



# TOTAL PACKAGE

## AMAZON AIR'S CHANGING NETWORK & STRATEGIC ORIENTATION | MARCH 2022

Chaddick Amazon Air Brief No. 6 | March 15, 2022

By Joseph P. Schwieterman, Borja González Morgado, and Abby Mader

### Our analysis of Amazon Air's evolution since August 2021 shows that the carrier:

- Increased flight activity by another 14%, not including added lift by air-cargo partners
- Invested heavily within Europe with Irish partner ASL, expanding flights to > 38 daily
- Emphasized scheduling in narrow time intervals at its Cincinnati (CVG) and Wilmington, OH hubs
- Expanded its network to be within 100 miles of 73% of the U.S population.
- Began using turboprops, giving it greater capability for third-party shipping.

**Amazon Air is stepping up its expansion within Europe** while simultaneously investing in major U.S. hubs and taking steps to diversify its business model. Such moves help Amazon expand its airline's purpose well beyond those warehouse-to-warehouse inventory shipments that our analysis shows have been its dominant purpose in the past. The owned subsidiary of retail giant Amazon made notable moves during autumn 2021 and early 2022 that gave it a stronger presence in Europe and put it in a position to challenge FedEx and UPS for certain kinds of business.<sup>1</sup>

This independently produced brief reviews Amazon Air's initiatives between August 2021 and March 2022.<sup>2</sup> Our findings build upon our [August 2021 Amazon Air Brief](#). That report described the airline's notable moves from February to August 2021. For a primer on Amazon Air, see the [sidebar of page 3](#).



CHADDICK INSTITUTE FOR METROPOLITAN DEVELOPMENT AT DEPAUL UNIVERSITY CONTACT:  
JOSEPH SCHWIETERMAN, PH.D. | PHONE: 312.362.5732 | EMAIL: chaddick@depaul.edu

PHOTO CREDIT (ABOVE): BOEING 767-300 AT ONTARIO INT'L ON JULY 10, 2021 BY PEIWEN CHEN.

# MAJOR FINDINGS FROM OUR ANALYSIS

The analysis draws on publicly available sources of information, including:

- Data on 4,500 Amazon Air takeoffs and landings from flightaware.com and flightradar24.com;
- Geographic analysis of Amazon flights using ArcGIS Pro software and U.S. Census data; and
- Information on fleet registration at the FAA and other sources, including planespotters.net.

**FINDING 1.** Amazon Air’s intra-Europe operations grew from eight to 18 daily flights from August 2021 to March 2022, even while a much larger network of “partner flights” involving planes that are not registered to Amazon Air emerged. These complementary networks appear to now encompass around 38 daily flights serving eight cities. Many partner flights operate with Boeing 737s that its contractor, ASL Airlines, acquired during an autumn growth spurt.

Amazon’s operating partner in Europe, Dublin-based ASL Airlines, grew prodigiously in the last six months of 2021, growing from two to six Boeing 737s that are reported as being flown for Amazon Air and also acquiring another five 737s that are neither reported as being for Amazon Air nor other cargo airlines.<sup>3</sup> Many of its non-Amazon Air planes, our analysis indicates, have flight itineraries analogous to ASL flights under the retailer’s banner. Our analysis provides strong evidence they are being operated primarily in support of the retailer. We refer to them as “partner flights,” and treat them separately from flights on planes reported as part of Amazon Air.

Flights on Amazon Air-registered planes within Europe grew from 8.2 daily in August to 18.2 this month. Partner flights grew even more dramatically, our analysis suggests, rising from just a handful to around 20–24 daily. Together, this gives Amazon more than three dozen flights covering a highly decentralized network. We observed the greatest activity at Germany’s Cologne-Bonn Airport and France’s Paris Charles de Gaulle Airport, which each averaged 5.8 daily flights (Cologne is also a hub for UPS). The third busiest, Barcelona, ES, had 3.8 daily flights (Figure 1).

Our partner-flight estimate was made by evaluating ASL’s flights using 737s (the airframe that ASL uses on its

FIGURE 1: Amazon’s European Network, including partner flights



Amazon’s intra-Europe network, March 3, 2022. Probable partner flights (“shadow flights”) on ASL Airlines freighters not reported as being operated for Amazon Air are in brown.

