CASE STUDY

HUNTSVILLE'S CARGO AND FREIGHT OPERATIONS SUPPORT REGIONAL ECONOMIC DEVELOPMENT

The Huntsville metropolitan area is located in North Alabama approximately 200 miles west of Atlanta and 120 miles south of Nashville. The second largest city in Alabama trailing just Birmingham, Huntsville is located close to I-65 which runs from Mobile to Chicago. Like many areas of the Southeastern U.S., Huntsville is growing quickly.

[1]The region is served by Huntsville International Airport (HSV or the airport). HSV is owned and operated by the Huntsville-Madison County Airport Authority (HMCAA) which is often referred to as the Port of Huntsville. In addition to the Huntsville International Airport, the Port also operates the International Intermodal Center (Air Cargo & Rail Cargo), the Jetplex Industrial Park, Signature Flight Support, Foreign-Trade Zone #83, a hotel and a golf course. The Port of Huntsville is led by an Executive Director who reports to a five-member Board of Directors.

This region is included as a case study because of its cargo and freight activities.

Overview of the Regional Economy

The Huntsville Metropolitan Statistical Area (MSA) includes Limestone and Madison counties, with Huntsville being the area's principal city. The Huntsville MSA is adjacent to two other MSAs in northern Alabama: Decatur and Florence-Muscle Shoals. Huntsville's population is greater than the other two MSAs combined.

The region is a center of aerospace-related activities. Huntsville is the home of NASA's Marshall Space Flight Center, with a total workforce of nearly 6,000 employees and an annual budget of approximately $2.8 billion. The U.S. Army Aviation and Missile Command is headquartered at Redstone Arsenal, adjacent to Huntsville in Madison County.

According to the U.S. Bureau of Economic Analysis (BEA), for 2019, the Huntsville MSA:

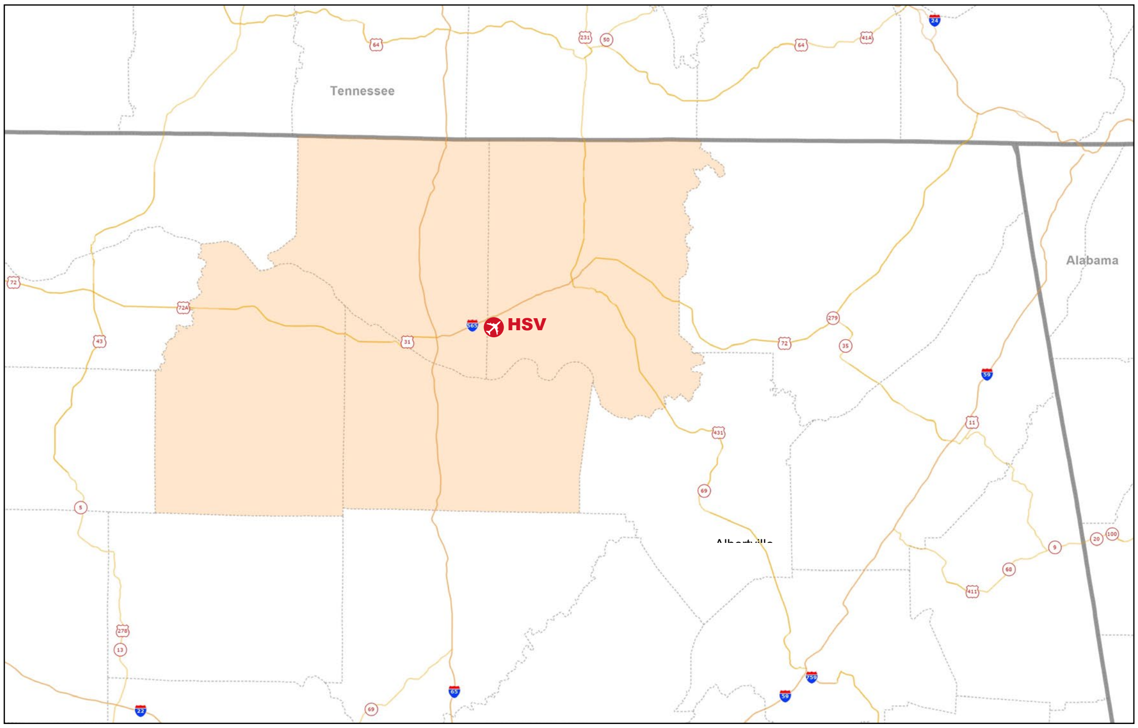
- Had a population of 471,824, ranked 116th in the nation (out of 384).
- Produced $29.5 billion in current-dollar total GDP. This GDP ranked 106th among MSAs, a slight decline in its ranking from 2009, when it was ranked 102nd among MSAs.

