



BLUE SKIES FOR AMAZON AIR

THE EXPANDING CAPABILITIES OF AMAZON'S CARGO AIRLINE | SEPTEMBER 2021

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Our analysis of Amazon Air's recent expansion shows that the carrier has:

- Increased flight activity by 17% in six months, not including added lift by partner airlines;
- Established a network of airports within 100 miles of more than 70% of the U.S. population;
- Developed synchronized scheduling at its Cincinnati (CVG) "superhub" and at Wilmington, OH;
- Acquired an equity stake in air-cargo company ATSG while leveraging its fleet for added flying;
- Positioned its network for a record-breaking Christmas buying season w/added next-day delivery.

Amazon Air's expanded route network and more sophisticated scheduling

have greatly enhanced its capabilities for overnight delivery in the 15 months since we published our first [Amazon Air Policy Brief](#). This fully owned subsidiary of retail giant Amazon made notable moves during spring and summer 2021 that close gaps in its network, give it a Canadian presence, and set into motion the development of major hubs.¹

This independently produced brief offers an overview of Amazon Air's initiatives between February 2021 and August 2021.² The analysis draws on publicly available sources of information, including:

- Data from flightaware.com and flightradar24.com on 3,500 Amazon Air takeoffs and landings;
- Geographic analysis of Amazon flights using ArcGIS software and U.S. Census data; and
- Information on fleet registration at the FAA and other sources, including planespotters.net.

Our findings build upon our [February 2021 Amazon Air Brief](#). That brief described Amazon's robust expansion from September 2020 to February 2021, including its initial operations within Europe and its purchase of more Boeing 767 planes to be retrofitted for cargo operations. Our [May 2020 Brief](#) explains why we expect its fleet to grow, possibly reaching 200 planes by 2028.



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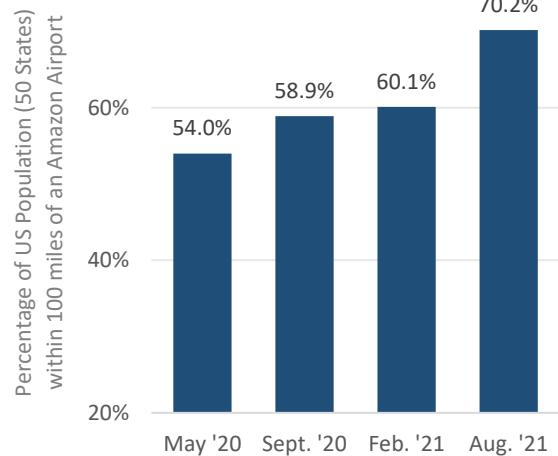
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PHOTO CREDIT (ABOVE): BOEING 767-338 AT LAX ON JULY 10, 2021 BY PEIWEN CHEN.

MAJOR FINDINGS FROM OUR ANALYSIS:

FINDING 1. Amazon Air's expansion during the spring and summer gives it a continuous presence at airports within 100 miles of more than 70% of the U.S. population. As a result, the airline can ship packages and inventory to points that are within a few hours' drive by truck or delivery van to more than 217 million people.

FIGURE 1: Growth in Percentage of U.S. Population within 100 miles of an Amazon Airport



The share of the population that lives within 100 miles (by air) from an Amazon Air airport grew from 54.0% in May 2020 to 60.1% in February 2021 to 70.2% in August 2021 (see Figures 1 and 2). More than seven in ten U.S. residents now live within a few hours' drive from an Amazon Air facility. Whereas the population living within 100 miles of an Amazon Air airport totaled 177,985,144 in May 2020, it is now 231,241,847, an increase of more than 53 million in just 15 months. This analysis is based on the most recent U.S. Census estimates available by census tract.³