## How does Amazon Air differ from FedEx and UPS?

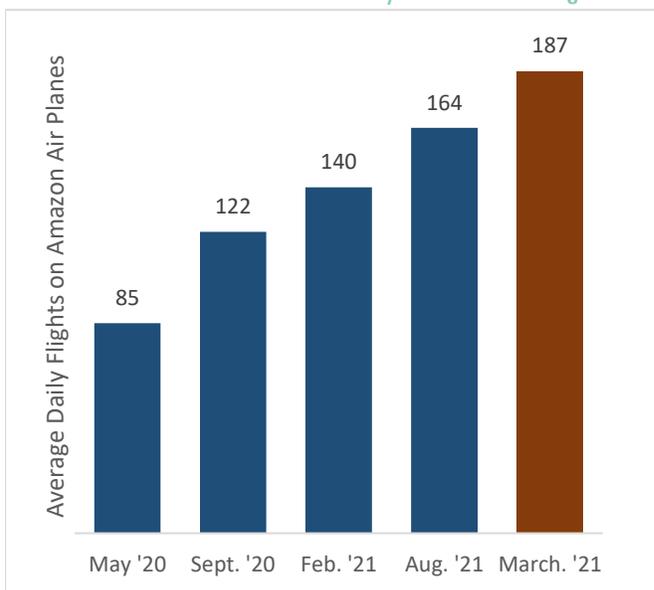
Amazon Air relies on contractors to do all its **freighter flying**, an approach differing from FedEx and UPS. Although 85+ planes are registered to Amazon Air and bear the retailer’s familiar “smile” logo, Amazon Air does not have an airline operating certificate. Its contractors, in turn, provide flight crews and maintenance as well as most of the loading/unloading of planes. Our analysis indicates that Amazon Air is **primarily designed to support inventory movements** between its warehouses and fulfillment centers. This analysis suggests that the airline’s role in handling packages on their way to customers’ doorsteps (which is mostly handled by truck and van) and “third party” shipping (i.e., shipping for customers not part of the Amazon supply chain) has been limited. Even so, **speculation is growing that this will change**, and that Amazon will more aggressively enter the third-party shipping business in direct competition to FedEx and UPS (see discussion on page 8). Amazon’s contractors include Air Transport Services Group (ATSG), a holding company for a variety of cargo airlines), Atlas Air, ASL Irish Airlines, and Silver Airlines. Amazon has bought a minority equity stake in ATGS and Atlas Air, deepening its air-cargo roots.

regular Amazon Air flights) that (i) arrive at or depart at least one of the airports that are served by Amazon Air, (ii) operate between the same points multiple times during our sample period, suggesting schedule regularity rather than sporadic movements, and (iii) are not scheduled in a manner similar to ASL planes devoted to DHL and FedEx service. Flights for these other carriers tend to operate primarily in the late evening and early morning (overnight) hours. To ensure a conservative estimate, we excluded flights that only loosely met the criteria.<sup>4</sup>

**FINDING 2.** Amazon Air flight activity grew by 14.3% between August 2021 and March 2022, resulting in 31% annualized growth. Most of the U.S. growth comes from increased flying to/from major hubs, particularly Cincinnati and Wilmington, OH, Fort Worth, TX, Seattle, WA, and San

Bernardino, CA, as well as on the previously mentioned intra-Europe routes.

**FIGURE 2:** Growth in Daily Amazon Air Flights



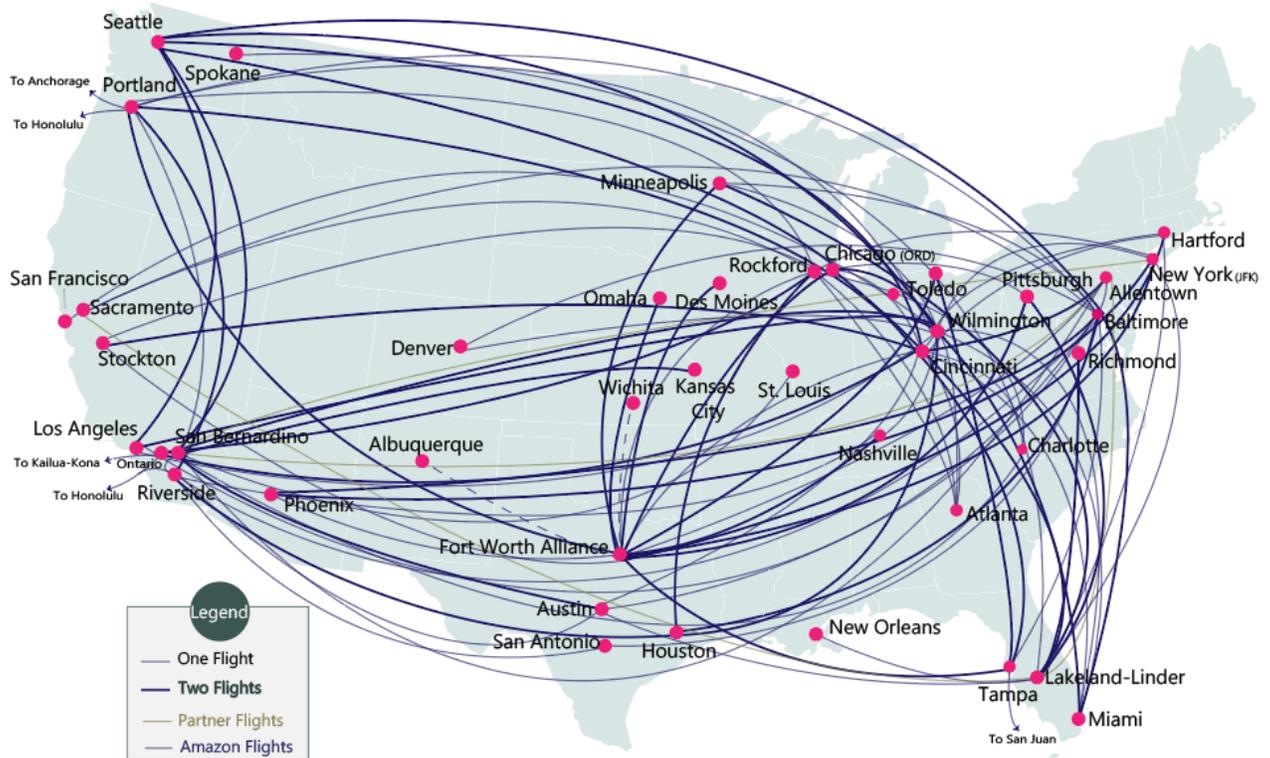
Amazon Air grew from 163.6 flights per day in August 2021 to 187.0 flights this month, a 14.3% increase, based on our review of five representative days of operations.<sup>5</sup> Partner flights grew at a slower pace, except within Europe, in part due to the additional planes Amazon Air has leased. This results in cumulative growth, roughly estimated, of around 13% since August. In addition, Amazon appears to be

