CASE STUDY

CHARLES M. SCHULZ SONOMA COUNTY AIRPORT – EXPANDING SERVICES IN THE SHADOW OF LARGE COMPETITORS

The Charles M. Schulz Sonoma County Airport (STS or "airport") is located near the City of Santa Rosa, the largest city in Sonoma County. It serves the Santa Rosa – Petaluma Metropolitan Statistical Area (MSA) and the broader North Bay Region ("region"), which comprises the counties of Sonoma, Lake, Napa, Marin, Mendocino and Humboldt north of San Francisco along the Pacific Ocean. The MSA is part of the larger San Jose-San Francisco-Oakland Combined Statistical Area. It is the northernmost county in the nine-county San Francisco Bay Area region. The Region's economy revolves around high technology industries and agriculture, particularly the world-famous wine industry and tourism.

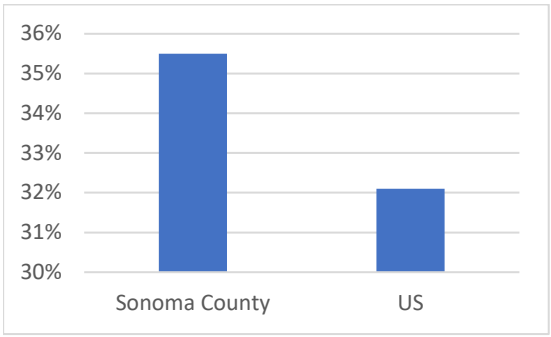
STS is a non-hub airport operating in the shadow of several larger international facilities. These are San Francisco International Airport (SFO), Oakland International Airport (OAK), San Jose International Airport (SJC), and Sacramento International Airport (SMF).

STS is included as a case study as an example of a smaller airport that has expanded its services since 2008, despite being within a relatively short distance from larger airports with significantly more air service options.

Introduction to the Sonoma County Region

Along with the neighboring Napa, Mendocino, Solano, and Lake counties, Sonoma County is in the heart of California's world-renowned Wine Country. The region is famous for its wineries, cuisine, resorts, and culture. Santa Rosa is the largest city in the county, with a population of about 180,000.

According to the U.S. Bureau of Economic Analysis (BEA), in 2019, the Santa Rosa-Petaluma MSA had a population of 494,336, ranked 112th in the nation (out of 384 total). The MSA produced $33.3 billion in current-dollar total GDP. This ranked 90th among MSAs, an increase in the region's national ranking from 2009, when it ranked 97th among MSAs.[1]

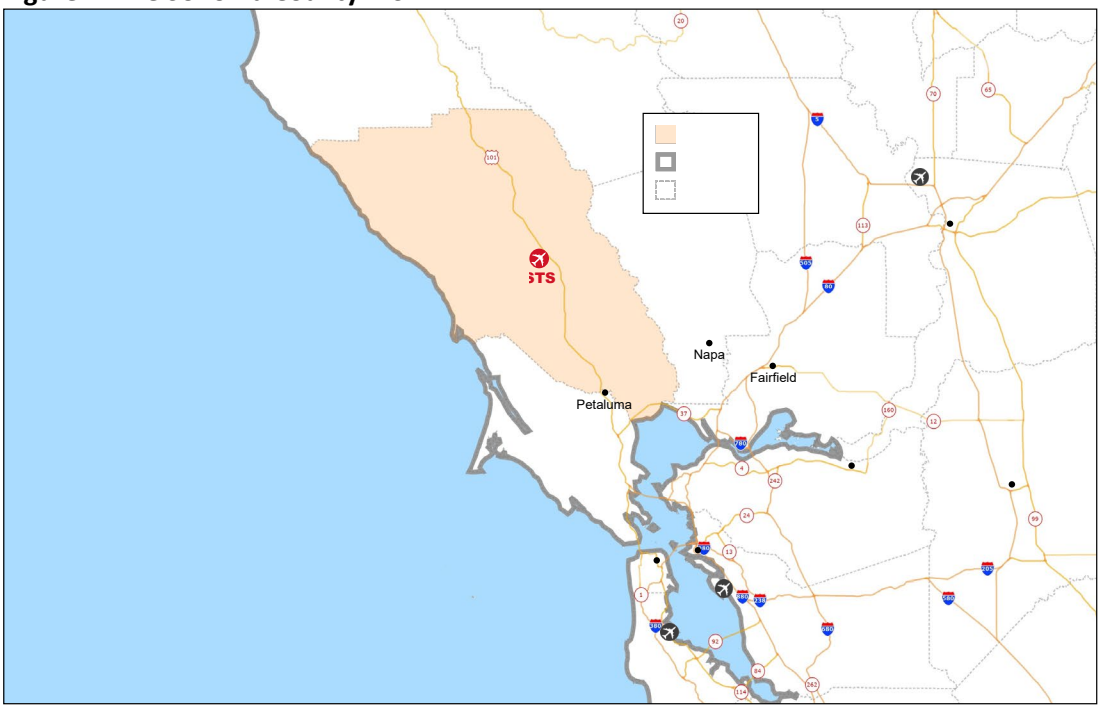


Compared to the U.S. average, more Sonoma County residents over age 25 have a Bachelor's degree or higher.

[1] https://apps.bea.gov/regional/bearfacts/action.cfm

The region is relatively highly educated. Almost 40 percent of the adult population aged 25 or older hold a Bachelor's degree or graduate or professional degree. This is slightly above that for California as a whole, where a total of 35 percent hold a Bachelor's degree or graduate or professional degree.

