

**ECONOMIC
BENEFIT
ANALYSIS**



ECONOMIC BENEFIT ANALYSIS

For

SALINAS MUNICIPAL AIRPORT

Prepared for

The City of Salinas

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SALINAS MUNICIPAL AIRPORT ECONOMIC BENEFIT ANALYSIS

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SALINAS MUNICIPAL AIRPORT ECONOMIC BENEFIT ANALYSIS

EXECUTIVE SUMMARY

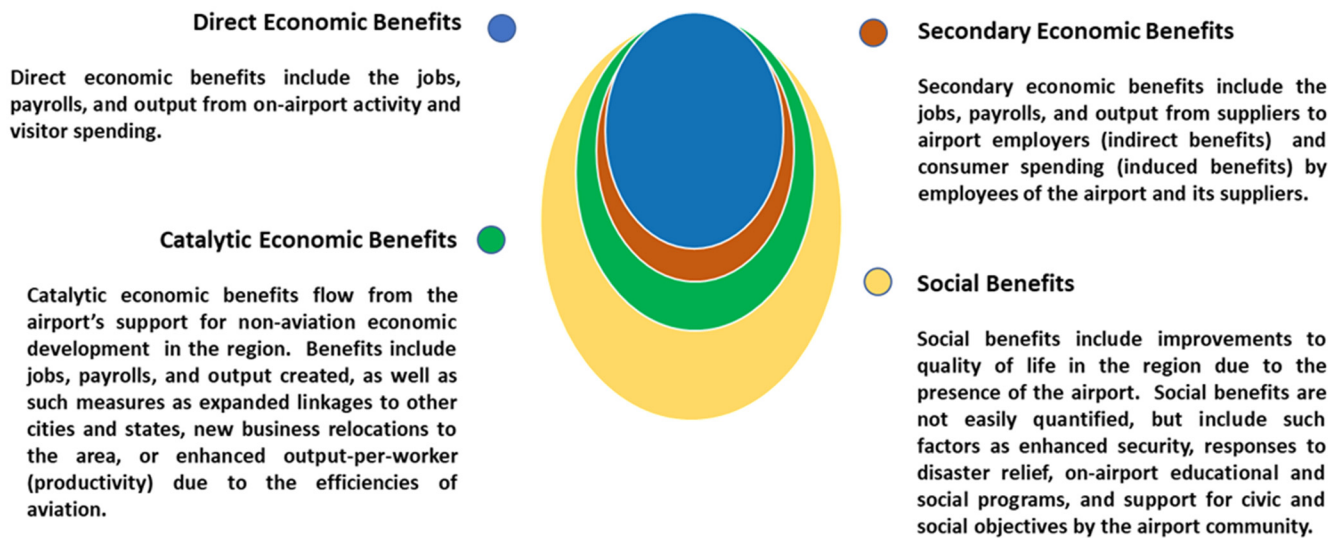
This report provides an analysis of economic and related benefits created by Salinas Municipal Airport (SNS), a Regional General Aviation airport owned and operated by the City of Salinas. The study period is calendar year 2019. The airport encompasses 605 acres located three miles southeast of the central district of Salinas, in Monterey County, California. The latest available Federal Aviation Administration (FAA) form 5010 lists 165 based aircraft on the airport, including 4 jets and 5 helicopters. The primary runway (8/26) is 6,004 feet in length and is capable of serving modern turboprop aircraft and corporate jets. The air traffic control tower is open 12 hours daily, closing after 1900 hours. The airport terminal houses the airport administrative offices, a rental car concession, an air medical ambulance service, a flight school, and a popular restaurant that serves the aviation community and surrounding area.



Salinas Municipal Airport offers a range of Fixed Base Operator (FBO) services, including fueling, inspections, maintenance, repair and restoration, air charter services, as well as aircraft sales and rentals. The airport is home to firms that specialize in major airframe and powerplant repairs, serving a global client base. In addition, since 1981 the airport has hosted the California International Airshow featuring military and civilian performers, along with aircraft displays and aviation exhibits. There are 29 employers on the airport (including 5 non-aviation businesses) creating 185 direct jobs and producing on-site output valued at \$30.9 million in 2019. Ninety-seven percent of all jobs on the airport are in the private sector.

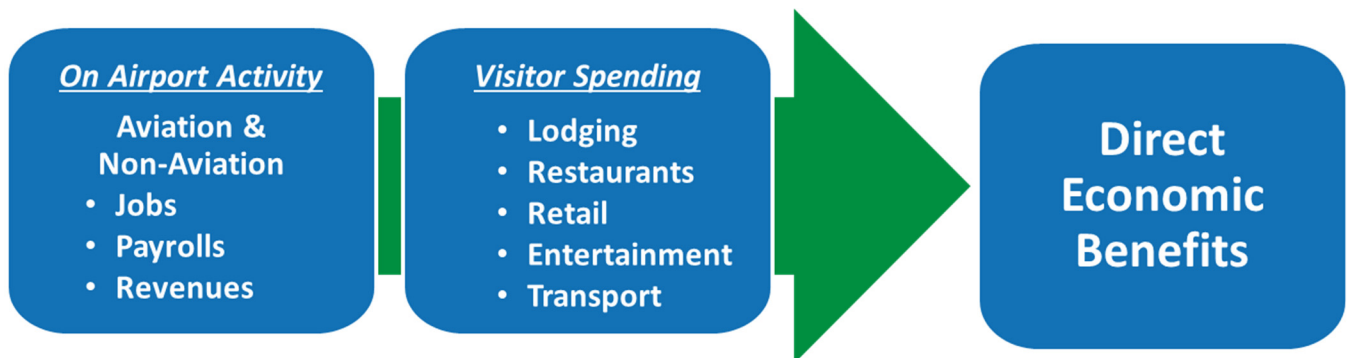
The Salinas Municipal Airport provides a number of benefits to the community, as illustrated in **Figure A**. Often, popular perception is that the primary benefits of a regional general aviation airport accrue to aircraft owners. This view may be due to the limited metrics available to the public, such as operations (take-offs and landings) and the number of based aircraft. However, airports contribute broad social benefits, such as medical transport or support for economic development, that raise the quality of life within the community. Moreover, airports are centers of commercial activity, creating economic benefits, including employment and payrolls for workers and revenue (output) for businesses on the airport and in the general economy. These various benefits are described below.

Figure A: Economic and Related Benefits of Salinas Municipal Airport



Direct economic benefits originate both on and off the airport (see **Figure B**). Activity by aviation and non-aviation employers on the airport creates jobs, payrolls, and revenues. Firms working on capital improvement projects on the airport are included as aviation employers. Off the airport, spending by

Figure B: Sources of Direct Economic Benefits of Salinas Municipal Airport



visitors generates direct economic benefits when travelers that arrive by air pay for lodging, restaurants, retail goods and services, entertainment, and transport such as auto rental. The on-airport direct benefits are tabulated by obtaining data on revenues received by airport employers, the number of workers, and compensation paid. Air visitor direct spending benefits are based on the number of visitors and their outlays for goods and services, which support jobs and payrolls in the hospitality industry.

Secondary economic benefits (often known as “multiplier” benefits) are created when the initial spending on the airport or by visitors circulates and recycles through the economy. There are two types of secondary economic benefits (**Figure C**).

Indirect benefits include activity by suppliers and vendors who sell to airport or hospitality businesses, along with the jobs created and incomes paid to workers by these suppliers. For example, businesses and agencies on the airport purchase services such as insurance, supplies such as aviation fuel, and hard goods such as tools or office furniture from off-airport providers.

Figure C: Sources of Secondary Economic Benefits of Salinas Municipal Airport



Induced benefits measure the consumer spending of workers who produced both the direct or indirect goods and services. For example, when an aircraft technician’s salary is spent for consumer goods such as groceries or medical services, this contributes to additional employment and income in the general economy for providers of these goods and services.

Economic benefit studies rely on multiplier factors from input-output models to estimate how direct spending on the goods and services of a particular industry or set of industries creates secondary indirect and induced benefits. An input-output model incorporates inter-industry or “supply chain” relationships within the region that account for changes in employment, payroll, and output in related industries set off by a change in demand in the initial industry. The input-output model used for this study was the IMPLAN (*Impact Analysis for Planning*) model, based on data and coefficients for the Monterey County economy from the U. S. Bureau of Economic Analysis. This model is frequently used by public agencies and regional analysts for studying the economic benefits of airports and aviation across the nation.

The combined direct and secondary benefits are known as **total economic benefits**, measuring the airport’s “economic footprint” within the regional economy (**Figure D**). In the United States, most airports, whether focused on general aviation or commercial service, have a recent economic benefit report (often called an economic impact study). When describing and comparing the economic benefits of airports, it is the total economic benefit figure which is most often highlighted.

Figure D: Direct, Secondary, and Total Economic Benefits



In calendar year 2019, Salinas Municipal Airport created total economic benefits of 401 jobs supported, payrolls for workers of \$26.8 million, and output of \$61.6 million (Figure E).

Figure E: Salinas Municipal Airport Total Economic Benefits



Catalytic economic benefits refer to the support the airport provides for non-aviation economic growth and development across the region. Airport tenants purchase supplies and services from non-aviation businesses in the Salinas economy, creating jobs, payrolls and revenues for vendors. Local businesses rely on the airport for charter flights, cargo movement, and such services as aerial mapping and crop dusting. Salinas Municipal Airport is vital to the region’s agricultural industry, facilitating movement of supplies, workers, and executives to and from sites in California and neighboring states such as Arizona. The airport provides agricultural and other businesses with expanded linkages for commerce, makes the

greater Salinas area more competitive, and studies have shown that business aviation can increase worker productivity. A modern airport also encourages new businesses. The availability of an airport with sufficient infrastructure to support corporate jets is invariably listed by business executives as a key criterion for business location and expansion.

Moreover, Salinas Municipal Airport creates broader **social benefits** that impact the quality of life of residents of Salinas and Monterey County. Public safety and national security objectives are supported by aviation operations of law enforcement and government agencies, including various branches of the U. S. military. As one social benefit example, the Salinas Municipal Airport is the site of a nationally-recognized alternative education program (Bob Hoover Academy) aimed at high school age youth who participate in a technology curriculum along with aviation training. Aircraft owners and pilots stand ready to assist in disaster relief, such as during the Loma Prieta earthquake (October 17, 1989) recovery. Established in 2002, medical air response services for the Central Coast region are based at Salinas Municipal Airport for emergency and specialized transportation of patients and medical personnel. The airport has and continues to impact many who have utilized its services. Other social and unique benefits that SNS offers are detailed later in this report, and many personal stories are included in **Appendix I**.

SALINAS MUNICIPAL AIRPORT ECONOMIC BENEFITS

The individual components making up the direct, secondary, and total economic benefits of Salinas Municipal Airport are shown in **Table 1**. The bottom row of the table sets out the total economic benefits for each benefit measure (employment, payrolls, and output). The total economic benefits for each measure are calculated as the column sums of the direct and secondary economic benefits. As noted above, these components sum to **total economic benefits of 401 jobs supported, payrolls of \$26.8 million and output of \$61.6 million**.

SOURCE	EMPLOYMENT	PAYROLLS	OUTPUT
On-Airport Benefits	185	\$14,460,000	\$30,867,000
Air Visitor Benefits	51	\$2,170,000	\$5,000,000
<i>Direct Benefits</i>	236	\$16,630,000	\$35,867,000
Indirect Benefits: Suppliers	60	\$3,850,000	\$9,729,000
Induced Benefits: Employees	105	\$6,298,000	\$15,962,000
<i>Secondary Benefits</i>	165	\$10,148,000	\$25,691,000
<i>Total Benefits</i>	401	\$26,778,000	\$61,558,000

Sources: On-airport employment information obtained through on-site employer interviews and records of Salinas Municipal Airport. Secondary benefits computed from the IMPLAN input-output model, with coefficients for Monterey County. Values are in 2019 dollars.