developing a more hub-centric model, with flights arriving and departing at times calibrated to support fulfillment at critical times of the day, particularly in the Ohio Valley, which remains the nerve center of the airline. At the Cincinnati CVG hub, which formally opened in August, Amazon Air grew steadily but not dramatically. To our surprise, the airline has not yet made a major move there since its opening. The “superhub” is *not*, at least for the moment, dramatically altering the airline’s geographic orientation. Amazon has noted that CVG could see 100 planes daily, but it currently sees only a small fraction of that number.

Among the highlights of our analysis:

- **Cincinnati CVG’s flight activity grew from 21.5 to 25.6 Amazon Air daily flights, with almost all departures occurring between 11:30 a.m. and 3:45 p.m.** Partner flights added roughly six more daily, although their frequency varies and appears to have subsided somewhat since August. Altogether, Amazon operates about 31 flights daily at CVG.
- **Wilmington Air Park (ILM), which is just 60 miles by highway from CVG, saw an increase from 21 to 24 daily flights.** Almost all departures occur between midnight and 1:45 a.m., making its

**FIGURE 3: Amazon Air’s Growing Domestic U.S. Flight Network, March 3, 2022**



schedule almost a mirror image of CVG’s. This pattern indicates ILN activity is intended to improve the complementary relationship with this neighboring facility. Few partner flights operate from this cargo-only airport, despite the airport being home to ATSG, a major contractor with several air-cargo units and a company in which Amazon owns an equity stake.

- **Fort Worth Alliance’s activity grew from 26 to 37 flights per day, partially due to the new ATR-72 flights discussed in Finding 3.** This airport’s departures are tightly organized into four departure windows (“banks”), each only around a half-hour in duration. The first occurs around midnight and is followed by ones around 8 a.m., 3 p.m. and 7 p.m. As in Wilmington, there is little apparent partner-flight activity from this airport.

- **Chicago Rockford International (RFD) has diminished, falling to an average of nine Amazon Air daily flights this month, compared to 10 in August and around 16 a year ago.** With the inclusion of partner flights, Rockford sees about 11 daily flights. Its diminished activity likely reflects Amazon’s lessened dependence on UPS, which has a major hub at Rockford. The diversion of flights to Chicago O’Hare could be a factor, as could the considerable distance between the airport and the vast network of Amazon warehouses in metropolitan Chicago’s southern periphery and southeastern Wisconsin.



*An Amazon Boeing 737 at Florida’s Lakeland Linder Airport, one of the carrier’s most rapidly expanding hubs, on December 31, 2021*

- **The Riverside and San Bernadino airport hubs, separated by only about 21 highway miles, remain roughly the same size, seeing 9 and 14 daily Amazon Air flights, respectively.** With the inclusion of the partner flights, San Bernardino has grown to about 16 daily flights, making it Amazon’s largest operation west of Ft. Worth. Riverside (RIV) departures are tightly clustered between 8-10 a.m. daily, as are roughly half of San Bernardino’s flights. This suggests that these hubs have specific missions in the Amazon supply chain not closely linked to shipping packages by air for next-day delivery, as they have few middle-of-the-night departures.

- Amazon Air’s fleet **expanded from 73 planes in late August to 88 in mid-March**, based on public sources.<sup>6</sup> Of these 54 are Boeing 767s, with most of the rest being Boeing 737s.

Altogether, **Amazon Air served 47 North American airports on a typical day in early March 2022**, up from 41 last August, not including the additional flying by its partners. Activity remains brisk at Seattle-Tacoma International, which grew from 11.7 to 14 flights over the above period, and at Baltimore-Washington Thurgood Marshall International (BWI), Portland International (PDX), and Lakeland Linder International, FL (one of the newest hubs), although activity has plateaued at these latter three (See Table 1 on the next page). Stockton, CA and Phoenix, AZ, also remain focus points but had fewer flights. Intra-Canada activity remained steady at around 16 daily flights, encompassing the same four airports discussed in our [August brief](#).

