000	(14)	\$1,045,000	N/A	\$1,513,000	22.33%
Center	Leach	1V8	5	\$181,000	\$240,000	\$432,000	2	\$84,000	N/P	\$190,000	3	\$97,000	N/A	\$242,000	127.37%
Colorado Springs	Meadow Lake	FLY	273	\$13,442,000	\$20,865,000	\$45,010,000	130	\$4,941,000	N/P	\$10,140,000	143	\$8,501,000	N/A	\$34,870,000	343.89%
Craig	Craig-Moffat	CAG	50	\$2,411,000	\$4,263,000	\$8,103,000	14	\$405,000	N/P	\$1,088,000	36	\$2,006,000	N/A	\$7,015,000	644.76%
Crawford	Crawford	99V	22	\$1,582,000	\$1,926,000	\$3,299,000	20	\$524,000	N/P	\$1,661,000	2	\$1,058,000	N/A	\$1,638,000	98.62%
Creede	Mineral County Memorial	C24	7	\$325,000	\$510,000	\$1,094,000	1	\$55,000	N/P	\$91,000	6	\$270,000	N/A	\$1,003,000	1102.20%
Del Norte	Astronaut Kent Rominger	RCV	31	\$1,361,000	\$2,440,000	\$5,383,000	13	\$339,000	N/P	\$1,259,000	18	\$1,022,000	N/A	\$4,124,000	327.56%
Delta	Blake Field	AJZ	48	\$2,861,000	\$3,912,000	\$6,939,000	20	\$618,000	N/P	\$1,553,000	28	\$2,243,000	N/A	\$5,386,000	346.81%
Delta	Westwinds	D17	14	\$896,000	\$1,224,000	\$2,098,000	3	\$136,000	N/P	\$290,000	11	\$760,000	N/A	\$1,808,000	623.45%
Denver	Centennial	APA	10,341	\$593,537,000	\$974,495,000	\$2,087,182,000	6,792	\$404,922,000	N/P	\$1,322,113,000	3,549	\$188,615,000	N/A	\$765,069,000	57.87%
Denver	Rocky Mountain Metropolitan	BJC	3,312	\$193,442,000	\$312,144,000	\$730,848,000	2,670	\$153,902,000	N/P	\$460,506,000	642	\$39,540,000	N/A	\$270,342,000	58.71%
Denver	Colorado Air and Space Port	CFO	915	\$46,371,000	\$69,043,000	\$116,428,000	489	\$31,595,000	N/P	\$75,527,000	426	\$14,776,000	N/A	\$40,901,000	54.15%
Durango	Animas Airpark	00C	48	\$3,584,000	\$5,309,000	\$9,815,000	19	\$708,000	N/P	\$2,201,000	29	\$2,876,000	N/A	\$7,614,000	345.93%
Eads	Eads Municipal	9V7	13	\$359,000	\$445,000	\$601,000	9	\$242,000	N/P	\$437,000	4	\$117,000	N/A	\$164,000	37.53%
Erie	Erie Municipal	EIK	214	\$11,231,000	\$18,087,000	\$35,925,000	217	\$4,934,000	N/P	\$12,833,000	(3)	\$6,297,000	N/A	\$23,092,000	179.94%
Fort Morgan	Fort Morgan Municipal	FMM	44	\$1,932,000	\$2,939,000	\$5,077,000	32	\$1,038,000	N/P	\$3,024,000	12	\$894,000	N/A	\$2,053,000	67.89%
Glenwood Springs	Glenwood Springs Municipal	GWS	202	\$10,029,000	\$18,338,000	\$36,674,000	36	\$1,625,000	N/P	\$3,920,000	166	\$8,404,000	N/A	\$32,754,000	835.56%