Comparison of total benefits with the initial direct benefits provides insight into the recycling or multiplier process that causes benefits due to the presence of the airport to be distributed across the regional economy. For example, the 236 combined direct on-airport and air visitor jobs supported total employment of 401 total workers in the region, yielding a multiplier value of 1.7. The economic interpretation is that, on average, each 100 direct jobs supported an additional 70 jobs in the Salinas area. Similarly, each million dollars of direct output is associated with additional secondary output of another \$700,000, derived from calculation of the ratio of total output (\$61,558,000) to direct output (\$35,867,000), again equal to 1.7.

DIRECT AND SECONDARY ECONOMIC BENEFITS

The combined direct economic benefits of on-airport and visitor activity for Salinas Municipal Airport summed to output of \$35.9 million, 236 direct jobs created, and payroll of \$16.6 million.

Direct on-airport economic benefits resulted from the activity of 28 private tenants, City of Salinas staff, and various capital improvement projects. Direct on-airport output was \$30.9 million, with payroll to 185 on-airport workers of \$14.5 million.



“Direct on-airport economic benefits resulted from the activity of 28 private tenants, City of Salinas staff, and various capital improvement projects. Direct on-airport output was \$30.9 million, with payroll to 185 on-airport workers of \$14.5 million.”

The direct economic benefits from air visitors to Salinas Municipal Airport included expenditures of \$5.0 million of visitor spending injected into the local economy, creating employment for 51 workers in the hospitality industry, with payroll of \$2.2 million.

“The direct economic benefits from air visitors to Salinas Municipal Airport included expenditures of \$5.0 million of visitor spending injected into the local economy, creating employment for 51 workers in the hospitality industry, with payroll of \$2.2 million.”



The combined Salinas Municipal Airport secondary benefits, computed through IMPLAN, created an additional \$25.7 million of output, jobs for 165 additional workers, and payroll of \$10.1 million as the initial spending recycled through the region.

The two types of secondary economic benefits, indirect and induced, both involve non-aviation businesses in the region. Indirect benefits refer to the purchase of goods and services from non-aviation suppliers. To operate their businesses and meet the needs of customers, on-airport employers producing aviation services and firms in the hospitality industry serving air visitors to the region require basic inputs to operate their businesses, such as utilities, banking and other financial services, office supplies, and equipment. The combined suppliers are typically referred to as the “supply chain” for the aviation related businesses on the airport and in the hospitality industry. The presence of the Salinas Municipal Airport added to the employment and sales revenues of these non-aviation supplier firms. Aviation and hospitality businesses purchased \$9.7 million of goods and services from local suppliers, creating 60 jobs in the region with payrolls of \$3.8 million to workers in supplier industries.

“Aviation and hospitality businesses purchased \$9.7 million of goods and services from local suppliers, creating 60 jobs in the region with payrolls of \$3.8 million to workers in supplier industries.”



Another component of secondary economic benefits is known as induced benefits, resulting from spending by workers in aviation related industries, as well as in businesses along the supply chain for aviation. For example, when airport workers return to their home communities and spend their payrolls from their on-airport employers, that spending supports additional non-aviation economic activity in the region. Workers on the airport, in the hospitality industry, and in supplier firms spent \$16.0 million on consumer goods and services in the local economy, supporting 105 jobs with \$6.3 million payrolls.



“Workers on the airport, in the hospitality industry, and in supplier firms spent \$16.0 million on consumer goods and services in the local economy, supporting 105 jobs with \$6.3 million payrolls.”

A DAY AT SALINAS MUNICIPAL AIRPORT

Airports are available to serve the flying public and support the economy every day of the year. The Salinas Municipal Airport is a consistent source of revenues, employment, and income for the economy within the airport service area. During an average day, the airport generated \$168,600 of daily total economic benefits (including direct and secondary or multiplier benefits) and supported 401 area workers bringing home daily income of \$73,400 for spending in their home communities (**Table 2**).

Table 2
Economic Benefits for an Average Day
Salinas Municipal Airport

Activity	Average Day
All Aircraft Operations	207 Daily Aircraft Operations
On-Airport Employment	185 Workers on the Airport
On-Airport Payrolls	\$39,600 Paid to Airport Workers
General Aviation Air Visitors	69 Air Visitors in the Area Daily*
Air Visitor Spending	\$13,700 Daily Visitor Spending
Total Employment	401 Total Area Jobs Supported
Total Payrolls	\$73,400 Paid to Area Workers
Total Economic Benefits	\$168,600 Daily Economic Benefits

*Includes overnight visitors as well as those who remained for only part of a day

“During an average day, the airport generated \$168,600 of daily total economic benefits (including direct and secondary benefits) and supported 401 area workers bringing home daily income of \$73,400 for spending in their home communities.”



On an average day at the airport, there are more than 200 operations by aircraft involved in local or itinerant activity, including touch-and-go operations, corporate travel on business jets, or private general aviation flights bringing passengers visiting the area for personal travel or on business.

In 2019, the airport provided on-site employment for 185 workers, creating payrolls valued at \$39,600 per day for spending for consumer goods and services. On an average day in 2019, there were 69 air visitors in the area spending for lodging, food and drink, retail goods and services, recreation and ground transportation. Visitor spending injected \$13,700 per day into the regional economy.

ON-AIRPORT ECONOMIC BENEFITS

Economic benefits on the airport flow from the employment, payroll, and output created by the private firms and public agencies located on the airport, as well as capital improvement projects undertaken by private contractors that come onto the airport.



Information about employers and economic activity on the airport was obtained through surveys and interviews with tenants. Airport staff provided substantial data and collaboration in support of this study. Airport staff shared records, facilitated on-site interviews with business owners and managers, and provided specialized knowledge regarding airport operations. Survey participants were informed that the individual employer results were confidential and only aggregate totals would be published.

The 29 employers on the airport reported 185 employees in 2019 (**Table 3**). There were 24 aviation-related employers and 5 non-aviation employers. Private sector employers made up 97 percent of employers on the airport (28/29) and accounted for 97 percent of all jobs on the airport (180/185). Private aviation related employers on-site at Salinas Municipal Airport included FBO firms providing FAA certified repair services, inspection, painting, flight training for fixed wing aircraft and helicopters, aircraft rental and sales, aircraft charter, aircraft flying exhibitions, aerial photography, and medical transit, as well as full service repair, restoration, and renovation for airframes and power systems.

Table 3 Direct, Secondary, and Total On-Airport Economic Benefits Salinas Municipal Airport			
SOURCE	EMPLOYMENT	PAYROLLS	OUTPUT
Direct On-Airport Economic Benefits			
Private Aviation Employers (23)	133	\$11,404,000	\$24,270,000
Public Aviation Employers (1)	5	\$728,000	\$1,409,000
Capital Improvement Projects	4	\$308,000	\$879,000
<i>Aviation Benefits</i>	142	\$12,440,000	\$26,558,000
Private Non-Aviation Employers (5)	43	\$2,020,000	\$4,309,000
<i>Direct Benefits</i>	185	\$14,460,000	\$30,867,000
Secondary On-Airport Economic Benefits			
Indirect Benefits: <i>Activity by Suppliers & Vendors</i>	52	\$3,374,000	\$8,487,000
Induced Benefits: <i>Activity by Workers as Consumers</i>	90	\$5,386,000	\$13,703,000
<i>Secondary Benefits</i>	142	\$8,760,000	\$22,190,000
Total On-Airport Economic Benefits			
<i>Total Benefits</i>	327	\$23,220,000	\$53,057,000

Source: On-airport employment was obtained through on-site interviews and records maintained by Salinas Municipal Airport administrative staff. Payroll figures based on Monterey County wage and benefits data from U. S. Bureau of Economic Analysis. Output estimates were computed from the IMPLAN input-output model, with coefficients for Monterey County. Values are in 2019 dollars.

The 23 private aviation tenants provided jobs for 133 workers, payrolls of \$11.4 million and created direct output of \$24.3 million. Including staff of the Salinas Municipal Airport and estimates of capital improvement projects, aviation related activity on the airport employed 142 workers with payrolls of \$12.4 million and aviation-related direct output of \$26.6 million in 2019. There were 5 private non-aviation employers with 43 workers on Salinas Municipal Airport in 2019. Private non-aviation businesses included a golf course on airport property, as well as food service and specialized industrial firms. The non-aviation payroll generated on Salinas Municipal Airport was \$2.0 million. Non-aviation employers created direct output of \$4.3 million in 2019.

“Aviation compensation was more than 25 percent higher than the average job in the area.”

The average compensation (including benefits) of aviation workers on the airport was \$85,700. The U.S. Bureau of Economic Analysis reports the average compensation for all workers in Monterey County was \$66,200 (adjusted to 2019 by the Consumer Price Index of the U. S. Department of Labor). Aviation compensation was more than 25 percent higher than the average job in the area. Average compensation received by non-aviation workers was \$61,200 (adjusted to full time equivalent workers to account for part time employees of food service and consumer service firms).

CAPITAL IMPROVEMENT PROJECTS

Capital improvement projects are included as a source of airport economic benefits since construction activity generates spending and employment both on and off the airport. Runway improvements, fencing, drainage projects, and building construction are all examples of capital improvements that enhance safety and provide for growth.

Large capital improvement projects that begin at a point in time can extend over more than one year and annual outlays can vary from year to year when projects are underway. To smooth out the annual variation in capital improvement spending, economic benefit studies typically average outlays over a multi-year period.

For this study, figures on capital improvements were obtained from City of Salinas and airport records and averaged over the most recent three-year period from 2017 through 2019. Activities at Salinas Municipal Airport included runway rehabilitation and surface improvements, taxiway construction and maintenance. The total over the period was \$2.6 million and the average annual outlay was \$879,000 (**Table 4**). This expenditure value was used to obtain the employment estimate of 4 full time equivalent construction employment worker-years and \$308,000 worker compensation.

Table 4 Capital Improvement Projects Salinas Municipal Airport	
Year	Expenditures
2017	\$101,000
2018	\$1,161,000
2019	\$1,375,000
Total	\$2,637,000
3 Year Average	\$879,000

Source: City of Salinas budget documents and Salinas Municipal Airport

DIRECT, SECONDARY, AND TOTAL ON-AIRPORT BENEFITS

The capital improvement projects undertaken on the airport by private contract firms were incorporated into the computation of direct benefits of on-airport activity to provide the final sum of 185 direct jobs on the airport, with payroll of \$14.5 million and direct output of \$30.9 million.

Secondary benefits as estimated by the IMPLAN model added employment of 142 more jobs and additional output of \$22.2 million as the initial direct spending recirculated within the regional economy. As noted earlier, secondary effects come from two sources. On-airport private firms and public agencies make purchases from suppliers and vendors, who in turn purchase inputs and hire employees to support production of goods and services for airport customers. This effect is known as the indirect benefit. Simultaneously, employees of airport firms and agencies and employees of their suppliers are also consumers who spend incomes in their home communities. This spending stimulates additional jobs and output in the sectors serving consumers, creating induced benefits across the area economy.

Of the 142 secondary jobs associated with the presence of the airport, 52 were indirect jobs in supplier industries to on-airport activity, such as finance and insurance, business services, providers of parts, supplies and materials, transportation and warehousing, information and communication systems. There also were 90 additional jobs in the region induced by household spending by airport and supplier employees across a broad spectrum of consumer industries, including health care, food service, retail trade, and personal services.

