



CODA Digest

All-Causes Delays to Air Transport in Europe
Quarter 3 2023



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1 Executive Summary

The **average delay per flight in Q3 2023 decreased to 22.0 minutes per flight**, compared to Q3 2022 where the average delay per flight was 22.8 minutes per flight alongside an **increase** in the **number of flights** of 7% when compared to Q3 2022 .

Arrival punctuality improved in comparison to Q3 2022, with **65.8% of flights arriving within 15 minutes or earlier of their scheduled arrival time (STA)**, compared to 64.5% in Q3 2022.

Despite falling slightly **reactionary (knock-on) delay contributed the most** to the average delay per flight with an almost identical share of 48.2% of delay minutes (up from 47.1% share in Q3 2022), translating to **10.6 minutes** per flight.

Airline related delay causes fell, those such as ramp handling, passenger boarding, staff shortage, (etc.) however they still ranked second at **5.2 minutes per flight**.

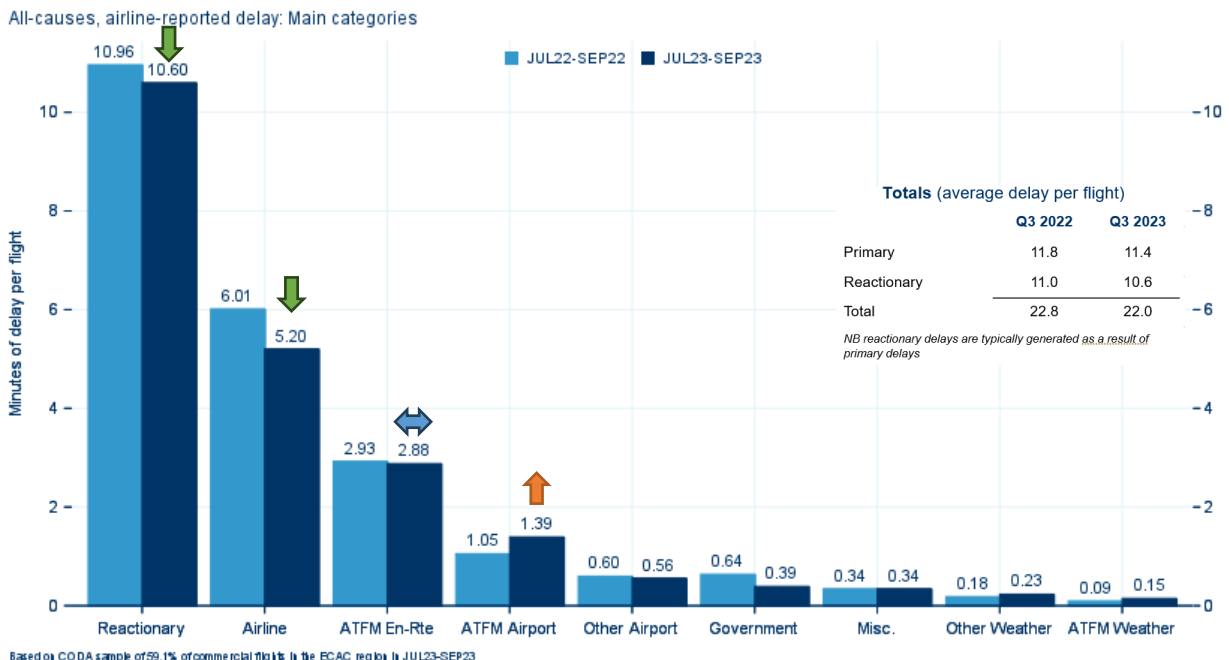
En-route ATFM delay remained high at **2.9 minutes per flight**, however it did remain stable compared to Q3 2022.

A **Flight Data Processing System (FDPS) failure** in the UK and Italy generated high network ATFM delays and flight cancellations on August 28th. The failure also had effects at low-capacity airports such as those in the Greek islands as flights blocked parking positions and could not depart.

ATFM airport delays increased to 1.4 minutes per flight, Tel-Aviv and Lisbon saw delays due to aerodrome capacity throughout the quarter. Flights departing **London Gatwick** experienced en-route capacity delays throughout the quarter, impacting the first rotation in turn causing reactionary delays, the airport was also affected by ATC capacity, staffing and aerodrome capacity arrival regulations compounding the delay, the culmination of these factors resulted in low punctuality.

Weather delays were low during the quarter, however en-route seasonal weather (mainly thunderstorm activity) delays were recorded in Karlsruhe UAC, Budapest, Beograd and Zagreb ACCs.

Figure 1. Breakdown of the Average Delay per Flight Q3 2023 vs. Q3 2022



2 Punctuality

Departure punctuality improved slightly in Q3 2023 with 61.3% of flights departing within 15 minutes or earlier than their scheduled departure time, this compared to 59.6% in Q3 2022.

