

CASE STUDY

ALLENTOWN-LEHIGH VALLEY AIRPORT'S CARGO OPERATIONS AND CONTRIBUTIONS TO REGIONAL ECONOMIC DEVELOPMENT



The Allentown-Bethlehem-Easton Metropolitan Statistical Area (MSA) is in Eastern Pennsylvania approximately 60 miles north of Philadelphia and 100 miles west of New York City. This area is also known as the Lehigh Valley. Allentown is located close to the junction of I-78 which runs from New York City and I-476 which runs from Philadelphia to Northern Pennsylvania. The MSA is the third largest metro area in Pennsylvania with a population of nearly 850,000 in 2019, trailing only the Philadelphia and Pittsburgh regions.

The Lehigh Valley International Airport (ABE or the Airport) is 3 miles northeast of Allentown and 2 miles northwest of Bethlehem. It is the fourth busiest airport in the Commonwealth of Pennsylvania after Pittsburgh International (PIT), Philadelphia International (PHL), and Harrisburg International (MDT).

In part because of its location close to major population centers on the east coast, ABE has become a major airport for handling air cargo. In 2015, Amazon selected ABE as one of the few airports to be served by the company's new air freight division, Amazon Air.

The region was selected as a case study because of its air cargo and freight operations.

Overview of the Region and its Economy

According to the U.S. Bureau of Economic Analysis (BEA), in 2019, the MSA had a population of 844,052 ranked 70th in the nation (out of 384 total). The MSA produced \$47.2 billion in current-dollar total GDP. This ranked 69th among MSAs, a slight drop from 2009, when the region was ranked 66th nationally.¹

Located as it is in a relatively populated part of the east coast, this MSA is bordered by other large metropolitan regions, including the largest in the U.S. To the southeast is the Reading, PA MSA (population 420,000). To the northwest is the Scranton--Wilkes-Barre MSA (population 554,000). To the immediate north is the East Stroudsburg MSA (population 170,000). To the southeast is the greater Philadelphia-Camden-Wilmington region with 6.1 million. And to the east is the greater New York-Newark-Jersey City area, with a population of 19.2 million.

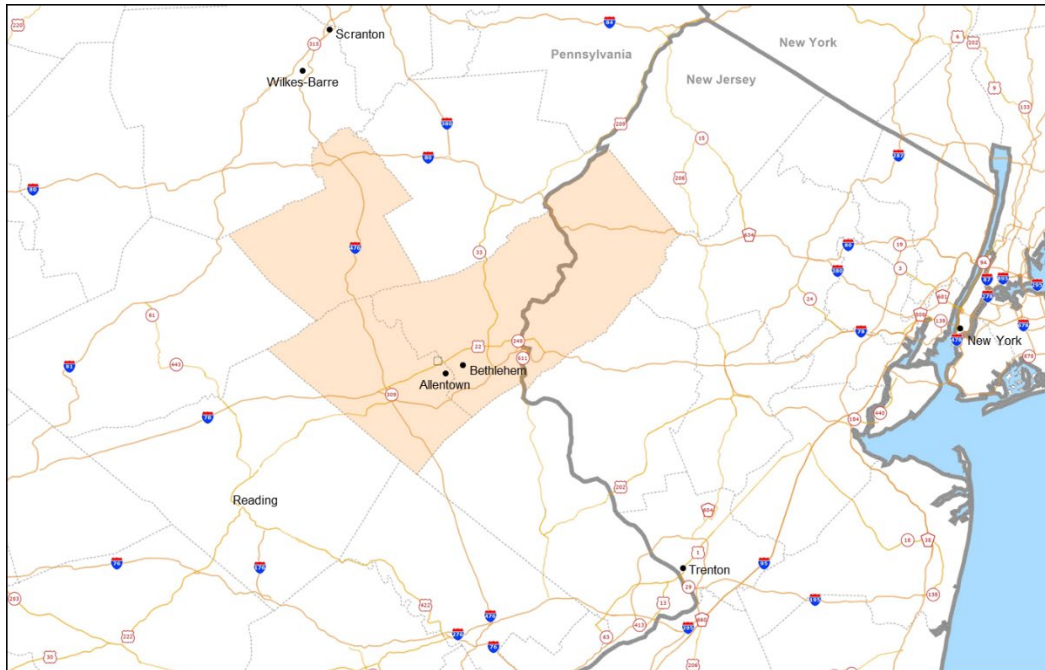
The region is home to two community colleges and nine four-year colleges and universities, including Lafayette College and Lehigh University. Almost 30 percent of the adult population aged 25 or older hold a Bachelor's degree or graduate or professional degree. Nationally, just over 32 percent of the population has a Bachelor's degree or more.²