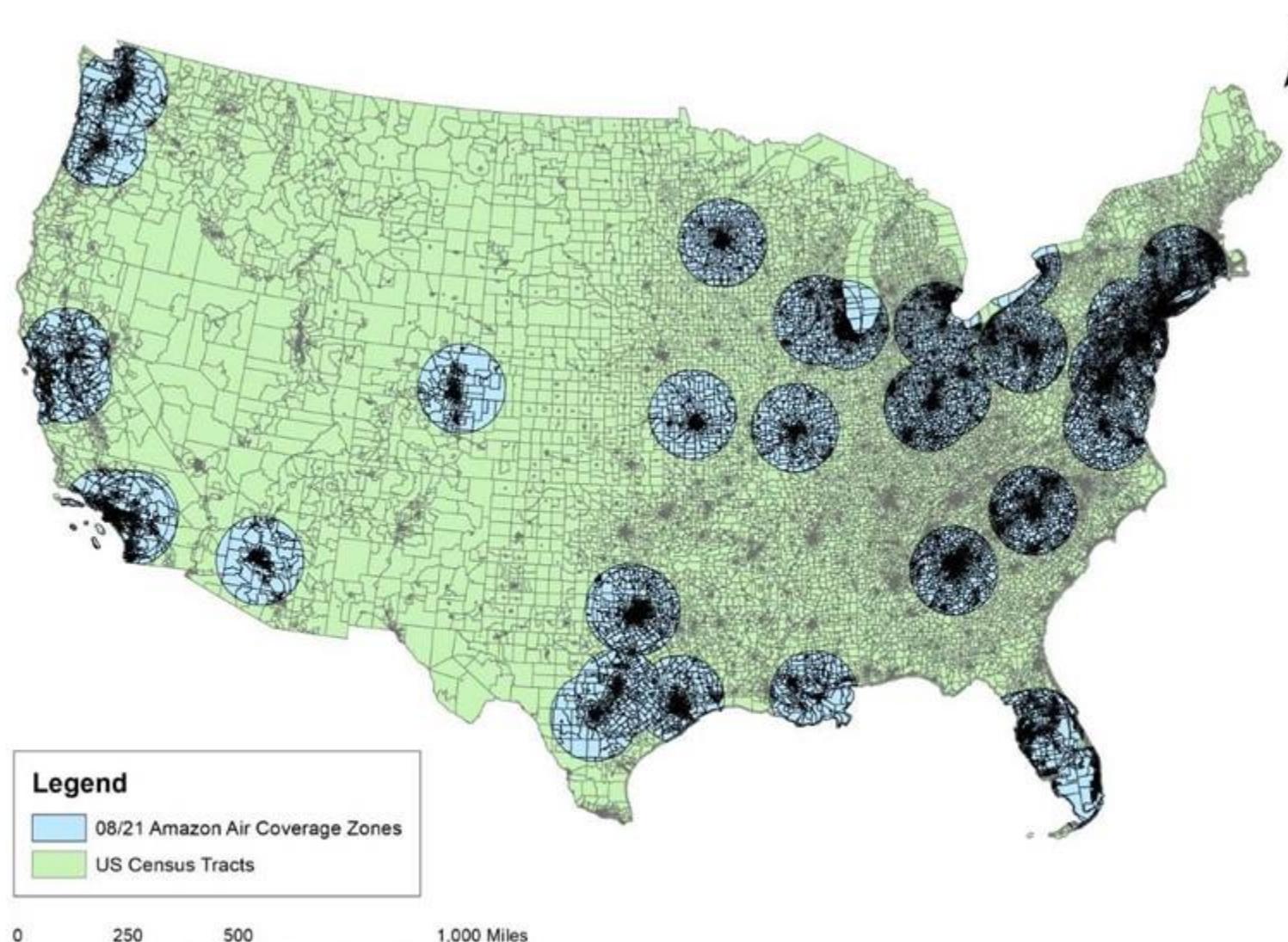
Amazon Air has put much emphasis on closing gaps in its U.S. network, adding regular service to seven airports: Charlotte, NC; Fairbanks, AK; Kansas City, MO; Pittsburgh, PA; San Bernardino, CA; St. Louis, MO; and Toledo, OH (serving Detroit, MI) since our

February report. Its flights arrive at airports within, or less than 30 miles from the periphery of, 22 of the 25 largest metropolitan areas of the United States. Two of the three outliers, Boston, MA, and San Diego, CA, are each within 100 miles (by expressway) of an Amazon Air airport, leaving only Raleigh-Durham, NC, which is about 130 miles (by air) from the nearest facility. In total, Amazon Air now regularly flies to **42 airports in the United States**, including its territories, and more than a dozen international locations.

Amazon Air's expanded reach bolstered its ability to rapidly move inventory among its multitude of warehouses and sorting services to make next-day delivery possible for an enormous array of products to much of the U.S. population. Please refer to Finding 3 for analysis of Amazon's ability to provide overnight delivery from its expanding Ohio Valley hubs at Cincinnati CVG and Wilmington, OH.

FINDING 2. Amazon Air flight activity grew 17% between February and August 2021, facilitated by the addition of 14 planes. A pair of Boeing 737 planes leased to Cargojet made possible its first-ever intra-Canada operations, while the newly opened San Bernardino, CA hub is giving the carrier added versatility in the West.

FIGURE 2: Areas of the Continental United States within 100 Miles of an Amazon Air Airport, August 2021



Flight activity on planes registered to Amazon Air grew from an average of 140.2 per day in February 2021 to 163.5 per day in August 2021, which constitutes 17% growth over a roughly six-month period (Figure 3 and Table 1). These estimates, which nearly match those predicted by the Chaddick Institute in its February brief, are derived from comparisons of the average number of flights over six-day periods in February 2021 and our new sample in late August 2021.

The United States and U.S. Caribbean portion of Amazon Air grew 14% between the February and August periods, whereas Amazon's newly added intra-Canada operation now accounts for 3% of its daily flights. Through its lease of the Boeing 737s to Cargojet, **Amazon Air now typically has about ten or eleven intra-Canada flights daily**, serving airports in Calgary and Edmonton, AB, Hamilton, ON, and Vancouver, BC.

Transoceanic flying on international routes remains largely non-existent using Amazon Air-branded planes. Although the formal European network changed little in recent months, still comprised mostly of two 737s operated by ASL Ireland (see map on page 2 of [our earlier report](#)), evidence suggests that there is increased intra-Europe flying on non-Amazon planes operated by its partners. In Germany, Amazon Air added presence at Hannover, after having announced its plans to make Leipzig a hub last year.