Figure 1: The Sonoma County MSA



The region's population and employment have grown moderately since 2008. Table 1 summarizes the changes in key socio-economic characteristics for the period. As shown, from 2008 through 2019:

- Total population rose by over 21,000 (4 percent). By contrast, population for the state of California rose by 8 percent. The population peaked at 503,000 in 2016 before declining. Some of that decrease may be associated with the significant wildfire activity that swept through the area in three consecutive years, beginning in 2017.
- Total employment increased by almost 60,000 (6 percent). For the state as a whole, total employment rose by 19 percent.
- Average per capita income (nominal dollars) rose from $43,600 to $66,700 (54 percent), roughly equal to the average per capita income for all in California. Expressed in constant 2019 dollars, the increase was 25 percent. Per capita incomes for the state of California rose by 52 percent in nominal dollars. The MSA's per capita income is roughly $10,000 above the 2019 average U.S. per capita income, $56,467.
- The number of establishments operating in the region declined slightly.[2]

[2] The BEA uses data from the U.S. Census Bureau on "establishments," which it defined as "a single physical location at which business is conducted or services or industrial operations are performed. It is not necessarily identical with a company or enterprise, which may consist of one or more establishments. Establishment counts represent the number of locations with paid employees any time during the year." The count excludes government

Table 1: Change in Major Socio-Economic Variables, Sonoma County Region 2008-2019

	2008	2015	2019	2008-15		2015-19		2008-19	
				Change	Percent	Change	Percent	Change	Percent
Population	473,091	500,863	494,336	27,772	6%	(6,527)	-1%	21,245	4%
Total Employment	276,221	296,758	313,181	20,537	7%	16,423	6%	36,960	13%
Private Non-farm Employment	240,249	260,449	277,362	20,200	8%	16,913	6%	37,113	15%
Government Employment	29,800	30,185	29,532	385	1%	(653)	-2%	(268)	-1%
Income per Capita ($)	$43,658	$55,437	$66,700	$11,779	27%	$11,263	20%	$23,042	53%
Number of Establishments	13,957	27,492	28,560	13,535	97%	1,068	4%	14,603	105%

Source: BEA

Regional Economic Strengths

Several sectors experienced employment growth of 20 percent or more. These included health care and social services (12,000 jobs, an increase of 44 percent); accommodations and food service (nearly 4,500 jobs, or 22 percent); administrative and support services (over 4,500 jobs, or 31 percent); arts, entertainment, and recreation (nearly 2,200 jobs, or 28 percent); transportation and warehousing (nearly 2,400 jobs, or 48 percent); forestry, fishing, and related services (almost 1,500 jobs or 66 percent); and management of companies (over 400 jobs or 20 percent). Table 2 summarizes the change in employment by major industry sectors from 2008 to 2019, ranked by the largest number of employees in the MSA in 2019.

Table 2: Summary of Employment by Sector and Changes Since 2008

Industry Sector	2008	2015	2019	Change 2008-2019	
				Number	Percent
Health care and social assistance	27,300	36,661	39,329	12,029	44%
Retail trade	29,480	31,111	30,043	563	2%
Manufacturing	24,392	24,950	26,258	1,866	8%
Accommodation and food services	20,350	23,585	24,832	4,482	22%
Professional, scientific, and technical services	25,785	23,393	24,209	(1,576)	-6%
Construction	20,438	18,929	23,796	3,358	16%
Other services (except government and gov't enterprises)	16,370	19,003	19,183	2,813	17%
Administrative and support services & waste remediation	14,488	16,509	19,010	4,522	31%
Real estate and rental and leasing	13,744	14,430	16,016	2,272	17%
Finance and insurance	11,039	10,495	11,388	349	3%
Arts, entertainment, and recreation	7,880	9,212	10,068	2,188	28%
Wholesale trade	9,672	10,329	9,552	(120)	-1%
Transportation and warehousing	4,992	5,945	7,371	2,379	48%
Educational services	4,373	5,146	5,213	840	19%
Information	4,119	3,990	3,737	(382)	-9%
Forestry, fishing, and related activities	2,226	2,860	3,697	1,471	66%
Management of companies and enterprises	2,030	2,321	2,446	416	20%
Utilities	861	743	754	(107)	-12%
Mining, quarrying, and oil and gas extraction	710	837	460	(250)	-35%
Subtotal private nonfarm employment	240,249	260,449	277,362	37,113	15%
Government and government enterprises	29,800	30,185	29,532	(268)	-1%
Total employment	**276,221**	**296,758**	**313,181**	**36,960**	**13%**

Source: BEA

establishments except for certain situations, such as state-operated retail liquor stores, local government-owned/operated hospitals, and federally-chartered credit unions.
https://www.census.gov/programs-surveys/susb/about/glossary.html

Economic Clusters

The U.S. Cluster Mapping Project's analysis of the region also highlights its broad economic strength. The area's economy features multiple tradeable clusters that are among the top performers in the country, and several are of notable strength. They include those associated with the region's agricultural and wine industry (food processing), along with agriculture, medical devices, and financial services, among others.