¹ <https://apps.bea.gov/regional/bearfacts/action.cfm>

² <https://www.census.gov/content/dam/Census/library/publications/2021/acs/acsbr-009.pdf>



Figure 1: The Allentown-Bethlehem-Easton MSA



The region has undergone significant changes 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 30,000 (4 percent). That was a faster increase than realized for the entire Commonwealth of Pennsylvania, which rose by only 1 percent.
- Total employment increased by almost 55,000 (13 percent). By contrast, employment for the Commonwealth rose by 8 percent.
- Average per capita income (nominal dollars) rose from \$42,300 to \$55,700 (32 percent). In constant 2019 dollars, the increase for the Allentown-Bethlehem area was 8 percent. In 2019, the per capita income for the region was 4 percent less than the average for all of Pennsylvania, \$58,046.
- The number of business establishments operating in the region was largely unchanged.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: Change in Major Socio-Economic Variables, Allentown-Bethlehem Region 2008-2019**

	2008	2015	2019	Change 2008-15		Change 2015-19		Change 2008-19	
				#	%	#	%	#	%
Population	814	830	844	16	2%	14	2%	30	4%
Total Employment	435	459	490	24	5%	31	7%	55	13%
Private Non-farm Employment	388	415	445	27	7%	30	7%	57	15%
Gov't Employment	45	42	43	(3)	-7%	1	2%	(2)	-6%
Income per Capita (\$)	\$42,338	\$48,632	\$55,675	\$6,294	15%	\$7,043	14%	\$13,337	32%
Number of Establishments	19	18	19	(1)	-3%	1	3%	(0)	0%

Regional Economic Strengths

The region's economy is anchored by several large employment sectors. Table 2 summarizes employment by industry sectors for the MSA. The largest sector (based on total employment in 2019) was health care and social assistance. Employment in that sector increased by over 13,000 (22 percent) between 2008 and 2019. The other largest sectors based on 2019 employment were Retail trade, Manufacturing, Accommodations and Food Service, and Administrative and support and waste management and remediation services ("administrative and support services"). However, the sectors where employment changed most significantly were Transportation and Warehousing (in which employment more than doubled); real estate and rental and leasing services (increased 32 percent); and arts, entertainment, and recreation (30 percent).

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

Description	2008	2019	Change	
			Number	Percent
Private nonfarm sectors				
Manufacturing	40,789	41,442	653	2%
Retail trade	50,775	49,179	(1,596)	-3%
Transportation and warehousing	16,866	(D)	18,992	113%
Finance and insurance	19,954	20,238	284	1%
Real estate and rental and leasing	15,461	20,342	4,881	32%
Professional, scientific, and technical services	(D)	25,169	3,427	16%
Administrative and support services	25,640	31,968	6,328	25%
Educational services	12,714	15,729	3,015	24%
Health care and social assistance	59,302	72,452	13,150	22%
Arts, entertainment, and recreation	9,921	12,908	2,987	30%
Accommodation and food services	27,230	33,185	5,955	22%
Other services (except gov't and gov't enterprises)	24,630	25,939	1,309	5%
All other (includes suppressed categories)	84,463	96,191	11,728	14%
Subtotal - Private nonfarm employment	387,745	444,742	56,997	15%
Government and government enterprises	45,116	42,629	(2,487)	-6%
Total employment	435,265	489,934	54,669	13%

Source: BEA

Note: Changes for Transportation and Warehousing sector calculated using 2018 data. Changes for PST sector based on 2009-2019.