The total benefits of on-airport operations are the sum of the combined direct and secondary benefits. The total benefits of on-airport operations include:

- **327 total jobs supported**
- **\$23.2 million total payroll created**
- **\$53.1 million of output contributed to the area economy**

Direct on-airport employment benefits of 185 jobs accounted for 57 percent of total employment benefits, while the secondary (or multiplier) component of 142 jobs accounted for 43 percent.

GENERAL AVIATION VISITOR ECONOMIC BENEFITS

Visitors travel on general aviation aircraft to Salinas Municipal Airport for business, as vacationers, to reunite with friends and relatives, or for various personal or professional reasons. Although general aviation travel is sometimes viewed as a luxury mode of transport, the efficiencies and flexibility of general aviation are highly desirable, especially to corporate travelers.

Studies of companies that use business aviation find that these firms outperform others on key financial measures such as earnings and share price growth. While these visitors are in the Salinas area, they contribute to the regional economy with expenditures on lodging, food and drink, and other goods and

services. Moreover, air travel can provide a way for high time-value decision makers to review investment opportunities in the Salinas area or conduct business discussions and return to their home airport during the same day.

According to the FAA Air Traffic Activity Data System (ATADS), there were 75,535 operations at Salinas Municipal Airport in 2019, with a distribution of 40 percent local operations and 60 percent itinerant operations. Operations are defined as a departure (take off) or arrival (landing). Local flights are those that take off from the Salinas Municipal Airport and remain in the airport traffic pattern for pilot training or testing. Local operations predominantly involve based aircraft. Itinerant operations occur when aircraft depart to another airport or arrive at Salinas on a flight originating at another airport.

There were a reported 43,448 civilian itinerant general aviation operations at Salinas Municipal Airport in 2019 (Table 5). Itinerant operations can involve based or non-based aircraft traveling to or from airports other than Salinas Municipal Airport. Those itinerant arriving aircraft that are not based at Salinas Municipal Airport are identified as “true transient” arrivals in airport economic studies. To determine the number of true transient arrivals, a sample of 5,500 operations from the FlightAware Flight Tracker database for Salinas Municipal Airport was analyzed. This source includes arrival and departure data for aircraft identified by N numbers, on an hourly basis. Based aircraft arrivals were removed by matching arriving N numbers with known N numbers of Salinas based aircraft. It was found that 21 percent of arriving itinerant aircraft were based at Salinas Municipal Airport, while 79 percent were true transients based elsewhere, and therefore properly identified as visitors.

There were 21,724 itinerant arrivals in 2019. Applying the ratios from the sampling analysis, estimates of 6,951 based itinerant arrivals and 14,772 true transient arrivals were obtained for Salinas Municipal Airport for 2019. By matching pairs of arrivals and departures in the sample of 5,500 operations, it was found that 15 percent of all arriving transient aircraft (2,216) remained overnight, while 85 percent (12,556) stayed for a portion of a day but not overnight.

Some one-day aircraft remain on the airport for only a short period, such as to buy fuel or visit the on-site restaurant. Other travel parties may stay longer to visit a corporate site, conduct a business meeting, or purchase goods and services off the airport. These latter activities generate off-airport benefits in the

Table 5 General Aviation Itinerant Aircraft Salinas Municipal Airport	
Category	Activity
Itinerant GA Operations	43,448
Itinerant GA Arrivals	21,724
Itinerant Based Arrivals	6,952
True Transient Arrivals	14,772
Overnight Stay Aircraft	2,216
One Day Stay Aircraft	12,556
One Day Stay > 3 hours	3,250
One Day Stay < 3 hours	9,306

Source: Derived from FAA ATADS and records for Salinas Municipal Airport as compiled by the FlightAware Flight Tracker system, 2019

form of expenditures that support jobs and payroll in the local area. Detailed arrival and departure records indicated that 63 percent of arriving one-day transient aircraft (9,036) remained on the airport for less than three hours, while 22 percent of one-day transient aircraft (3,250) remained parked at the airport for three hours or longer, enough time for passengers to leave the airport and make expenditures in the surrounding area.

Those aircraft travel parties that remained overnight stayed in the Salinas area for an average of 2.5 days, according to an analysis of the FlightAware arrival and departure data. Aircraft that remained on the airport for three hours or longer stayed in the area for an average of 6.2 hours. The greatest percentage of aircraft remained at the airport for less than three hours. The average length of stay for one-day transient aircraft remaining on the airport for less than three hours was 27 minutes.

GENERAL AVIATION VISITOR SPENDING

Overall visitor spending depends on the number of visitors, their length of stay, and the types of expenditures made. The number of visitors is a function of the number of arriving aircraft and average passengers per aircraft. While appealing in concept, attempts to survey pilots and passengers of arriving or departing general aviation aircraft often result in response rates that fall well below acceptable levels of statistical significance.

Studies by the National Business Aviation Association and Harris Interactive found average travel party size across business aviation flights of 3.0 persons. This estimate may be influenced by increasing utilization of larger corporate jets. The Aircraft Owners and Pilots Association has reported an average of 2.5 passengers for general aviation flights. A recent study by the FAA (*The Economic Impact of Civil Aviation on the U. S. Economy: The Economic Impact of Civil Aviation by State*) determined average number of passengers on itinerant general aviation flights to be 2.84. For this study, an average of these three estimates, 2.8 passengers per aircraft, was used.

Estimates for visitor spending per aircraft travel party per trip are set out in **Table 6**. Travel party calculations are for 2.8 passengers. Overnight travel parties stayed an average of 2.5 days, according to analysis of the FlightAware sample of arrivals and departures. Figures for spending by category were based on the *Monterey County Visitor Profile* prepared by Destination Analysts Inc., 2016, and updated to 2019 through adjustment by the Consumer Price index. Entries were validated by contacting lodging establishments, rental car agencies and local restaurants. Lodging and food expenditures were also compared with per diem spending allowances for Monterey County for federal travel by the U. S. Government Services Administration. These methodologies for computing visitor spending are typically used in airport studies by research firms and government agencies (see for example *Contribution of General Aviation to the US Economy in 2018*, prepared by PricewaterhouseCoopers LLP for the NBAA, AOPA, and other sponsors, 2020).

Visitor spending per aircraft per trip for overnight visitors was \$1,997. The largest component was lodging at \$1,088, which accounted for 54 percent of the total. The next largest category for overnight visitors was food and drink, at \$532 per aircraft travel party, 27 percent of the total.

Table 6 General Aviation Visitor Spending per Aircraft per Trip Salinas Municipal Airport		
Category	Overnight Aircraft	One Day Aircraft
Lodging	\$1,088	N/A
Food & Drink	\$532	\$85
Retail Goods & Services	\$133	\$25
Entertainment	\$90	\$15
Ground Transportation	\$134	\$52
Spending per Trip	\$1,997	\$177
Number of Aircraft	2,216	3,250
Direct Visitor Spending	\$4,425,000	\$575,000
Direct Visitor Benefits \$5,000,000		

Source: Spending reports provided through Monterey County Convention & Visitors Bureau, adjusted to 2019 values by Consumer Price Index, U. S. Bureau of Labor statistics. Day visitor spending by category is 40% of one full day spending. Figures are rounded and may not compute exactly.

Visiting travel parties who were only in the area for a day had no expenses for lodging and therefore total spending per aircraft was lower than for overnight visitors, at \$177. Since one-day visitors were often in the area for only a portion of a full day, each spending category was adjusted to 40 percent of the full day/overnight values for those aircraft on the airport for 3 hours or more.

The economic value of an arriving overnight aircraft of \$1,997, multiplied over 2,216 aircraft arrivals yields direct visitor spending of \$4.4 million for 2019. The economic value of an aircraft that remains on the airport from three hours or more of \$177, multiplied

over 3,250 one-day aircraft, results in direct spending of \$575,000. The combined general aviation visitor direct spending at Salinas Municipal Airport by overnight and one-day aircraft was \$5.0 million for 2019.

DIRECT, SECONDARY, AND TOTAL VISITOR BENEFITS

Annual 2019 direct, secondary, and total air visitor benefits are shown in **Table 7**. Benefits are shown for overnight, one day, and combined general aviation visitors. The largest direct spending category by aviation visitors was overnight expenditures for hotel or other accommodation, with outlays of \$2.4 million. The level of lodging employment associated with this spending level was 20 jobs and payroll of \$981,000. The second greatest spending category was food and drink, with combined overnight and one day visitor outlays of \$1.5 million, creating 17 jobs with payroll of \$652,000. Summed over all spending categories for combined overnight and one day travel parties, direct visitor benefits included output (visitor spending) of \$5.0 million, 51 hospitality sector jobs supported, and payrolls of \$2.2 million.

The indirect benefits created by purchase of intermediate goods and services from suppliers to the hospitality industry were output of \$1.2 million and 8 additional jobs across the regional economy. The induced spending by workers as consumers created benefits of \$2.3 million in output and 15 jobs. The

indirect plus induced secondary benefits across the Salinas area economy flowing from the direct air visitor spending summed to \$3.5 million of output, 23 jobs, and \$1.4 million payrolls.

Combining direct and secondary benefits, the total economic benefits contributed to the local region from air visitor spending were:

- 74 total jobs supported
- \$3.6 million total payroll created
- \$8.5 million total output produced




TABLE 7
Direct, Secondary, and Total Economic Benefits from General Aviation Visitors
Salinas Municipal Airport

Category	Overnight GA Visitor Expenditures	One Day GA Visitor Expenditures	Output (Expenditures)	Payrolls	Employment
Direct Visitor Economic Benefits					
Lodging	\$2,390,000	N/A	\$2,390,000	\$981,000	20
Food/Drink	\$1,195,000	\$275,000	\$1,470,000	\$652,000	17
Retail Sales	\$354,000	\$172,000	\$526,000	\$283,000	9
Entertainment	\$177,000	\$46,000	\$223,000	\$149,000	3
Ground Transport	\$310,000	\$81,000	\$391,000	\$105,000	2
<i>Direct Benefits</i>	<i>\$4,426,000</i>	<i>\$574,000</i>	<i>\$5,000,000</i>	<i>\$2,170,000</i>	<i>51</i>
Secondary Visitor Economic Benefits					
Indirect Benefits	\$1,098,000	\$144,000	\$1,242,000	\$476,000	8
Induced Benefits	\$1,972,000	\$287,000	\$2,259,000	\$912,000	15
<i>Secondary Benefits</i>	<i>\$3,070,000</i>	<i>\$431,000</i>	<i>\$3,501,000</i>	<i>\$1,388,000</i>	<i>23</i>
Total Visitor Economic Benefits					
<i>Total Benefits</i>	<i>\$7,496,000</i>	<i>\$1,005,000</i>	<i>\$8,501,000</i>	<i>\$3,558,000</i>	<i>74</i>

Source: Spending estimates from Monterey County Convention & Visitors Bureau, applied to general aviation aircraft activity at Salinas Municipal Airport based on data from the FAA ATADS and the FlightAware Flight Tracker System. Employment and payroll estimated by the IMPLAN input-output model. Values are in 2019 dollars.

GOVERNMENTAL REVENUE BENEFITS

Because of the output, jobs, and income created by the presence of Salinas Municipal Airport, the facility is an important source of public revenues. Estimated tax revenues for 2019 are shown in **Table 8**. The tax revenues in the table are derived from the IMPLAN model, based on current rates for California, Monterey County, and federal taxes. The IMPLAN model estimates tax revenues related to employment, worker compensation, and output components as reported by the U.S. Bureau of Economic Analysis. No break-out is available in the BEA data for individual cities, as city and county data are combined and reported at the county level. The table is constructed to identify the taxes from direct on-airport activity, direct visitor spending in the region, secondary tax collections created by supplier (indirect) and worker (induced) activity and total combined tax collections from direct and secondary sources due to the presence of the airport.