2020 Colorado Aviation Economic Impact Study - Airport Economic Impacts

Airport		Current Study (2018 Data)					2013 Study (2012 Data)				Difference Current-2013				
Associated City	Airport Name	FAA ID	Total Impacts				Total Impacts				Difference Current-2013				
			Jobs	Payroll	Value Added	Business Revenues 2018	Jobs 2013	Payroll 2013	Value Added 2013	Business Revenues 2012	Jobs Comparison	Payroll Comparison	Value Added Comparison	Business Revenues Comparison	Change in Business Revenues
Granby	Granby-Grand County	GNB	10	\$451,000	\$678,000	\$1,214,000	21	\$776,000	N/P	\$2,340,000	(11)	\$325,000	N/A	\$1,126,000	-48.12%
Greeley	Greeley-Weld County	GXY	926	\$42,392,000	\$67,373,000	\$125,132,000	672	\$30,784,000	N/P	\$94,091,000	254	\$11,608,000	N/A	\$31,041,000	32.99%
Haxtun	Haxtun Municipal	17V	4	\$6,000	\$15,000	\$22,000	2	\$89,000	N/P	\$195,000	2	\$83,000	N/A	\$173,000	-88.72%
Holly	Holly	K08	4	\$72,000	\$95,000	\$145,000	2	\$69,000	N/P	\$161,000	2	\$3,000	N/A	\$16,000	-9.94%
Holyoke	Holyoke	HEQ	34	\$1,818,000	\$2,473,000	\$3,901,000	16	\$456,000	N/P	\$1,694,000	18	\$1,362,000	N/A	\$2,207,000	130.28%
Julesburg	Julesburg Municipal	7V8	3	\$111,000	\$122,000	\$179,000	1	\$56,000	N/P	\$110,000	2	\$55,000	N/A	\$69,000	62.73%
Kremmling	Mc Elroy Airfield	20V	16	\$750,000	\$1,211,000	\$2,151,000	19	\$595,000	N/P	\$2,047,000	(3)	\$155,000	N/A	\$104,000	5.08%
La Junta	La Junta Municipal	LHX	65	\$2,912,000	\$4,716,000	\$10,388,000	19	\$756,000	N/P	\$2,398,000	46	\$2,156,000	N/A	\$7,990,000	333.19%
La Veta	Cuchara Valley	07V	3	\$4,000	\$4,000	\$10,000	1	\$73,000	N/P	\$149,000	2	\$69,000	N/A	\$139,000	-93.29%
Lamar	Lamar Municipal	LAA	22	\$1,307,000	\$1,780,000	\$3,077,000	49	\$1,222,000	N/P	\$4,516,000	(27)	\$85,000	N/A	\$1,439,000	-31.86%
Las Animas	Las Animas-Bent County	7V9	5	\$211,000	\$241,000	\$450,000	2	\$102,000	N/P	\$273,000	3	\$109,000	N/A	\$177,000	64.84%
Leadville	Lake County	LXV	29	\$1,463,000	\$2,227,000	\$4,286,000	28	\$942,000	N/P	\$3,426,000	1	\$521,000	N/A	\$860,000	25.10%
Limon	Limon Municipal	LIC	11	\$491,000	\$750,000	\$1,263,000	2	\$90,000	N/P	\$410,000	9	\$401,000	N/A	\$853,000	208.05%
Longmont	Vance Brand	LMO	490	\$24,097,000	\$36,439,000	\$68,036,000	204	\$9,067,000	N/P	\$27,745,000	286	\$15,030,000	N/A	\$40,291,000	145.22%
Meeker	Meeker/Coulter Field	EEO	19	\$889,000	\$1,411,000	\$2,473,000	61	\$2,479,000	N/P	\$5,963,000	(42)	\$1,590,000	N/A	\$3,490,000	-58.53%
Monte Vista	Monte Vista Municipal	MVI	10	\$449,000	\$600,000	\$1,054,000	6	\$211,000	N/P	\$283,000	4	\$238,000	N/A	\$771,000	272.44%
Nucla	Hopkins Field	AIB	29	\$1,565,000	\$2,060,000	\$3,815,000	9	\$324,000	N/P	\$984,000	20	\$1,241,000	N/A	\$2,831,000	287.70%
Pagosa Springs	Stevens Field	PSO	42	\$2,998,000	\$4,007,000	\$6,629,000	59	\$2,039,000	N/P	\$6,947,000	(17)	\$959,000	N/A	\$318,000	-4.58%
Paonia	North Fork Valley	7V2	4	\$239,000	\$345,000	\$586,000	3	\$127,000	N/P	\$239,000	1	\$112,000	N/A	\$347,000	145.19%
Rangely	Rangely	4V0	34	\$1,651,000	\$2,528,000	\$4,440,000	22	\$630,000	N/P	\$1,871,000	12	\$1,021,000	N/A	\$2,569,000	137.31%
Rifle	Garfield County Regional	RIL	277	\$16,348,000	\$23,654,000	\$40,945,000	456	\$21,697,000	N/P	\$56,939,000	(179)	\$5,349,000	N/A	\$15,994,000	-28.09%
Saguache	Saguache Municipal	04V	3	\$21,000	\$27,000	\$48,000	1	\$52,000	N/P	\$72,000	2	\$31,000	N/A	\$24,000	-33.33%