The neighboring Decatur MSA had a 2019 population of 152,603, which ranked 273rd in the nation. It produced $6.7 billion in GDP. The Florence-Muscle Shoals MSA is smaller, with a 2019 population of 147,970 (285th in the nation).[2]

[1] Image from https://www.portofhuntsville.com/

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

Figure 1: The Huntsville Region



The region has undergone significant growth in population and employment 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 nearly 70,000 (13 percent). As a point of comparison, population for the state of Alabama increased by 4 percent.
- Total employment increased by 45,000 (13 percent). Statewide, employment increased by 6 percent.
- Average per capita income (nominal dollars) rose from $37,200 to $49,200 (32 percent). (In constant 2019 dollars, the increase was 8 percent.) The region's 2019 per capita personal income was 12 percent higher than the statewide average.
- The number of business establishments operating in the region increased by over 3,000 (24 percent).[3]

[3] The BEA uses data from the U.S. Census Bureau on "establishments," which it defines as "An establishment is 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 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

Table 1: Summary of Socio-economic Metrics for Huntsville Region 2008-2019

	2008	2015	2019	Change 2008-15		Change 2015-19		Change 2008-19	
				#	%	#	%	#	%
Population	554	597	624	43	8%	27	5%	70	13%
Total Employment	344	354	388	10	3%	35	10%	45	13%
Private Non-farm Employment	281	288	320	7	3%	32	11%	39	14%
Gov't Employment	57	60	64	3	5%	3	5%	6	11%
Income per Capita ($)	$37,165	$42,730	$49,223	$5,565	15%	$6,493	15%	$12,058	32%
Number of Establishments	14	16	17	2	15%	1	8%	3	24%

Source: BEA.

Note: All figures in 1,000s except for per capita income, which is shown in nominal dollars. Government employment includes military and civilian.

Regional Economic Strengths

The region's economy is anchored by several large employment sectors. Many large companies, major manufacturers and U.S. government agencies have a significant presence in Huntsville. These include Boeing, Dynetics, Northrup Grumman, the U.S. Army and NASA.

Considering the NASA and military facilities in the region, it is not surprising that the public sector has a large share of total employment. In the private sector, the largest sector was Professional, Scientific, and Technical Services followed by manufacturing. Since 2015, the amount of PST employment grew by almost 8,700 (21 percent). Employment in the manufacturing sector rebounded; after losing jobs between 2008 and 2015, employment there rose almost 4,000 (10 percent) 2015 and 2019. Table 2 summarizes the changes in employment in the Huntsville region based on major industrial sectors, sorted by the sectors with the greatest num ber of employees in 2019. The table separately accounts for private and public sector employment. The sectors with the greatest percentage growth since 2008 were educational services, real estate, and health care.

Table 2: Changes in Employment by Major Industrial Sector 2008-2019

Industry Sector	2008	2015	2019	Change 2008-19	
				Number	%
Private Sector					
Professional, scientific, and technical services	--	41,750	50,412	N/A	N/A
Manufacturing	45,208	36,772	40,610	(4,598)	-10%
Retail trade	35,954	37,521	39,082	3,128	9%
Administrative and support services	25,045	28,993	30,077	5,032	20%
Health care and social assistance	21,914	24,328	27,125	5,211	24%
Accommodation and food services	--	23,795	25,599	N/A	N/A
Other services (except gov't and gov't enterprises)	--	18,803	21,048	N/A	N/A
Construction	19,965	17,927	20,890	925	5%
Real estate and rental and leasing	12,028	13,137	15,718	3,690	31%
Finance and insurance	9,095	9,359	10,900	1,805	20%
Wholesale trade	8,499	9,181	9,416	917	11%
Arts, entertainment, and recreation	--	5,073	6,845	N/A	N/A
Educational services	3,952	5,311	5,423	1,471	37%
Farm employment	5,610	5,132	4,814	(796)	-14%
Information	--	3,743	3,841	N/A	N/A
Management of companies and enterprises	--	1,690	1,550	N/A	N/A
Public Sector					
Government (Federal, State, Local, and Military)	57,419	60,463	63,528	6,109	11%
Grand Total	**336,490**	**438,366**	**478,867**	**142,377**	**42%**

