ASSAIA

2024 Turnaround Benchmark Report

1. Introduction

Embracing opportunity: The future of a technology-powered turnaround process

The aviation industry has faced turbulent times over the past year. However, Global air travel has largely rebounded to pre-pandemic levels and there's a marked increase in global flight numbers, unlocking major growth potential.

Currently, airlines are facing delayed aircraft deliveries, which is causing issues with servicing the increased demand in air travel. In this context, maximizing aircraft utilization has never been more crucial.

Airports, too, are feeling the pressure, with limited capacity due to a lack of investment during COVID, as well as high costs and long lead times for infrastructure expansion. Additionally, growing public pressure around sustainability adds another challenge to expansion plans, making efficient use of existing capacity more important than ever to prevent capacity issues leading to delays and other operational problems.

One of the biggest areas of opportunity for airlines and airports is the turnaround, a complex and finely balanced process comprising dozens of variables working together in harmony to ensure an aircraft lands and departs as efficiently as possible.

As airports and airlines continue to modernize and embrace digital transformation, advances in technology such as AI present the industry with exciting opportunities to revolutionize their turnaround and maximize capacity utilization.

In the *2024 Turnaround Benchmark Report*, we analyze each aspect of the turnaround process in detail, uncovering where operational delays are occurring, while pinpointing the biggest areas for improvement.

We also examine how the turnaround has changed over the past two years, as well as comparing performance against several key factors; including geography, stand type, airport and aircraft size, carrier type, and more.

For airlines and airports, so much is out of their control: severe weather events, global conflicts, a fluctuating economy... 2024 had it all. But within the turnaround, the opportunity to refine and manage what is within your control remains significant. This is where airlines and airports can mitigate for those uncontrollable events and begin making significant gains.

And let's not forget, you can't manage what you can't measure.

Christiaan Hen, CEO, Assaia

2024 Turnaround Benchmark Report

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Turnaround time
4%
decrease

Ground delays
6%
decrease

+25%

2023

1 2 3 4 5

2024

Median turns per gate per day increase **from 4 to 5**

Median turnaround length decreased from 81.4 mins to **77.8 mins**

-6%

North America
Airline-operated gates

More turns per gate each day

Europe
Common-use gates

Estimated:
27%

Actual:
49%

There's a significant gap between **estimated** and **actual** APU runtime (27% and 49%).

Medium and non-hub airports outperform large hubs in turns per stand per day, and at reducing gaps between turns.

Large hub airports outperform medium, small, and non-hub airports in terms of capacity utilization.

Legacy airlines generally arrive earlier and experience fewer departure and ground delays compared to low-cost carriers.

2. Executive summary

When done right, the perfect turnaround can yield major time, money, and environmental benefits. Conversely, turnarounds gone wrong causes delays, potentially ramping up costs and passenger frustration.

This makes the following particularly encouraging: between 2023 and 2024, at airports where ApronAI was live in both years, ground delays dropped by 6% and turnaround time by 4%. This reduction is vital for airlines, as it directly leads to more efficient ground operations, fewer costly delays, and increased aircraft utilization.

The report also highlights a significant increase in turns per gate, with the median number rising from 4 to 5 turns per day (a 25% improvement). The improved turnaround, largely attributed to the use of AI at the airports studied, directly contributes to better gate utilization, enabling airports to accommodate more flights and increase operational capacity.

Interestingly, the European airport model (common-use gates) utilizes gate capacity more efficiently than the US model (airline-operated gates), achieving more turns per gate each day, but performs worse in terms of delays. This highlights a tradeoff between maximizing capacity and maintaining on-time performance (OTP). As the demand for air travel continues to grow, how much longer will the North America model be sustainable, knowing capacity is wasted due to the constraints of airline-operated gates?

Other key findings include:

- Medium and non-hub airports outperform large hubs in turns per stand per day, and at reducing gaps between turns.
- Large hub airports outperform medium, small, and non-hub airports in terms of capacity utilization
- Legacy airlines generally arrive earlier and experience fewer departure and ground delays compared to low-cost carriers
- There's a significant gap between **estimated** and **actual** APU runtime (27% and 49%), revealing APUs are often left running for excess (and unnecessary) periods of time

By the end of this report, you'll have gained valuable insights into how optimizing the turnaround process can enhance your overall operational efficiency, reducing costs and, ultimately, driving long-term, sustainable success.

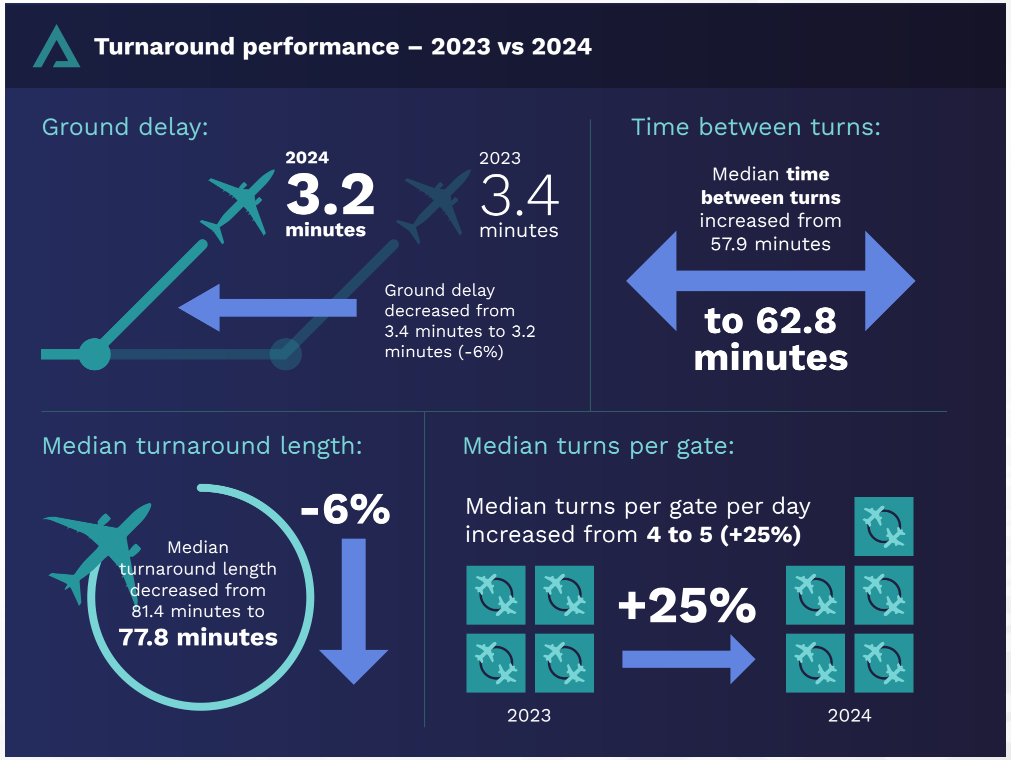
3. Comparing 2023 to 2024

Turnaround performance: 2023 vs 2024 overview

During 2024, we've witnessed significant growth in turnaround activity across our key airports. Focusing on the five airports where Assaia's ApronAI technology was rolled-out in both 2023 and 2024 (excluding any new airports added this year for an accurate comparison), the number of turnarounds has jumped from 149,630 in 2023 to 211,217 in 2024.

This uptick can be attributed to two main factors: first, some airports that came online midway through 2023 have been fully operational in 2024. Second, we're also witnessing a broader recovery in air traffic as the industry continues to rebound post-COVID.