2020 Colorado Aviation Economic Impact Study - Airport Economic Impacts

Airport		Current Study (2018 Data)					2013 Study (2012 Data)				Difference Current-2013				
		Total Impacts					Total Impacts								
Associated City	Airport Name	FAA ID	Jobs	Payroll	Value Added	Business Revenues 2018	Jobs 2013	Payroll 2013	Value Added 2013	Business Revenues 2012	Jobs Comparison	Payroll Comparison	Value Added Comparison	Business Revenues Comparison	Change in Business Revenues
Salida	Harriet Alexander Field	ANK	44	\$2,068,000	\$3,278,000	\$6,937,000	37	\$1,492,000	N/P	\$4,733,000	7	\$576,000	N/A	\$2,204,000	46.57%
Springfield	Springfield Municipal	8V7	6	\$112,000	\$153,000	\$245,000	8	\$279,000	N/P	\$1,066,000	(2)	\$167,000	N/A	\$821,000	-77.02%
Steamboat Springs	Steamboat Springs	SBS	184	\$9,021,000	\$14,029,000	\$26,113,000	86	\$2,794,000	N/P	\$8,820,000	98	\$6,227,000	N/A	\$17,293,000	196.07%
Sterling	Sterling Municipal	STK	17	\$916,000	\$1,409,000	\$2,349,000	32	\$1,247,000	N/P	\$3,638,000	(15)	\$331,000	N/A	\$1,289,000	-35.43%
Trinidad	Perry Stokes	TAD	36	\$1,789,000	\$2,563,000	\$4,772,000	16	\$453,000	N/P	\$1,379,000	20	\$1,336,000	N/A	\$3,393,000	246.05%
Walden	Walden-Jackson County	33V	7	\$48,000	\$70,000	\$119,000	6	\$233,000	N/P	\$607,000	1	\$185,000	N/A	\$488,000	-80.40%
Walsenburg	Spanish Peaks Airfield	4V1	8	\$308,000	\$459,000	\$848,000	9	\$404,000	N/P	\$1,138,000	(1)	\$96,000	N/A	\$290,000	-25.48%
Westcliffe	Silver West	C08	4	\$60,000	\$99,000	\$188,000	9	\$354,000	N/P	\$1,355,000	(5)	\$294,000	N/A	\$1,167,000	-86.13%
Wray	Wray Municipal	2V5	35	\$1,858,000	\$2,558,000	\$3,745,000	23	\$563,000	N/P	\$999,000	12	\$1,295,000	N/A	\$2,746,000	274.87%
Yuma	Yuma Municipal	2V6	49	\$2,557,000	\$3,411,000	\$5,375,000	18	\$598,000	N/P	\$982,000	31	\$1,959,000	N/A	\$4,393,000	447.35%
	TOTAL (INCLUDING DEN)		331,101	\$14,958,877,000	\$24,863,701,000	\$44,223,538,000	253,234	\$11,972,823,000	N/P	\$34,821,032,000	77,868	\$2,699,413,000	N/P	\$9,402,506,000	27.00%