On the U.S. mainland, Amazon made a variety of key moves, including:

- **The heavily publicized opening of major facilities at Cincinnati/North Kentucky International (CVG) and expansion at Ohio's Wilmington Air Park as discussed in Finding 4 below;**
- **Investment in expansion at Oregon's Portland International and Washington's Seattle-Tacoma International**, making them significant hubs, each generally having a dozen or more flights daily (see Table 1);
- **Concerted growth at Baltimore-Washington International, Fort Worth Alliance, and Lakeland Linder** (near Tampa), and modest reductions at Chicago Rockford International and Bradley International, in Windsor Locks, CT (near Hartford, CT). Additional flights by partner airlines, however, have offset much of the decline at these latter two airports, as noted below;
- **The springtime opening of its 700,000 square foot ground facility at California's San Bernardino International**. Amazon Air launched at this airport, which does not have regularly scheduled passenger flights, in part by shifting traffic from nearby Ontario International. This emerging hub already typically has about eight daily flights, with many more likely to be added soon.

FIGURE 3: Growth in Daily Flight Activity

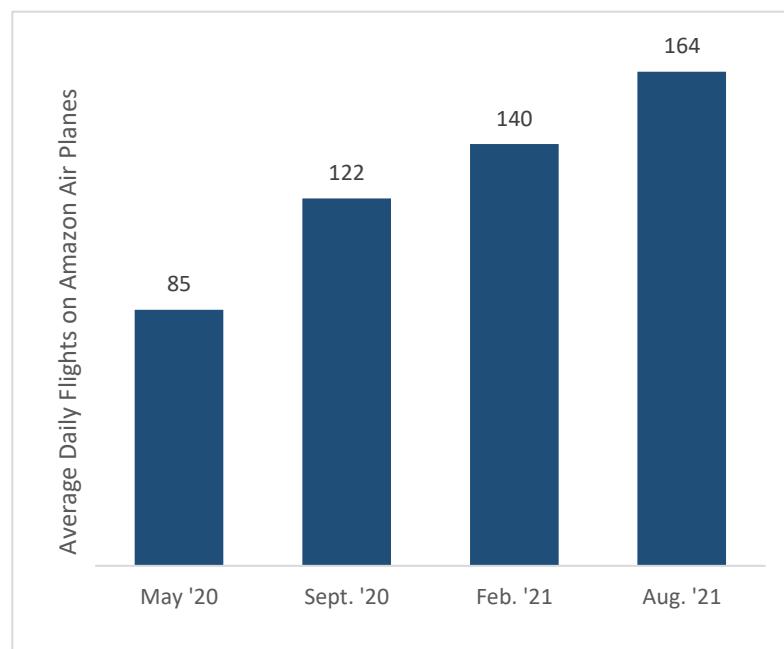


FIGURE 4: Amazon Air Continental U.S. Flight Network, Wednesday, August 19, 2021

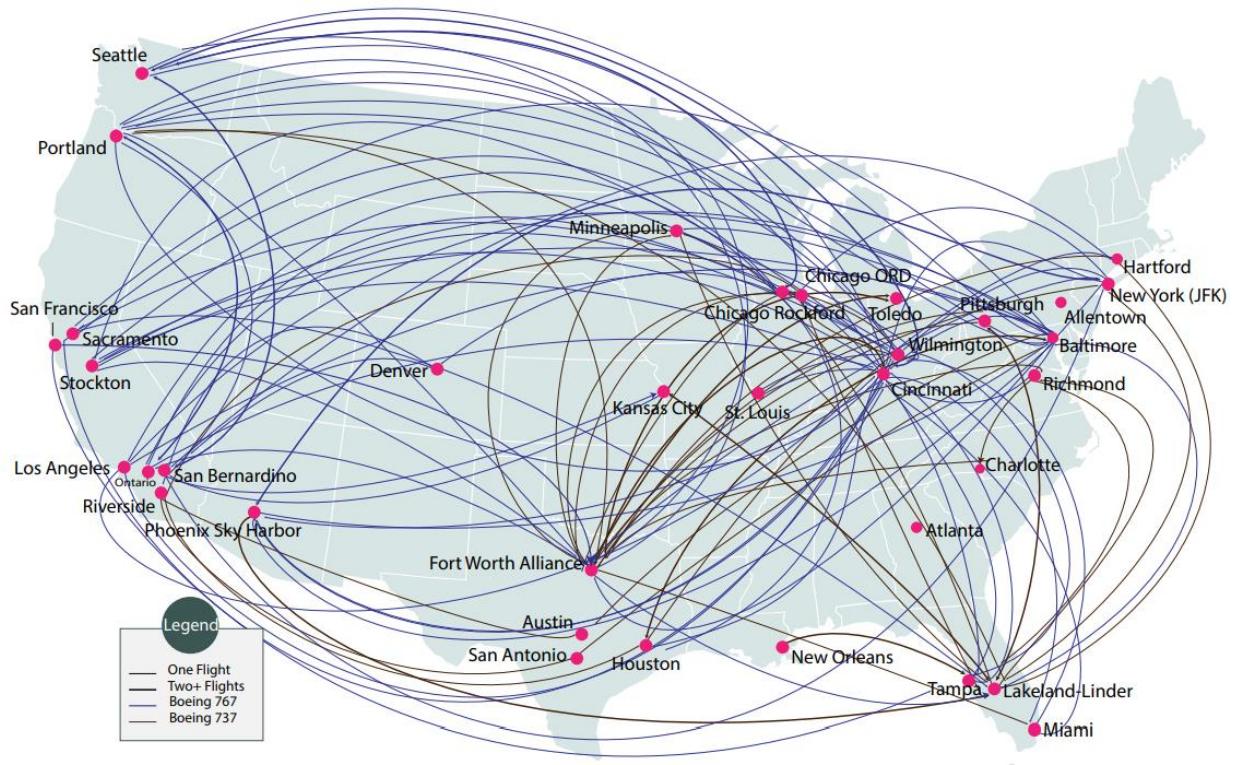


FIGURE 5: Additional flights by partner airlines appearing to be on Amazon-related missions, August 19, 2021