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

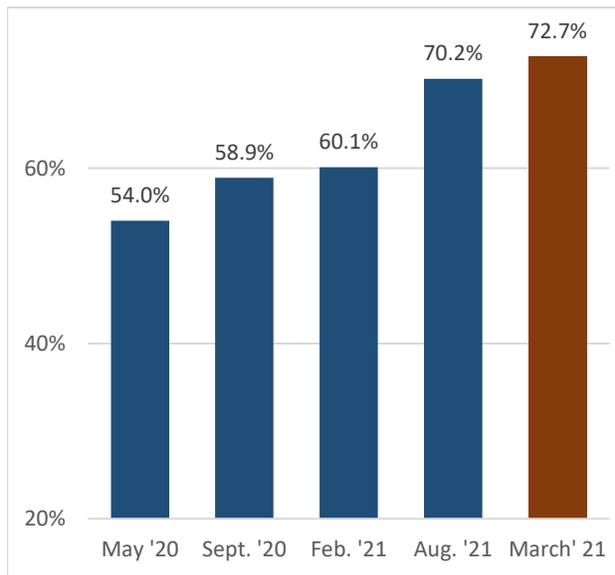
Airport		Earlier Time Periods- Amazon Air				March 2022 Amazon Air + Partner Flights		
		April 23, 2020	August 2020*	February 2021*	August 2021*	March 2022 Amazon Air Flights*	Estimated Partner Airline Flights on typical day+	Total incl. Partner Airline Flights
Albuquerque International Sunport (ABQ)						4.8		4.8
<b>Allentown Lehigh Valley Int'l (ABE)</b>	<i>See note a</i>	6	5.0	4.3	0.0	1.4	4.5	5.9
Anchorage Ted Stevens Int'l (ANC)		4	2.0	2.0	1.8	2		2.0
Atlanta Hartsfield-Jackson Int'l (ATL)		0	2.0	2.5	2.3	3.2		3.2
Austin-Bergstrom International (AUS)		0	4.0	4.2	3.7	5.8		5.8
<b>Baltimore-Washington Marshall Int'l (BWI)</b>	<i>Hub</i>	6	9.0	10.5	19.5	19.2		19.2
Charlotte Douglas Int'l (CLT)					1.7	5		5.0
Chicago O'Hare International (ORD)		0	2.7	3.5	7.5	7.2		7.2
<b>Chicago Rockford International (RFD)</b>	<i>Declining Hub</i>	15	16.5	15.8	10.2	9.2	1	10.2
<b>Cincinnati/Northern Kentucky Int'l (CVG)</b>	<i>Superhub</i>	24	25.7	27.8	21.5	25.6	5.5	31.1
Denver International (DEN)		4	3.7	4.2	1.0	2.2	2	4.2
Des Moines International (DSM)	<i>New</i>					1.6		1.6
Fairbanks Int'l (FAI)					2.0	1.8		1.8
<b>Fort Worth Alliance (AFW)</b>	<i>Hub</i>	8	16.7	17.2	26.3	36.6		36.6
Honolulu Daniel K. Inouye Int'l (HNL)		4	4.3	3.8	5.2	5.6		5.6
<b>Houston G. Bush Intercontinental (IAH)</b>	<i>Hub</i>	9	10.2	10.0	7.3	7.2	1	8.2
Kahului (OGG)		2	2.2	1.8	2.2	2		2.0
Kailua-Kona/Kona International (KOA)		0	1.7	2.0	2.5	2		2.0
<b>Kansas City International (MCI)</b>					3.7	2.2		2.2
<b>Lakeland Linder International (LAL)</b>	<i>Hub</i>	0	11.5	11.5	21.2	16.2	1.5	17.7
Los Angeles International (LAX)		0	0.0	2.0	3.8	6	1.5	7.5
Miami International (MIA)		6	7.3	6.7	5.7	6.8	0.5	7.3
Minneapolis-Saint Paul International (MSP)		2	3.7	2.0	6.3	6		6.0
Nashville International (BNA)	<i>New</i>					3.8		3.8
New Orleans, Louis Armstrong Int'l (MSY)		0	0.0	2.0	2.0	2		2.0
<b>New York John F. Kennedy Int'l (JFK)</b>	<i>Hub</i>	0	8.0	8.8	10.0	8.2	1	9.2
Omaha Ebbly (OMA)						2.4		2.4
<b>Ontario International (ONT)</b>	<i>Declining Hub</i>	13	21.5	20.5	12.8	12	0.5	12.5
Pittsburgh International (PIT)					3.8	6.2		6.2
Phoenix Sky Harbor International (PHX)		4	6.5	9.5	9.5	4	2.5	6.5
<b>Portland International (PDX)</b>	<i>Hub</i>	6	8.2	10.5	15.3	13.8	0.5	14.3
Richmond International (RIC)		0	5.0	4.0	3.7	2		2.0
Riverside March Air Reserve Base (RIV)		4	5.7	6.5	9.3	9.2		9.2
Sacramento International (SMF)		4	6.2	4.5	6.0	2		2.0
San Antonio/Kelly Field (SKF)		2	3.2	2.0	2.0	2		2.0
<b>San Bernardino International (SBD)</b>	<i>Emerging Hub</i>				8.0	14	1.5	15.5
San Francisco International (SFO)		2	2.8	7.0	4.0	3.8	0.5	4.3
St. Louis Lambert International (STL)					3.6	1.8		1.8
San Juan Luis Muñoz Marin Int'l (SJU)		0	2.7	2.0	2.0	1.8	0.5	2.3
<b>Seattle-Tacoma International (SEA)</b>	<i>Expanding Hub</i>	9	9.3	11.2	11.7	14		14.0
<b>Spokane International</b>	<i>New</i>					1.8		1.8
Stockton Metropolitan (SCK)		4	4.0	6.2	5.3	4		4.0
Tampa International (TPA)	<i>Declining Hub</i>	16	11.3	13.2	7.7	8.8		8.8
Toledo Express (TOL)					3.7	4		4.0
Wichita Dwight D. Eisenhower National (ICT)	<i>New</i>					1.2		1.2
<b>Wilmington Air Park (ILN)</b>	<i>Hub</i>	13	13.7	14.8	20.5	24.2	1	25.2
Windsor Locks Bradley Int'l (Hartford) (BDL)		2	6.8	8.0	4.2	5.6	1	6.6
<i>Outside United States</i>								
Canadian Airports					10.2	10.2		10.2
Pacific Rim Airports		1						
Western Europe Airports		0	0.7	16.8	16.3	36.4	48	84.4
<b>Total takeoffs &amp; landings</b>		170.0	243.5	279.3	326.9	374.0	74.5	448.5
<b>Total flights</b>		85.0	121.8	139.7	163.5	187.0	37.25	224.3