Appendix D. Regional Impacts by Region

Economic Impacts by Region					
#	Region	Jobs	Payroll	Value Added	Business Revenues
1	Golden Plains Total	241	\$11,208,000	\$16,200,000	\$27,503,000
	On Airport	174	\$9,595,000	\$13,216,000	\$22,192,000
	Visitor Spending	67	\$1,613,000	\$2,984,000	\$5,311,000
2	Northern Colorado Total	1,916	\$82,229,000	\$130,562,000	\$260,564,000
	On Airport	1,206	\$62,850,000	\$96,555,000	\$199,364,000
	Visitor Spending	710	\$19,379,000	\$34,007,000	\$61,200,000
3	Denver Total (not including DEN)	13,435	\$846,120,000	\$1,371,889,000	\$2,948,159,000
	On Airport	11,688	\$779,169,000	\$1,259,564,000	\$2,753,712,000
	Visitor Spending	1,747	\$66,951,000	\$112,325,000	\$194,447,000
	DEN Total (special region)	236,852	\$10,782,279,000	\$18,200,119,000	\$32,509,564,000
	On Airport	78,101	\$5,116,237,000	\$8,557,432,000	\$15,728,703,000
	Visitor Spending	158,751	\$5,666,042,000	\$9,642,687,000	\$16,780,861,000
4	Pikes Peak Total	22,744	\$1,325,933,000	\$2,037,412,000	\$2,931,499,000
	On Airport	17,949	\$1,181,055,000	\$1,782,035,000	\$2,488,487,000
	Visitor Spending	4,795	\$144,880,000	\$255,378,000	\$443,011,000
5	Central Plains Total	36	\$1,360,000	\$2,054,000	\$3,337,000
	On Airport	16	\$835,000	\$1,142,000	\$1,710,000
	Visitor Spending	20	\$525,000	\$912,000	\$1,627,000
6	Southeast Colorado Total	90	\$3,219,000	\$4,552,000	\$10,719,000
	On Airport	77	\$3,004,000	\$4,115,000	\$9,907,000
	Visitor Spending	13	\$215,000	\$437,000	\$812,000
7	Pueblo Total	640	\$29,249,000	\$39,315,000	\$79,123,000
	On Airport	545	\$27,068,000	\$35,275,000	\$71,408,000
	Visitor Spending	95	\$2,181,000	\$4,040,000	\$7,715,000

Economic Impacts by Region					
#	Region	Jobs	Payroll	Value Added	Business Revenues
8	San Louis Valley Total	238	\$9,123,000	\$14,757,000	\$34,029,000
	On Airport	183	\$7,800,000	\$12,553,000	\$29,829,000
	Visitor Spending	55	\$1,323,000	\$2,204,000	\$4,200,000
9	Southwest Total	2,661	\$96,389,000	\$154,587,000	\$271,546,000
	On Airport	566	\$36,744,000	\$49,520,000	\$86,402,000
	Visitor Spending	2,095	\$59,645,000	\$105,067,000	\$185,144,000
10	Central Western Slope Total	3,934	\$136,351,000	\$226,943,000	\$414,027,000
	On Airport	1,358	\$60,593,000	\$88,073,000	\$174,980,000
	Visitor Spending	2,576	\$75,758,000	\$138,870,000	\$239,047,000
11	Northwest Colorado Total	6,124	\$267,189,000	\$440,950,000	\$967,181,000
	On Airport	3,493	\$189,981,000	\$301,271,000	\$720,861,000
	Visitor Spending	2,631	\$77,208,000	\$139,679,000	\$246,320,000
12	Rocky Mountain Resort Total	10,853	\$470,475,000	\$790,055,000	\$1,287,705,000
	On Airport	1,936	\$102,585,000	\$142,099,000	\$284,220,000
	Visitor Spending	8,917	\$367,890,000	\$647,956,000	\$1,003,485,000
13	Upper Arkansas Total	172	\$6,697,000	\$10,472,000	\$25,781,000
	On Airport	153	\$6,154,000	\$9,590,000	\$24,188,000
	Visitor Spending	19	\$543,000	\$882,000	\$1,593,000
14	Raton Basin Total	39	\$1,504,000	\$2,076,000	\$4,261,000
	On Airport	35	\$1,374,000	\$1,855,000	\$3,841,000
	Visitor Spending	4	\$130,000	\$221,000	\$420,000
	TOTAL	299,975	\$14,069,325,000	\$23,441,943,000	\$41,774,998,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019