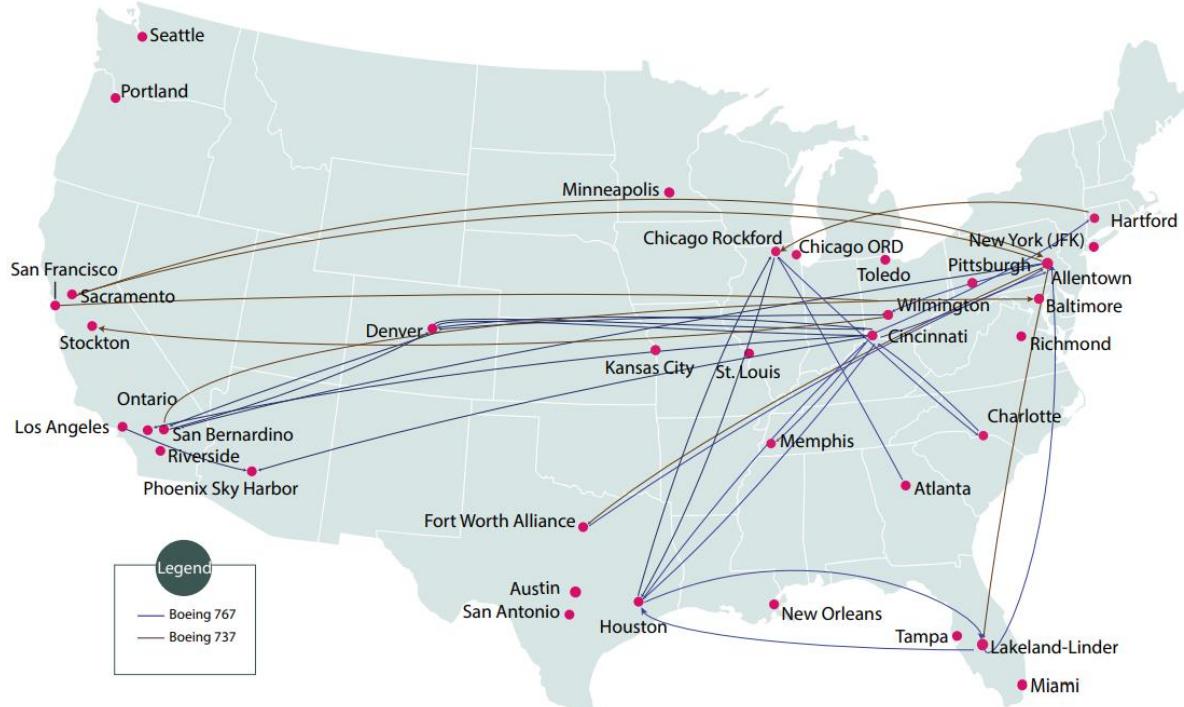


TABLE 1: Trends in Takeoffs & Landings at Airports Served by Amazon Air

Airport		Earlier Time Periods			August 2021		
		Thursday April 23, 2020	August 2020 *	February 2021 *	August 2021* Amazon Air planes	Estimated flights by Partner Airlines+	Total incl. Partner Airline Flights
Allentown Lehigh Valley Int'l (ABE)	<i>Hub (note a)</i>	6	5.0	4.3	0.0	10	10.0
Amsterdam Airport Schiphol (AMS)		0	0.7	0.8	0.0		0.0
Anchorage Ted Stevens Int'l (ANC)		4	2.0	2.0	1.8		1.8
Atlanta Hartsfield-Jackson International (ATL)		0	2.0	2.5	2.3	1	3.3
Austin-Bergstrom International (AUS)		0	4.0	4.2	3.7		3.7
Baltimore-Washington Marshall Int'l (BWI)	<i>Hub</i>	6	9.0	10.5	19.5		19.5
Charlotte Douglas Int'l (CLT)					1.7	2	3.7
Chicago O'Hare International (ORD)		0	2.7	3.5	7.5		7.5
Chicago Rockford International (RFD)	<i>Hub</i>	15	16.5	15.8	10.2	5	15.2
Cincinnati/Northern Kentucky Int'l (CVG)	<i>Super Hub</i>	24	25.7	27.8	21.5	13	34.5
Dallas-Ft. Worth International (DFW)		0	0.0	0.2	0.0		0.0
Denver International (DEN)		4	3.7	4.2	1.0	6	7.0
Fairbanks Int'l (FAI)					2.0		2.0
Fort Worth Alliance (AFW)	<i>Hub</i>	8	16.7	17.2	26.3	2	28.3
Honolulu Daniel K. Inouye International (HNL)		4	4.3	3.8	5.2		5.2
Houston George Bush Intercontinental (IAH)	<i>Hub</i>	9	10.2	10.0	7.3	6	13.3
Kahului (OGG)		2	2.2	1.8	2.2		2.2
Kailua-Kona/Kona International (KOA)		0	1.7	2.0	2.5		2.5
Kansas City International (MCI)	<i>New</i>				3.7		3.7
Lakeland Linder International (LAL)	<i>Hub</i>	0	11.5	11.5	21.2	4	25.2
Miami International (MIA)		6	7.3	6.7	5.7		5.7
Los Angeles International (LAX)		0	0.0	2.0	3.8		3.8
Minneapolis-Saint Paul International (MSP)		2	3.7	2.0	6.3		6.3
New Orleans, Louis Armstrong Int'l (MSY)		0	0.0	2.0	2.0		2.0
New York John F. Kennedy Int'l (JFK)	<i>Hub</i>	0	8.0	8.8	10.0		10.0
Ontario International (ONT)	<i>Declining Hub</i>	13	21.5	20.5	12.8	2	14.8
Pittsburgh International (PIT)	<i>New</i>				3.8	1	4.8
Phoenix Sky Harbor International (PHX)		4	6.5	9.5	9.5		9.5
Portland International (PDX)	<i>Hub</i>	6	8.2	10.5	15.3		15.3
Richmond International (RIC)		0	5.0	4.0	3.7		3.7
Riverside March Air Reserve Base (RIV)		4	5.7	6.5	9.3		9.3
Sacramento International (SMF)		4	6.2	4.5	6.0	2	8.0
San Antonio/Kelly Field (SKF)		2	3.2	2.0	2.0		2.0
San Bernardino International (SBD)	<i>Emerging Hub</i>				8.0	4	12.0
San Francisco International (SFO)		2	2.8	7.0	4.0	2	6.0