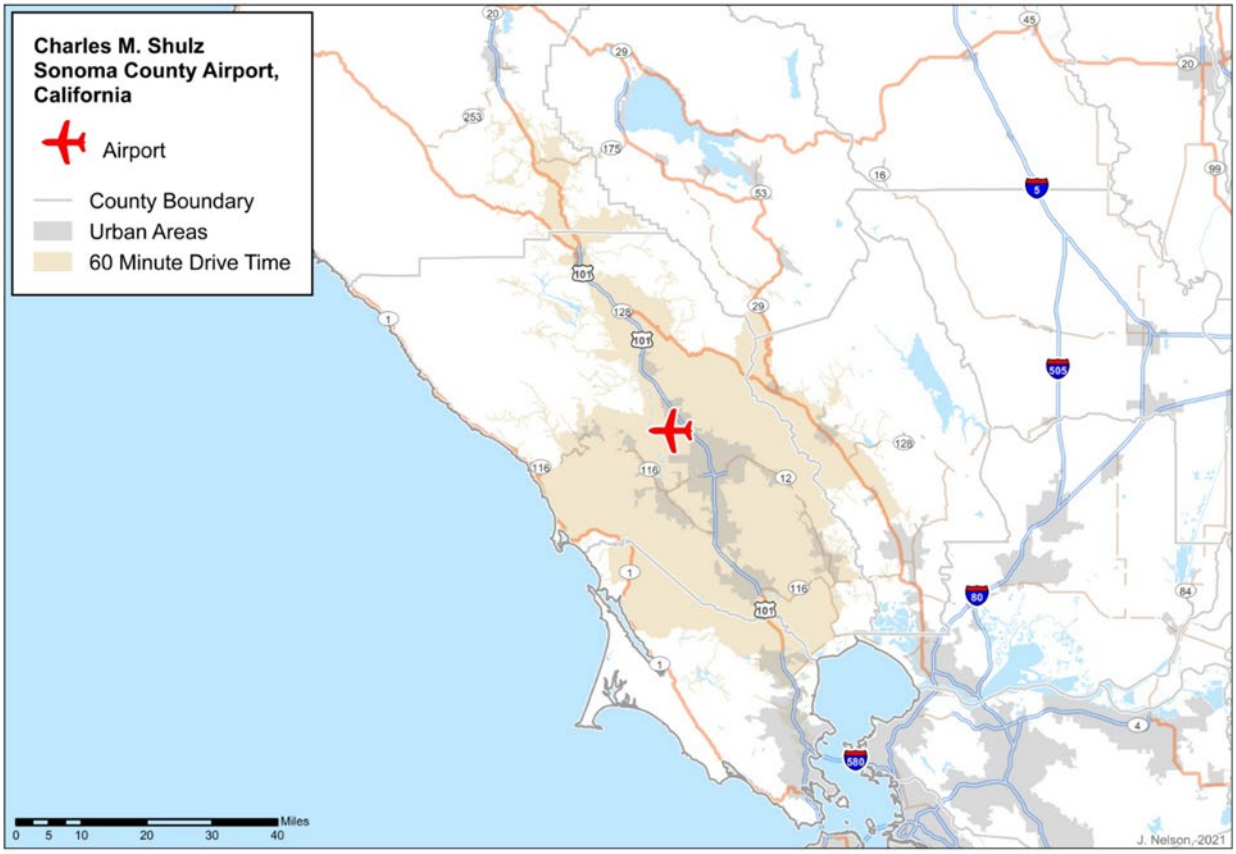
- The Food Processing cluster includes subclusters for wine, malt beverages, and distilleries. The region is ranked 2nd nationally in the wineries subcluster, 28th in breweries, and 37th in distilleries. The region's location quotient for the cluster is 9.30.
- Within the Agricultural Inputs and Services Cluster, the region is ranked 8th in the nation for industries related to farm management and labor services. The LQ for this cluster is 6.54.
- The region is also ranked in the top 50 nationally for employment in the Medical Device cluster. Subclusters include optical instruments and ophthalmic goods and surgical and dental instruments and supplies. Its LQ is 5.14.
- The region also has economic strength (high employment specialization) in the Financial Services cluster. Over 1,000 are employed in the credit intermediation subclusters, with another 500 in financial investment activities. The region's LQ for financial services is 1.32.

Drive Time Analysis

Figure 2 illustrates a 60-minute drive time around STS. Key highlights of socio-economic activity *within the 60-minute drive of the airport*:

- The total estimated 2019 population was 632,000. Of that, 384,000 (61 percent) were considered "working age" (between the ages of 18 and 64).
- The economy supported over 35,000 businesses employing nearly 300,000. In terms of major industry sectors (defined by NAICS codes), the largest based on total employment was Manufacturing (31,000 employees) followed by Professional, Scientific, and Technical Services (PST), with over 20,000 and Finance, Insurance, and Real Estate with nearly 20,000.
- Of the population within the drive area, 24. percent held a Bachelor's degree and another 14.0 percent held a Graduate or Professional degree.

Figure 2: Spatial Distribution of the STS Airport One-Hour Drive Time Trade Area



Overview of the Airport and its Commercial Service

STS is the only airport that offers scheduled commercial air service into the North Bay region. The Airport is a division of the Sonoma County Department of Transportation and Public Works. Operation of the Airport is the responsibility of the Airport Manager, with support from the Aviation Advisory Commission appointed by the County Board of Supervisors.

The Airport is classified as a non-hub airport by the Federal Aviation Administration in 2019. Based on enplaned passengers, STS was the 182nd busiest airport in the country in 2019 and the 15th busiest in California.