Source: BEA

Note: Figures will not sum to totals because industry sectors with smaller amounts of employment are not shown. " – " indicates that the data were suppressed to protect confidentiality. Employment in those sectors is included in the Grand Totals. Employment in the Transportation and Warehousing sector is one where reporting was suppressed.

The region has employment concentrations in PST, Manufacturing, and Administrative and support services, based on their Location Quotients (LQs). LQs quantify the concentration of employment in a region against the nation as a whole. If an LQ is equal to 1, then the industry has the same share of its area employment as it does in the nation. An LQ greater than 1 indicates an industry with a greater share of the local area employment than is the case nationwide. For example, Las Vegas will have an LQ greater than 1 in the Leisure and Hospitality industry because this industry makes up a larger share of the Las Vegas employment total than it does for the nation as a whole. In the Huntsville region, the LQs for the PST, Manufacturing, and Administrative and support services were all above 1.25.

Economic Clusters

The U.S. Cluster Mapping Project's analysis of the Huntsville region also highlights its broad economic strength. A cluster is a concentration of related industries in a particular region. Clusters consist of companies, suppliers, and service providers, as well as government agencies and other institutions that provide specialized training and education, information, research, and technical support. *Traded clusters* are groups of related industries that serve markets beyond the region in which they are located and therefore require some form of transport connectivity. Examples include financial service or information technology. By contrast, *local clusters* consist of industries that serve the local market. Examples include local grocery stores or restaurants.[4]

The Cluster Mapping project analyzed the economic strengths of the broader Huntsville economic region. This area includes not only all of the three MSAs but extends to counties in the northeastern corner of the state. The area's economy features multiple tradeable clusters that are among the top performers in the country, and several are of notable strength. Those include Information Technology and Analytical Instruments; Communications Equipment and Services; and Marketing, Design, and Publishing.

- Within the IT sector, the region shows significant economic strength and employment specialization in software reproducing, electronic components, and computers and peripherals. The region was ranked in the top 30 nationally for these subsectors, out of 179 total economic areas.
- Not surprisingly, the region is ranked in the top 10 nationally in the Aerospace Vehicles and Defense Cluster, especially for guided missile and space vehicle manufacturing.
- The region is ranked in the top 10 nationally in the Communications Equipment cluster, with employment specialization in radio and television broadcasting and wireless communications equipment manufacturing.
- The region is ranked in the top 20 nationally in the Upstream Metals Processing, with employment specialization in other aluminum rolling, drawing, and extruding.