St. Louis Lambert International (STL)	<i>New</i>				3.6		3.6
San Juan Luis Muñoz Marin Int'l (SJU)		0	2.7	2.0	2.0		2.0
Seattle-Tacoma International (SEA)	<i>Hub</i>	9	9.3	11.2	11.7		11.7
Stockton Metropolitan (SCK)		4	4.0	6.2	5.3	1	6.3
Tampa International (TPA)	<i>Declining Hub</i>	16	11.3	13.2	7.7		7.7
Toledo Express (TOL)	<i>New</i>				3.7		3.7
Wilmington Air Park (ILN)	<i>Hub</i>	13	13.7	14.8	20.5	4	24.5
Windsor Locks Bradley Int'l (Hartford) (BDL)		2	6.8	8.0	4.2	2	6.2
<i>Outside United States</i>							
Canadian Airports					10.2		10.2
Pacific Rim Airports		1					
Western Europe Airports		0	0.7	16.8	16.3	-	16.3
Total takeoffs & landings		170.0	244.2	280.3	326.9		393.9
Total flights		85.0	122.1	140.2	163.5		197.0

* Six day average + General estimate by Chaddick Institute of ABX, Atlas, ATI, flights that appear to be on Amazon mission. Note a: Flight activity at this airport has apparently been transitioned from Amazon Air to ABX Air. ^ Excludes Amsterdam, NL, which is listed separately.

The number of fully operational planes in the Amazon Air fleet grew from a reported 59 in February 2021 to 73 in August 2021, a 24% increase.⁴ These estimates do not include former Delta Air Lines and WestJet 767s in the process of being added, once their conversion to freighters is complete. Boeing 767s remain the carrier's workhorses, accounting for about 60% of its daily flights, with the remainder being 737s.

FINDING 3. Amazon is increasingly reliant on the flights of partner carriers using planes that are not formally part of the Amazon Air fleet. Although precise estimates of the number of such flights are not possible due to the manner in which information is reported, we estimate that partner airlines operate 20 - 30 daily flights that supplement Amazon Air flights in the U.S. domestic market alone. Flight itineraries in Europe suggest there is also a sizeable supplemental operation across the Atlantic.

Amazon has made several notable moves since our February report that deepen its partnership with established cargo airlines. Most notably, in May, it was reported that Amazon had exercised its warrants to purchase a minority stake in [Wilmington, OH-based ATSG group](#), a holding company whose subsidiaries include ABX Air and Air Transport International. Amazon also has warrants for the purchase of a stake in Atlas Air Worldwide Holdings, the parent company of Atlas Air based in Westchester County, New York.