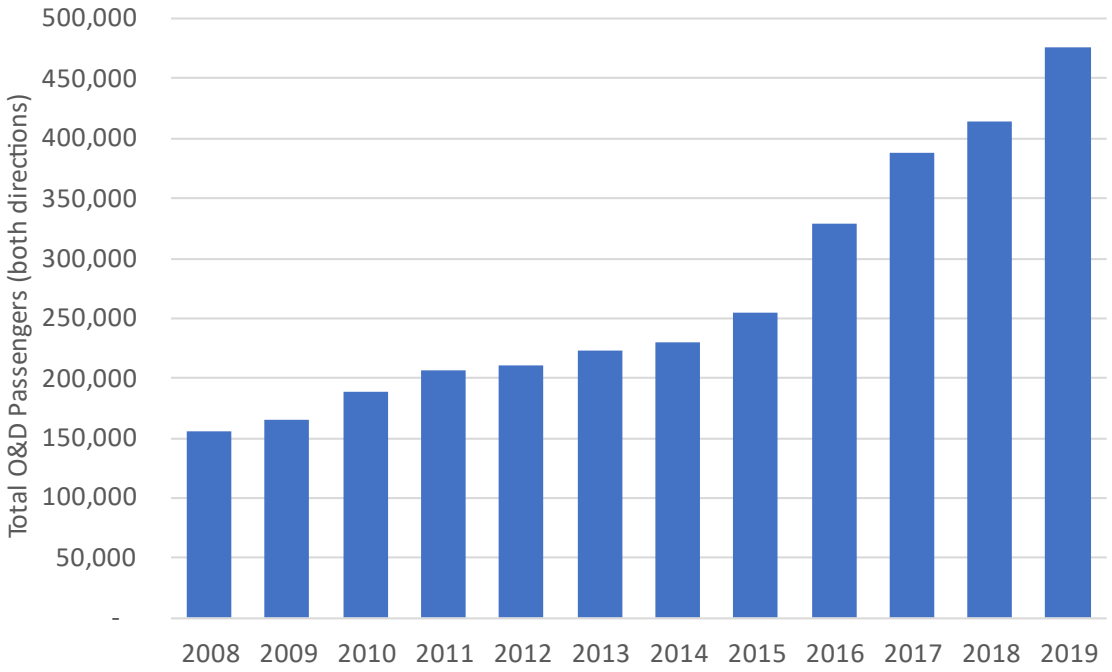
The Airport defines its catchment area to be broader than the MSA, encompassing the "North Bay region," which includes Sonoma, Lake, Napa, Marin, Mendocino and Humboldt counties.[3] The catchment area had an estimated population of 1,195,163 in 2018. This represented 14 percent of the total San Francisco Bay Area population of 8.3 million.

STS primarily serves customers originating at or destined for the Airport. According to available data, in 2019, over 99 percent of the total passenger traffic used the airport as its point of origin or destination

[3] Charles M Schulz Sonoma County Airport Market Assessment Analysis, March 2019.

(O&D). The airport has succeeded in tripling total O&D traffic since 2008, with the number of passengers rising from just over 150,000 to 475,000.

Figure 3: Change in Total O&D Passengers at STS



With clear passenger demand, airlines were increasingly willing to add capacity at the airport.

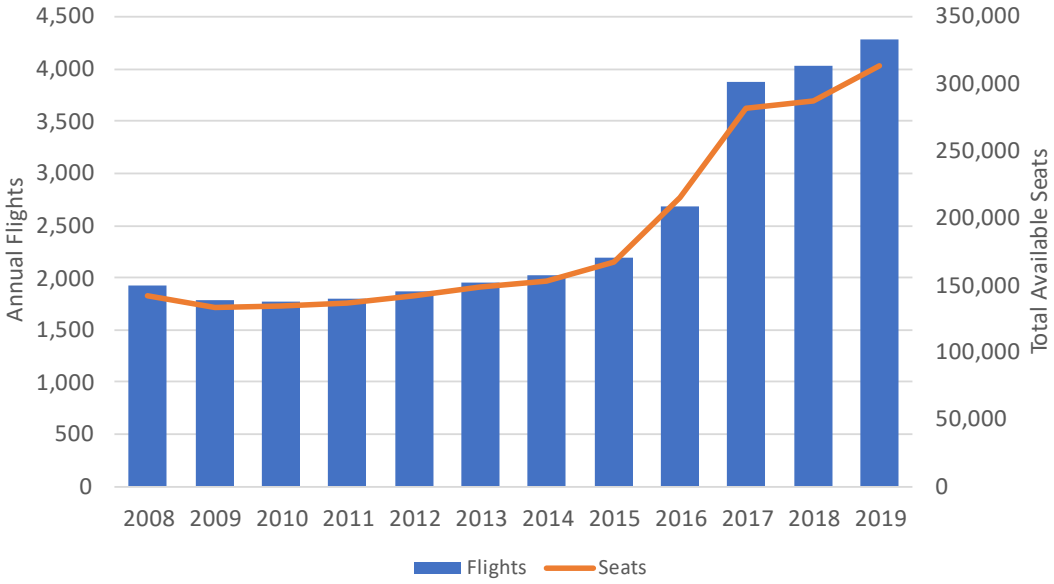
Somewhat uniquely at STS, capacity was constrained by the length of its main runway. When Alaska Airlines (Alaska) initiated service at STS in 2007, it was able to do so because the airport's main runway – at 5,121' – could accommodate aircraft no larger and no more powerful than the airline's 76-seat Q400s. Alaska started service with flights to Los Angeles International (LAX) and Seattle Tacoma International (SEA). It soon expanded to Portland (PDX) and Las Vegas.

In 2014, the airport was able to extend its main runway to 6,000.' The extension was necessary to bring the airport into compliance with FAA standards. The additional length also allowed airlines to use turbofan aircraft at the airport.