The Lehigh Valley Economic Development Corporation (LVEDC) reports that the area is within a day's drive of one-third of the U.S. population. The area has developed into a logistics hub, with 35,000 jobs and year-over-year growth of 9.4 percent for the past five years. Major logistics employers in the Lehigh Valley include

- Amazon
- FedEx Ground
- NFI
- Walmart
- McKesson
- Zulily
- Americold
- US Cold Storage

Economic Clusters

The U.S. Cluster Mapping Project's analysis of the 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 area's economy features multiple tradeable clusters that are among the top performers in the country, and several are of notable strength. They include Distribution and eCommerce, Education, and Medical Devices, among others.

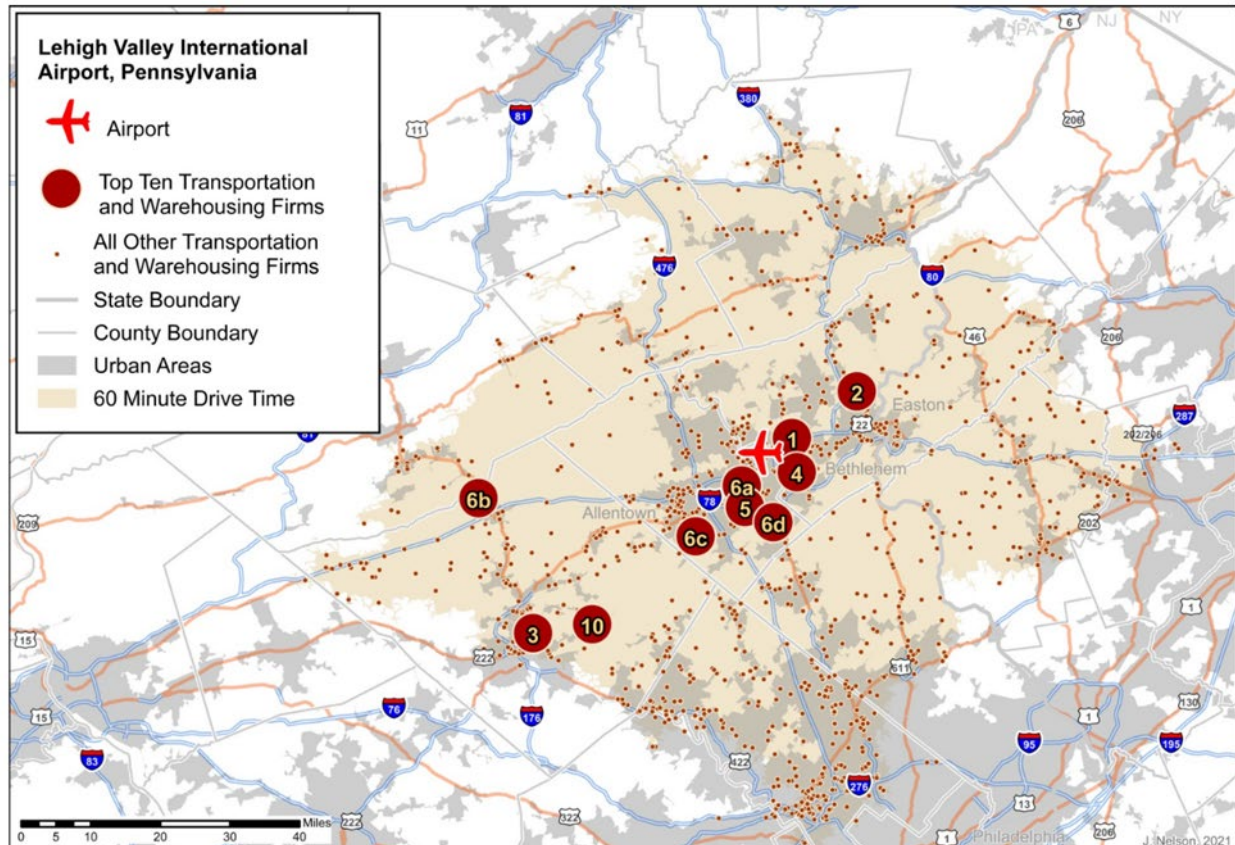
- The region is ranked 44th nationally (out of 917) in Distribution and Electronic Commerce. Estimated regional employment in this sector in 2018 was over 26,000. The region has economic strengths in multiple related subclusters, including Warehousing and Storage, Electronic and Catalog Shopping, Professional and Commercial Equipment and Supplies, Wholesale of Electrical and Electronic Goods, Wholesale of Drugs and Druggists' Sundries, and Wholesale of Chemical and Allied Products. In each of those subclusters, the region is ranked among the top 50 in the U.S.
- The region was ranked 59th nationally for Education and Knowledge Creation. With estimated 2018 employment of nearly 11,000, the region's strength is a reflection of the large number of colleges and universities in the area.
- Medical devices is also a regional economic strength, with employment specialization in Surgical and Dental Instruments and Supplies. The region is ranked 33rd nationally. Over 1,700 worked in this subcluster in 2018.