These moves appear to be paying dividends in the form of added operational flexibility. Our analysis suggests that more lift is being provided by these companies on planes not registered to Amazon Air. ABX Air (formerly Airborne Express) is playing a particularly elevated role. Unlike ATI and Atlas, ABX does not formally lease planes from Amazon Air. Nevertheless, the company now has extensive flights using 737s and 767s on routes that appear to be missions to support Amazon Air. For example:

- ABX appears to have largely replaced Amazon Air as the carrier of record at Allentown-Lehigh Valley International Airport (ABE). ABX now averages about 10 flights daily at the Pennsylvania airport, while Amazon Air flights are now increasingly rare. A similar tactic of replacing an Amazon Air flight with an ABX flight also evidently occurred at Denver International Airport.
- ABX is a workhorse during the “busy periods” at both CVG and Wilmington, operating a combined 10 -11 daily flights from these hubs, as discussed in Finding 4 below.
- Along with sister company AIT, ABX has extensive flight activity in Southern California, including operations at the San Bernardino hub. Most of these flights operate to other Amazon Air hubs and focus cites.

Figure 5 shows representative examples of routes provided by these carriers using 737s and 767s—Amazon's preferred airframe—linking established airports that appear likely to be on Amazon missions. This tally (see “Estimated Flights by Partner Airlines” column on Table 1) excludes flights apparently scheduled to support the hub operations of other cargo airlines, such as DHL, which also has its major U.S. hub at CVG. When the 20 – 30 supplemental flights we estimate operate daily are included, it is reasonable to conclude that Amazon may have grown to 175 – 185 daily flights involving dedicated

freighters (Figure 5). This is a conservative estimate, as it excludes flights that do not meet the strict criteria mentioned and the many international flights these partner carriers operate, which appear to be intended to support Amazon.

A similar network of supplemental flights appears to have emerged within Europe, with ASL Ireland Airlines having a dozen or more flights that appear to be on supporting missions, even though they are not recorded as being part of Amazon Air. Much of this flight activity centers on Milan, Italy, Hannover, Germany, and Madrid, Spain. The schedules of these flights suggest they are not likely operated to support DHL and FedEx, for whom ASL also operates planes. Furthermore, a recent report indicates that a new ASL service linking Cagliari, Sardinia to Milan is primarily to support Amazon, even though the 737s used on this route are not formally part of Amazon Air.⁵ How many supplemental flights are operated primarily for Amazon, however, remains a matter of conjecture.



An Amazon Boeing 767-323 (ER) departs from Ontario International Airport on July 10, 2021. Activity at Ontario diminished following the April 2021 opening of a hub at nearby San Bernardino International (Peiwen Chen)

FINDING 4. Flight schedules at Amazon Air's hubs at Cincinnati (CVG) and Wilmington have become highly synchronized, with outbound CVG flights concentrated during the mid-afternoon while ILN's occur in the middle of the night, akin to those at DHL's CVG and FedEx's Memphis hubs. This pair of Ohio Valley facilities, just 55 miles apart, are complementary in orientation and together have flights that reach airports within 150 miles of 182 million U.S. residents.

Amazon Air's heavily publicized opening of its \$1.5 billion "air hub" at Cincinnati (CVG) on August 11, 2021, was a seminal moment in the carrier's development.⁶ The complex spans 600 acres and includes an 800,000-square-foot sorting center with robotic equipment. Over the past several years, while work on the massive sorting center was underway, Amazon Air gradually expanded its flights to CVG. Throughout the transition, Amazon reportedly relied heavily on DHL, which has its own sorting center next door to its new facility.

Emerging Flight Patterns at CVG and Wilmington

Flight activity at CVG has become more carefully synchronized over the past year, with the vast majority of inbound flights now arriving between 8 and 11 a.m. A wave of departures occurs between 2 and 3:30 p.m. These tightly woven "banks" of flights are well-suited to allow packages and inventory to be transferred between planes without long delays. The pattern of mid-afternoon outbound flights also allows Amazon to move inventory to key locations for next morning delivery (or in some cases, perhaps same-day delivery as well).

TABLE 2: Banks of departures at CVG and Wilmington Air Park

Tuesday, August 19, 2021

Cincinnati/Northern Kentucky Int'l Departures			Wilmington (OH) Air Park Departures		
Midday bank of flights			Late evening/early morning bank of flights		
11:48 AM	Stockton (SCK)	Amazon Air	11:08 PM	Los Angeles (LAX)	Amazon Air
12:29 PM	Miami (MIA)	Amazon Air	12:27 AM	Portland (PDX)	Amazon Air
12:52 PM	Phoenix (PHX)	Amazon Air	12:34 AM	San Francisco (SFO)	ABX Air
2:46 PM	Denver (DEN)	ABX Air	12:38 AM	Sacramento (SMF)	Amazon Air
2:50 PM	Portland (PDX)	Amazon Air	12:46 AM	Seattle (SEA)	Amazon Air
2:54 PM	Miami (MIA)	Amazon Air	12:50 AM	Los Angeles (LAX)	Amazon Air
2:56 PM	Stockton (SCK)	Amazon Air	12:54 AM	Houston (IAH)	Amazon Air
2:58 PM	Windsor Locks (BDL)	Air Transport Int'l	12:58 AM	New York (JFK)	Amazon Air
3:00 PM	Phoenix (PHX)	Air Transport Int'l	12:59 AM	St. Louis (STL)	Amazon Air
3:01 PM	Houston (IAH)	Air Transport Int'l	1:02 AM	Windsor Locks (BDL)	Amazon Air
3:04 PM	Atlanta (ATL)	Amazon Air	1:06 AM	Denver (DEN)	ABX Air
3:13 PM	Tampa (TPA)	Amazon Air	1:10 AM	Chicago (ORD)	Amazon Air
3:14 PM	Seattle (SEA)	Amazon Air	1:30 AM	Cincinnati (CVG)	ABX Air
3:19 PM	Allentown (ABE)	ABX Air			
3:22 PM	Ontario (ONT)	Air Transport Int'l			
3:23 PM	Shreveport (BAD)	Atlas Air			