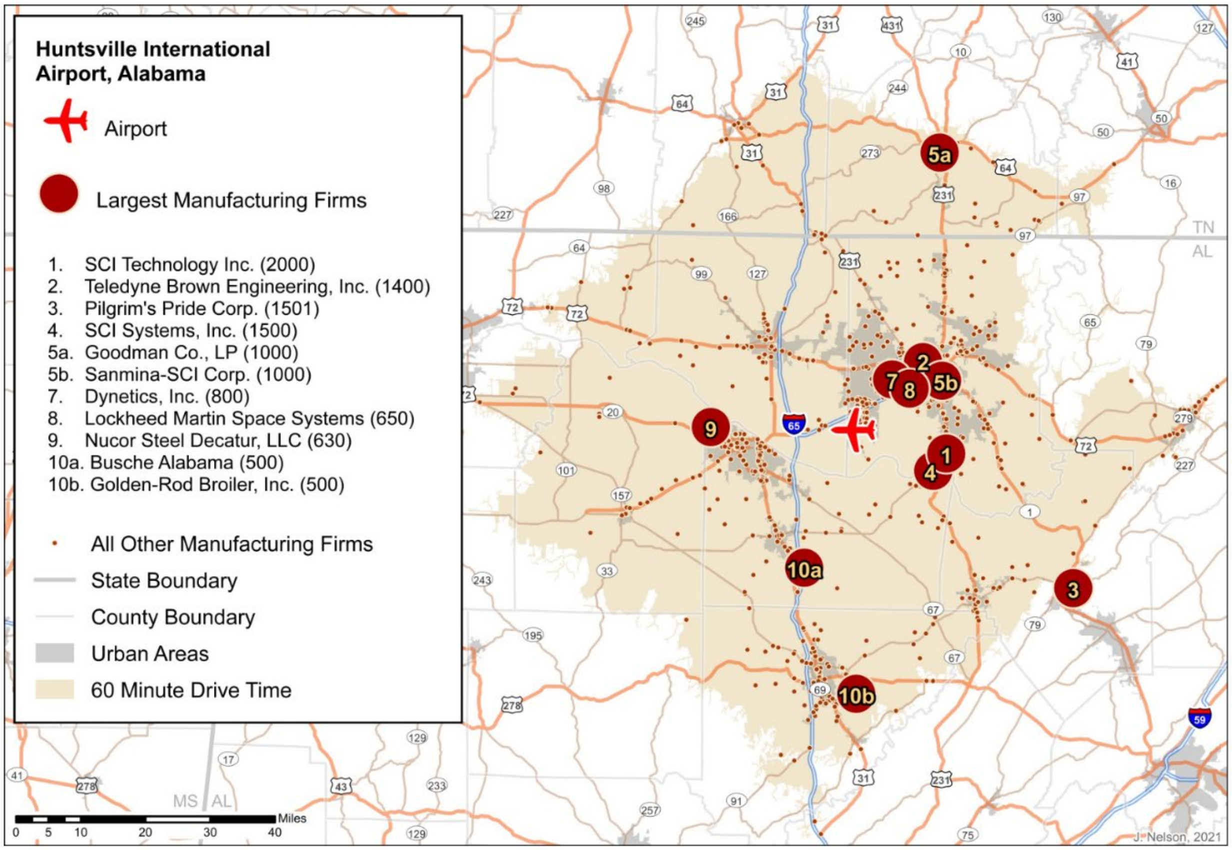
In addition, the region has significant strength in other traded clusters that are less likely to rely on aviation. For example, the region is ranked 5th nationally in Livestock Processing (e.g., poultry processing), 9th in Textile Manufacturing (e.g., knitting mills, yarn and thread mills, textile and fabric finishing), and 10th in Trailer and Mobile Homes (e.g., truck trailer manufacturing and travel trailer and camper manufacturing).

4 https://www.clustermapping.us/about/clusters-101

Economic Activity Near the Airport

Figure 2 summarizes economic activity in the region and focuses on businesses within the Manufacturing sector, which is likely to be associated with cargo and freight operations.

Figure 2: Spatial Distribution of Manufacturing Firms (NAICS 31-33) in the HSV Airport One-Hour Drive Time Trade Area



Highlights of the economic activity ***within a 60-minute drive of the airport*** include:

- The estimated 2019 population was just under 810,000, an increase of about 56,000 (7.5 percent) from the 2010 population of just over 750,000. Of the 2019 population, an estimated 498,000 (61.7 percent) were considered "working age" (between 18 and 64).
- Of the 2019 population, an estimated 19.4 percent held a Bachelor's degree and another 11.2 precent held a Graduate or Professional degree.
- The largest industrial sector based on 2019 employment was Manufacturing, with just under 36,000 employees, followed by Professional, Scientific and Technical Services, with over 27,000.
- The region supported over 26,000 establishments that employed nearly 387,000.