⁴⁴ <https://www.clustermapping.us/about/clusters-101>



Another way to analyze the economics of the area is to more closely examine business and socio-economic data within a given radius around the airport. Figure 2 illustrates the area within a 60-minute drive of ABE and identifies those establishments in the Transportation and Warehousing sector located there.

Figure 2: Spatial Distribution of Transportation and Warehousing Firms (NAICS 48-49) in the ABE Airport One-Hour Drive Time Trade Area



Key highlights of socio-economic activity within the 60-minute drive of the airport:

- The total estimated 2019 population was 2.1 million. Of that, 1.3 million (61 percent) were considered “working age” (between the ages of 18 and 64).
- The economy supported over 80,000 businesses employing nearly 1.1 million. In terms of major industry sectors (defined by NAICS codes), the largest based on total employment was Manufacturing (102,000 employees) followed by Professional, Scientific, and Technical Services (PST), with over 94,000 and Finance, Insurance, and Real Estate with nearly 68,000. The Transportation and Warehousing sector included over 1,400 establishments that employed over 20,000.



Overview of the Airport and its Services

The Lehigh Valley International Airport (ABE or the Airport) has two runways, one 7,600 feet and one 5,800 feet. The Airport has a passenger terminal complex consisting of one landside and one satellite terminal, connected by an underground tunnel. There are 9 gates in the passenger terminal. On airport property there are rental car facilities, general aviation facilities with a fixed base operator and a dedicated air cargo ramp with nearby cargo warehouses.

ABE is owned and operated by the Lehigh-Northampton Airport Authority (LNAA). LNAA is overseen by a 15-member Board of Governors appointed by both Lehigh and Northampton Counties.

ABE is a small hub airport and in 2019 handled 912,000 passengers in 2019. At that time, ABE's total passenger level ranked 142nd amongst U.S. airports.⁵ In 2019, the Airport was served by 4 commercial passenger airlines to 11 nonstop domestic U.S. markets, with an average of about 18 daily departures.⁶ Regional jets are the most common passenger aircraft at ABE, accounting for nearly 80 percent of departures.

Table 3: Summary of Passenger Market 2019

Carrier	Seats	Share	Markets
American	151,480	29%	3
Delta	132,937	25%	2
Allegiant	195,842	37%	7
United	42,341	8%	1
Total	522,600	100%	12