Airport name	Minimum date	Maximum date
ATL	2023–02–21	2024-03-31
CVG	2022-04-01	2024-03-31
IAH	2022-11-28	2024-03-31
JFK	2022-04-01	2024-03-31
SEA	2022-04-01	2024-03-31



Despite surges in flight numbers and passenger traffic, staff shortages, and flight disruptions during 2024, our five ApronAI airports displayed marked improvements in turnaround performance.

Ground delays dropped by 6%, which contributed to a 4% reduction in average turnaround time. This has directly led to increased gate availability and, most impressively, an average gain of one additional turn per gate per day.

3. Comparing 2023 to 2024 (continued)

Upon arrival, processes like baggage unloading and passenger disembarkation improved by 10-15%. Additionally, pre-conditioned air (PCA) unit connections were made 14% faster in 2024 compared to 2023. While this doesn't typically directly cause delays or impact turnaround times, it plays a key role in reducing auxiliary power unit (APU) burn time, which supports wider sustainability efforts.

On the departure side, fueling is now completed 2.5% earlier on average, with fueling duration also shortened by 0.7 minutes in 2024. Although pushback tug arrival performance only improved by 2%, it now connects earlier, indicating a shift in operational procedures to prepare aircraft for departure more efficiently, avoiding last-minute delays.

AI is at the heart of delivering these improvements. How? Real-time monitoring allows precise tracking of key events (such as baggage handling); automated data insights collect detailed time stamps for each turnaround activity (from disembarkation to refueling); and sophisticated machine learning models send out AI-powered alerts, helping teams remove bottlenecks and proactively react to subtle shifts in the turnaround process.

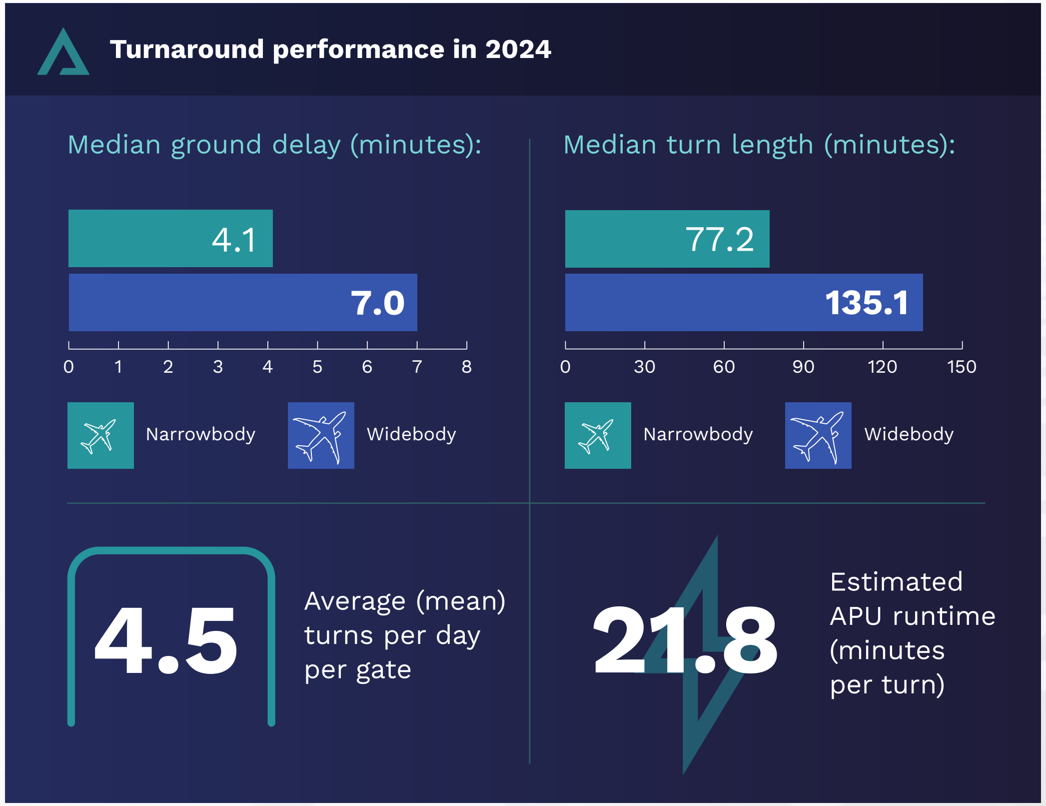
Turnaround subprocess changes: 2024 vs 2023

PCA connect	-0.9 minutes / -14%
Cargo connect (unloading start)	-0.2 minutes / -14%
Passenger disembarkation	-0.5 minutes / -10%
Pushback on stand	-0.9 minutes / -2%
Pushback connect	-9.4 minutes / -47%
Fueling end	-0.8 minutes / -2.5%

4. Turnaround performance in 2024

2024 turnaround performance breakdown

This section covers detailed turnaround performance data for 2024, based on 311,054 turnarounds across 306 gates, 199 airlines, and 13 airports spanning two continents (Europe and North America).



4.1 Europe vs North America

A geographical snapshot of turnaround performance

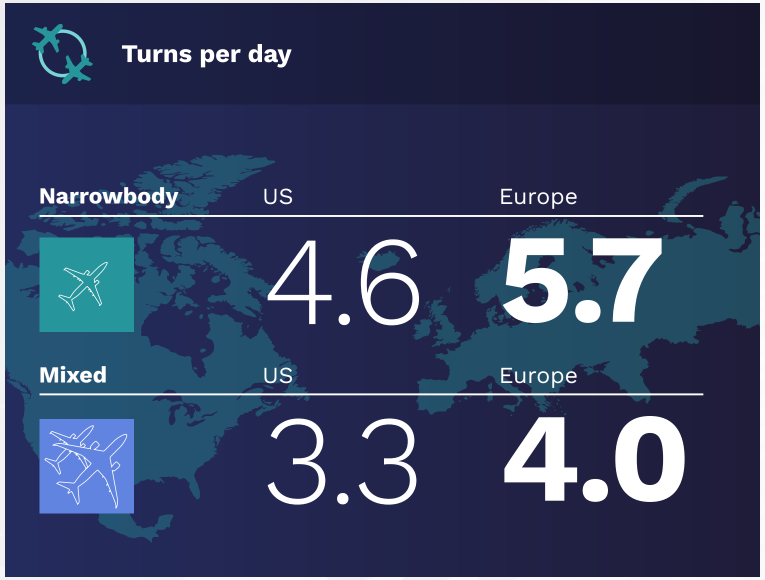
A key difference between European and North American airports is in their gate operation models. In Europe, gates typically follow a common-use principle, allowing airports to allocate gates flexibly for optimal efficiency. In North America, particularly at hub airports, airlines own and operate their gates, meaning no other airline can use them. In theory, common-use models offer greater gate capacity by reducing operational constraints.