Several findings related to CVG stand out:

- Amazon Air and partner airlines average 17 inbound flights in the 8 – 11 a.m. interval and 16 in the afternoon interval (Table 2). Only a handful of flights move outside of these intervals.
- Amazon Air did not significantly expand flights at CVG immediately after it opened the hub, although we expect a concerted build-up by early 2022.
- Long-haul flights more than 1,000 miles to major metropolitan regions dominate the schedule. Routes less than 600 miles are mostly limited to some of the country's largest metropolitan regions, such as Atlanta, GA, New York, NY, and Philadelphia (both via ABE), and St. Louis, MO. This pattern points to Amazon's intention to use trucks as much as possible, particularly over distances less than 600 miles.
- The outbound bank of flights departing between 2 and 3:30 p.m. connects CVG to airports that, according to our analysis, are **within 150 miles of 162.9 million people**.

The Wilmington (ILN) hub schedule is in some ways the mirror image of CVG, having mostly evening arrivals between 4:30 and 10 p.m. and early morning departures between midnight and 1:30 a.m. When flights by partner airlines are included, there are usually around 13 inbound and outbound flights during the above intervals in a typical day. Our analysis shows that flights from Wilmington typically fly directly to airports in densely populated areas, being **within 150 miles of 135.6 million people**.

A total of **181.6 million Americans live within 150 miles** of airports with nonstop Amazon Air flights from either CVG or Wilmington. In addition, **227.9 million U.S residents** live either within this distance of one

of these airports or within 600 miles of CVG, in which case the movement of packages entirely by truck and van is a highly practical alternative. In short, the Ohio Valley hub complex has enormous reach.

Dividing flights between two airports that are close together, of course, has its downsides, including the added complexity it brings to the company's supply chain. Sorting centers may be underutilized during certain hours of the day. But the arrangement also has advantages, including added versatility. The arrangement gives Amazon a viable backup if one airport is rendered out of service, as can happen in case of accidents. The diverging schedule pattern could allow warehouses and fulfillment centers to utilize the same trucks to support deliveries to CVG and ILN on the same day.

Notable Advantage of Each Hub

Cincinnati CVG's Amazon flight network, in our estimation, is poised to dwarf that of Wilmington within a few years. The airport affords Amazon access to a much larger labor pool and more prime vacant land for expansion. CVG also has better Interstate highway access, having particularly attractive routes to the South and the Central United States. It is in closer proximity to the large cluster of Amazon warehouses and sorting centers in the Cincinnati area and has greater synergy with the DHL hub and UPS hub at CVG and Louisville, respectively. Ready access to those hubs allows Amazon to rapidly ship products (or packages) to almost anywhere in the world and provides an attractive backup to its own services. Amazon has a greater ability to acquire dedicated space on freighters at CVG.

Wilmington Air Park, notably, is 55 miles closer to major population centers of the Northeast than CVG and offers less-congested access to both large cities in that region and to points north. Arriving trucks can avoid the severe congestion that is associated with crossing the Ohio River into Northern Kentucky. Wilmington's "cutoff time" (deadline for deliveries) could be as late as 11 p.m., allowing a truck, for example, to depart from Baltimore, MD as late as 3 p.m. and make flight connections, thereby allowing for next-day delivery to much of the country. Wilmington also has lower landing fees and is not subject to the air-traffic delays that could occur if Amazon moved its arrivals and departures to night-time hours at CVG, when there is a profusion of DHL activity. Wilmington is also the headquarters of ABX, allowing Amazon to leverage its maintenance facilities and its extensive pool of pilots living nearby.

In short, the evidence seems clear that Amazon will maintain its dual-hub arrangement while focusing the preponderance of its growth on CVG. The expansion of these hubs, and CVG in particular, will allow Amazon, at the time of its choosing, to move into the third-party shipping business, particularly for companies locating near its Ohio Valley hubs. As noted in our [previous report](#), Morgan Stanley has publicized its expectation that Amazon will launch a third-party delivery service in the United States, possibly as soon as this year.⁷ This service would include delivery of packages involving purchases not made on the Amazon platform, a move that could change the landscape of a sector long dominated by FedEx, UPS, and the U.S. Postal Service. We concur, while acknowledging that Amazon has revealed little about its plans.