Overview of the Airport and its Services

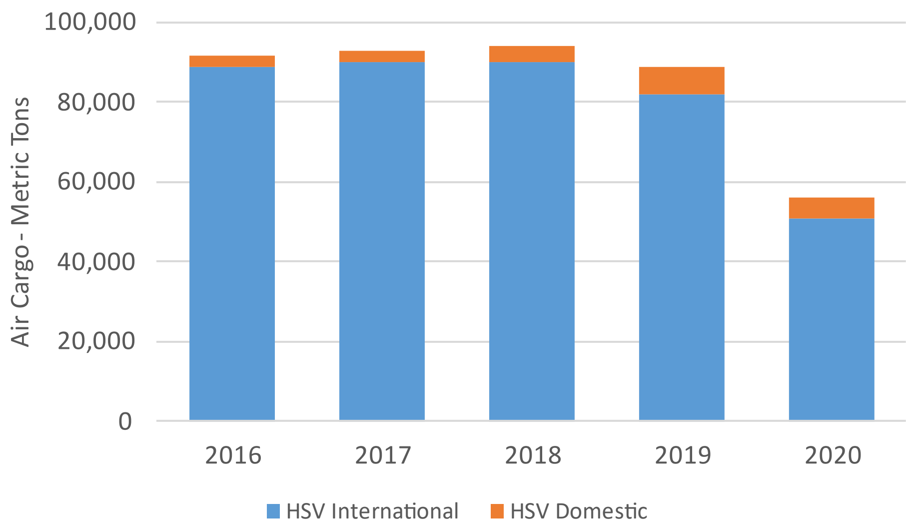
The Airport is located 10 miles southwest of downtown Huntsville near I-565. The Airport has two parallel runways, one 10,000 feet and one 12,600 feet, with a 5,000-foot separation, allowing for simultaneous operations during instrument conditions. HSV is equipped for CAT II operations. The Airport has a 12-gate passenger terminal with an adjacent automobile parking garage, a private aviation terminal, general aviation hangars, air cargo facilities, a Norfolk Southern intermodal center and other facilities for various aeronautical and non-aeronautical tenants.

[5]HSV is a small hub airport and in 2019 handled a record 725,000 enplaned passengers. For 2019, HSV's total passenger level ranked 123rd amongst North American airports.[6] As of May 2021, the Airport was served by 6 commercial passenger airlines to 10 nonstop domestic U.S. markets totaling 175 weekly departures.[7] For the three-year period 2018-2020, American Airlines and Delta Air Lines accounted for almost 80 percent of passenger enplanements.[8] Regional jets are the most common equipment at HSV, accounting for nearly 80 percent of passenger aircraft departures.

More importantly for this case study, HSV's air cargo tonnage in 2019 totaled 88,769 metric tons which ranks 50th amongst North American airports.[9] Of that tonnage, 81,740 metric tons (92 percent) is carried on international flights and the remainder is on domestic flights. Preliminary data for 2020 from the Airports Council International – North America indicated a 37 percent drop in HSV's total cargo during the pandemic.

[5] Image from https://www.portofhuntsville.com/air-cargo/
[6] North American Airport Traffic Summary, Airports Council International – North America, 2019.
[7] Airline Data Inc., published airline schedules for Week of May 16-22, 2021.
[8] Source: U.S. DOT, T-100 Carrier Reports
[9] North American Airport Traffic Report, Airports Council International – North America, 2019.

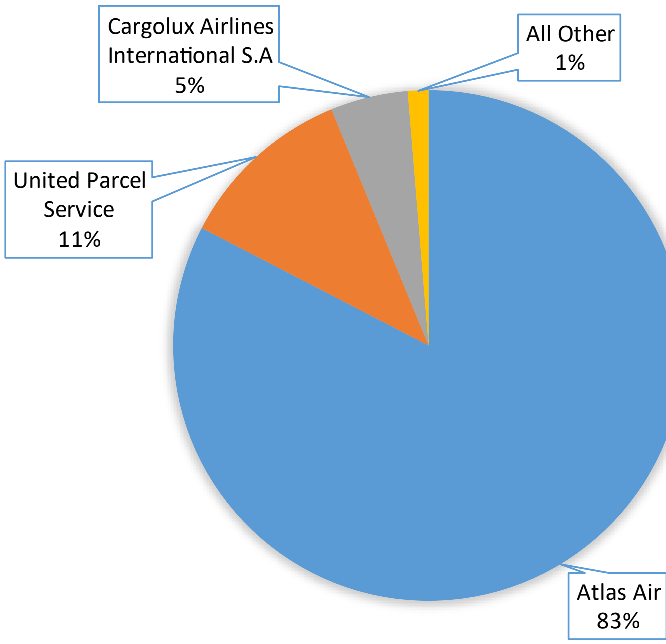
Figure 3: Air Cargo Tonnage at HSV



Source: North American Airport Traffic Report, Airports Council International – North America, 2016-2020

For the aggregate three-year period (2018-2020), Atlas Air accounted for 83 percent of the air cargo tonnage carried at HSV, UPS carried 11 percent and Cargolux carried 5 percent.