4.1.1 Capacity and gate utilization

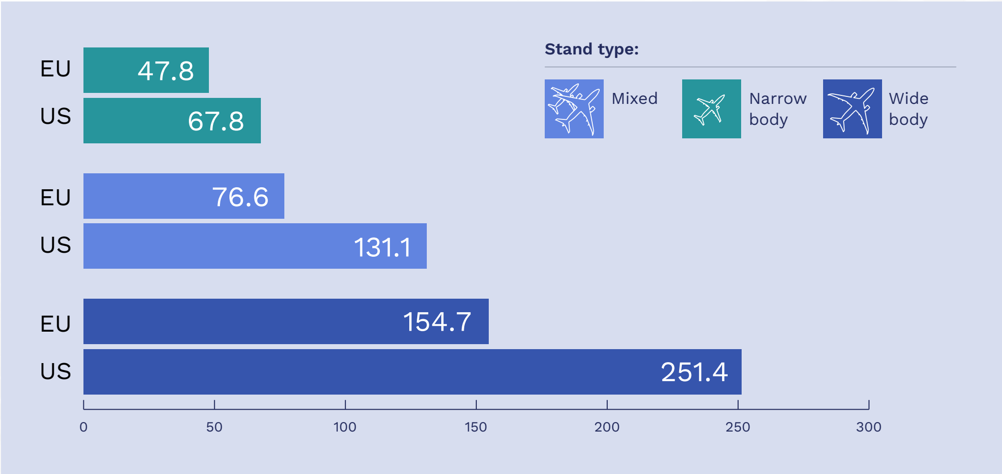
Turnaround gaps are significantly shorter in Europe than North America, which is consistent with the turns per gate per day data.

Gate capacity metrics support the theory: under the North America model, more gates are needed for the same number of flights, or fewer flights can be handled per gate due to airline-specific constraints.

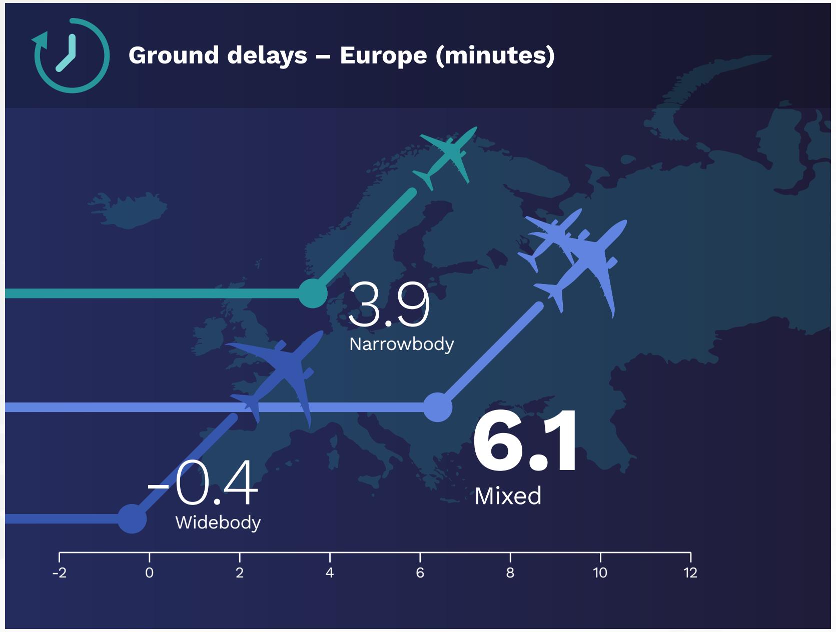
Turns per day



Turnaround gap (minutes)



(If a stand sees 90% or more of either widebody or narrowbody aircraft, it's labeled as a widebody or narrowbody stand respectively. "Mixed stands" represent everything else)



4.1.2 Delays and scheduled turnaround times

Delays / OTP

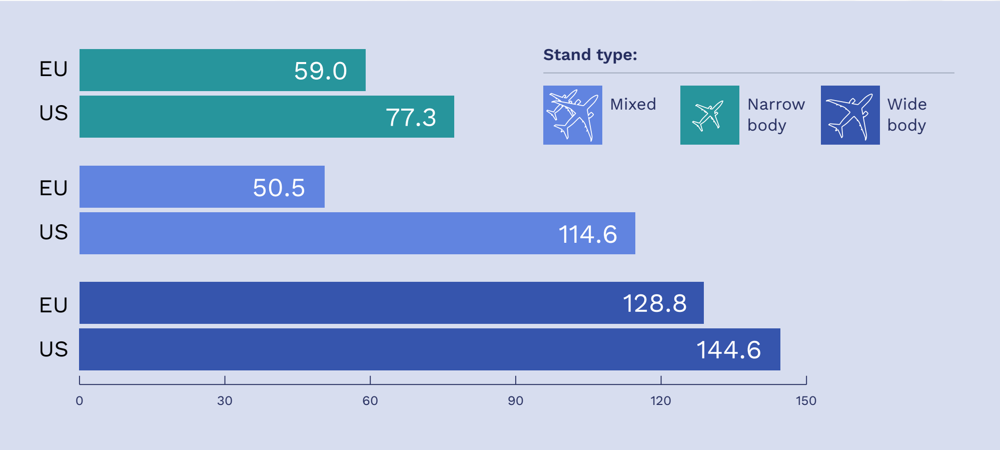
When it comes to departure delays, European performance generally surpasses that of North America, except in the narrowbody segment. Here, North America demonstrates a marked advantage, significantly outperforming Europe.

When examining the efficiency of airline-operated gates versus common-use gates, airline-operated gates experience an average ground delay of 3.2 minutes, compared to 6.4 minutes of delay at common-use.

Turnaround times

It's important to note that North American airlines generally schedule longer *planned* turnaround times. Invariably, the more time you allocate for a flight, the lower the chances of a delay. This reflects the trade-off between lower capacity and improved punctuality, while Europe tends to prioritize capacity instead.

Average turnaround length (minutes)



4.1.3 Early arrivals, taxi-in times, and APU usage

Early arrivals

On average, our analysis shows a trend of early arrivals across North America. The only exception is widebody aircraft, likely due to transatlantic routes from Europe, which typically contend with strong jetstream headwinds.

In other words, while North America sees more early arrivals, with less capacity and flexibility at the gate, airlines often struggle to accommodate these aircraft. In contrast, Europe has fewer early arrivals but more capacity and flexibility at the gate to manage them.

Taxi-in times

Interestingly, the different airport layouts and gate availability between the two regions unearth a key point of contrast: taxi-in times. In North America, taxi-in durations are significantly longer compared to Europe, possibly due to airport design and operational factors.

In addition to airport layout, gate capacity and airline-operated gate efficiency appear to play a key role in operations at North America airports. Less efficient gate utilization increases the likelihood that a gate won't be available when the next flight arrives, with fewer alternatives for reallocating incoming flights. This effect is only amplified in case of many early arrivals, as we have seen in North America.

Early arrivals (minutes)

	North America	Europe
Narrowbody	8.5	3.5
Mixedbody	8.9	4.4

APU usage

From a sustainability perspective, North America lags behind Europe, with an average APU runtime of 21.9 minutes compared to Europe's 17.7 minutes. Notably, common-use gates in North America have a higher average APU runtime of 28.1 minutes, compared to 20.4 minutes for airline-operated gates. This suggests that extended APU usage is more concentrated at common-use gates, which often handle international traffic.

4.2 Airport type and size

4.2.1 Capacity and gate utilization

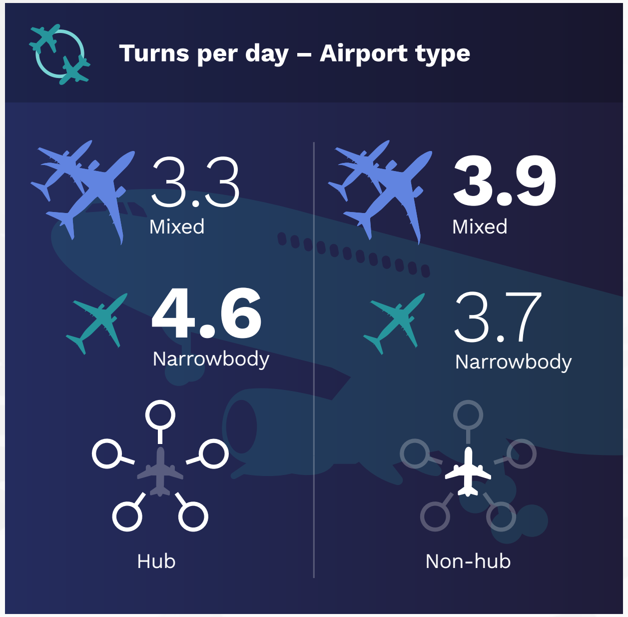
Our analysis of narrowbody and widebody stands reveals that large hub airports outperform medium, small, and non-hub airports in terms of capacity utilization.