Total capacity offered at the airport rose significantly, especially beginning in 2016 when Alaska added daily flights to Orange County John Wayne Airport (SNA). Allegiant also launched service to Phoenix-Mesa Gateway Airport (AZA) and Las Vegas International Airport (LAS), but discontinued those flights the next year. In 2017, American Airlines (American) added flights to Phoenix Sky Harbor International Airport (PHX) and United Airlines (United) entered service at STS with operations to San Francisco International (SFO). In 2019, American added flights to Los Angeles International (LAX) and to Dallas/Ft. Worth International (DFW), and United added service to Denver International (DEN). Throughout the

period, the average size of aircraft using the airport was largely unchanged, at between 70 and 75 seats per departure.

Figure 4: Change in Flights and Available Seats at STS, 2008-2019



In July 2019, a peak domestic travel timeframe in the U.S., airlines serving STS offered non-stop schedule service to 10 destinations. These services were clustered in the western region of the U.S. with one service each to the Rocky Mountain and Southwest Regions. Table 3 summarizes STS's July 2019 services. Alaska remains the airport's market leader holding 63 percent of the available capacity.

Table 3: Summary of Scheduled Service Offerings at STS, July 2019

Airline	Destination	Flights	Seats	Share of seats
American	DFW	31	2,356	23%
	LAX	31	2,356	
	PHX	31	2,356	
Alaska	LAX	83	6,308	63%
	PDX	62	4,712	
	SAN	31	2,356	
	SEA	48	3,648	
	SNA	31	2,356	
Sun Country	MSP	9	1,191	4%
United	DEN	31	1,550	10%
	SFO	31	1,550	
Total		**419**	**30,739**	**100%**

Source: Schedule data from Diio by Cirium

Connectivity

High quality transportation – of all modes – is a prerequisite for sustained economic growth and competitiveness for a region. Specifically, these factors of economic development are driven by productivity growth which is underpinned by trade, foreign investment, and innovative activity – all of which are facilitated by connectivity. "Connectivity" generally means the ability to reach a wide range of places in a short amount of time. Connectivity is not simply a matter of the number of routes or number of frequencies operated. Connectivity is fundamentally about access to markets and regions.

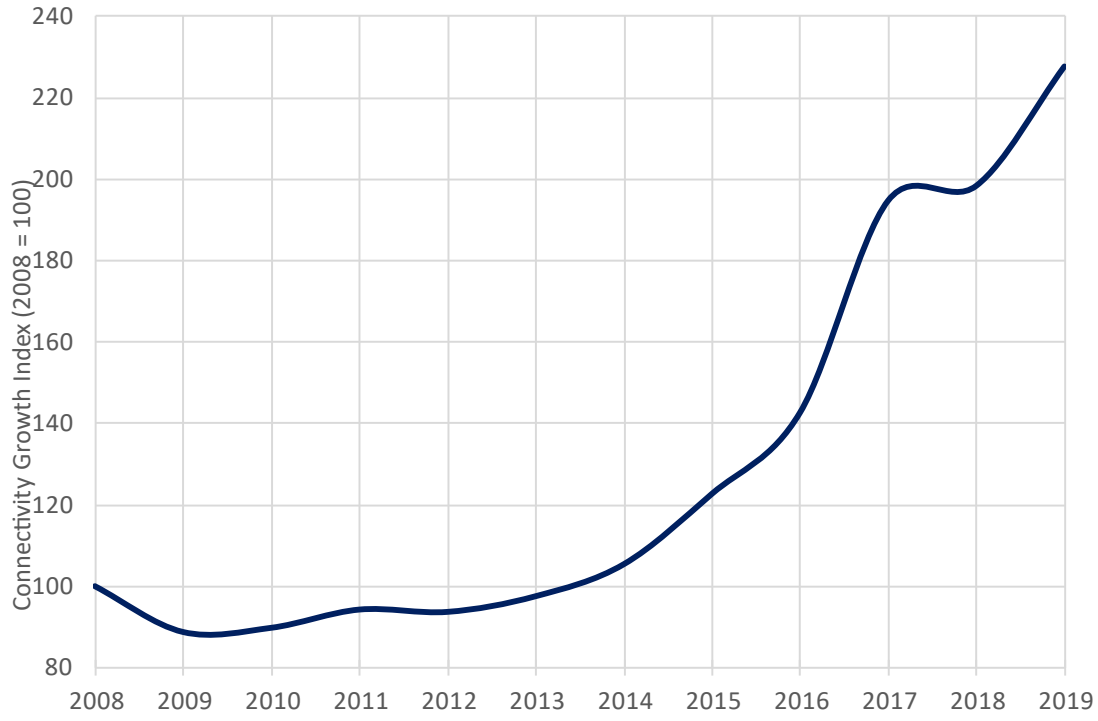
Connectivity can be quantitatively measured in a variety of ways; the figure below summarizes the growth in connectivity at STS between 2008 and 2019 using a method developed by the International Air Transport Association (IATA). The IATA connectivity index estimates the quality of air service at an airport based on the degree of service to other airports with the largest and most diverse route networks, as a proxy for how accessible the local economy is to the rest of the world.[4] The *change* in STS's connectivity index or score is charted below, by indexing the score against 2008 levels for comparison.