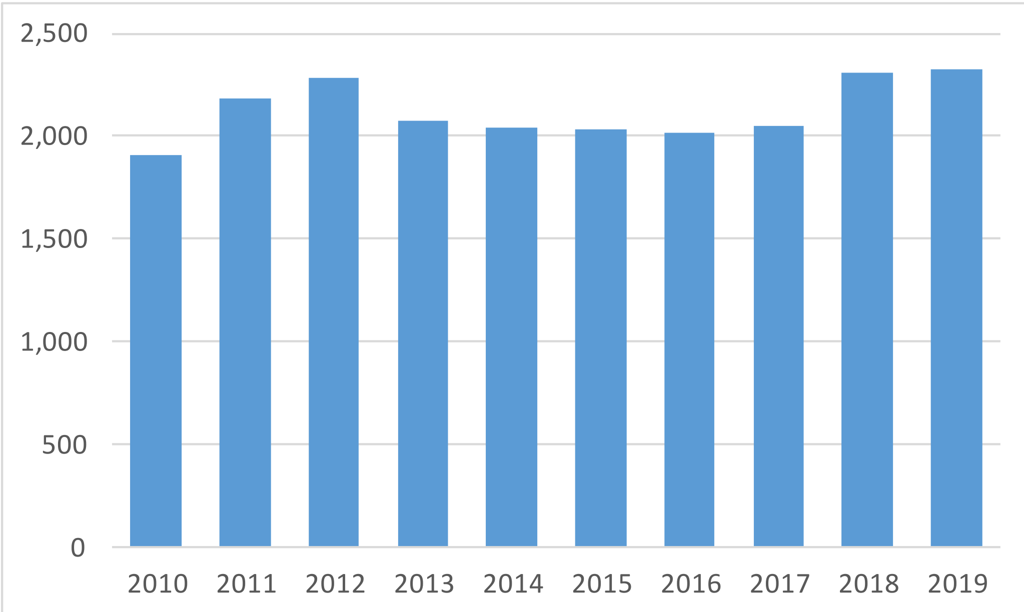
Figure 4: Airline Market Shares of HSV Air Cargo Tonnage, 2018-2020



Source: U.S. DOT, T-100 Carrier Reports.

Due to the nature of publicly available reports of air cargo industry operations, it is difficult to obtain detailed information on the cargo handled at HSV. For instance, the U.S. DOT T-100 carrier reports provide information on the nonstop segments of HSV cargo flights. However, where an international bound flight from HSV stops at another U.S. domestic point first, the onboard cargo is reported at Domestic. Given these reporting challenges, we alternatively report the number of freighter aircraft operations as a proxy for HSV cargo activity levels over time.

Figure 5: HSV Freighter Aircraft Operations



Source: U.S. DOT, T-100 Carrier Reports.

As shown in Figure 5, the freighter operations at HSV have sustained a high level of activity during the entire period 2010-2019. Particularly notable are the years 2018-2019 where record highs were achieved in consecutive years. In those years, tariffs and international trade wars negatively affected many air cargo markets, but the HSV cargo operators maintained and expanded service levels – perhaps even as regional cargo volumes declined.

HSV's Forwarder-Controlled Freighter Network

HSV enjoys robust international air cargo service thanks to the operations of DSV Panalpina ("DSV"), a Danish transport and logistics company offering transport services globally which began in 1990. As a leading global freight forwarder, DSV embarked on an innovative plan to better serve its customers. DSV leased freighter aircraft from Cargolux and began operations between HSV and Luxembourg Airport (LUX). HSV provided an attractive location in the Southeast U.S., an uncongested airport, and established industries which drove demand for air cargo, including high-tech, telecommunications, healthcare, oil & gas, fashion, and automotive.