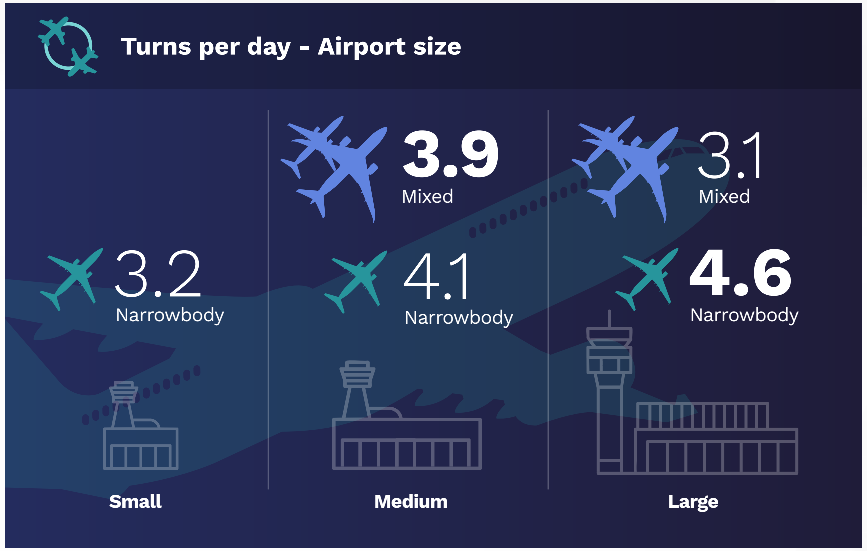
Turns per day

Large hubs boast higher aircraft turns per stand per day and shorter gaps between turns. That’s because these airlines often employ a hub-and-spoke system, meaning capacity is maximized by combining feeder flights (primarily narrowbody) with long-haul operations to extend network reach and fill long-haul flights with passengers from short-haul connections.

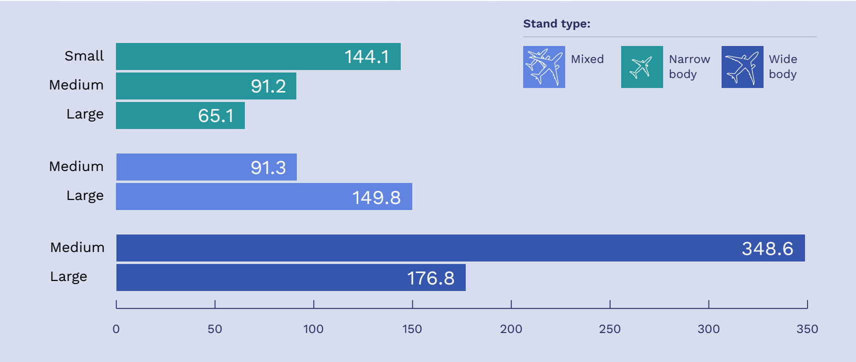
However, the utilization of mixed stands presents a different trend. Medium and non-hub airports outperform large hubs in turns per stand per day and when reducing gaps between turns.

It appears large airports use mixed stands predominantly for widebody operations (60% of turns), whereas medium airports allocate them more to narrowbody flights (25% of turns), leading to distinct capacity utilization patterns across airport sizes.

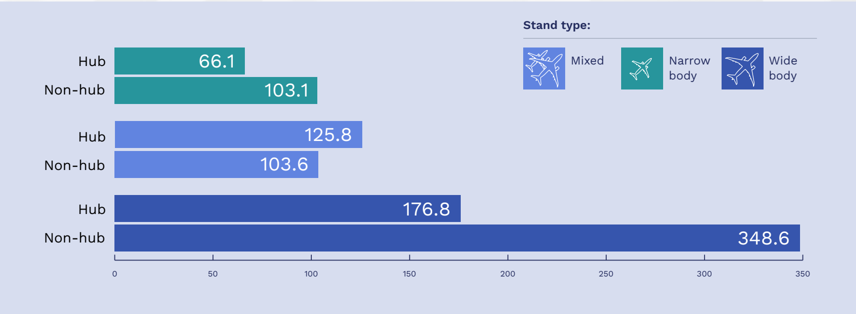




Turnaround gaps – Airport size (minutes)



Turnaround gaps – Airport type (minutes)



4.2.2 Scheduled turnaround time and delays

Narrowbody and mixed stands tend to process quicker turnarounds at smaller, non-hub airports. This makes sense, as smaller airports typically contend with fewer connecting flights, which reduces complexity while speeding up the overall turnaround process.

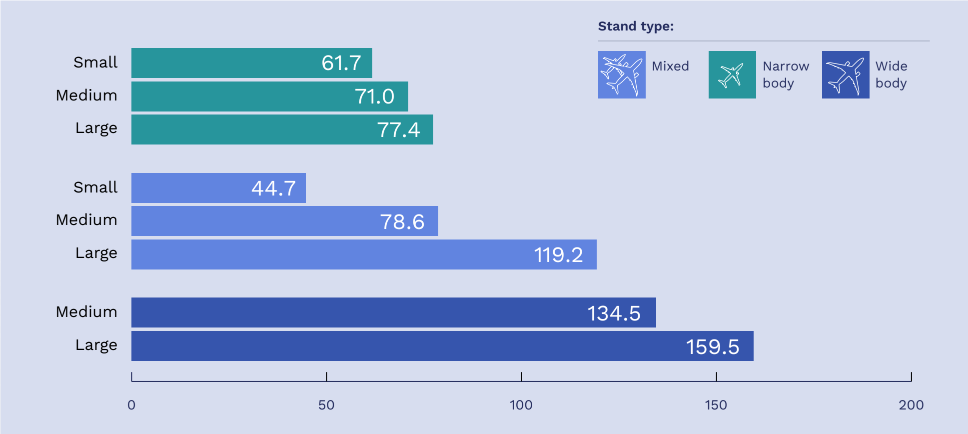
However, for widebody flights, we see the opposite trend—larger hub airports have faster turnaround times. This is likely because home carriers at hubs can better optimize their fleet across different routes—while at smaller, outstation airports, widebody aircraft often wait longer for their return flight, slowing down turnaround times.

Delays / OTP

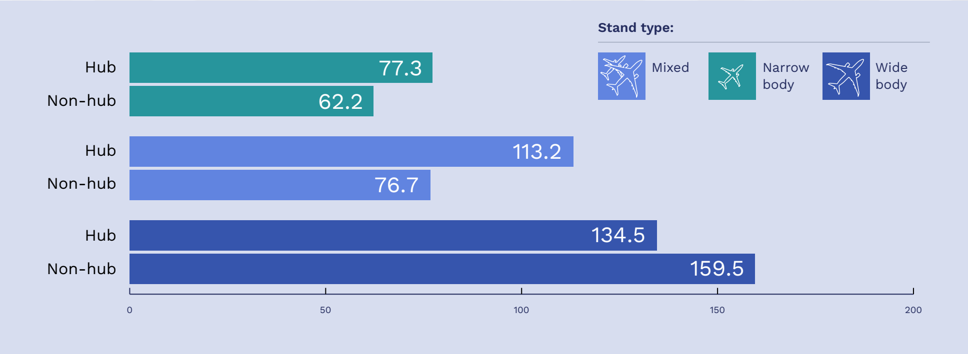
When examining ground delays for flights departing from narrowbody stands, an interesting pattern emerges: smaller airports experience the highest delays, while hub airports have more delays than non-hub airports.