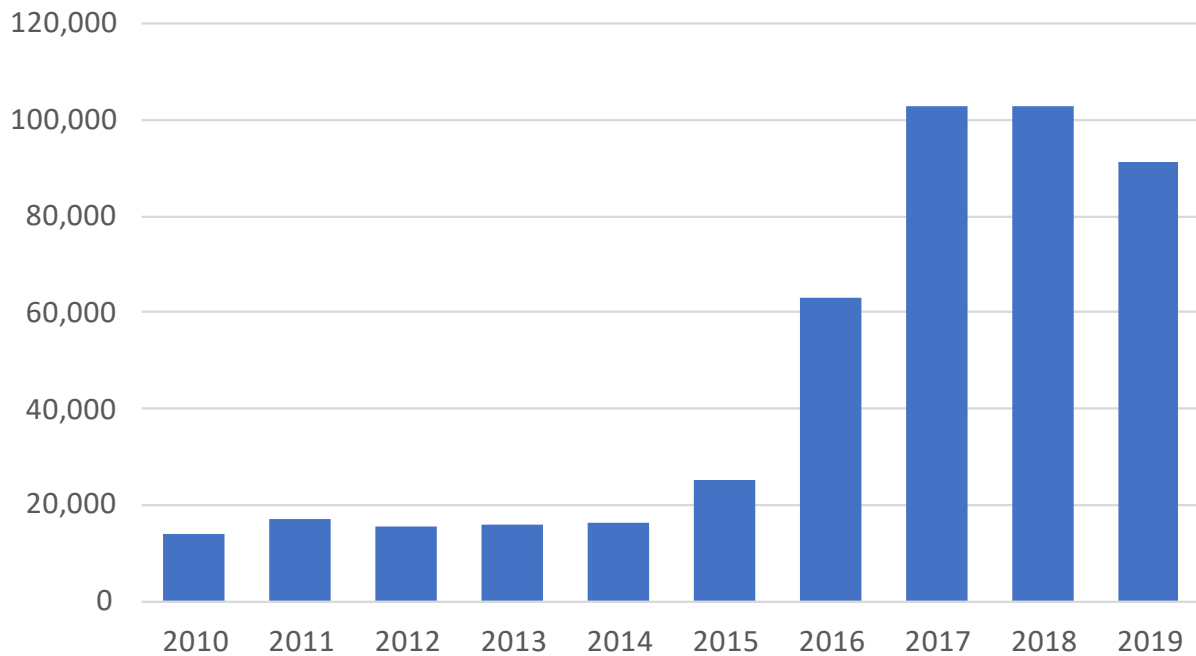
Source: T-100 data from Diio / Cirium

Note: "Markets" based on a minimum of 50 annual departures. Allegiant served four markets with basically weekly service. Only its flights to Orlando Sanford Airport were scheduled on the equivalent of a daily basis. Total markets reflect that both American and United serve Chicago O'Hare.

Air cargo has been a particular point of emphasis at ABE since September 2015 when Amazon began charter freighter operations at the airport. The operation is now known as Amazon Air and ABE was one of the first three airports in the developing network. Prior to that, FedEx carried almost 100 percent of the cargo at the airport. By 2016 and the first full calendar year of operations, ABE air cargo reached 63,000 metric tons – more than triple the tonnage handled in the years just prior to Amazon Air's entry. By the end of 2017, ABE air cargo exceeded 100,000 metric tons – more than five times the pre-Amazon Air levels. Between 2018 and 2020, ABE's cargo tonnage stabilized between 90,000 and 100,000 metric tons. See Figure 3.