\* Average over sample period, ranging from 5–6 days + Approximation based on Chaddick Institute review of ABX, ASL, Atlas, and ATI flights that appear to be on Amazon missions. Note a: Activity at this airport has apparently shifted between Amazon Air and partner flights. Not shown, Dallas–Ft. Worth International Airport (DFW), which had modest activity through February 2021 but none since then.

**FINDING 3.** Nearly three-quarters of the U.S. population is now within 100 miles of an airport served by Amazon Air, up from about 60% a year ago. Newly acquired ATR-72 turboprops and flights to smaller cities — together with Amazon’s deepening relationships with other cargo airlines — add to its airline’s versatility, which could be further enhanced by the Boeing 777s reportedly being eyed for transoceanic missions.

Amazon Air has added four ATR-72 turboprops to its network since August, giving it five in total, and uses them differently than other airframe models.

**FIGURE 4: Growth in Percentage of U.S. Population within 100 miles of an Amazon Airport**



Whereas Boeing 737 and 767 models tend to move across its airport network in complex patterns, apparently in response to scheduling algorithms, the turboprops operate to and from Fort Worth Alliance Airport, mostly on short-hop shuttle routes. The turboprops serve **four of the six new cities** added to Amazon Air’s network since August: **Albuquerque, NM, Des Moines, IA, Omaha, NE, and Wichita, KS.** Larger airplanes tend to serve the other two, **Nashville, TN and Spokane, WA.** With these four new cities, the share of the U.S. population within 100 miles of an Amazon Air airport has risen from 70.2% to 72.7% since August.

Moreover, the turboprops (which FedEx uses in large numbers) tend to be used for flights conducive to next-day package delivery. The ATR-72s generally depart Fort Worth in the middle of the night and return around dawn –

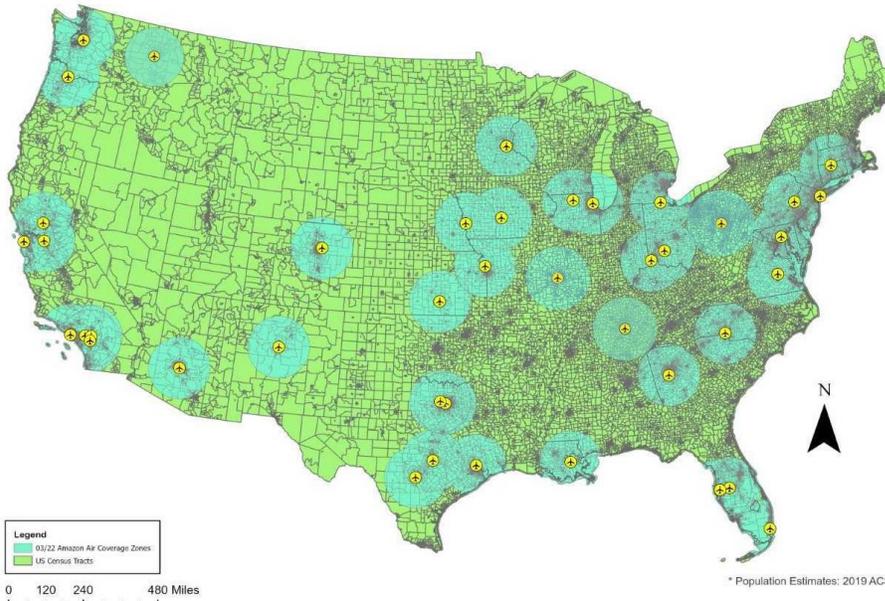
something we have not seen at this hub to any large extent previously. For reasons that are unclear, however, these planes do not fly on some routes every business day.