At hub airports, narrowbody delays are likely attributed to airlines waiting for connecting passengers. However, the delays at smaller airports are less clear. Upon closer inspection, the data shows this trend is driven by airports in North America, where air traffic control (ATC) flow regulations may force flights to hold at smaller outstations due to congestion at larger hubs.

Turnaround times – Airport size (minutes)



Turnaround times – Airport type (minutes)



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Continent	Airport size	Percent	Median departure delay
North America	Large	19.4	4.2 minutes
North America	Medium	58.0	3.2 minutes
North America	Small	54.9	12.3 minutes
Europe	Large	48.2	9.9 minutes
Europe	Medium	82.0	5.1 minutes
Europe	Small	24.6	0.0 minutes

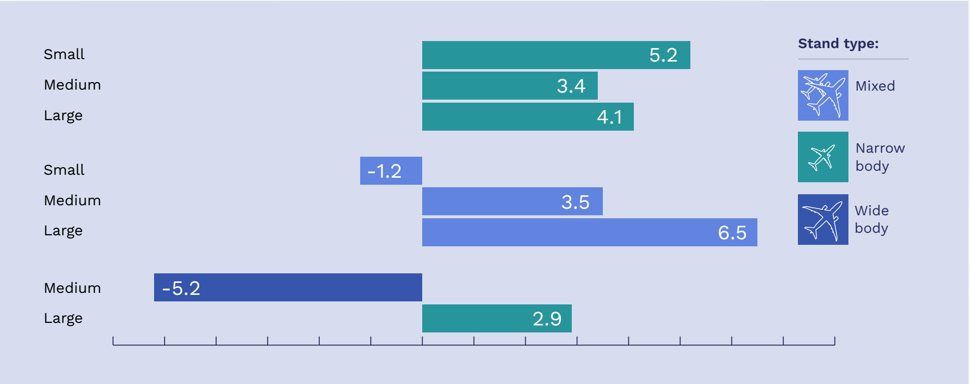
For flights departing from mixed and widebody stands, larger hub airports tend to experience more delays compared to small and medium non-hub airports. This can likely be attributed to the increased complexity of managing both crew and passenger connections at major hubs, which can create additional operational challenges.

4.2.3 Taxi-in times

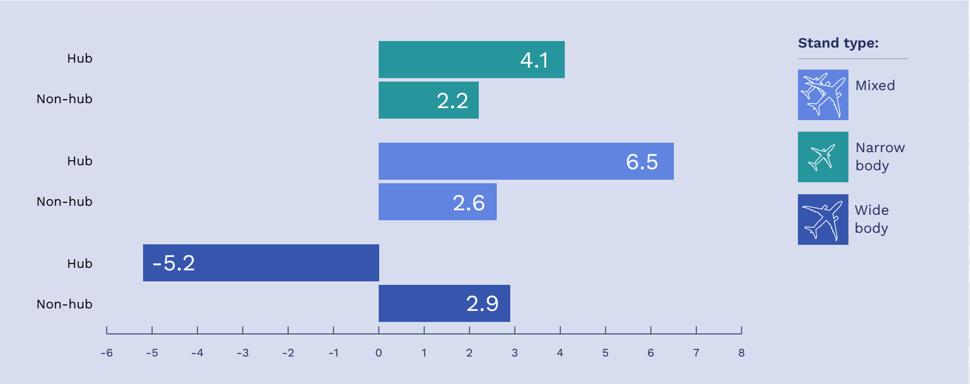
When it comes to taxi times, there's a direct correlation between airport size and length of delay. In other words, larger airports typically experience longer taxi times.

Interestingly, taxi times at hub airports are often shorter than those at non-hubs. Why? One possible explanation is that hub airports, where airlines have a vested interest in ensuring on-time arrivals and successful passenger transfers, place greater emphasis on minimizing gate conflicts and avoiding the need to hold arriving flights, thereby improving overall efficiency.

Departure delays – Airport size (minutes)

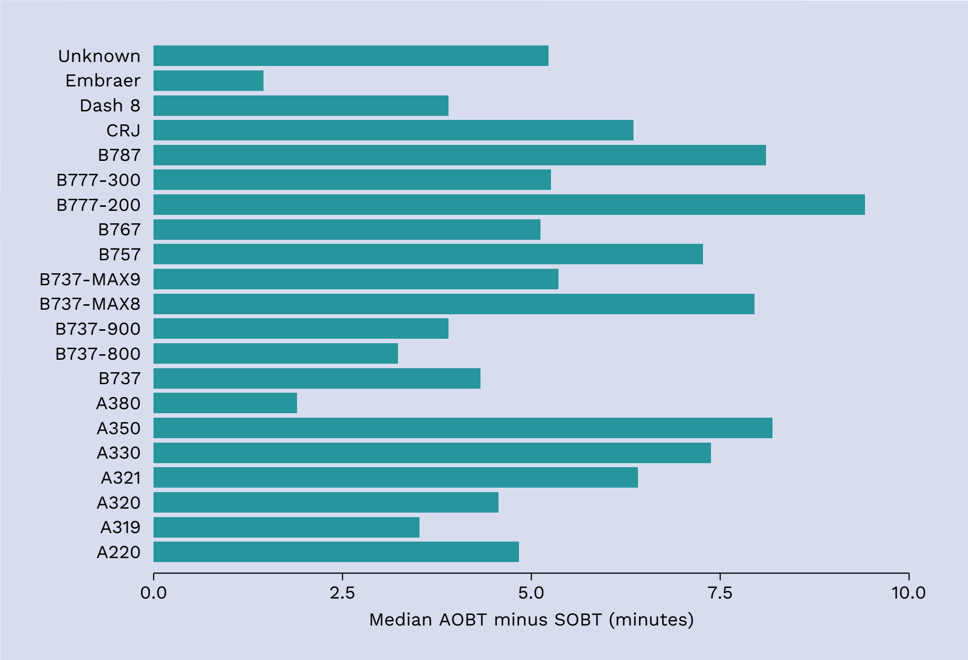


Departure delays – Airport type (minutes)