Table 8 Government Revenue Benefits Salinas Municipal Airport				
Source	Direct Taxes On-Airport	Direct Taxes Visitors	Secondary Taxes	Total Taxes
Federal Taxes				
Corporate Profits Tax	\$47,000	\$14,000	\$73,000	\$134,000
Personal Income Tax	\$1,205,000	\$179,000	\$843,000	\$2,227,000
Social Security Tax	\$1,404,000	\$232,000	\$1,003,000	\$2,639,000
All Other Federal Taxes	\$127,000	\$38,000	\$174,000	\$339,000
Total Federal Taxes	\$2,783,000	\$463,000	\$2,093,000	\$5,339,000
State and Local Taxes				
Corporate Profits Tax	\$26,000	\$8,000	\$39,000	\$73,000
Sales Tax	\$418,000	\$128,000	\$574,000	\$1,120,000
Property Tax	\$424,000	\$130,000	\$583,000	\$1,137,000
Aircraft Property Tax	\$797,000	N/A	N/A	\$797,000
Personal Income Tax	\$464,000	\$69,000	\$325,000	\$858,000
All Other State & Local	\$238,000	\$53,000	\$235,000	\$586,000
Total State & Local Taxes	\$2,367,000	\$388,000	\$1,756,000	\$4,511,000
Total Federal, State and Local Taxes				
Total Taxes	\$5,150,000	\$851,000	\$3,849,000	\$9,850,000

Source: Calculations from the IMPLAN input-output model based on Monterey County, California, and federal tax collections at current rates. All figures are in 2019 dollars.

Salinas Municipal Airport was the source of the following public revenues in 2019:

- **\$9.8 million total combined federal, state, and local tax revenues**
- **\$5.3 million total federal tax revenues**
- **\$4.5 million total state and local tax revenues**
- **\$5.1 million federal, state, and local tax revenues from direct on-airport activity**

FEDERAL TAXES

The largest federal component was the social security tax, with contributions from employers and workers of \$2.6 million in 2019. Direct social security contributions on the airport of \$1.4 million accounted for 54 percent of the total social security taxes. The second largest federal tax revenues came from total personal income taxes of \$2.2 million, with \$1.2 million paid by the 185 on-airport workers. Overall, direct on-airport economic activity accounted for \$2.8 million of federal tax revenues, or 53 percent of the total federal collections of \$5.3 million.

STATE AND LOCAL TAXES

State and local tax revenues were \$4.5 million. Direct on-airport activity contributed \$2.4 million in revenues or 53 percent of the total state and local collections. The largest components of total state and local tax revenues were sales and property taxes of \$1.1 million for each. Personal income taxes of \$858,000 were the third largest revenue source, followed by property taxes of on based aircraft. Beginning January 1, 2020, federal law required airport revenues, including fuel taxes, to be used only for airport purposes.

AIRCRAFT PROPERTY TAXES

Under California law, aircraft are subject to annual appraisal and are taxable as tangible personal property. The Monterey County assessor receives aircraft ownership information from the Salinas Airport, the State Board of Equalization, and the FAA. Aircraft owners must file an Aircraft Property Statement that includes the purchase price, model and manufacturing year of the aircraft, and information about operating hours, condition, and avionics equipment. For tax purposes, the assessed value is set at current market value of the aircraft. Historic aircraft are typically exempt from property tax.

Aircraft based at Salinas Municipal Airport had an adjusted (after exemptions) assessed value of \$72,307,977 in 2019, according to figures provided by the Treasurer's office of Monterey County. The airport is located in tax rate area 005003 and personal property in that area is subject to the general 1.0 percent tax rate per \$100 plus an additional 0.102505 percent tax rate per \$100 for various school district bonds and other voter-approved charges. Aircraft property taxes of \$797,000 accounted for one third of

the \$2.4 million state and local tax revenues resulting from direct economic activity on-site at Salinas Municipal Airport in 2019.

The assessed value of based aircraft was \$72.3 million.

The resulting tax revenues include:

- **\$797,000 aircraft property tax revenues**
- **\$723,000 general tax revenues at the 1.0 percent tax rate**
- **\$74,000 Salinas city tax revenues at the 0.102505 tax rate**

CATALYTIC ECONOMIC BENEFITS

Catalytic economic benefits are related to the airport's support for non-aviation economic activity, growth, and development in the region. A study by the Air Transport Action Group, an international air travel organization, notes that "Air transport's most far-reaching economic contribution is via its contribution to the performance of other industries and as a facilitator of their growth. These 'catalytic' or spin-off benefits of aviation affect industries across the whole spectrum of economic activity." (See *Benefits Beyond Borders*, ATAG, 2018, Pg. 11). A prime example of catalytic benefits includes the jobs, payrolls, and output created within the vast Salinas agricultural complex, one of the main industries using aviation services as a key input for producing output. Further growth of employment and revenues across the economy results when new businesses are attracted to the area, seeking a modern airport with infrastructure to accommodate corporate aircraft. Less easy to quantify are such benefits as expanded linkages to other cities and states, or enhanced output-per-workers (productivity) due to the efficiencies of aviation.

"Catalytic economic benefits are related to the airport's support for non-aviation economic activity, growth, and development in the region."

The role of California airports as a catalyst or stimulus for growth was highlighted in *Aviation in California: Benefits to our Economy and Way of Life*, prepared for the California Division of Aeronautics by Economics Research Associates (June, 2003). The report points out (page 26) that "As California corporations continue to decentralize their operations to escape the high cost of major metropolitan areas, the state's system of 250 airports is becoming increasingly important. These airports allow smaller California communities to compete with lower cost locations in other states." The report also emphasizes the many qualitative features of general aviation that are important to travelers, including increased security and "less hassle" compared to commercial airlines, greater privacy, convenience, time saving, and cost saving.

NON-AVIATION VENDORS AND SUPPLIERS TO AVIATION

The most immediate catalytic effects of Salinas Municipal Airport on non-aviation businesses are the purchases of inputs of goods and services, known as indirect benefits. In order to produce output and support jobs, aviation employers make purchases, ranging from aviation and jet fuel for resale, office furniture, shop tools, and services such as insurance and banking. The direct output of Salinas Municipal Airport aviation employers in 2019 was \$26.6 million, as shown in **Table 9**. This direct output required intermediate inputs of \$7.4 million, identified in the table as “Indirect Benefits,” or purchases from suppliers in the regional economy. (It is likely that additional inputs were purchased from outside the region, but those outlays are not included in the table, since they did not create jobs and output for the regional economy.)

Table 9 Direct, Secondary, and Total Aviation Economic Benefits Salinas Municipal Airport			
SOURCE	EMPLOYMENT	PAYROLLS	OUTPUT
Direct Aviation Economic Benefits			
Private Aviation Employers (23)	133	\$11,404,000	\$24,270,000
Public Aviation Employers (1)	5	\$728,000	\$1,409,000
Capital Improvement Projects	4	\$308,000	\$879,000
<i>Direct Aviation Benefits</i>	<i>142</i>	<i>\$12,440,000</i>	<i>\$26,558,000</i>
Secondary Aviation Economic Benefits			
Indirect Benefits: Activity by Suppliers & Vendors	46	\$2,985,000	\$7,421,000
Induced Benefits: Activity by Workers as Consumers	77	\$4,595,000	\$11,728,000
<i>Secondary Aviation Benefits</i>	<i>123</i>	<i>\$7,580,000</i>	<i>\$19,149,000</i>
Total Aviation Economic Benefits			
<i>Total Benefits</i>	<i>265</i>	<i>\$20,020,000</i>	<i>\$45,707,000</i>

Source: On-airport employment was obtained through on-site interviews and records maintained by Salinas Municipal Airport administrative staff. Payroll figures based on Monterey County wage and benefits data from U. S. Bureau of Economic Analysis. Output, indirect benefits and induced benefits estimates were computed from the IMPLAN input-output model, with coefficients for Monterey County. Values are in 2019 dollars.

Suppliers to aviation make up what is known as the “upstream” portion of the aviation supply chain. Detail from the IMPLAN input-output model provides for analysis of the various industries supplying inputs to aviation producers at Salinas Municipal Airport, as shown in **Table 10**. The entries illustrate the upstream supply chain that supports output and job creation at the airport. Industries in the table are ranked according to dollar volume of inputs purchased by airport firms and City of Salinas airport operations during 2019. Aviation firms purchased \$1.8 million of inputs from the transportation and warehousing industry, including trucking and delivery, warehouse storage, and related services. Other inputs purchased from local suppliers included \$1.1 million of business support services (market research, advertising, security, and janitorial services). The mix of local suppliers of inputs to aviation was diversified over many other industries, including professional and technical services (such as legal advice and accounting), financial services (insurance and extensions of credit), leasing and maintenance of equipment, construction, and communications equipment and services.

Table 10 Aviation Upstream Supply Chain Salinas Municipal Airport	
Industry	Inputs
Transportation & Warehousing	\$1,799,000
Business Support Services	\$1,084,000
Real Estate, Rental, Leasing	\$907,000
Financial Services	\$724,000
Wholesale Trade	\$585,000
Professional, Technical Services	\$457,000
Construction & Maintenance	\$379,000
Government Services	\$253,000
Information, Communication	\$244,000
Retail Trade	\$184,000
Personal Services	\$164,000
Food Services	\$135,000
Equipment Repair, Maintenance	\$126,000
Utilities	\$56,000
Mining, Oil & Gas	\$51,000
All Other Suppliers	\$273,000
Input Purchases	\$7,421,000

Source: Calculated from the IMPLAN input-output model, Monterey County, 2019

From **Table 9**, it can be seen that the \$7.4 million of goods and services provided by the upstream suppliers of inputs to aviation was associated with creation and support of 46 jobs in the regional economy. The analysis here relates to upstream suppliers to aviation producers. However, non-aviation firms on the airport also required inputs from regional suppliers. The total purchases of inputs by non-aviation firms on the airport was \$1.1 million in 2019, supporting 6 jobs across various industries.

NON-AVIATION USERS OF AVIATION SERVICES

The previous section identified the non-aviation businesses and industries in the upstream portion of the aviation supply chain that provides the essential inputs required to produce aviation output. Utilizing inputs from the upstream supply chain, aviation output is then produced for users, customers, or clients of the Salinas Municipal Airport aviation community. The customer component is known as the “downstream” portion of the supply chain. The downstream users are those non-aviation businesses, public agencies, and individuals who depend on and purchase aviation output to support their economic activity.

Output produced by the aviation providers can be sold as inputs to further production (“intermediate demand”) or sold to “final demand.” For example, when an agricultural firm requires crop dusting service, the crop dusting is an intermediate input to agricultural output. In contrast, an individual who charters a flight to travel from Salinas to a medical appointment

in San Francisco is the final purchaser of the charter service. Goods and services sold to final demand are not intended to be resold or used for further production. Final demand consists of sales to consumers, governments, or sales made outside the local region.

Through input-output analysis, sales to non-aviation businesses who use aviation as intermediate inputs and household or government purchases or sales outside the region for final demand can be identified. Within the IMPLAN model, there are over 500 industries represented. Each industry has a set of requirements from other industries in order to produce output and each institutional component of the economy (households, government, capital investment, out-of-region exports) has a similar listing of purchases. The final demand and intermediate demands by purchasers of aviation services from Salinas

Table 11 Components of Demand for Aviation Services Salinas Municipal Airport			
Category	Sales as Final Demand	Sales as Intermediate Inputs	Output
Private Aviation Employers	\$9,562,000	\$14,708,000	\$24,270,000
Public Aviation Employers	\$1,409,000	N/A	\$1,409,000
Capital Improvement Projects	\$879,000	N/A	\$879,000
<i>Sales to Purchasers</i>	<i>\$11,850,000</i>	<i>\$14,708,000</i>	<i>\$26,558,000</i>

Source: Calculated from the IMPLAN input-output model, Monterey County, 2019

Municipal Airport are set out in **Table 11**. Output of private aviation employers is \$24.3 million. Private businesses within the region that require aviation services in the production of their own output purchased \$14.7 million of aviation services as intermediate inputs. An additional \$9.6 million of output was purchased directly by consumers or government or exported out-of-region as final demand. Note that the output of the airport administration (equal to the budget of \$1.4 million) is included as final demand, along with capital improvement projects. Within the framework of input-output analysis, both are recorded as components of final demand.