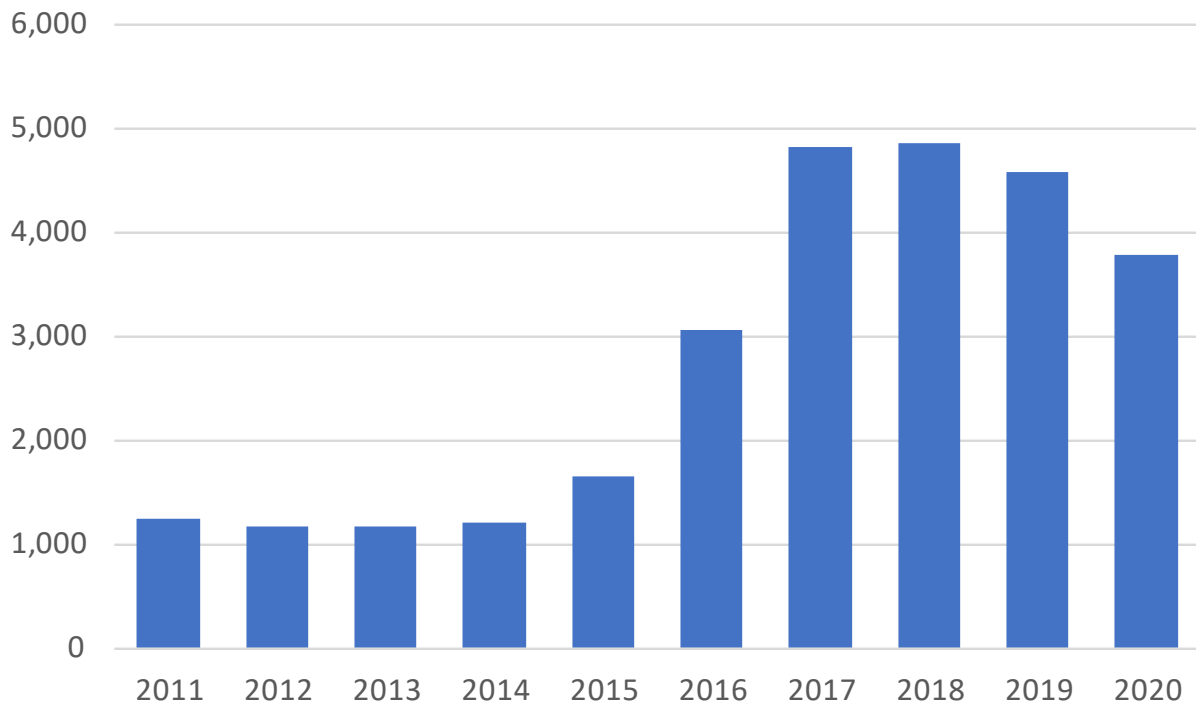
⁵ FAA Enplanement data, CY 2019

⁶ Airline Data Inc., published airline schedules for Week of May 16-22, 2021.

**Figure 3: Air Cargo Tonnage at ABE**

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

Figure 4 below shows ABE's freighter aircraft operations over the ten-year period 2011-2020. While freighter operations decreased from 2019 to 2020, air cargo tonnage increased in that same timeframe as shown in Figure X.X above. Clearly, the e-commerce boom that occurred during the pandemic led to higher consumer demand and, therefore, increased tonnage levels would be expected in 2020. It also suggests that Amazon Air was allocating more of each aircraft operation to ABE versus other cities on its typical multi-stop itineraries. It may also suggest Amazon Air was loading and unloading heavier goods at ABE in 2020. Whatever the specific reasons, on average, Amazon carried more tonnage per flight at ABE in 2020 than in prior years.

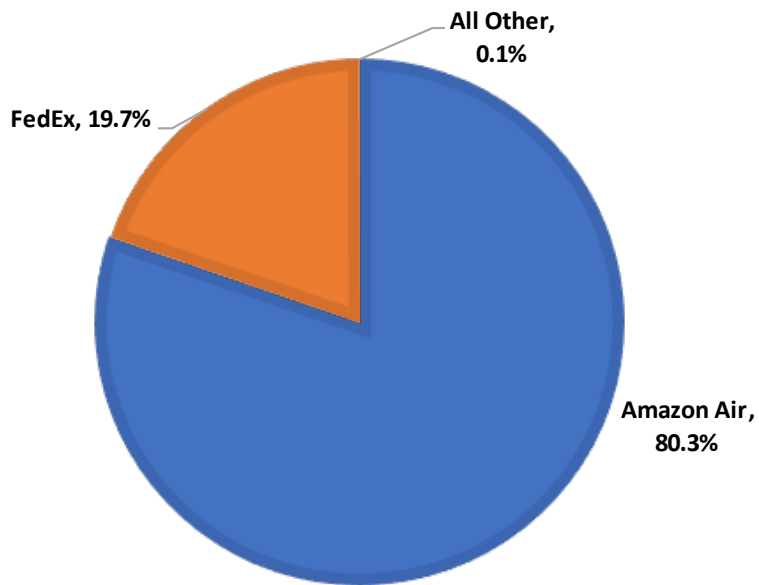
**Figure 4: ABE Freighter Aircraft Operations**

Source: U.S. DOT, T-100 Carrier Reports and Hubpoint Strategic Advisors analysis.

Amazon Air dominates air cargo volumes at ABE. For the aggregate three-year period (2018-2020), Amazon Air accounted for 80 percent of the air cargo tonnage carried while FedEx carried almost 20 percent. Passenger airlines and other charter air cargo operators handle a minor amount of the airport's cargo.



Figure 5: Airline Market Shares of ABE Air Cargo Tonnage, 2018-2020



Source: U.S. DOT, T-100 Carrier Reports and Hubpoint Strategic Advisors analysis.