4.3 Per aircraft and airline type

Smaller aircraft incur less delays, with the main exception being the A380



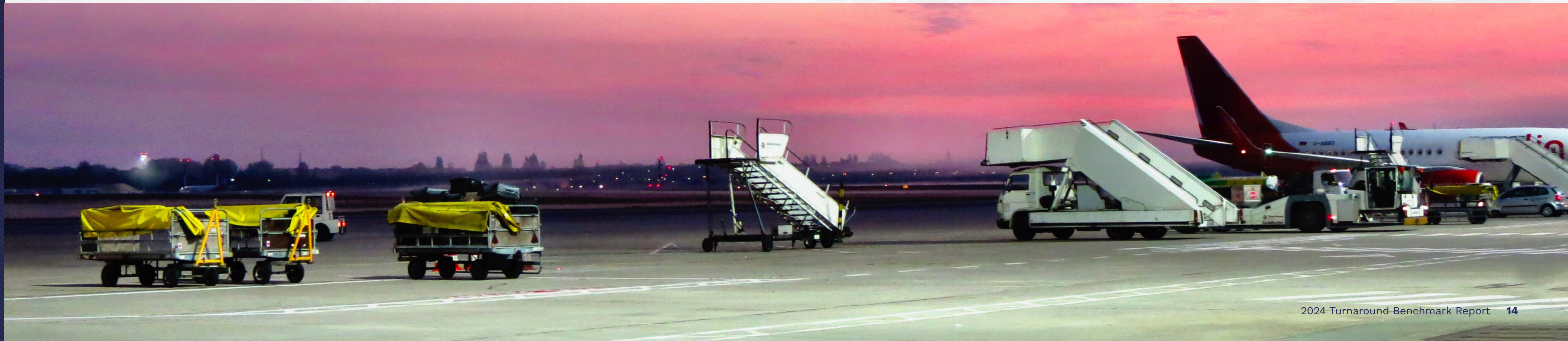
Departure Delays

Carrier type	Arrival delay	Departure delay	Ground delay
Legacy airlines	-5.9 minutes	3.7 minutes	3.7 minutes
Low-cost carriers (LCCs)	-2.3 minutes	5.8 minutes	5.8 minutes

Low-cost carriers (LCCs) have experienced exceptional global growth over the past decade. However, our research shows legacy airlines tend to arrive earlier and experience fewer departure and ground delays compared to LCCs, primarily due to longer scheduled turn times.

In turn, this extended time between flights gives legacy carriers more flexibility to maintain on-time performance (OTP).

Despite the delays caused by shorter turn times, LCCs typically boast higher aircraft utilization rates, meaning they can fly more legs with the same aircraft. Ultimately, this leads to increased revenue and profitability, particularly because a large portion of their cost base is fixed.



5. The perfect turn

Next, let's examine the turnaround process to understand which individual steps contribute to overall OTP. The table on page 16 provides average engagement times for all flights covered in our research, as well as a breakdown across different delay categories.

5.1 Arrival process: The importance of a good start

Interestingly, chocks are placed an average of 0.6 minutes after the aircraft parks, regardless of delay category. This indicates that ground handlers are generally ready at the gate as soon as the aircraft arrives.

Another key finding is that most "below the wing" arrival activities – such as connecting the bridge or stairs, ground power, PCA, and start of baggage unloading – tend to begin later as flight delays increase.

Understandably, if the connection of the bridge or stairs is delayed, the overall flight delay increases in tandem. Later disembarkation also results in delayed flights. This suggests that initial delays during the turnaround process can create a domino effect, further impacting departure times.

5.2 Departure process: Timing is everything

When analyzing the catering and fueling process, a clear trend emerges: for on-time flights, these processes begin earlier. In contrast, as delays increase, the start times for catering and fueling get pushed back.

The duration of catering and fueling appear relatively fixed, yet they often take longer for delayed flights. Consequently, the completion times for fueling and catering are also later when flights are delayed.

The effects of these delays can vary depending on the specific procedures of individual airlines and airports. For instance, if boarding can't start until fueling and catering are completed, any delays in these areas directly impact boarding and are more likely to cause departure delays.

Additionally, the presence of a pushback tug is crucial; without it (in most cases), a flight cannot depart. Therefore, having a tug available at the stand on time is essential for minimizing departure delays. Our data reveals that a late arrival of the tug to the stand, or a delay in connecting the tug to the aircraft, correlates with increased delays for some airlines.

Unsurprisingly, boarding often starts later when flights are delayed. Typically, this is because either earlier turnaround processes fell behind schedule, issues arose during the boarding process at the gate, or the airline is waiting for a missing passenger. Since the boarding process itself takes a set amount of time and can't easily be accelerated, starting late has a real impact on overall OTP. That's why prompt boarding is crucial to make sure flights depart as scheduled.

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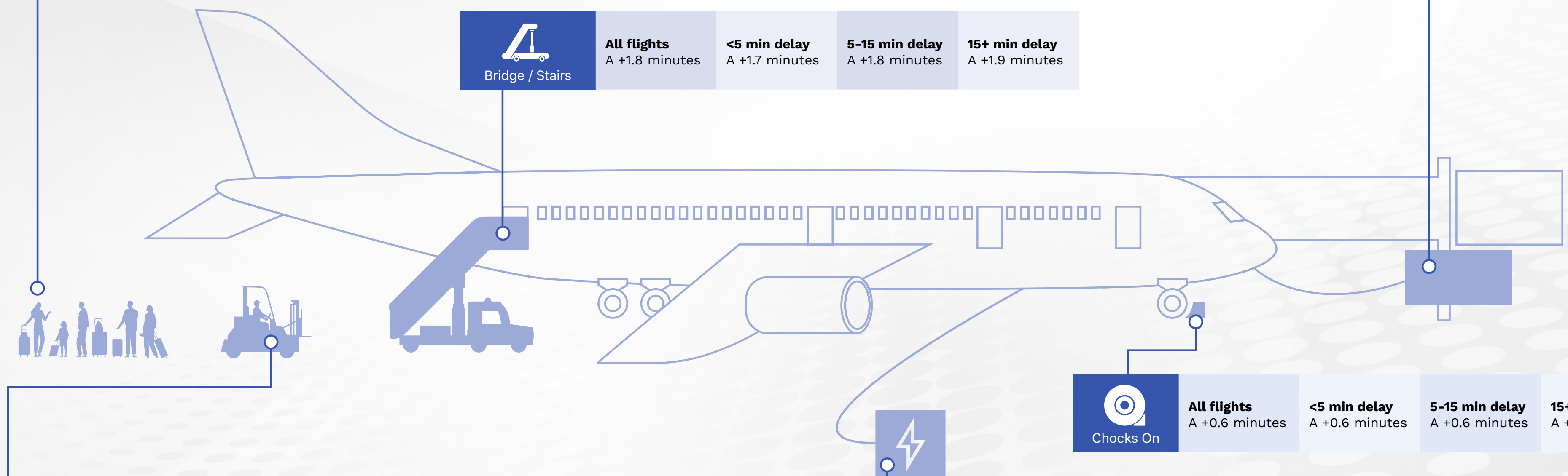
The perfect turn

Arrival processes: The importance of a good start

Average delay: All flights **4.2 minutes**, <5 min delay **-0.6 minutes**, 5–15 min delay **8.9 minutes**, 15+ min delay **29.1 minutes**



Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Disembarkation	A +3.2 minutes	A +3.1 minutes	A +3.3 minutes	A +3.4 minutes
PCA On	A +5.7 minutes	A +5.6 minutes	A +5.7 minutes	A +5.7 minutes
Bridge / Stairs	A +1.8 minutes	A +1.7 minutes	A +1.8 minutes	A +1.9 minutes
Chocks On	A +0.6 minutes	A +0.6 minutes	A +0.6 minutes	A +0.6 minutes
First Loader Connect	A +1.4 minutes	A +1.4 minutes	A +1.5 minutes	A +1.6 minutes
Ground Power	A +3.2 minutes	A +3.1 minutes	A +3.3 minutes	A +3.4 minutes

A = Arrival (of aircraft)