The non-aviation business customers that make up the downstream supply chain of the Salinas Municipal Airport aviation community are shown in detail in **Table 12**. It can be seen that several significant *purchasers* of aviation services also appear in **Table 10** as *suppliers* to aviation. Examples are transportation and warehousing, wholesale and retail trade, utilities, and business support services. While each of these appears as a supplier to aviation, each is also a customer, illustrating the interconnectedness of the market economy.

Total sales of aviation services to regional businesses as intermediate inputs were \$14.7 million in 2019. The largest volume was within the transportation and warehousing industry, again dominated by trucking, showing that aviation producers depend on the trucking industry to receive necessary supplies,

while the trucking industry also depends on aviation to expedite deliveries of cargo. Industries that use aviation as inputs for production range across the entire regional economy, from utilities to wholesale firms to healthcare and agriculture.

In summary, aviation employers at Salinas Municipal Airport purchased \$7.4 million of inputs from non-aviation suppliers and in turn sold \$14.7 million of aviation services required by non-aviation firms to use as inputs in their own production processes to create non-aviation jobs, payrolls and output in the regional economy.

CATALYTIC BENEFITS OF BASED AIRCRAFT

Numerous studies, such as those supported by the National Business Aviation Association (NBAA), have documented how business aviation improves operations and the bottom line for non-aviation businesses. These catalytic benefits include employee time saving, enhanced productivity, and improved customer service. NBAA research findings include:

- A single business aircraft can bring an airport and its community \$2.5 million in economic benefits
- Two-thirds of business aircraft passengers are more productive in the air than in the office
- Eighty percent of business aircraft operations are flights into airports in smaller communities

A persistent statistic from research on aviation in non-aviation businesses is that firms that have corporate aircraft tend to have higher profits, grow more rapidly, and have not only greater worker productivity, but also higher levels of employee satisfaction (see for example *Business Aviation: An Enterprise Value Perspective*, NBAA, 2010).

Table 12 Aviation Downstream Supply Chain Salinas Municipal Airport	
Industry	Purchases
Transportation & Warehousing	\$7,600,000
Utilities	\$2,278,000
Wholesale Trade	\$1,457,000
Business Support Services	\$561,000
Retail Trade	\$454,000
Government	\$366,000
Hospitality & Leisure	\$359,000
Healthcare	\$348,000
Agriculture	\$265,000
Manufacturing	\$240,000
All Other	\$780,000
Sales as Intermediate Inputs	\$14,708,000

Source: Calculated from the IMPLAN input-output model, Monterey County, 2019

“Aviation employers at Salinas Municipal Airport purchased \$7.4 million of inputs from non-aviation suppliers and in turn sold \$14.7 million of aviation services required by non-aviation firms to use as inputs in their own production processes to create non-aviation jobs, payrolls and output in the regional economy.

The business aircraft based at Salinas Municipal Airport represent very significant investments by aircraft owners. From the Monterey County Assessor roles, the total value of all aircraft based at Salinas Municipal Airport is \$72 million. The average value of the top ten aircraft is \$5.3 million. There are 15 based aircraft with an assessed value of more than \$1 million and 10 of these are listed as owned by agricultural firms. This is not surprising given the importance of agriculture in the Monterey County economy. Agricultural output exceeds \$4 billion per year, according to the Monterey County Farm Bureau. Crops include lettuce and other salad greens, as well as broccoli, cauliflower, strawberries, wine grapes, and other fruits and vegetables, all contributing to the description of the area as “America’s Salad Bowl.” Aviation and the infrastructure supporting aviation at Salinas Municipal Airport clearly are vital to the operations of the agriculture industry.

The important role of aviation in the Salinas area agricultural industry is confirmed from a review of based aircraft travel patterns. Flight records show that among the most frequently active aircraft at the airport are those registered to major agricultural firms such as the Nunes Company and D’Arrigo Brothers. The linkages between firms in Salinas with other major growing areas can be seen in **Table 13**, which sets out the top 10 origins for based aircraft returning to the airport. The table is derived from the FlightAware sample of 5,500 operations used to develop information on itinerant and based activity at the airport.

There were 6,952 itinerant based arrivals in 2019 (based aircraft returning to Salinas from outside the area). By far, the greatest number of returning based aircraft flights were from Yuma, Arizona. This is consistent with the role of climate in cultivation of lettuce, arguably the most important of the Salinas area crops. In winter, lettuce growing transfers to more temperate climates, particularly Yuma. It is common in the industry for growers to use aircraft for numerous 90-minute flights from Salinas to Yuma and return to transport production workers, technical specialists, and managers.

While the agricultural industry has made large investments in aircraft based at the Salinas Municipal Airport, there are also other businesses that rely on aviation as well that are not analyzed here. Research by the Aircraft Owners and Pilots Association found 65 percent of general aviation flights are for a business purpose (*State of General Aviation, AOPA, 2019*). If that same ratio holds for Salinas Municipal

Table 13 Origin of Arriving Based Aircraft Salinas Municipal Airport		
Rank	Origin	Arrivals
1	Yuma, AZ	1,996
2	Lemoore, CA	405
3	San Jose, CA	260
4	Sacramento, CA	241
5	Thermal, CA	241
6	Santa Ana, CA	231
7	Fresno, CA	164
8	Redding, CA	125
9	San Luis Obispo, CA	125
10	Truckee, CA	125
N/A	All Other	3,037

Source: Derived from records for Salinas Municipal Airport as compiled by the FlightAware Flight Tracker system, 2019. Figures are for Salinas based aircraft only.

Airport, based aircraft fly an estimated 9,000 business operations per year or 25 per day, yielding potential catalytic benefits of increased efficiency, improved profitability, and continued economic growth for the region.

Salinas Municipal Airport based aircraft fly an estimated 9,000 business operations per year or 25 per day, yielding potential catalytic benefits of increased efficiency, improved profitability, and continued economic growth for the region.

CATALYTIC BENEFITS OF ITINERANT AIRCRAFT

In the same way that the infrastructure of Salinas Municipal Airport facilitates outward bound travel for based aircraft, the airport also allows visitors from across the nation to come to the area for business, recreation, or personal reasons. While some arriving itinerant aircraft carry visitors that will spend for food and lodging in the area and add to direct benefits, others bring customers to buy Salinas area goods and services. Itinerant aircraft also may bring sellers of products and technologies that improve the productivity or competitiveness of Salinas businesses.

Table 14 Origin of Arriving Itinerant Aircraft Salinas Municipal Airport		
Rank	Origin	Percent
1	San Jose, CA	12.3
2	Palo Alto, CA	8.2
3	Yuma, AZ	6.4
4	San Carlos, CA	4.1
5	Paso Robles, CA	3.1
6	Santa Rosa, CA	2.9
7	Hollister, CA	2.6
8	Hayward, CA	2.5
9	Livermore, CA	2.2
10	Fresno, CA	2.1

There were an estimated 21,724 arrivals at Salinas Municipal Airport by transient itinerant aircraft in 2019. In a detailed sample of 5,500 operations, visitors to Salinas originated at 169 airports, including in Arizona, Colorado, Nevada, New Mexico, Oregon, and Texas in the western states and as far away as Florida, New Jersey, Ohio and Hawaii.

Analysis of itinerant aircraft arrivals at Salinas Municipal Airport indicated that a key linkage provided by the airport is between the Salinas region and the dynamic Silicon Valley area (Table 14). Silicon Valley includes the San Jose metro area, communities farther north on the peninsula, such as Palo Alto and San Carlos, and the southern portion of the East Bay toward Fremont. Silicon Valley originations account for one out of every four itinerant (non-based) arrivals at the airport.

Source: Derived from records for Salinas Municipal Airport as compiled by the FlightAware Flight Tracker system, 2019. Figures are for transient aircraft only; Salinas based aircraft arrivals have been excluded.

The *Los Angeles Times* described Salinas as “One foot in the fields and the other edged toward Silicon Valley.” Driving time from Salinas to San Jose is about one hour,

and much slower during rush hours. The flight-line distance between Salinas and San Jose is approximately 60 miles, or a few minutes from departure to arrival.

Major employers in Silicon Valley include Apple, Facebook, Google, Oracle, Hewlett Packard, Intel and many others with a global presence. According to the Bureau of Economic Analysis, the average compensation per job in Silicon Valley is \$152,000. Itinerant flight activity indicates strong linkages between the Salinas area and Silicon Valley, with significant potential for further growth, whether as an expanding market for Salinas goods and services or a source of new investment, new ideas, or new technology to create new jobs, improve overall productivity, and raise regional incomes.

SOCIAL AND UNIQUE BENEFITS OF THE AIRPORT

Social and unique benefits of the Salinas Municipal Airport include improvements to the quality of life in the region due to the presence of the airport. Social benefits are not easily quantified, but include such factors as enhanced security, responses to disaster relief, and support for civic and social objectives by the airport community.

A partial listing suggested by the airport administration of unique benefits includes:

- Air ambulance services available
- Bob Hoover Academy educational program
- Major overhaul and repair businesses hiring and training local workers
- Multi-generations of families owning aviation businesses
- Influence of Annual California International Air Show on career choices

The following includes two entities on the field that have contributed greatly to the impact that SNS has on the surrounding region. Appendix I further details personal stories provided by various tenants and the general public regarding the airport's social impact.

CALSTAR AIR MEDICAL SERVICES

Security and safety for the region improved in 2002 when CALSTAR Air Medical Services established an emergency air medical transport base at the airport to provide service to Monterey County and Central Coast communities. The base is staffed by a flight crew made up of pilots, clinicians, and on-site aircraft maintenance technicians.

Helicopters operating from the base are equipped with IFR and GPS equipment that allow operation in limited visibility situations common along the coastal region. CALSTAR provides transport on a daily basis, responding to traffic and work site accidents, transporting patients to medical facilities, and moving medical supplies and personnel to where they are needed.



CALSTAR air ambulance serves Salinas area and Central Coast region

BOB HOOVER ACADEMY

The Bob Hoover Academy at Salinas Municipal Airport was originated in 2017 by Sean D. Tucker, one of the world's premier civil air show performers, in partnership with his son, Eric. Sean Tucker began his flying career doing crop dusting for Salinas agricultural producers, but soon began performing aerobatics and has since been a headliner in hundreds of airshows worldwide. His work with the Academy has been recognized by the National Business Aviation Association with an award for Humanitarian Leadership. Co-founder Eric Tucker is a corporate pilot as well as an aerobatics performer.

The Academy is named in honor of Robert "Bob" Hoover, a mentor of Tucker, and regarded as an originator of modern aerobatics. Hoover was named by the Smithsonian as one of the three greatest aviators in history. His honors for military flying include the Distinguished Flying Cross and the French Croix de Guerre, but he was best known from his civil air show career of more than three decades.

The purpose of the academy is to provide alternative educational opportunities to underserved at-risk youth in the Salinas area. The program features aviation ground school, flight training, and a STEAM (Science, Technology, Engineering, Arts, and Mathematics) curriculum offered in partnership with the Monterey County Office of Education. The program has an enrollment of approximately 20 students. Rather than training professional pilots, the education program is focused on cultivating leadership skills and character building. The program has attracted corporate support as well as donations from benefactors, including actor and pilot Harrison Ford.