Since Amazon Air's entry at ABE in 2015, the company has added more than 37 other airport stations to its U.S. network. As the air network has grown, the points served at ABE have also diversified. As shown in Figure 6, eleven different markets were served outbound from ABE in 2020 – led by airports at Rockford, IL (RFD), Fort Worth, TX (AFW) and Sacramento (SMF). In 2020, ABE recorded flight arrivals from eight Amazon Air cities – led by AFW, Phoenix, AZ (PHX) and Ontario, CA (ONT). In Fall 2021, Amazon Air is scheduled to open its new primary hub at Cincinnati/Northern Kentucky International Airport (CVG). At that time, it is expected that more of ABE's flights will transit CVG than in prior years.



Figure 6: Amazon Air's Service Points at ABE, 2020

Amazon Air OUTBOUND Markets from ABE			Amazon Air INBOUND Markets to ABE		
Airport Code	Destination City	ABE Flight Departures	Airport Code	Origin City	ABE Flight Arrivals
RFD	Rockford, IL	357	AFW	Ft. Worth, TX	422
AFW	Ft. Worth, TX	355	PHX	Phoenix, AZ	356
SMF	Sacramento, CA	287	ONT	Ontario, CA	354
SEA	Seattle, WA	145	CVG	Cincinnati, OH	145
CVG	Cincinnati, OH	69	TPA	Tampa, FL	72
PHX	Phoenix, AZ	69	SMF	Sacramento, CA	45
TPA	Tampa, FL	69	BWI	Baltimore, MD	5
LAL	Lakeland, FL	45	ILN	Wilmington, OH	1
BDL	Hartford, CT	1			
IAH	Houston, TX	1			
ONT	Ontario, CA	1			
Grand Total		1,399	Grand Total		1,400

Source: U.S. DOT, T-100 Carrier Reports and Hubpoint Strategic Advisors analysis.

Additional Background on Amazon Air and FedEx at ABE

On an average day, ABE handles five Amazon Air flights operated by its partner airlines including Atlas Air, Air Transport International and ABX Air which all utilize Boeing 767 freighters. In 2020, Amazon Air contracted with Sun Country Airlines to fly its smaller Boeing 737 freighters, but those aircraft have not yet operated at ABE. Despite the additions of many more U.S. airports to its network, Amazon Air maintains a robust level of service at ABE.

ABE's strategic location and convenient access to the New York metro area were critical to its early addition to the Amazon Air network. Because Amazon Air exists to serve Amazon customers, the nearby presence of Amazon distribution and fulfillment centers is a prerequisite for an airport to be added to the network. By 2011, two Amazon fulfillment centers were operating 15 miles from ABE and, in 2016, a third facility opened nearby.

Meanwhile, in 2018, FedEx Ground opened an 850,000 square-foot distribution hub in the Lehigh Valley just 2 miles from ABE. The 253-acre site for the facility was owned by ABE and sold to a developer, which leased it to FedEx in 2016. Given the nature of FedEx Ground's use of surface transportation, there is no direct interaction between the facility and ABE currently. However, FedEx has signaled a higher degree of integration between its ground and air operations, so the potential exists for a linkage to connect to ABE's FedEx air cargo services.



Air Cargo Linkages to Regional Economic Development

Clearly, the operations of Amazon Air at ABE have been transformative to the airport and the region. The three Amazon fulfillment centers totaling over 2 million square feet and the Amazon Air operation support employment of approximately 3,000 Amazon employees in the Lehigh Valley.⁷ With e-commerce continuing to experience sustained growth, especially during the pandemic, there is high potential for further economic development related to ABE's air cargo services.

As the initial Amazon Air flights began in 2015, Don Cunningham, president and CEO of the Lehigh Valley Economic Development Corporation said, "The Lehigh Valley has become a key battleground in the e-commerce wars. When you consider that we're within [truck] delivery reach of 100 million consumers, I'm not at all surprised that LVIA is part of this pilot. That airport [ABE] has become an important asset in these wars."⁸

Further, the Airport's 2018 Master Plan Update stated, "The Airport is already mentioned and acknowledged as a key component in attracting business to the area. The region continues to strengthen its role and function as a logistics hub serving the Northeast. As a logistics hub, it will become more attractive to manufacturers, wholesalers, warehousing, and other freight related functions that will benefit from having direct and immediate access to multiple modes of movement. This will lead to increasing demand for truck, rail, and ancillary airfreight services. Increased truck traffic will lead to increasing highway congestion and significantly increase the need for alternative modes to provide access, including enhanced rail service, and ancillary airfreight service."⁹

Interviews with ABE management revealed that the Airport works closely with the Lehigh Valley Economic Development Corporation (LVEDC) and that the Airport's Board Chairman previously worked with LVEDC. Although the LVEDC is more involved in passenger air service development pursuits, there is recognition of the economic development potential related to air cargo services.