The perfect turn

The departure processes: The importance of timely take-off

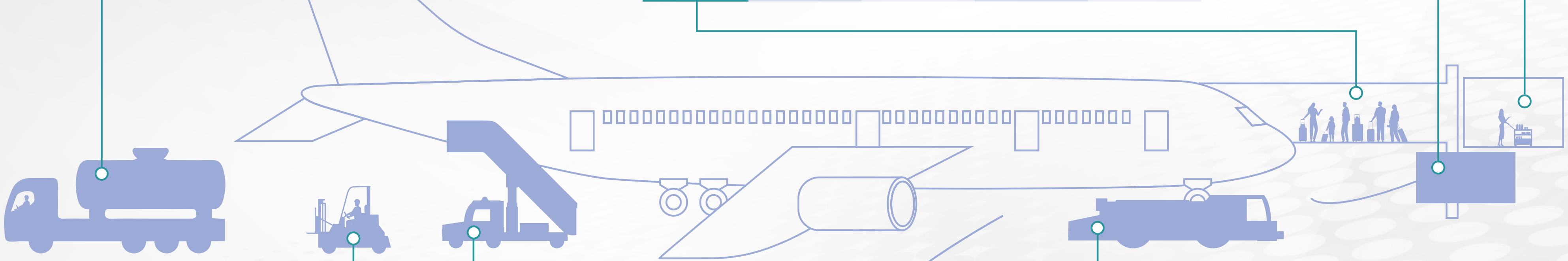
Average delay: All flights **4.2 minutes**, <5 min delay **-0.6 minutes**, 5–15 min delay **8.9 minutes**, 15+ min delay **29.1 minutes**

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Catering Connect	D -55 minutes	D -63 minutes	D -55 minutes	D -37 minutes
Catering Disconnect	D -36 minutes	D -45 minutes	D -35 minutes	D -16 minutes

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Fueling Connect	D -55 minutes	D -50 minutes	D -45 minutes	D -31 minutes
Fueling Disconnect	D -33 minutes	D -38 minutes	D -32 minutes	D -17 minutes

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
PCA Off	D -15 minutes	D -18 minutes	D -14 minutes	D +1 minutes

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Boarding Starts	D -39 minutes	D -41 minutes	D -38 minutes	D -17 minutes



Process	All flights	<5 min delay	5-15 min delay	15+ min delay
PB On Stand	D -37 minutes	D -48 minutes	D -36 minutes	D -15 minutes
PB Connect	D -29 minutes	D -40 minutes	D -29 minutes	D -10 minutes

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Bridge / Stairs Off	D -2 minutes	D -6 minutes	D +3 minutes	D +22 minutes

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Last Loader Disconnect	D -6 minutes	D -9 minutes	D -3 minutes	D +14 minutes

Process	All flights	<5 min delay	5-15 min delay	15+ min delay
Ground Power	D -13 minutes	D -17 minutes	D -11 minutes	D +6 minutes

D = Departure (of aircraft)

6. Sustainability and APU monitoring

The hidden cost of idle time

There are two main ways to measure APU usage. At most stands with ApronAI, we monitor ground power usage, which helps determine how long the APU runs when ground power isn't connected (we will refer to this as estimated APU runtime). However, while ground power is typically a good proxy for APU usage, there are instances when the APU may remain running, even when ground power is connected.

On average, estimated APU runtime makes up about 27% of the total turnaround time, while actual runtime is closer to 49%. This shows that APUs are often left running for excess periods of time, even when ground power is connected during several turnarounds.

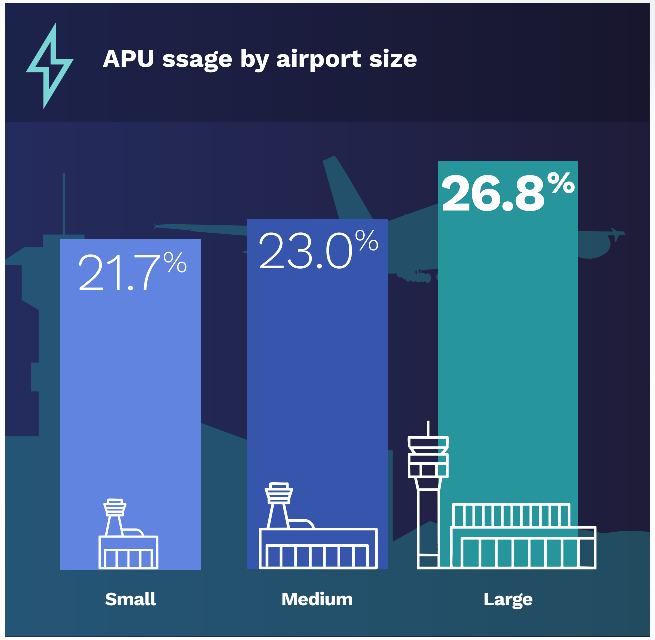
Europe's APU runtime is nearly 20% lower than North America, averaging 17.7 minutes compared to 21.8 minutes per turn. Despite the fact there are more airline-operated gates in North America, common-use gates have much higher APU runtimes—averaging 27.5 minutes compared to 21.8 minutes at airline-operated gates.

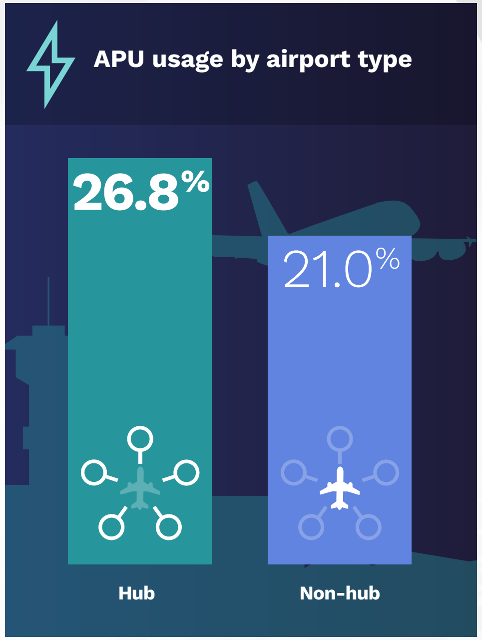
Additionally, airline-operated gates typically employ their own internal ground handling teams, while international carriers often rely on third-party ground handling companies that are not affiliated with any specific airline.

The data also reveals larger airports generally have higher APU runtimes, while hub airports show more APU activity than non-hub airports. This is likely because it's easier for airport authorities at smaller airports to spot when airlines aren't following APU rules, making it simpler to enforce compliance. At larger airports, it's tougher to keep track of these violations without automated tools like ApronAI.

When analyzing APU runtime across different aircraft types, it's clear large aircraft use the APU for a smaller percentage of their total turnaround time compared to smaller ones. This occurs due to the minimum duration for which the APU must remain operational, resulting in a lower percentage for longer turnaround times.

However, even when examining the average minutes of APU runtime without focusing on percentages, larger and hub airports continue to demonstrate greater APU usage compared to smaller, non-hub airports.





Carrier type	Median assumed percent	Median actual percent	Median excess percent	Median assumed APU runtime
Legacy	27.4	47.6	31.6	23.1
Low-cost	24.0	57.1	64.2	16
Unknown	23.9	N/A	N/A	20.0

Lastly, it's important to note that LCCs generally utilize APU significantly less than legacy airlines, which is evident in both the proportion of APU runtime during the turnaround, and the average duration of APU usage.

One possible explanation is cost-sensitivity, as running the APU racks up more bills than using ground power. Additionally, LCCs may prioritize their turnaround processes more than legacy carriers, given their greater emphasis on aircraft utilization rates.

7. Conclusion

The perfect turnaround doesn't just save time – it drives down costs, reduces environmental impact, and enhances the overall passenger experience.