Bob Hoover Academy Students, Faculty, and Supporters

AIRPORT INFLUENCE ON HOME PRICES

This economic benefit report has focused on the various benefits of the airport. Occasionally, it will be suggested that economic benefit studies should provide balance and present the negatives associated with the airport, notably aircraft noise and the effect on nearby property values. Because of the existence of residential housing near Salinas Municipal airport and a desire to quantify the relationship between airport activity and home values, a study of the effect of airport noise levels on home prices was included in this economic benefit study. The report was prepared by an Arizona State University economist who specializes in econometric studies, working with business students who assisted in data collection. The statistical noise analysis is included as an appendix.

There has been flight activity in the area of Salinas Municipal Airport since the 1940s when the airfield was used by the U.S. Air Force as a P-38 training facility and a base of operations for B-24 combat crew overseas replacements. The site was deeded to the City of Salinas for use as a municipal airport in 1946. Over time, operations and activity at the airport have increased, as has residential construction in Salinas and near the airport. Concern about aircraft noise is important to the general public, and especially to those homeowners near airport flight patterns. As a result, airport authorities are careful to log and respond to reports of excessive noise. In addition to sporadic noise complaints, officials work with homeowners, real estate firms, land use planners, and aviation consultants to monitor the perception (or the actual reality) that home values in communities may be jeopardized by airport proximity, primarily due to aircraft noise. This topic has been studied extensively by analysts, primarily with respect to large metropolitan area commercial service airports.

The highlights of the study are set out below:

- **National studies find that property values decrease in the range .4% to 2.0% for each one unit increase in airport noise exposure, indicating that housing markets do adjust for airport noise.**
- **The Salinas Municipal Airport noise study was based on analysis of data for 1,215 houses inside the 50 CNEL level, 603 houses inside the 50-55 CNEL contour, and 58 houses inside the 55-60 CNEL contour. The CNEL contour, unique to California, combines and weights decibels (db) of noise in daytime, evening, and nighttime.**
- **Houses inside the 50 CNEL level had the highest value, \$414,896. Houses in the 50-55 contour had an average value of \$407,043. Houses nearest the airport, in the highest noise 55-65 CNEL contour had the lowest value, \$402,439. However, a proper analysis must adjust these figures for differences in housing features, such as number of bedrooms, number of bathrooms, and lot size, by applying regression analysis to isolate the effects of noise on home values.**
- **An econometric regression analysis, holding housing features constant but allowing for noise variation, found a reduction in home value of 0.34% for a one unit increase in decibels across all noise contours, a result slightly weaker but similar to the housing market noise effect on home value found in many recent studies for other airports.**

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APPENDIX I

Salinas Municipal Airport Social Benefits

Various Tenants and Other Users of the Airport

While Salinas Municipal Airport is a major contributor to the economy of the City of Salinas and surrounding region, its value extends well beyond the monetary benefits. The following provides several personal stories that highlight the social benefits and opportunities the airport provides to the community.

MONTEREY COUNTY SHERIFF'S AERO SQUADRON AT THE SALINAS MUNICIPAL AIRPORT

By Bill Sabo

The Salinas Municipal Airport serves the county and the region by providing aerial Law Enforcement and Search and Rescue capabilities.

The Monterey County Sheriff operates and houses its Cessna 206 aircraft at the Salinas Airport. It is flown by volunteer pilots from the Monterey County Sheriff's Aero Squadron.

Using trained deputies from the Sheriff's department, the Aero Squadron performs Search and Rescue operations year-round. These operations, flown from the Salinas Airport, support other local agencies in locating missing hikers and campers in the Big Sur area. Over fifty of these life-saving missions have been flown by pilots based at the Salinas Airport. The availability of this aerial resource reduces the need for additional ground personnel and speeds the life-saving rescue of persons in need.

In addition, the Sheriff's Cessna 206 aircraft at the Salinas Airport with local trained deputies also supports local law enforcement surveillance activities and accomplishing missing persons and vehicle searches. This use of the Salinas Airport and the Sheriff's aircraft expands law enforcement capabilities not otherwise available and reduces the need for additional valuable ground resources.

SALINAS MUNICIPAL AIRPORT YOUNG EAGLE PROGRAM FOR YOUTH

By Bill Sabo

The Salinas Municipal Airport is a base for the Young Eagles flight program for local youth. The Young Eagles program provides a valuable educational opportunity for local youth ages 8 to 16 by giving them the chance to experience their first airplane flight in addition to learning about careers in aviation. The Young Eagles program uses local Salinas Airport aircraft flown by local pilots who volunteer their time and aircraft for these very popular flights.

Many of the local youths served by this program are disadvantaged and through this experience go on to pursue careers in aviation. Over 400 youth have participated in Young Eagle events at the Salinas Airport.

The Young Eagle learning experience that is made available to local youth cannot be duplicated elsewhere without great expense.

SOCIAL BENEFIT FOR THE BOB HOOVER ACADEMY

By Bob Hoover Academy Representative

The Bob Hoover Academy is a non-profit organization located at the Salinas Airport. Our mission is to inspire with the power of flight. We do this by offering flight training and STEM education opportunities to high school students. The students we serve are enrolled in the Monterey County Office of Education's Alternative Education aviation program. The students earn their high school diplomas by completing all of the general education with the school. They earn their elective credits through aviation!

The physical classroom was located in the business park adjacent to the airport. The floor-to-ceiling class windows looked out to the end of Runway 8. Whenever a plane would run-up, take-off, or land, the students got to see it first-hand. What an amazing experience to be able to see what we were learning about every single day. Not to mention, the jets, planes, and helicopters are of such a variety. Daily sightings of a UH-56 Blackhawk, Citation Jet, and Piper Cubs were just some of the examples of the mix of aircraft showing off.

We introduce these new aviators to the industry regularly - and Salinas is a great place to do just that. Our weather and altitude are both very conducive to flying. Aircraft perform at peak performance with the higher density air at low altitudes (airport elevation is 84 feet) and low temperatures (average 65 degree days). Salinas also boasts a very high rate of "flyable" days with clear skies. Salinas is an ideal airport to introduce student pilots to the aviation world.

The aviation world that these Salinas high schoolers are introduced to offers multiple opportunities for their futures. Our students begin their Bob Hoover Academy adventure with a tour through living legend of aviation Sean D Tucker's airshow aircraft hangar located on the Salinas Airport. Next, our students will each take a free airplane ride through the Salinas branch of the Experimental Aircraft Association (EAA)'s Young Eagles Program. Throughout their time in the Academy, students have been volunteers at Young Eagles events, as well as the California International Airshow Salinas. Some exceptional students have even been hired to work on Sean D Tucker's airshow team, or on the maintenance team. These incredible experiences are unique and valuable to our students' growth, responsibility, work ethic, and future hopes and dreams.

We asked many of the Bob Hoover Academy students what they think about going to school at the Salinas Airport. Here's what some of these high schoolers had to say, (SIC):

- "The school helps you out by being more inspired."

- “I got to go on a YE flight. To have my first experience flying by for free and in Salinas was pretty cool.”
- “We get to have the opportunity for a great future whether it's flying or becoming an airplane mechanic or something else.”
- “I had never even thought this was available to me until attending this school.”
- “I can hear the aircraft flying from my house.”
- “My first flight was really good. I enjoyed looking down at the whole of Salinas. I saw my house and all the schools with all the fields.”
- “I feel like the whole opportunity to fly is cool, it inspires us to work toward a better job.”

SNS TENANT FOR MORE THAN FOUR DECADES

By Bruce Britton

I began my association with SNS in 1975 when my family bought a single engine airplane and we needed a place to hangar it. We chose SNS because the weather was so much better than Monterey's.

We purchased the plane so I could easily get to Reno, NV as I was a helicopter pilot in the Nevada National Guard and I wanted to continue with my military career. My wife and I moved to Carmel to take over a family Real Estate company so driving to Reno once or twice a month wasn't going to work. Our children now run the same company which has been active since 1954.

The airport was instrumental in my National Guard career, I retired in 1989. My children all love aviation: My son is a private general aviation pilot, my nephew was a Navy P-3 pilot and my son-in-law is a retired Navy F-18 pilot. We all still fly our 1971 Bonanza which is still going strong.

Thanks, Salinas!

CALIFORNIA INTERNATIONAL AIRSHOW 2020

By Brett Godown

Since 1981, the California International Airshow has been producing and staging a “world class aviation event” at the Salinas Municipal Airport. With an all-volunteer non-profit organization, the CIA has given over \$8.5 million to local charities during the past 40 years.

Truly an International aviation event, the CIA has hosted the Canadian Forces Snowbirds, the British Red Arrows, The Soviet Mig Tour, as well as the US Navy Blue Angels and USAF Thunderbirds. The Airshow generates over \$4.4 million in direct and non-direct economic impact to the Salinas Airport, City of Salinas and County of Monterey each year.

The social benefit that the airshow brings to the airport and Community are immeasurable. First, there is the strong sense of community spirit that is generated each year. Traditions of volunteering are instilled in the youth of our community and the goodwill created over generations is a very positive force.

Giving our youth the sense of community volunteering teaches them the benefits of helping others and making our community a better place to live.

Certainly the \$200,000 annually that is passed on to non-profit organizations benefit many needy families and organizations each year. Groups like the Boys and Girls Club, United Way, Boy Scouts, Girl Scouts, School booster groups, Rotary Clubs, etc., all use funds earned at the Airshow to fund their community projects. All contributing to making our Community a better place for our residents.

Within the Airshow industry, Salinas has a reputation of producing one of the best community-based civilian airshows in the Country. It is widely recognized throughout North America and there is a very positive image in the industry but also within the Military of our Country. The positive image that the Salinas Airshow and Salinas Airport have received over the past 40 years is significant.

Pride and patriotism are a big part of airshows. The opportunity to see our Country's top military jets perform their maneuvers at the airshow can be inspiring for all ages and many younger kids actually make a decision to pursue military and aviation careers from attending the Salinas airshow. Over the years, the airshow has seen a number of military pilots bring their planes to the Salinas airshow, and tell us that they came to the Salinas airshow as a child and that is why they joined the Navy or Air Force to serve our Country.

The California International Airshow will continue its mission to produce a "World class aviation event at Salinas Airport, for family entertainment and education while raising money for local charities.

NINETY NINES AND WOMEN IN AVIATION

By Joanne Nissen

I think Angel Flights are awesome, but never had the opportunity to provide any. I have worked with the EAA's Young Eagle flight programs, never actually flown any myself, but many years ago we did fly penny a pound flights to support our scholarship programs and introduce folks to aviation.

As a younger person, I remember when there was a drag racing strip located at the airport so that was an additional use of the airport for the community. Think I witnessed one or two races. And the airport is used for bike races, runs, etc. even now.

I have been a member of the local chapter of The Ninety Nines, an international organization of women pilots for over 50 years. We have organized flights for community leaders to show them the county from the air to help them better understand the ramifications of the issues they were dealing with throughout our large county. There is such a diversity of geology, climates, plant communities, land use, community size, sizes (and complexity) of drainages, roadways, etc. that the aerial view gives them a larger sense of the whole. Some of us have flown photographers to help them with particular photos, either for publications or distribution to showcase a subject. We have hosted air race starts and finishes at the airport giving us opportunities to showcase our special part of the world to folks from out of the area.

As a chapter, we were involved in one of the early Air Shows. That original Air Show faded away, but now is surpassed by the current International Salinas Air Show. We have hosted heaps of girl scouts to educate them on non-traditional careers that are available. Given even greater heaps of airport tours for other groups, some young, some not so young.....the tower steps often give participants pause! It was important to emphasize the aerial applicators that are vital to the local Ag industry and more recently, the presence of the air ambulance. We know the Ag industry relies heavily on the airport both for the aerial applicators providing plant health, for the base of operation for the company aircraft that support the winter produce business in the southern Southwest as well as general business with companies all over the United States, Canada and Mexico. Many years ago, there was a plan to ship produce from Salinas, I believe using large propeller driven aircraft and for a short time there were airlines operating out of Salinas. I would think they were DC-6s, but that can be confirmed.