For instance, ABE is now considering relocating air cargo to the north side of the airport. This would necessarily require significant assets and resources to be deployed on behalf of cargo, not just by the Airport, but by the community as well. The airport's strategic plan has some focus on cargo and the synergies air cargo has with the region's warehouse and distribution sector. Further, a recent agreement between ABE and Airport Facilities Company (AFCO) is intended to assist with further on-airport cargo development and the recruitment of companies and tenants to utilize those cargo capabilities.

Regional Stakeholders Perspectives on the Airport's Contributions to Economic Development

The Lehigh Valley Economic Development Corporation (LVEDC) is one of the principal regional organizations concerned with driving economic growth and activity for people of all skills and education. Its priorities are to market the economic assets of the Lehigh Valley, recruit companies to targeted sectors, support the growth and retention of new employers, promote and develop the workforce, and expand investment and partnerships for economic growth. It has four targeted sectors: high performance manufacturing, professional business services, life sciences research and manufacturing, and food and beverage processing.

⁷ "Amazon's big hiring plans just latest example of competitive market for Lehigh Valley warehouse workers," The Morning Call, May 13, 2021.

⁸ "Amazon using Lehigh Valley airport for secret pilot program," The Morning Call, December 27, 2015.

⁹ Lehigh Valley International Airport, Master Plan Update, 2018



The LVEDC recognizes that the airport plays a pivotal role and impact on regional economic development, and transportation resources are an important resource for site selectors and businesses considering where to locate a building or expand an existing one. LVEDC notes that airports like ABE are important for foreign direct investment, because international companies looking for places to invest in the U.S. need quick access to their facilities via airports.

“LVIA plays a pivotal role and impact on regional economic development in Lehigh Valley, and transportation resources are an important resource for site selectors and businesses considering where to locate a building or expand an existing one, according to LVEDC’s President & CEO.

To help support the airport, LVEDC and other regional businesses and organizations have signed a “Fly Local” pledge with the airport. The pledge asks participants to use ABE when a flight is available within four hours of travel time each way from flights at competing airports, and when the cost of the flight from ABE is within \$200 of the lowest priced tickets at competing airports.

The Greater Lehigh Valley Chamber of Commerce represents over 30 affiliated local chambers of commerce in the area, with over 5,000 members that employ more than 200,000. Its mission is to improve the economy and quality of life in the metropolitan region. It too recognizes the contribution that the airport makes to the region and supports its development as part of a larger effort to improve the transportation infrastructure necessary for continued economic success. “Inadequate and failing infrastructure systems constrain business.” Transportation resources is also an important resource for site selectors and businesses.

The Chamber cites a 2016 survey from [Area Development](#) that reported accessibility to a major airport is considered important or very important to more than 44 percent of responding site selectors -- more important than corporate tax rates, union presence, and energy availability and costs. The economic impact of airports can be strengthened through improved marketing, investing in infrastructure improvements, and providing incentives such as air subsidies.”¹⁰

Communicating the Airport’s Contributions to Regional Economic Impact

The airport has not had an economic impact study completed since the Commonwealth last managed one in 2015. That study reported summary findings:

- Direct Impacts:
 - On-airport output of \$155.3 million
 - Visitor output of \$137.2 million
- Multiplier (Induced and Indirect) output of \$235.8 million
- Total impacts:
 - Total jobs 6,086
 - Total payroll: \$190.6 million
 - Total output: \$528.3 million

The report also noted that some companies use the airport regularly, and that activities at the airport included recreational flying, air cargo activity, military exercise, and medical flights. Other special events are held at the airport.

¹⁰ <https://lehighvalley.org/lehigh-valley-international-airports-importance-to-regional-economy-discussed/>