Connectivity at STS increased substantially from 2014 onwards, due not only to the growth in overall capacity enabled by the runway extension but more particularly with the introduction or expansion of nonstop service to well-connected hubs like Los Angeles (LAX), San Francisco (SFO), Phoenix (PHX), Denver (DEN), and Dallas (DFW). Service to these hubs facilitated onward connections to a larger number of domestic and international markets, thereby helping to more than double the air connectivity between 2014 and 2019. The single largest year of growth in connectivity at STS occurred in 2017, when connectivity jumped by 37 percent due largely to the introduction of daily service to SFO and PHX.

[4] The IATA connectivity index measures the number and size of destinations served, as well as the frequency of service to each destination and the number of onward connections available from those destinations. Service to airports with the highest total seat capacity (e.g. ATL) receive the highest weighting. Thus, the index recognises that connections to major global gateways provide greater global connectivity than connections to the same number of spoke ends. The formula for the index is as follows:

$$\frac{[\text{ Number of destinations x Weekly Frequency x Seats per flight }]}{\textit{Weighted by the Size of the Destination Airport}}$$
$$\text{Scalar factor of } 1000$$

Figure 5: STS Connectivity Growth Index (2008=100)

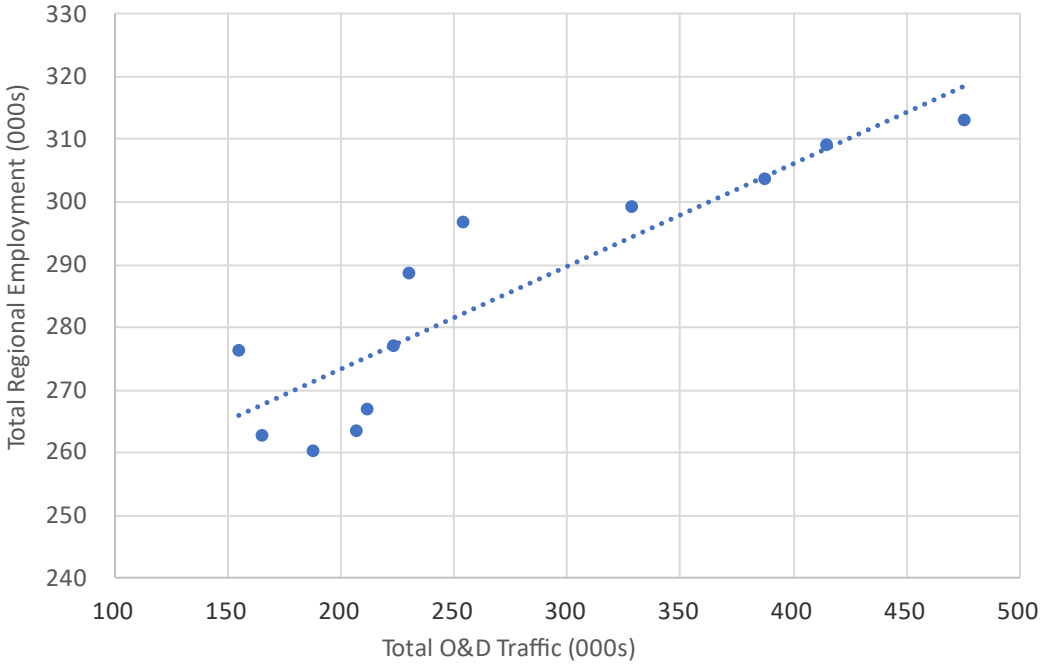


Note: Chart shows the IATA Connectivity Index for STS, indexed against 2008 (2008 = 100).
Source: InterVISTAS analysis of Innovata schedule data from Diio Mi.

Analysis of Air Service and Economic Variables

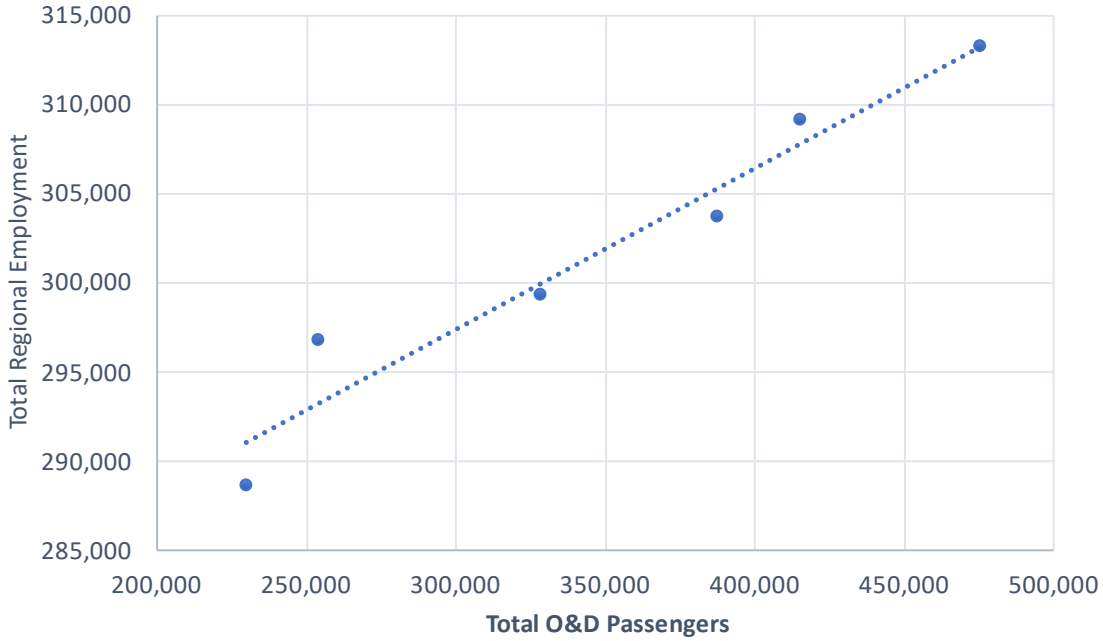
In this part of California, passenger traffic is relatively highly correlated with total regional employment. This means that as one variable rises, so does the other. As total regional employment increases, total O&D traffic at STS also increases. However, the correlation does not establish causation. It is not unambiguous that changes in employment necessarily lead to changes in O&D activity. The opposite could equally be true: That changes in O&D traffic lead to changes in regional employment. As shown in Figure 6 below, the relationship between the two concepts – shown with the data points and line – is positive, and the strength of the statistical correlation is relatively high (0.895).