Appendix E. Regional Impacts by Airport

Regional Economic Impacts by Airport							
Region		Airport	Airport Code	Jobs	Payroll	Value Added	Business Revenues
1	Golden Plains Region	Brush Municipal	7V5	3	\$146,000	\$410,000	\$579,000
1		Colorado Plains Regional	AKO	83	\$3,960,000	\$6,325,000	\$11,575,000
1		Fort Morgan Municipal	FMM	36	\$1,406,000	\$2,078,000	\$3,750,000
1		Haxtun Municipal	17V	3	\$4,000	\$10,000	\$15,000
1		Holyoke	HEQ	29	\$1,424,000	\$1,832,000	\$2,925,000
1		Julesburg Municipal	7V8	2	\$90,000	\$91,000	\$129,000
1		Sterling Municipal	STK	13	\$645,000	\$947,000	\$1,638,000
1		Wray Municipal	2V5	29	\$1,492,000	\$1,946,000	\$2,816,000
1		Yuma Municipal	2V6	43	\$2,041,000	\$2,561,000	\$4,076,000
2		Northern Colorado	Erie Municipal	EIK	182	\$8,659,000	\$13,925,000
2	Greeley-Weld County		GXY	816	\$33,817,000	\$53,293,000	\$102,247,000
2	Northern Colorado Regional		FNL	918	\$39,753,000	\$63,344,000	\$129,092,000
3	Denver (excluding DEN)	Boulder Municipal	BDU	261	\$16,234,000	\$25,426,000	\$52,854,000
3		Centennial	APA	9,013	\$574,091,000	\$942,556,000	\$2,013,325,000
3		Colorado Air and Space Port	CFO	841	\$45,328,000	\$67,306,000	\$112,552,000
3		Rocky Mountain Metropolitan	BJC	2,876	\$187,011,000	\$301,223,000	\$703,582,000
3		Vance Brand	LMO	444	\$23,456,000	\$35,378,000	\$65,846,000
4	Pikes Peak	Calhan	5V4	5	\$221,000	\$330,000	\$1,022,000
4		Colorado Springs Municipal	COS	22,505	\$1,315,376,000	\$2,021,209,000	\$2,893,356,000
4		Meadow Lake	FLY	234	\$10,336,000	\$15,873,000	\$37,121,000

Regional Economic Impacts by Airport							
Region		Airport	Airport Code	Jobs	Payroll	Value Added	Business Revenues
5	Central Plains	Kit Carson County	ITR	26	\$1,020,000	\$1,548,000	\$2,451,000
5		Limon Municipal	LIC	10	\$340,000	\$506,000	\$886,000
6	Southeast Colorado	Eads Municipal	9V7	11	\$297,000	\$345,000	\$454,000
6		Holly	K08	3	\$56,000	\$69,000	\$108,000
6		La Junta Municipal	LHX	50	\$1,690,000	\$2,674,000	\$7,426,000
6		Lamar Municipal	LAA	17	\$936,000	\$1,198,000	\$2,226,000
6		Las Animas-Bent County	7V9	5	\$156,000	\$158,000	\$327,000
6		Springfield Municipal	8V7	4	\$84,000	\$108,000	\$178,000
7	Pueblo	Pueblo Memorial	PUB	640	\$29,249,000	\$39,315,000	\$79,123,000
8	San Louis Valley	Astronaut Kent Rominger	RCV	24	\$834,000	\$1,546,000	\$4,101,000
8		Blanca	05V	2	\$21,000	\$27,000	\$54,000
8		Leach	1V8	6	\$141,000	\$177,000	\$345,000
8		Mineral County Memorial	C24	6	\$217,000	\$339,000	\$846,000
8		Monte Vista Municipal	MVI	8	\$355,000	\$449,000	\$843,000
8		Saguache Municipal	04V	1	\$16,000	\$20,000	\$39,000
8		San Luis Valley Regional	ALS	191	\$7,539,000	\$12,199,000	\$27,801,000
9	Southwest	Animas Airpark	00C	39	\$2,756,000	\$4,006,000	\$7,874,000
9		Cortez Municipal	CEZ	100	\$4,852,000	\$6,989,000	\$12,239,000
9		Durango-La Plata County	DRO	2,486	\$86,301,000	\$140,376,000	\$245,982,000
9		Stevens Field	PSO	36	\$2,480,000	\$3,216,000	\$5,451,000
10	Central Western Slope	Blake Field	AJZ	42	\$2,251,000	\$2,968,000	\$5,555,000
10		Crawford	99V	20	\$1,286,000	\$1,485,000	\$2,655,000
10		Gunnison-Crested Butte Regional	GUC	934	\$34,167,000	\$54,282,000	\$97,312,000
10		Hopkins Field	AIB	26	\$1,219,000	\$1,524,000	\$3,021,000