A resumption of transoceanic flying appears to be on the horizon. Amazon has tended to shy away from using Amazon Air on flights between continents, largely due to Amazon’s apparent desire to focus its airline on warehouse-to-warehouse movements, which occur *after* the products are brought into its distribution system. Manufacturer-to-warehouse shipments, conversely, tend to arrive via maritime vessels and cargo airlines with larger freighters than those in Amazon’s fleet. Although Amazon Air has sporadically done transoceanic flying, such flights have not appeared in our data as of late. Instead, the retailer appears to be enjoying success securing



*An Amazon Boeing 767 at Cincinnati-Northern Kentucky International on February 21, 2022.*

**FIGURE 2: Areas of the Continental United States within 100 Miles of an Amazon Air Airport, March 2022**



capacity on other cargo airlines while benefiting from having enormous leverage in negotiations with these carriers. Similarly, Amazon’s penchant for outsourcing, which is evident in its delivery van-operations, affords it maximum flexibility as circumstances change. For example, Amazon will be able to adjust rapidly in response to the recent surge in jet-fuel costs, which may

prompt a shift of more trans-pacific movements to more fuel-efficient marine vessels.

Nonetheless, we feel that significant transoceanic flying is coming, due to the mounting supply-chain problems facing nearly all retailers and the sheer scale of Amazon’s logistical needs. Bringing more transoceanic shipping “in-house” will give it heightened control over its supply chain. The deal announced in September to extend Amazon’s business relationship with Atlas Air Worldwide another 20 years is an example of how it seeks such heightened control. This deal provides Amazon warrants to acquire up to 20% of Atlas’s stock and mirrors a move it made in early 2021 to acquire a minority stake in ATSG, another of its major air-cargo contractors.<sup>7</sup>

Reports emerged in October that Amazon is considering acquiring **Boeing’s 777-300ERs** and **Airbus’s A330-300s** (after their conversion to freighters) for transpacific use, including flights from China.<sup>8</sup> Both models have considerably more payload capacity than Amazon Air’s current planes, suggesting that a strategic pivot may be in the offing. As noted above, however, changes to its supply chain will be gradual and likely take the form of experiments to help Amazon assess the benefits and costs. We believe the airline will move slowly into transoceanic flying over the next two years, likely with a dozen or fewer planes, but the longer term could bring a much more robust expansion.

**FINDING 4.** Amazon’s third-party *Fulfillment by Amazon* service, which primarily caters to retailers who stock merchandise at its facilities, has gained much momentum since our August brief. Amazon Air does not appear to feature prominently in this program, but its reported expansion is paving the way for a more general third-party delivery service in competition with FedEx and UPS. Amazon already is well-equipped for business-to-consumer shipping with second or third-day delivery, yet it remains a considerable way from providing next-day delivery from a single point to *anywhere* on the U.S. mainland.

The autumn months brought reports that Amazon is enjoying success with its *Fulfillment by Amazon* service, in which customers stock products at Amazon fulfillment centers and let the company handle the packaging and shipment. The program includes logistics support, inventory management, product returns, tracking, and other features. Walmart and eBay are reportedly among the companies using this service, with many packages being shipped in the same envelopes used for regular Amazon shipments.<sup>9</sup>

The program appears to rely primarily on trucks and vans to support “last mile” delivery between warehouses and customers. *Fulfillment by Amazon* is a specialized offering largely for retailers having products stocked at Amazon facilities close to consumers, but its growing prominence essentially answers the question of whether Amazon will enter the third-party shipping business.

It remains to be seen how quickly Amazon will launch an even larger program aimed at customers not able or willing to integrate their inventory into the retailer’s vast network. Amazon Air’s expansion over the past year indeed allows the company to pursue customers with less specialized shipping needs. The ATR-72 turboprops, while limited in number, for example, give the company a new tool to adjust its network in response to the package-delivery needs of other companies. Accordingly, we believe that Amazon will make a move, likely this year, giving it a more discernable foothold in third-party delivery that does not involve goods stocked at Amazon facilities. At the same time, we also believe that it will need to move incrementally, initially focusing on business-to-business and business-to-consumer delivery that melds with its network, rather than seeking to become an all-purpose provider.

Our analysis indicates that Amazon’s network could allow **a customer who ships from metropolitan Cincinnati** and has packages ready for delivery by around 7 pm (local time), to:

- Have those packages delivered by the next afternoon (or early evening) to points in all of the 25 largest U.S. metropolitan regions.
- Have packages delivered by the next day to perhaps 90% of the U.S. population.
- Have *second day delivery* to virtually the entire U.S. mainland, with delivery to some poorly served areas requiring a third day.