The insights we've gathered highlight significant improvements, from fewer ground delays to better gate utilization, demonstrating the tangible benefits of prioritizing turnaround efficiency.

These advancements reaffirm the critical role of technology, particularly AI, in bringing airports and airlines closer to achieving that highly sought-after perfect turn, where every aspect of ground operations is seamlessly coordinated, while also providing the visibility needed to understand and improve the turnaround process.

That's because, by minimizing ground delays and shortening turnaround times, airports and airlines are better positioned to maintain on-time performance, which is essential for operational success.

ApronAI's ability to provide real-time data insights enables airports and airlines to make informed decisions that optimize ground handling processes, ensuring that each step of the turnaround is executed with precision.

8. Limitations and Future Research

Our technology helps airlines predict, respond, and automate operations to increase turnarounds and free up gates faster. When combined with a more secure, efficient, and sustainable ecosystem, passengers travel on time, safely, and sustainably. That's the perfect turn.

To provide a high-level, easily digestible view of the turnaround process and wider industry, this report covers a limited proportion of the research findings. Over the coming months, we'll continue to present further findings and share valuable insights via our communication channels.

If you'd like to learn more about a particular area of interest or are interested in results for your airport or airline, please reach out to us for further information.

9. Definitions

ApronAI: Optimizing turnaround performance

Using real-time visibility and predictive alerting, ApronAI helps airports and airlines gain control of their operations, reducing delays and increasing capacity. Strategically placed cameras across aircraft stands, aerobridges, and the apron provide accurate timestamps and automatic alerts for turnaround events, generated in real time. Meanwhile, advanced machine learning tools provide accurate predictions for aircraft off-block and departure readiness.

Find out more

Stand types:

Narrowbody: Accommodate smaller aircraft typically with a single aisle, such as the Airbus 320 or Boeing 737. Narrowbody stands are often used for short to medium-haul flights, with aircraft capacity ranging between 100 to 240 passengers.

Widebody: Intended for large aircraft with two aisles, such as the Boeing 777, Airbus A350, or Boeing 787. Generally used for long-haul flights and have higher passenger capacities, often exceeding 300 seats.

Mixed: A versatile stand built to accommodate both narrowbody and widebody aircraft. The added flexibility helps airports optimize gate usage based on the varying sizes of aircraft in operation.

For the 2023 vs 2024 analysis, the dataset after cleaning consists of:

Turnarounds analyzed: 360,847

Airports analyzed: 5 Small, medium and large

Airlines analyzed: 81

Gates analyzed: 147

Continents analyzed: North America

For the 2024 analysis, the dataset after cleaning consists of:

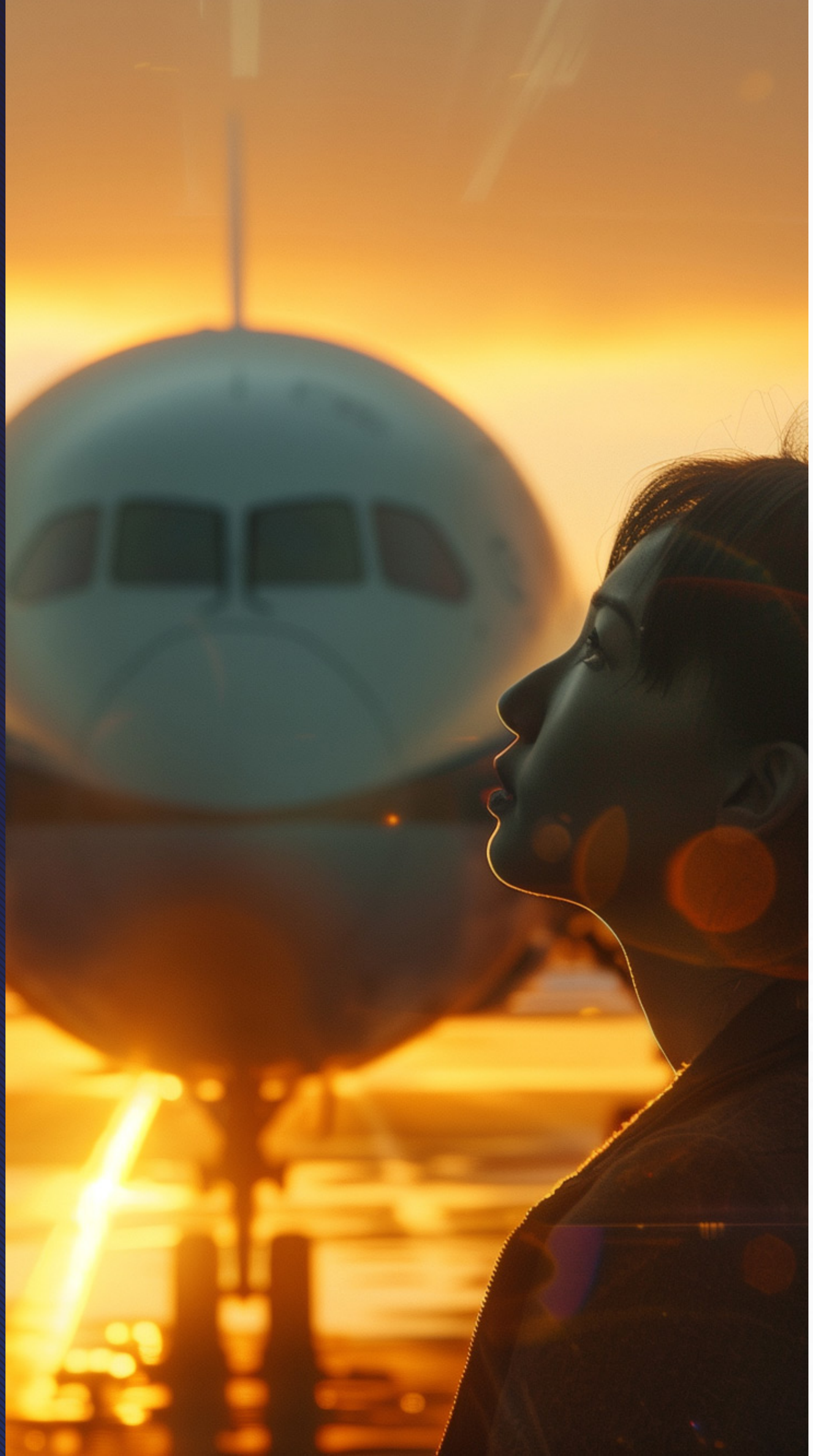
Turnarounds analyzed: 311,054

Airports analyzed: 13 Small, medium and large

Airlines analyzed: 199

Gates analyzed: 306

Continents analyzed: Europe and North America



10. Methodology

“2023” refers to turns between 2022-04-01 and 2023-03-31,
while “2024” refers to turns between 2023-04-01 and 2024-03-31 (all ranges inclusive).

1. Data Cleansing:

- Ground delays between -120 and 120 minutes are included.
- Turn lengths shorter than 10 and longer than 300 minutes are excluded.
- Values that are higher or lower than 3 standard deviations or more from the mean are regarded as outliers and therefore ignored.

2. Additional definitions:

- **Turnaround:** From when the aircraft arrives at the gate until pushback for departure.
- **Delay:** Actual Off-Block Time (AOBT) minus Scheduled Off-Block Time (SOBT)
- **Ground delay:** Delay minus arrival delay

Median versus mean:

- **The median** tells you what you’re most likely to see – for example, if you observe one specific random turnaround gap.
- **The mean** tells you what you should be prepared to see in general – for example, when you’re judging the buffer time given between turns overall.

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