I have raised sheep, have flown a couple to U.C. Davis for medical issues and brought new stock home in the plane. And, of course, when I am traveling to visit friends always include in-season produce in the plane to hand out....always to great reviews!!

I am a member of both the Local EAA and Pilots Associations. Everyone is always trying to showcase the benefits of the airport to the community.

THE AIRPORT IS HOME BASE FOR FLYING, PERSONAL DEVELOPMENT, AND CAREER

By Sophia Taylor-Home

For as long as I can remember, aviation has played a key role in my life. I can vividly recall stories my grandfather told me when I was very young about his experience serving on the USS Hornet, getting to work in close quarters with the finest aircraft the Navy had to offer in the mid-twentieth century, and the pilots that flew them. He told me that even though he had never pursued his own dream of becoming a pilot, that nothing should ever stop me if I decided I wanted to fly. At the time, the stories intrigued me, but the sky seemed a foreign place and the future a very long time away. Years later, still as a young child, I remember seeing the Blue Angels flying at the Salinas Airshow, and the amazement of watching the gorgeous aircraft streaking overhead, so loud it made my chest vibrate. And the absolute enthusiasm with which I marvelled at the aerobatic pilots tumbling through the sky, aerial ballet performed at the absolute highest level. The Salinas Airshow was my first experience at the Salinas Municipal Airport. At the time, I was so young I did not fully realize that we were at an airport, sitting, in fact, basically on a taxiway. We just went somewhere and watched a lot of really cool planes fly, and afterwards all I wanted to do was go back there.

When I was ten years old, I took my first EAA Young Eagles flight (coincidentally also my first time ever getting to fly in a plane of any size), and though I was terrified, it was the most fun I'd ever had. It was shortly after this that I began to think of the airport as a place, and a part of Salinas that made it unique. When I was thirteen, I began taking flight lessons, originally out of Monterey, and would fly with my instructor to practice touch-and-go's at a less familiar field by flying the fifteen minutes over to KSNS. It was at this time I joined the Monterey Bay Chapter of the Ninety-Nines and through them was introduced to the Salinas Pilots Association.

Throughout my most formative years and up until that point in time, the Salinas Airport was a bit of an abstract concept, a place I went and had almost impossible amounts of fun and then dreamt about later. It wasn't until the aviation community so joyfully welcomed me, a thirteen year old pipsqueak of a girl, into their organizations and events that I began to view the airport as my second home. I met people who had jobs in aviation, who had built their lives around aviation, who literally lived and breathed aviation. I realized that if I wanted, I could form the rest of my life around this place and the people I met and experiences I had there. I began to understand that aviation isn't just a career path, aviation is everything from the miles of pavement that make up the runways and taxiways, to the people eating lunch at the terminal restaurant, to the guys hanging out in the hangars puttering around with a tricky maintenance issue or just shooting the breeze and trading crazy pilot stories. I looked forward to the monthly meetings of the organizations I belonged to and felt like a welcome part of the groups, even with my limited experience as a student pilot. In just a few years, I became first a board member for the Salinas Pilots Association and am now the president, holding several honors, such as being the youngest and first female president in the association's history. Additionally, I've formed acquaintanceships and friendships at other local airports, since having KSNS for my home base in aviation gives me a place to invite others to visit.

Over the years, I also began to understand, without even realizing it at the time, the art of networking. Almost by accident I started meeting people who would later become mentors, instructors, even future employers. By the time I was a junior in high school and my college counselors were beginning to lecture on the importance of networking I was like, "Oh man, I've been doing this since eighth grade!" It paid off, and when I graduated from high school and started looking for a job, a friend at the airport immediately contacted me and told me, "Oh, by the way, Ryan at the FBO Jet West is looking for a desk person." Apparently, my reputation around the airport as the young aviation enthusiast preceded me because when I walked in and introduced myself, I was handed my very first job with no questions asked. A year later, I'm still working there and am a refueler as well as a customer service representative.

I also fly primarily out of Salinas now, having found a flight school on the field connected to one of the best maintenance shops around. I passed my private pilot checkride at KSNS and am working on my instrument rating here as well. I know the airport like the back of my hand and most days it feels like I spend more time on the airfield than I do at my own house. I've found a job, internships, a hobby, a career, and lifelong friends all in one place.

SNS SUPPORTS THE REGIONAL AGRICULTURAL INDUSTRY

By Thomas R. Am Rhein

Some years back when I was looking for a hangar in the Monterey Bay area, I approached you and within short order I was set up in a hangar for my newly painted C-172. The plane had been painted by Juan over at T & P Aero Refinishers. The amount of business that they generate is pretty amazing and Salinas is lucky to host such a skilled operator.

Salinas Airport has been great for me as I do fly regularly for business and having the tower and multiple departures and approaches work great for getting me in and out on time, and doing it safely. Over the years, I also have used the aerial application services from Salinas Airport in my farming operations.

As a LightHawkⁱ pilot, I have done donated flights all around the local area and even into northern California and southern California, but basing them from Salinas. Also, I have taken many young people from the area on airplane excursions so they learn about aviation and perhaps follow that as a career. While I have not been involved in the annual fly-in, I did work as a volunteer at the big AOPA fly-in a few years back. That was really a nice event and it brought national attention to Salinas as a great place to be.

On a larger scale, Salinas Airport has been a very useful base for charter services for the larger agricultural operation I am associated with. We have operations and growers all down the coast of California and into Mexico. Being able to bring folks together in Salinas is an important part of running a successful operation and is an important factor for us to be able maintain our national headquarters here in Salinas.

APPENDIX II

Salinas Municipal Airport Noise Analysis

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April 2020

Outside noise above basic ambient levels can disturb basic life in and around a house, leisure activities, or sleep and work in the home office. Furthermore, medical research shows that noise exposure can cause increased risk of hearing impairment and poor school performance (Passchier-Vermeer and Passchier 2000), hypertension (Rosenlund et al. 2001), cardiovascular disease (Meecham and Shaw, 1993; Correia et al. 2013), increases in suicide rates (Meecham and Shaw, 1993), and sleep disturbance and psychological stress (Stone, et al 1972).

However, airspace is a common property resource, where there is little or no delineation of use rights for private parties. Airport noise is an example of a negative externality which is defined as a by-product of production or consumption activities that adversely affects third parties not directly involved in the associated market transactions (Nelson, 2008). There is no established market for quietness where people could be compensated for their suffering, but a complementary system exists wherein individuals reveal their *willingness-to-pay* to avoid different levels of aircraft noise exposure. This willingness-to-pay is revealed through the difference in house values based on noise levels.

Most commonly, the differential property value is estimated through the Noise Depreciation Index (NDI), which is defined as the percentage depreciation of property values due to a one unit increase in noise exposure, typically measured in decibels (dB). The first such studies were carried out at the beginning of the 1970s which involved airports in Canada, the U.S., and Australia. Nelson (1980) provides an overview of 12 of these studies ranging from 1960 to 1976. He finds the average NDI to be 0.4% to 1.1%. These findings are supported through analyses of individual airports by Collins and Evans (1994); Feitelson, Hurd, and Mudge (1996); Kaufman and Espey (1997), Levesque (1994); O'Byrne, Nelson, and Seneca (1985); and Pennington, Topham and Ward (1990).

In more recent extensions of the work by Nelson (1980), Schipper, Nijkamp and Rietveld (1998) covering 19 HD noise studies and 30 NDI estimates find an average NDI of 0.83%. Further support comes from Nelson (2004) covering 33 airport studies in the U.S. and Canada from 1969 to 1997 finding that values of properties decline between 0.51 to 0.67% per dB.

Work on the negative effects of noise on house values at Chicago O'Hare International Airport (McMillen, 2004) and Atlanta Hartsfield-Jackson Airport (Cohen and Coughlin, 2005, 2008) put the NDI above 1%. McMillen finds an NDI of about 1% for Chicago O'hare and Cohen and Coughlin find an NDI of about 2%

for Atlanta Hartsfield. The most recent meta-analysis (Wadud, 2010) confirms that the NDI is likely below 1%. Including 53 NDI estimates, Wadud (2010) shows that the NDI is between 0.45% and 0.64%.

The findings for the U.S., Canada, and Australia are supported by studies for Switzerland and Poland. Salvi (2003) finds an NDI of 0.74% per dB for Zurich Airport, Baranzini and Ramirez (2005) find an NDI of 0.7% for apartments located in the vicinity of Geneva International Airport, and Trojaneck, R. et al. (2017) find an NDI of 0.87% for single-family houses, and 0.57% for apartments in the vicinity of Poznan Airport.

However, airports also have positive effects on surrounding communities. A portion of the population might value close proximity to airports because access for convenience of transportation and travel time for employment (Tompkins et al, 1998; Lipscomb, 2003).

Data for Salinas Municipal Airport

This study reports on a model of house prices as a function of attributes. The attributes are the number of bedrooms, bathrooms, and other features. House price data were current as of April 2020 from Zillow. The dataset contains information on 1,876 houses in Salinas, California. In addition to the house data from Zillow, the model uses noise contour information provided by the City of Salinas. The noise contour maps were created in May 2017.

Noise is measured using the Community Noise Equivalent Level (CNEL). CNEL is a single number that expresses the average sound level over a 24-hour period. The CNEL is measured in dB but includes an additional fivefold weight for aircraft movements between 7 pm and 10 pm (roughly a 5dB penalty) and an additional tenfold weight for aircraft movements during the nighttime hours of 10 pm to 7 am (roughly a 10dB penalty). The CNEL approach to measure noise exposure is unique to California. CNEL is measured in common dB units (Wyle Laboratories, 1971). Normal background noise in urban areas is approximately 50-60 decibels during daytime hours and 40 decibels during nighttime (Nelson, 2004). An indoor CNEL value of 45dB is mandated by the California Code of Regulations (CCR, Title 24, Part 6, Section T25-28) for single-family dwellings, multiple family dwellings, hotel and motel rooms, which translates to about an outside noise exposure of 65-75 dB CNEL with closed windows.

The model is based on data for 1,215 homes located inside a 50 CNEL zone, 603 homes inside a 50-55 CNEL zone, and 58 homes inside a 55-60 CNEL zone. **Table A-1** contains the descriptive statistics for the sale prices and the characteristics of the houses for 2020. The houses are located in the neighborhoods of East Salinas, Fairview Park, Garden Heights, Hansen, Sherwood, and Sunstream Village. The average house in the sample is valued at \$412,030, has 2.8 bedrooms, 1.5 bathrooms, and is located on a 0.16-acre lot. The houses inside the 50 CNEL contour are valued at \$414,896. Houses inside the 50-55 CNEL contour are valued at \$407,043, and houses inside the 55-65 CNEL contour are valued at \$402,439. Comparing values across noise contours, *home values decrease as the noise level increases*. But since we are not holding all other housing characteristics constant, it is possible that houses in the noisier area might be smaller, have fewer bathrooms, or fewer bedrooms than houses in quieter areas. Figure A shows an overview of all the houses and their respective CNEL values included in this study.

The Model

The analysis uses a standard hedonic price model. The model can be written as

$$Y = X\beta + \varepsilon$$

where ε is a residual term assumed to be normally distributed with a zero mean and constant variance. The dependent variable (Y) is the natural log of housing price values, and X includes all house characteristics, such as the number of bedrooms, the number of bathrooms, the number of fireplaces, the number of stories, lot size, and distance from the airport in miles. Included in X are also a dummy variable for the neighborhood and, most importantly, a dummy variable for the noise contour. **Table A-2** includes a list of the variables and their definitions.