Since then, the DSV forwarder-controlled freighter network at HSV has grown to include Brazil, Hong Kong, and Mexico using leased and chartered freighters. HSV's cargo facilities have grown with the freighter operation – extending runways, expanding taxiways, and building cargo facilities which now total over 300,000 square feet, including multiple temperature-controlled facilities.

By any measure, the forwarder-controlled freighter network is judged as a success. More than 30 years after its inception, it continues to operate high levels of cargo service while carrying a diverse array of commodities and adding new customers. The DSV network at HSV has become a model for other alternative cargo gateway airports to emulate even as it continues to evolve and innovate.

Air Cargo Linkages to Regional Economic Development

Interviews with HSV management revealed strong linkages between the Airport's cargo operations and regional economic development. Existing business retention and new business attraction can be traced back, in some way, to the presence of convenient, reliable air cargo services.

Notably, the Business Development team at HSV has consciously cultivated a cooperative environment within the region where the macro- benefits of economic development outweigh instinctive territorial self-interests, producing results for the greater good. The team of four professionals is dedicated to air cargo development which then translates to economic development within a stated 600-mile catchment area. Each team member is trained in all facets of the business development process and share equal knowledge of HSV's air cargo business. This translates to a productive, efficient experience for business prospects who are not handed off to individual subject matter experts to meet their needs. It also leads to strong relationships between airport staff and freight forwarders, cargo airlines and others in the logistics eco-system.

The Business Development team is driven by their mission to support DSV's air cargo customers and to serve as a conduit between DSV and its customers. In this manner, the Airport serves as an extension of DSV to assist customers with various issues that may arise. This fosters a sense of partnerships between involved parties which helps to sustain and grow service levels.

The partnerships also extend to elected officials who value the positive downline impacts of the air cargo operations. The active involvement by Alabama's Congressional delegation has enabled HSV to obtain entitlements and Federal grants to improve infrastructure required by air cargo operators. Indeed, the DSV freighter network at HSV has been leveraged by the State of Alabama to help attract large scale manufacturing facilities in the automotive and aerospace sector.

Examples of the linkages between HSV's air cargo services and regional economic development include:

- The Mercedes auto plant in Vance, Alabama which opened in the 1990s. This plant is a 2-hour drive south of HSV, but benefits from DSV's frequent air cargo services to Western Europe.
- [10]Similarly, a joint venture between Mazda and Toyota – Mazda Toyota Manufacturing (MTM) – is constructing a massive factory in Huntsville. The $2.3 billion state-of-the-art facility is expected to employee over 4,000 people. The factory's construction is already being supported by HSV air cargo and that will only grow as the plant begins producing automobiles.

The investments made at HSV over time related to air cargo have generated a return on investment and related regional economic development. This has been achieved through regional cooperation,

[10] Image from https://www.daimler.com/company/locations/tuscaloosa/

partnerships and collaboration aimed at common goals which ultimately benefit the citizens and businesses in and around the State of Alabama.[11]

Regional Stakeholders Perceptions of Airport's Contributions to Economic Development

The Huntsville Chamber of Commerce (Chamber) describes itself as "the catalyst for business growth, community engagement, and action to drive economic vitality and advance our position as a global leader in technology and innovation." It is organized around three major departments: Economic Development, Workforce and Education, and Small Business and Events. The Chamber also has departments focusing on communications and government affairs. The Chamber recognizes the value of HSV's non-stop international cargo flights to Luxembourg, Hong Kong, Mexico City, and Sao Palo. Its annual report highlights the number of jobs created and capital investments. The Chamber also reports the number of foreign-based companies with locations in Huntsville/Madison County.