SHORT-TERM OUTLOOK AND PREDICTIONS

The remainder of 2021 and early 2022 will almost certainly bring sustained expansion—and, by all likelihood, more surprises. By early 2022, we expect that significant growth at CVG will provide a clearer indication of Amazon Air’s plans for that hub than is possible to determine today. It remains to be seen how quickly CVG emerges as the “superhub” that some have predicted, considering the airline’s apparent desire to remain highly decentralized. That said, there have been numerous reports that the hub will have the capacity to handle 100+ planes and 200 daily flights, so its potential is clear.⁸

We expect that:

- **Amazon will expand flight operations** by another 12-14%, bringing its daily total to more than 180 by January 2022, not including flights by partner airlines, which, too, are likely to grow more numerous. The fleet of Amazon Air planes in active service will grow to more than 80, while more supplemental planes operated by its partners will take to the skies. Shortages of qualified pilots and other labor, however, could loom large, which is made evident by Amazon Air’s extensive outreach to fill open positions.
- **Amazon Air’s growth** will be fueled by what is expected to be a frenetic Christmas shopping season, which will require more intensive use of its fleet, possibly with additional night-time flying.
- **Robust expansion will occur at both Cincinnati CVG and Southern California’s San Bernardino International Airport**, resulting in what could become two “superhubs,” one in the Ohio Valley and another in California, each in close proximity to DHL and UPS hubs.
- **Amazon Air will gain a foothold in less populous regions as it deploys ATR-42/72 turboprop airplanes.** The three such planes that are expected to join Amazon Air’s active fleet are well-suited for serving mid-size cities, such as those in the Mountain States and Great Plains that are considerable distances from existing Amazon airports. We expect more such planes to follow.
- **Amazon Air will make more deliberate moves into international markets**, although the direction this will take remains unclear. We anticipate Leipzig to be a focal point of that expansion, although Amazon’s apparent penchant for using contractors makes tracking its European moves more difficult. Amazon’s operation within Europe may already be larger than many realize.

For our three earlier Amazon Air Briefs and our March 2021 brief on expanding activity at cargo-only airports during pandemic year 2020, please [click here](#).



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THE COVID CRISIS IN AIR TRANSPORT? *James G. Baas*

THE EFFECT OF COVID-19 ON REVENUE DENSITY IN
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 DEPAUL UNIVERSITY
CHADDICK INSTITUTE FOR
METROPOLITAN DEVELOPMENT

¹ Amazon Air is not to be confused with the retailer's experimental drone unit, Amazon Prime Air.

² This brief is prepared as an extension of Chaddick Institute's mission to promote public understanding of the evolution of transportation systems. The findings are based entirely on Chaddick Institute's independent analysis of publically available data. Any opinions expressed are those of the authors.

³ Estimates of the size of Amazon Air active fleet were obtained from the listings on Planespotters.net devoted to "Amazon Prime Air" and "Amazon Services, Inc" (the latter section is primarily comprised of planes that are not yet in active service.) In addition, the study team evaluated official FAA fleet-registration data to identify planes not listed on the Planespotters.net site. The team concluded that Planespotters.net offers a relatively accurate portrayal of the size of Amazon Air. The number of active planes (including those that are temporarily parked) listed rose from 59 in February to 73 on August 25, 2021. We leave to others, however, the difficult task of reconciling some of the varying estimates of Amazon Air's fleet size reported in the news media.

⁴The Chaddick team used ArcGIS to measure the distance of Amazon Air airports (geographical coordinates) to the geographic center of all U.S. Census tracts, which generally encompass a population between 1,200 and 8,000. If the center of the tract was within 100 miles of the airport, it was included. American Community Survey (ACS) data for 2019 was used to estimate population totals due to the incompleteness of official 2020 Census data at the time of analysis.

⁵ For the report in the news media that flights to Sicily are to support Amazon, please refer to this *Stattimes* article, available at <https://www.stattimes.com/news/amazon-air-launches-new-flight-between-milan-and-sicily-in-italy-air-cargo-aviation/>

⁶ A summary of the opening of the hub at Cincinnati/Northern Kentucky International can be found in this Cincinnati/Northern Kentucky International Airport press release on August 11, 2021: <https://www.cvgairport.com/about/news/2021/08/11/amazon-amazon-air-launches-state-of-the-art-air-cargo-hub-in-northern-kentucky-creating-more-than-2-000-jobs>

⁷ For a discussion of the Morgan Stanley predictions, see this *DC Velocity* article, dated November 2, 2020: <https://www.dcvvelocity.com/articles/47839-amazon-could-launch-third-party-delivery-service-in-us-by-2021-morgan-stanley-says>

⁸ This *Simple Flying* article offers a good summary of the hub's potential: <https://simpleflying.com/amazon-cincinnati-aviation-hub/>

SEE OUR SEPTEMBER 2020 REPORT FOR AN ASSESSMENT
OF THE JUXTAPOSITION OF FLIGHTS AND WAREHOUSES



[Boeing 737-8AS at Madrid, Spain on January 17, 2021 by Adrian Nowakowski](#)