The goal of the regression analysis is to isolate the effect of noise on house values. *Simply comparing the average values of houses in each noise contour does not provide conclusive evidence about the effect of noise on house values because houses on different sides of noise contour boundaries might differ by more characteristics than just the noise level.* Regression analysis keeps everything else constant while just focusing on the difference in noise levels.

Results

Table A-3 provides results for the ordinary least squares (OLS) regression analysis. The results are within the range of the main findings of similar studies reviewed earlier. Overall, the estimated model explains about one-half the variation in log housing values as shown by the adjusted R-squared (.535). The individual variables for housing characteristics performed as expected. Houses with more bathrooms, more bedrooms, larger lot sizes, and a fireplace have higher values. Dummy variables for the number of bathrooms and number of bedrooms are positive and significant at the 1% level. The number of stories or the presence of a fireplace do not have an effect on the value of houses in this sample. It is interesting to note, for this study of Salinas houses, the house value *decreases* as the distance from the airport increases, while the model holds noise levels constant. For each additional mile from the airport, the value of houses is about 3% lower.

In addition, the neighborhood the house is located in also affects the house value in a significant way. Using East Salinas as the reference neighborhood, houses in Fairview Park are about 3% higher, while houses in the other neighborhoods, Garden Heights, Hansen, Sherwood, and Sunstream Village are between 0.8% and 3.6% lower, holding noise and other determinants constant.

The model finds the value of a house located inside the 55 CNEL noise contour is about 1.7% *lower* than otherwise, holding everything else constant. Per db, the housing prices are $1.7/5 = 0.34\%$. The finding for the 55 CNEL contour is not as large but still consistent with other reports that find about a 0.4 to 2% reduction in house value per dB. The effect of a location inside the 60 CNEL contour is small and statistically insignificant.

The summary finding of the model is that properties near the Salinas Municipal Airport show a 0.34% reduction in housing value for a one-unit increase in decibels, holding constant all other factors that

influence price, such as lot size or number of bedrooms. The result is slightly weaker but similar to that most frequently found in other airport noise studies for the United States.

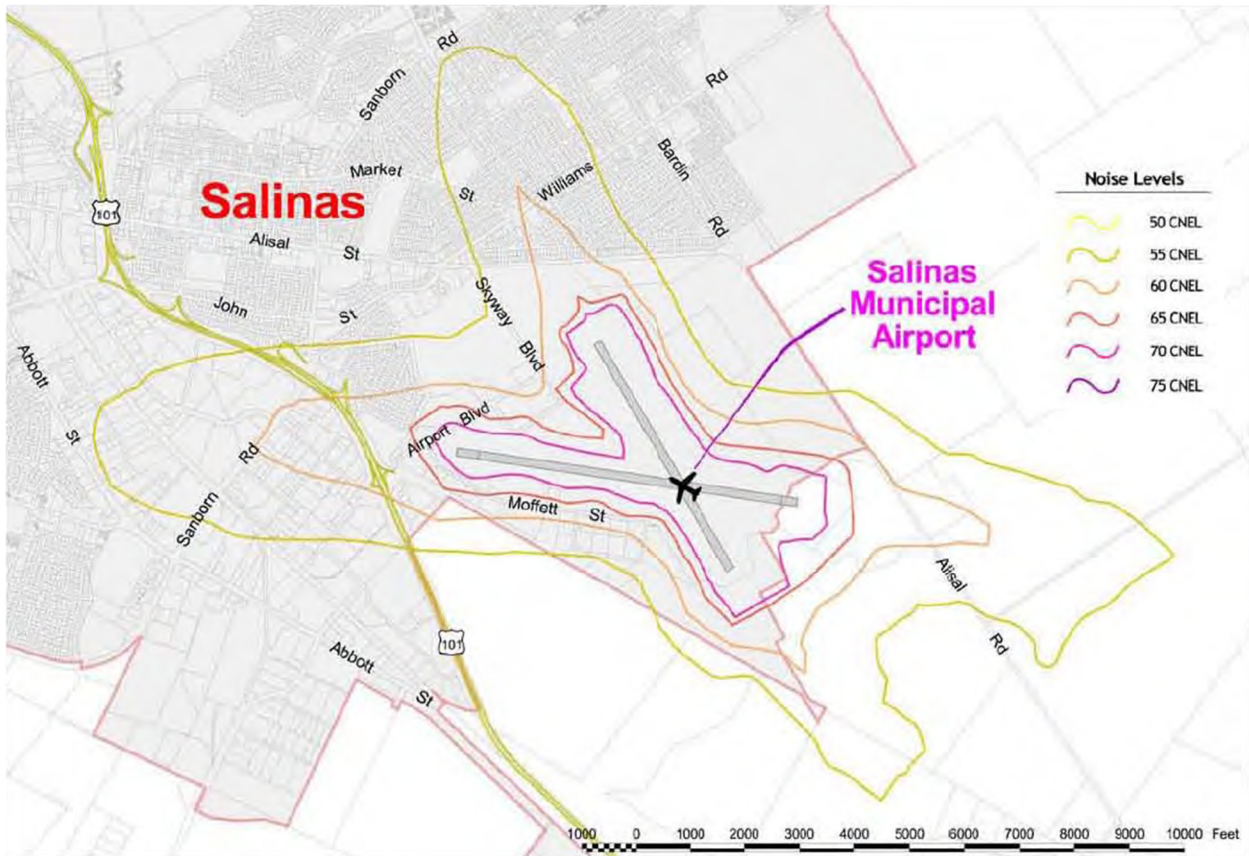


Figure A: Noise Contours for Salinas Municipal Airport



Figure B: Residential Properties and Noise Levels, Salinas Municipal Airport

TABLE A-1. SUMMARY STATISTICS, FULL SAMPLE—1,847 OBSERVATIONS

	Count	Percentage	Mean
Houses in CNEL 50 contour	1207	65.35	\$414,895.67
Houses in CNEL 55 contour	582	31.51	\$407,042.64
Houses in CNEL 60 contour	58	3.14	\$402,438.74
East Salinas	843	45.64	\$409,018.92
Fairview Park	278	15.05	\$430,120.71
Garden Heights	280	15.16	\$426,863.26
Hansen	221	11.97	\$390,809.41
Sherwood	35	1.89	\$380,260.31
Sunstream Village	190	10.29	\$407,595.42
1-bedroom	20	1.08	\$361,591.05
2-bedrooms	648	35.08	\$378,517.90
3-bedrooms	878	47.54	\$4,223,300.78
4-bedroom	243	13.16	\$449,868.07
5-bedroom	44	2.38	\$481,160.73
6-bedroom	12	0.65	\$509,872.92
7-bedroom	1	0.05	\$515,372.00
8-bedroom	1	0.05	\$604,967.00
0.5-bathroom	7	0.38	\$365,182.71
1-bathroom	957	51.81	\$384,596.15
1.5-bathrooms	121	6.55	\$424,087.64
2-bathroom	665	36.00	\$439,444.35
2.5-bathrooms	19	1.03	\$459,361.68
3-bathrooms	69	3.74	\$483,033.90
3.5-bathrooms	1	0.05	\$515,372.00
4-bathrooms	6	0.32	\$564,684.67
5-bathrooms	1	0.05	\$438,682.00
6-bathrooms	1	0.05	\$460,065.00
0 fireplaces	10	0.54	\$366,467.20
1 fireplace	1837	99.46	\$412,277.99
1-story	1830	99.08	\$411,497.56
2-stories	17	0.92	\$469,341.41
		Range	Mean
Zillow Value	1847	\$162,878-\$621,797	\$412,030.00
Travel Distance (miles) from Airport	1843	0.64 - 3.67	1.47
Lot Size Sq acres	1843	0.008 - 2.0	0.1644179
Bedrooms	1847	1 - 8	2.8
Bathrooms	1847	0.5 - 6	1.5

TABLE A-2. VARIABLES IN HEDONIC REGRESSIONS

Variable Name	Variable Definition
lzestimate	Log value of the nominal housing value as determined by Zillow
cnel2	Dummy variable equal to one for houses within the 50 to 55 CNEL noise contour; zero otherwise.
cnel3	Dummy variable equal to one for houses within the 55 to 60 CNEL noise contour; zero otherwise.
bedroom2	Dummy variable equal to one for houses with two bedrooms; zero otherwise.
bedroom3	Dummy variable equal to one for houses with three bedrooms; zero otherwise.
bedroom4	Dummy variable equal to one for houses with four bedrooms; zero otherwise.
bedroom5	Dummy variable equal to one for houses with five bedrooms; zero otherwise.
bedroom6	Dummy variable equal to one for houses with six bedrooms; zero otherwise.
bedroom7	Dummy variable equal to one for houses with seven bedrooms; zero otherwise.
bedroom8	Dummy variable equal to one for houses with eight bedrooms; zero otherwise.
bathroom2	Dummy variable equal to one for houses with 1 bathroom; zero otherwise.
bathroom3	Dummy variable equal to one for houses with 1.5 bathrooms; zero otherwise.
bathroom4	Dummy variable equal to one for houses with 2 bathrooms; zero otherwise.
bathroom5	Dummy variable equal to one for houses with 2.5 bathrooms; zero otherwise.
bathroom6	Dummy variable equal to one for houses with 3 bathrooms; zero otherwise.
bathroom7	Dummy variable equal to one for houses with 3.5 bathrooms; zero otherwise.
bathroom8	Dummy variable equal to one for houses with 4 bathrooms; zero otherwise.
bathroom9	Dummy variable equal to one for houses with 5 bathrooms; zero otherwise.
bathroom10	Dummy variable equal to one for houses with 6 bathrooms; zero otherwise.
lotsizeacre	Lot size in acres.
stories2	Dummy variable equal to one for houses with more than one story; zero otherwise.
fireplace2	Number of fireplaces== 1.0000
distance	Travel distance in miles from house to airport.
nbhd2	Series of dummy variables: nbhd2d for Fairview Park, nbhd3d for Garden Heights, nbhd4d for Hansen, nbhd5d for Sherwood, and nbhd6d for Sunstream Village, using East Salinas as the base neighborhood
age	Age of house in years in 2020

TABLE A-3. REGRESSION ANALYSIS RESULTS

Dep Var: Log(house value)	Semi-Log Function	
	Coefficient	Standard Error
cnel2	-0.017***	(0.005)
cnel3	0.007	(0.012)
bedroom2	0.040*	(0.018)
bedroom3	0.096***	(0.018)
bedroom4	0.129***	(0.019)
bedroom5	0.171***	(0.022)
bedroom6	0.184***	(0.030)
bedroom7	0.353***	(0.087)
bedroom8	0.239**	(0.090)
bathroom2	0.033	(0.030)
bathroom3	0.091**	(0.031)
bathroom4	0.115***	(0.030)
bathroom5	0.143***	(0.035)
bathroom6	0.177***	(0.032)
bathroom7+	Omitted	(.)
bathroom8	0.283***	(0.047)
bathroom9	-0.019	(0.084)
bathroom10	0.148	(0.083)
Lot size acre	0.113***	(0.029)
stories2	0.018	(0.021)
fireplace2	0.096**	(0.030)
nbhd2	0.033***	(0.006)
nbhd3	-0.021***	(0.006)
nbhd4	-0.036***	(0.007)
nbhd5	-0.024	(0.014)
nbhd6	-0.008	(0.007)
Age	-0.001***	(0.000)
Distance	-0.033***	(0.007)
Constant	12.783***	(0.048)
adj R-squared		0.535
N		1836

* p<0.05, ** p<0.01, *** p<0.001

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