Table 3: Foreign-based Companies in Huntsville/Madison County 2021

Continent	Home Country	Number of Firms
North America	Canada	5
	Mexico	1
Europe	Denmark	1
	France	3
	Germany	7
	Ireland	1
	Italy	2
	Luxembourg	2
	Sweden	2
	Switzerland	3
	United Kingdom	3
Asia	Japan	24
	Korea	1
Australia	Australia	1

Source: https://hsvchamber.org/departments/economic-development/community-data/foreign-based-companies/

The Chamber is also supporting the 'Huntsville Regional Economic Growth Initiative' (HREGI) that aims to establish Huntsville/Madison County as a center of technology in the South and in the nation. HREGI is

[11] Image from https://www.portofhuntsville.com/rail-cargo/

designed to position the area as one of the leading economic growth centers in the Southeast, comparing with Austin, Raleigh-Durham, Charlotte, and other peer technology-based U.S. cities. Major corporate investors include Toyota, Boeing, Northrop Grumman, Adtran, and Vertiv. Employment in these sectors benefit from connectivity provided by commercial aviation.

The Huntsville Metropolitan Planning Organization (MPO) notes the economic contribution of the airport by referencing the connections with international markets. "The presence of many international companies has been a driving force in continuous economic growth in North Alabama. The Jetplex Industrial Park is home to L.G. Electronics, the first Korean manufacturing operation located in North America. In Madison County alone, there are over 60 foreign-based corporations. These include representation from Canada, France, Denmark, Germany, Ireland, Italy, Japan, Korea, Kuwait, Netherlands, Singapore, South Africa, Sweden, Switzerland, and the UK."[12]

The Top of Alabama Regional Council of Governments (TARCOG) is the organization in northern Alabama that serves as the economic development organization on behalf of the U.S. Economic Development Administration (EDA). It serves the five-county region that includes the Huntsville, MSA and focuses on addressing common regional issues, opportunities, and challenges. The 2020 update of its Comprehensive Economic Development Strategy (CEDS) notes the region's history with manufacturing and transition from traditional industries, such as textiles, to advanced manufacturing industries that involve higher technology and robotics. Activities associated with manufacturing, distribution, and logistics share many characteristics, such as locating in close proximity to major transportation facilities.

The CEDS update notes that advanced manufacturing associated with science and technology promises great potential for the area. The region's intermodal connections of rail and air create outstanding opportunities for effective and efficient transportation, distribution, and logistics. TARCOG supports efforts to facilitate the transportation of goods and services locally, regionally and globally, particularly intermodal transportation networks that support manufacturing and distribution. It also supports workforce development and education activities that facilitate the retraining of workers displaced by industries that are diminishing in importance, particularly retraining that prepares workers for employment in advanced manufacturing industries.[13]

Communicating the Airport's Economic Impact

HSV's website noted that its overall economic impact was estimated as part of a study of the six airports in the state that had commercial air service.[14] That study concluded that the economic impact of the Port of Huntsville was:

- Economic Impact: $1.8 Billion
- Payroll Impact: $1 billion
- Employment Impact: 28,600 Jobs

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[12] TRIP 2045, City of Huntsville Area Planning Division and the Huntsville Area Metropolitan Planning Organization, May 2020, pp. 96-98.
[13] Top of Alabama Regional Council of Governments, 2020 Annual Update, Comprehensive Economic Development Strategy, pp. 12-13.
[14] The Economic Impact of Alabama's Six Major Commercial Service Airports on the State's Economy, Prepared for: The Aviation Council of Alabama, July 2020. Available at: https://live-flyhsv.pantheonsite.io/wp-content/uploads/2020/09/AL-Airports-Economic-Impact-Study.pdf

CASE STUDY

HUNTSVILLE'S CARGO AND FREIGHT OPERATIONS SUPPORT REGIONAL ECONOMIC DEVELOPMENT

A second economic impact study commissioned by the state's Department of Transportation's Aeronautics Bureau was released in December 2020. That study covered all 80 public use airports in the state, including the six commercial service airports, and was based on airport operations for 2019. The report separately estimated the direct, indirect, and induced economic impacts associated with airport operations, capital development, and visitor spending. This study estimated that HSV's operations supported:

- Total employment of 5,108
- Total payroll $170.9 million
- Total economic activity, $483 million.[15]

[15] Alabama Statewide Economic Impact Study Technical Report, Jviation, p. 70. Available at: http://sites.jviation.com/aldot-airport-study/documents/aldot_economic-impact-study-technical-report.pdf