**TABLE 2: Diurnal vs Nocturnal: CVG’s Daytime and Wilmington Air Park’s Nighttime Departures, March 4, 2022**

Cincinnati-Northern Kentucky Int’l (CVG)			Wilmington Air Park, OH (ILN)		
<i>Carrier</i>	<i>Time</i>	<i>Destination</i>	<i>Carrier</i>	<i>Time</i>	<i>Destination</i>
Amazon	11:37 AM	Stockton (SCK)	Amazon	10:00 PM	Los Angeles (LAX)
Amazon	11:47 AM	Ontario (ONT)	Amazon	12:23 AM	Miami (MIA)
Amazon	12:31 PM	Allentown (ABE)	Amazon	12:30 AM	Seattle (SEA)
Amazon	2:30 PM	Miami (MIA)	Amazon	12:34 AM	Windsor Locks (BDL)
Amazon	2:33 PM	Austin (AUS)	Amazon	12:35 AM	Tampa (TPA)
ABX	2:36 PM	Denver (DEN)	Amazon	12:42 AM	San Francisco (SFO)
ABX	2:42 PM	Allentown (ABE)	Amazon	12:46 AM	Los Angeles (LAX)
ABX	2:45 PM	Windsor Locks (BDL)	Amazon	12:54 AM	Houston (IAH)
Amazon	2:51 PM	Atlanta (ATL)	Amazon	12:58 AM	New York (JFK)
Amazon	2:54 PM	Stockton (SCK)	Amazon	1:02 AM	Denver (DEN)
Amazon	3:03 PM	Seattle (SEA)	ABX	1:06 AM	Sacramento (SMF)
ABX	3:06 PM	Ontario (ONT)	Amazon	1:10 AM	Chicago (ORD)
			Amazon	1:14 AM	Portland (PDX)

With the addition of as few as a half-dozen airports to its system, Amazon could build a system providing second-day delivery to the entire U.S. mainland from the Cincinnati area. This could close the gap with certain rural areas, such as the northern Great Plains and Mountain states.

These estimates are based on many non-verifiable assumptions and assume that items arriving by air can quickly be transloaded onto Amazon's ground operation. Please refer to our [August report](#) for analysis of the powerful dynamics of Amazon's "dual" hubs in Cincinnati and Wilmington, which includes a discussion of the enormous geographic reach of the trucking network supporting these Ohio Valley hubs.



*Amazon's massive six-story terminal facility at Cincinnati CVG on February 28, 2022, seven months since its opening*

At the same time, our analysis indicates, Amazon does not yet have the capability to offer *universal* next-day delivery on the U.S. mainland to third parties with inventory in Cincinnati, much less an "anywhere to anywhere" next-day delivery service akin to FedEx. One reason is that, apart from the Wilmington hub, Amazon has not shifted most of the flight activity at its major hubs to the middle-of-the-night schedules needed for it to become a more universal next-day delivery provider. Only around 30% of flights now depart between 11 p.m. and 6 a.m., an interval that accounts for the vast majority of FedEx's domestic operations, some of which arrive at their destination after 9 a.m., which makes delivery by late afternoon to customers who live hundreds of miles away difficult. Offering comprehensive *next-morning* delivery, a staple for FedEx and UPS, would require even greater changes to the network.

Cincinnati continues to have almost entirely late-morning-to-mid-afternoon Amazon Air departures, and its flight activity there has grown only at a measured pace. Its schedule usually does not include evening flights to other hubs, such as Ft. Worth Alliance or San Bernardino, which are also among its largest hubs. This suggests that Amazon is not prioritizing the integration of its hubs in ways to support late-night airplane-to-airplane transfers in a manner like FedEx. Amazon's CVG facility is, quite literally, across the road from DHL's massive operation at the same airport, and the resulting synergy could abet the creation of a large-scale third-party next-day delivery network. Even so, no reports have been made public about extensive Amazon/DHL cooperation toward this goal, and even if such cooperation was to ensue, DHL does not operate a "Memphis-style" hub at the airport.

To summarize, **Amazon's CVG hub does not yet appear to be moving in the direction of becoming a large-scale nighttime operation** akin to that of FedEx's largest hubs or UPS Worldport in Louisville, KY. Presently, Amazon Air's primary focus appears to continue to be positioning goods at warehouses so that it is close to the consumer when an order is placed, which, is itself an enormously complex logistical challenge. As a result, we believe, that that Amazon will move into third-party shipping by expanding *Fulfillment by Amazon*, "cherry-picking" next-day delivery business that fits its network, serving customers who accept two-day delivery, and those willing to stock inventory at multiple locations.

## SHORT-TERM OUTLOOK AND PREDICTIONS

For the remainder of 2022, expect growth to follow a similar pattern to the latter part of last year, which was an exciting time for Amazon Air. Its annual growth in flight activity is likely to hover around 20-24%, which, while somewhat slower than in the recent past, is still impressive considering that Amazon Air is well over twice the size as it was when we published our first brief in May 2020. Although exponential growth may be relegated to the past, **Amazon Air's fleet, now reportedly 88 planes, could surpass 100 by the end of the year**, a notable achievement considering the modest slowdown in economic growth underway and dramatic increases in jet fuel costs. Although our prediction roughly 20 months ago that Amazon Air would have 200 planes by 2028 was speculative, it remains in our view reasonable. In fact, it may be conservative, considering that Amazon Air is now acquiring turboprops and that, when the partner network is included, it may already account for 110+ planes regularly in service.

Our other predictions for the remainder of 2022 include:

- **The addition of 4–5 more cities, supported by the delivery of at least one more ATR -72.** The carrier will make particular efforts to better serve the Mountain States, including Salt Lake City, points north of Denver, and the Upper Great Plains.

- **A strategic shift in flying due to the acquisition of Boeing 777 freighters for transoceanic missions**, which could result in flights from the Pacific Rim to the Riverside and San Bernardino hubs, although the full effects of this may not be seen until mid-2023 or later.