Figure 6: Relationship between Total Regional Employment and Total O&D Passenger Traffic (2008-2019)



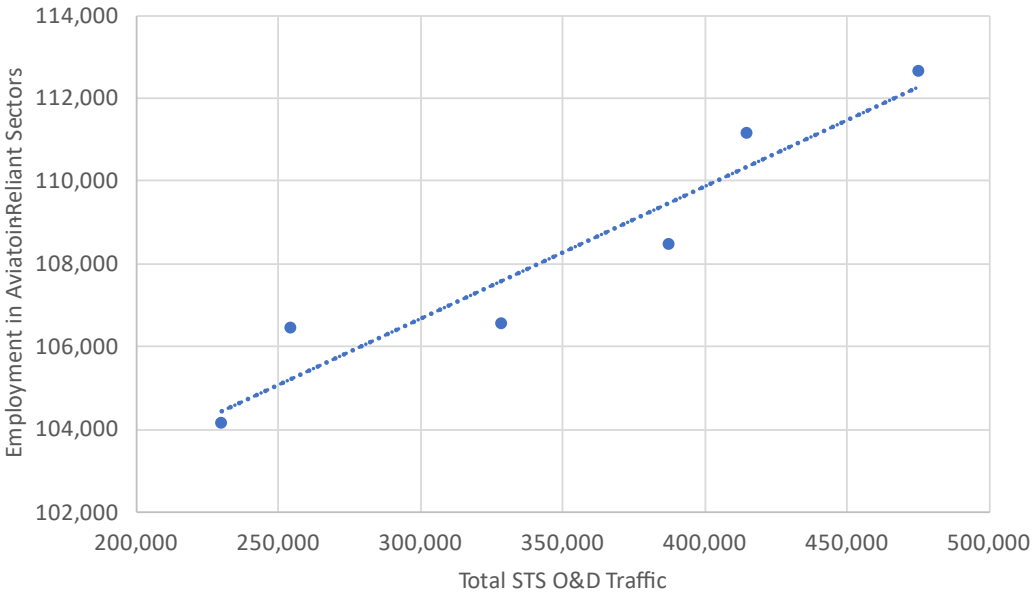
If the analysis is confined to the period from 2014 through 2019 (thus eliminating the period immediately following the Great Recession and when the airport's main runway length precluded jet operations), the strength of the correlation rises to 0.970.

Figure 7: Relationship between Total Regional Employment and Total O&D Passenger Traffic (2014-2019)



If the analysis is further restricted to employment in sectors that tend to be more reliant or dependent on commercial aviation (i.e., manufacturing; wholesaling; PST; management of companies; information; financial and insurance service; real estate; and administrative, support, and waste management and remediation service), then the correlation remains essentially unchanged, at 0.956.

Figure 7: Relationship between Total O&D Passenger Traffic and Employment in Aviation-Reliant Sectors (2014-2019)



STS's Competitive Challenge

The analysis above suggests that the region's population and employment base are increasingly willing to use their local airport, especially as service offerings expand. Nevertheless, STS faces significant challenges for airline service and passenger traffic because of its proximity to four other large airports in Northern California. All offer a wider range of nonstop domestic and international destinations, with highly competitive air fare pricing. The combination of service and pricing options, as is the case with all non- hub and small hub airports within driving distance of one or more large hub airports, results in travelers gravitating to these. Table 4 summarizes the competition from the other nearby airports.

Table 4: Summary of Airport Proximity and Service

Airport	Distance (miles)	Drive time (hrs.)	Avg. daily flights 2019	Markets served 2019
Sonoma County (STS)	--	--	12	9
Oakland International Airport (OAK)	74	1.25	148	42
San Francisco International Airport (SFO)	74	1.5	520	101
Sacramento International Airport (SMF)	105	2	158	35
San Jose International (SJC)	119	2	195	41

Note: Drive times based on Google maps, estimates for mid-morning weekday. "Average daily flights" based on scheduled operations. "Markets served" based on a minimum of 150 annual departures and refer to unique airports. If two or more airlines serve the same destination (e.g., ORD), the "market served" is counted only once.

Ground access and traffic congestion have significant influences on travelers' choices when determining which airport they are most likely to use. STS is located 57 miles north of the Golden Gate Bridge on California Route 101, the main north-south non-interstate artery in California. As such, it is heavily congested, so travel times, particularly during peak periods, from the North Bay Area to OAK and SFO can be excessive.