Regional Economic Impacts by Airport							
Region		Airport	Airport Code	Jobs	Payroll	Value Added	Business Revenues
10		Montrose Regional	MTJ	2,536	\$82,922,000	\$144,167,000	\$261,986,000
10		North Fork Valley	7V2	4	\$191,000	\$267,000	\$472,000
10		Telluride Regional	TEX	361	\$13,607,000	\$21,320,000	\$41,355,000
10		Westwinds	D17	11	\$708,000	\$930,000	\$1,671,000
11	Northwest Colorado	Craig-Moffat	CAG	46	\$1,876,000	\$3,398,000	\$6,849,000
11		Rifle Garfield County	RIL	252	\$13,859,000	\$19,728,000	\$35,202,000
11		Glenwood Springs Municipal	GWS	179	\$7,655,000	\$14,637,000	\$31,264,000
11		Grand Junction Regional	GJT	2,911	\$143,073,000	\$239,248,000	\$600,891,000
11		Meeker/Coulter Field	EEO	18	\$729,000	\$1,154,000	\$2,100,000
11		Rangely	4V0	30	\$1,347,000	\$2,025,000	\$3,709,000
11		Steamboat Springs	SBS	167	\$7,270,000	\$11,267,000	\$22,083,000
11		Yampa Valley	HDN	2,521	\$91,380,000	\$149,493,000	\$265,083,000
12	Rocky Mountain Resort	Aspen-Pitkin County	ASE	6,553	\$284,079,000	\$480,431,000	\$779,383,000
12		Eagle County Regional	EGE	4,270	\$185,457,000	\$308,139,000	\$505,611,000
12		Granby-Grand County	GNB	10	\$345,000	\$514,000	\$946,000
12		Mc Elroy Airfield	20V	14	\$557,000	\$917,000	\$1,672,000
12		Walden-Jackson County	33V	6	\$37,000	\$54,000	\$93,000
13	Upper Arkansas	Central Colorado Regional	AEJ	71	\$2,480,000	\$4,210,000	\$10,906,000
13		Fremont County	1V6	40	\$1,854,000	\$2,566,000	\$6,224,000
13		Harriet Alexander Field	ANK	36	\$1,322,000	\$2,116,000	\$5,283,000
13		Lake County	LXV	22	\$1,002,000	\$1,512,000	\$3,226,000
13		Silver West	C08	3	\$39,000	\$68,000	\$142,000
14	Raton Basin	Cuchara Valley	07V	1	\$3,000	\$2,000	\$8,000
14		Perry Stokes	TAD	30	\$1,286,000	\$1,762,000	\$3,616,000

Regional Economic Impacts by Airport							
Region		Airport	Airport Code	Jobs	Payroll	Value Added	Business Revenues
14		Spanish Peaks Airfield	4V1	8	\$215,000	\$312,000	\$637,000
DEN	DEN Special Region	Denver International	DEN	236,852	\$10,782,279,000	\$18,200,119,000	\$32,509,564,000

Source: Calculations by EBP US using the 2017 IMPLAN model, 2019