- **More expansion at its largest hubs, Cincinnati, Ft. Worth, Riverside, San Bernardino, and Wilmington, with only modest growth at other hubs**, following a pattern observed over the past six months. We, nonetheless, expect growth at each of these hubs to be incremental. Our research team feels that if Amazon intended to rapidly pivot toward a more centralized flight network akin to that of FedEx and UPS, it would have already made a move to do so at CVG.

- **Announcements that the company will deepen its foray into the third-party logistics business.** We expect Amazon to seek a greater piece of the delivery business being handled by FedEx, UPS, and the US Postal Service that does not involve purchases on its online platform. We do *not* expect, however, that the company will announce anytime soon plans to broadly enter the consumer-to-consumer segment. That would require both large-scale investments in facilities to collect parcels and a change in the orientation of Amazon Air. Instead, it will focus on providing business-to-consumer delivery for companies that can stock inventory at several locations or need only second- or third-day delivery –while prioritizing enhancing overnight and same-day delivery options for the massive numbers of Amazon Prime subscribers. ■



*An ABX Air Boeing 767 at Los Angeles International (LAX) on March 8, 2022, a non-Amazon plane that appears to be supporting the retailer (Peiwen Chen)*

## AUTHORS & STUDY TEAM



**AUTHOR: JOSEPH P. SCHWIETERMAN, PH.D.**, a professor of Public Service Management and director of the Chaddick Institute for Metropolitan Development at DePaul University, is a nationally known authority on transportation and urban economics. He is author of the book *Air Cargo and the Opening of China* and editor-in-chief of *Issues in Aviation Law and Policy*, a DePaul journal.



**CO-AUTHOR: BORJA GONZÁLEZ MORGADO** is a graduate research associate at the Chaddick Institute and student in the Master's in Sustainable Development Program at DePaul. Borja, from Madrid, Spain, has a strong interest in sustainable transportation, and led the GIS analysis for this report.



**CO-AUTHOR: ABBY MADER** is a graduate research associate at the Chaddick Institute who has supported its analysis of transportation issues. Abby is presently pursuing a Master's of Sustainable Urban Development at DePaul and has a bachelor's degree from the University of Wisconsin - Green Bay.



**EDITORIAL TEAM: STEVE RUDOLPH, M.ED., J.D.**, is manager of Chaddick's Air Transport Policy Initiative and managing editor of DePaul's *Issues in Aviation Law and Policy* journal. He was formerly executive director of the International Aviation Law Institute at DePaul's College of Law.

**TECHNICAL SUPPORT: ALLISON WOODWARD**

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



THE CHADDICK INSTITUTE, WHICH PROMOTES EFFECTIVE PLANNING AND TRANSPORTATION, DOES NOT RECEIVE FINANCIAL SUPPORT FROM AIRLINES, RETAILERS, OR AFFILIATED INDUSTRIES.

## Issues in Aviation Law and Policy

The Chaddick Institute is home to the widely circulated peer-reviewed journal [Issues in Aviation Law and Policy](#), featuring timely works from authors around the world. *IALP* covers both legal and policy issues affecting civil aviation, as well as matters related to commercial airports and other aspects of aviation. Please email [chaddick@depaul.edu](mailto:chaddick@depaul.edu) for subscription information or a complimentary copy.



---

<sup>1</sup> Amazon Air is not to be confused with the retailer’s experimental drone unit, Amazon Prime Air.

<sup>2</sup> 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.

<sup>3</sup> Our estimates for fleet changes are based on publicly available fleet information appearing on planespotters.com. The Chaddick Institute does not closely track airplane acquisitions and transactions, instead leaving that to other analysts. We recognize that our estimates may differ from proprietary estimates made by fleet-planning specialists.

<sup>4</sup> For example, a daytime flight between Milan and Paris during the day met criteria, whereas as a 7 a.m. flight from Cologne to Paris would not, as it could have been operated in support of UPS’s overnight hub at Cologne, which generally involves departures through 6:30 am.

<sup>5</sup> The Chaddick Institute collects sample of 5–6 representative (non holiday) days to evaluate Amazon Air and partner activity. The most recent sample encompassed March 1–4 and March 7, encompassing each day of the week except Sunday.

<sup>6</sup> See endnote 4.

<sup>7</sup> For a discussion o Amazon’s equity stake in ATSG, please refer to the CNBC article from March, 3, 2021:

<https://www.cnbc.com/2021/03/08/amazon-takes-minority-stake-in-cargo-contractor-atsg.html>

<sup>8</sup> For a discussion of the company’s apparent interest in Boeing 777s, please refer to this Bloomberg News article from October 13, 2021: <https://www.bloomberg.com/news/articles/2021-10-13/amazon-seeks-used-long-range-cargo-jets-able-to-fly-from-china>

<sup>9</sup> For a discussion of *Fulfillment by Amazon*, including a reference to eBay an Walmart shipments, please refer to this CBNC article from September 9, 2021, <https://www.cnbc.com/2021/09/04/how-amazon-is-shipping-for-third-parties-to-compete-with-fedex-and-ups.html>