According to airport estimates for 2018, STS retained five percent of the passenger bookings from the catchment area. The rates vary significantly by county. SFO captures over 80 percent of the bookings from the catchment area.[5]

% of Passenger Bookings Captured by STS	
County of residence	%
Sonoma	12.2
Mendocino	7.0
Humboldt	5.9
Lake	4.1
Napa	2.7
Marin	1.4

Air Service Development

As is the case in most U.S. markets, airport management initiates contacts with the airlines to discuss potential air service development opportunities. The business community may partner with the Airport and engage with air carriers after the airlines have expressed interest in discussing the potential of air service. The engagement by the business community can take multiple forms, from direct participation in meetings to contacts between local companies and airline sales teams to persuade the airline to add and/or up-gauge services.

[5] Percentages may not add to 100 due to rounding.

In 2008, the Airport was served only by Alaska, via its Horizon regional affiliate. At that time, the Airport's air service development goals included expanding the number of flights and air carriers to key West Coast markets and adding service to a hub airport toward the east. Over the last 12 years, those goals have been largely accomplished with the introduction of non-stop services to most major hubs in the western U.S. Non-stop services to Denver (DEN) and Dallas Fort Worth (DFW) in 2019 are the latest hub markets to be added. In the summer of 2021, the Airport will be served by four air carriers providing non-stop service to ten markets.[6] The newest air carrier at STS, Avelo, launched service to Hollywood Burbank Airport (BUR) on April 28, 2021.

The Airport now seeks to attract new non-stop service to an additional hub in the Mountain region and add service to a Midwest hub and markets on the East Coast. The pandemic has not materially impacted the Airport's air service development goals.

Air Service Development and Community Stakeholders

In 2002, the County Board of Supervisors formed the Air Service Retention Committee comprised of members of the public and private sector stakeholders interested in air service. As a result of these efforts, scheduled commercial air service was reinstated at STS by Horizon (the regional subsidiary of Alaska) in March 2007.

The Airport continues to enjoy a positive working relationship with the local business community. This is evident from the successes the Airport and its partners have enjoyed in U.S. Department of Transportation Small Community Air Service Development Grant Program. Together, the airport, local business community, and federal grant secured community and federal funding for new service at STS:

- Alaska (operated by Horizon) to LAX in 2007
- American to PHX in 2017

STS provides the region with a "quality of life asset" for all air travelers seeking to avoid commutes and the crowds at other Bay Area airports. There is a clear recognition in the business community of the benefit of retaining and expanding air service at STS. Business leaders value the time saved and the reduction in travel risk for the company when employees can forgo the two-hour plus drive to other airports in the region.

The Airport Airline Advisory Committee meets two or three times a year to review the air service development program and other airline related initiatives. The committee includes representatives from area chambers of commerce, the Sonoma County Economic Development Board, the City of Santa Rosa, and Sonoma County.

[6] Airline Schedules as of April 23, 2021. Source: Innovata Schedules via Diio by Cirium.

The Marketing Roundtable meets bi-monthly to keep members informed of each organization's current marketing programs and to look for joint marketing opportunities. A subcommittee assists STS on its marketing programs on an "as needed" basis.

Airport management works closely with all its partners including the local Chambers of Commerce, Sonoma County Tourism and Visit Santa Rosa. These partners have provided financial, marketing and data support for the Airport's air service development initiatives.

Businesses participate directly in STS's air service development initiatives. In the past, the Airport has partnered with Medtronic in the pursuit non-stop service to Minneapolis, the corporate headquarters. Medtronic is a medical technology and services company, with an operation about one mile from STS.

Recently, the Airport and Keysight Technologies, an electronic design, test and automation company, worked together to assure the return of service by United Airlines In addition, Keysight and other partners supported the effort to secure non-stop service to Denver in 2019.

The wine industry of the North Bay region, centered in Sonoma and Napa counties, engages with the Airport to encourage expanded air services at STS. The focus of the Wine Industry is to expand connectivity at STS to more efficiently connect its employees, vendors and wine buyers to domestic and international markets. Engagement takes the form of support for STS's hosting of airline decision makers at various wineries in the Region.

Communicating the Airport's Economic Impact

In 2013, the Airport initiated an airfield improvement project that included extending the main runway at STS to 6,000' to comply with FAA standards and accommodate operations by regional jet aircraft. Before the project won approval from various government agencies, STS funded an economic impact analysis to highlight the value of this project to regional stakeholders. This analysis concluded new daily non-stop regional jet service to major markets in the western U.S. would produce an estimated $9.5 million in annual revenue per each new non-stop market. Convincing regional stakeholders was a key factor in building the support needed to launch this project.

The Airport's last economic impact study was completed in 2008. Consequently, it was based on operations at the airport restricted to turboprop aircraft.

It is the view of the Airport that for most stakeholders, a high-level economic impact works best. The airport recognizes that some stakeholders may understand the "finer points of the results of an economic impact study," but most stakeholders would be more receptive to a simplified summary of the results. A "lite" version of an economic impact study would be beneficial.

STS management's air service development efforts are primarily geared toward expanding connectivity for its customer base. As a non-hub airport in a region with multiple large hub airports, new air service

(e.g., additional capacity on existing routes or service to a new market) requires STS to convince an airline that both local and connecting traffic demand would be adequate to support such as service.

Naturally, all air travelers want to fly non-stop to their destinations. In seeking support from the community for service to major hubs, it is a challenge to "sell" the value of connectivity to local stakeholders, including the business community. Economic analysis that provides Airport management with a more robust and easily communicated story line on the value of connectivity to all stakeholders would be useful. This type of analysis and output should be incorporated into all future economic impact studies. It would allow the airport to show how new connecting service via a hub airport would benefit the community economically and environmentally.