Figure 2: Departure Punctuality: Q3 2023 vs Q3 2022

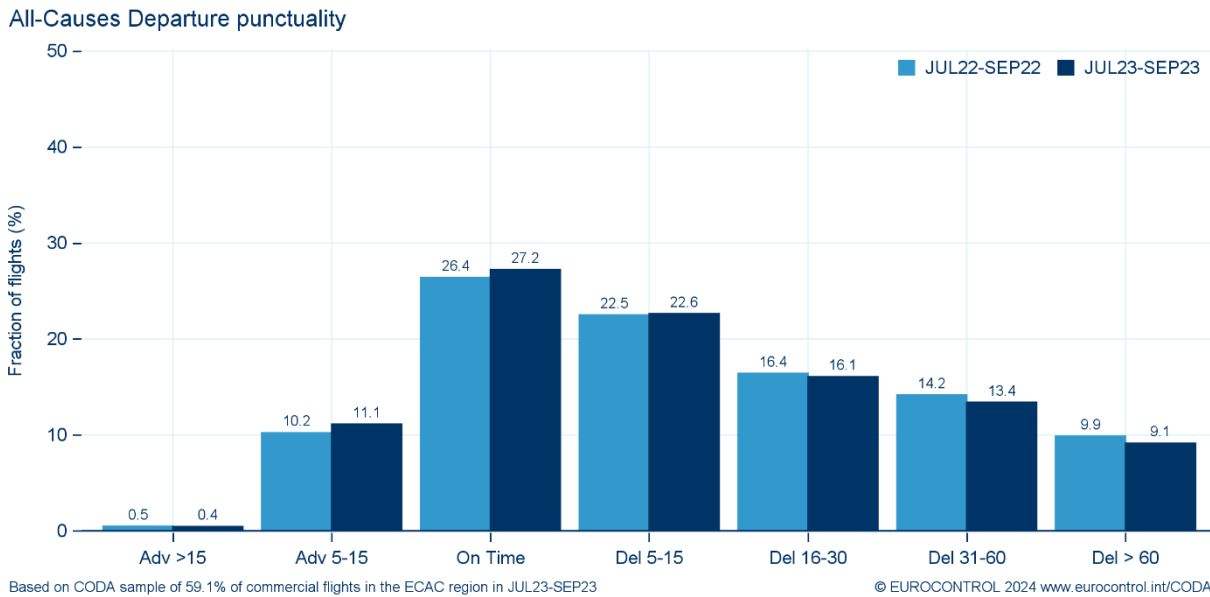
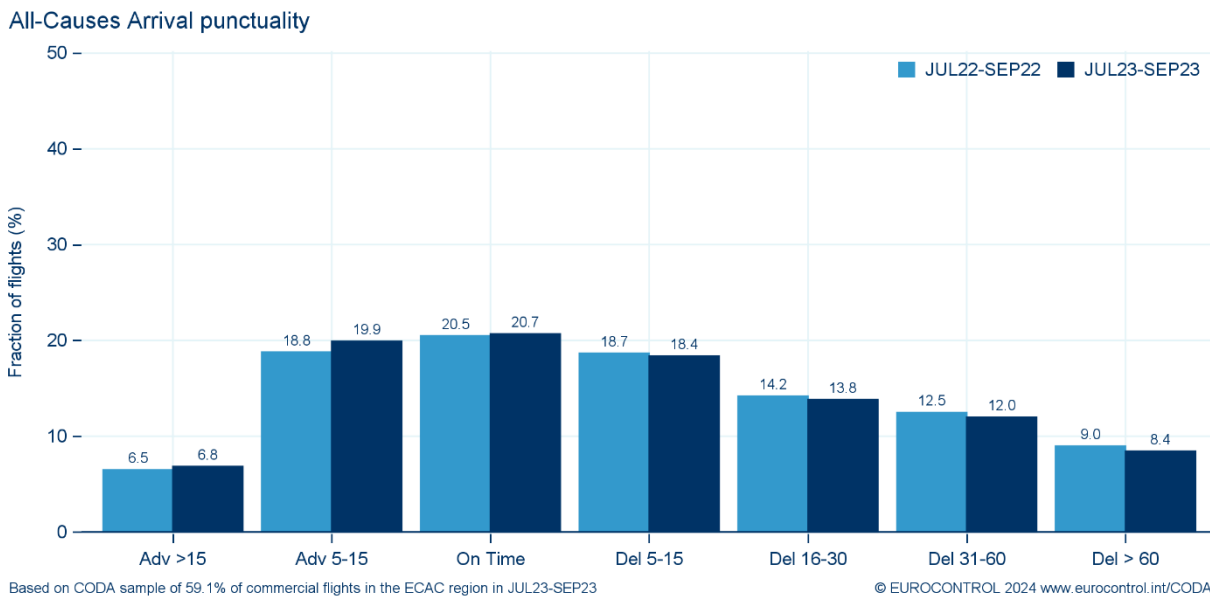


Figure 3. Arrival Punctuality: Q3 2023 vs Q3 2022



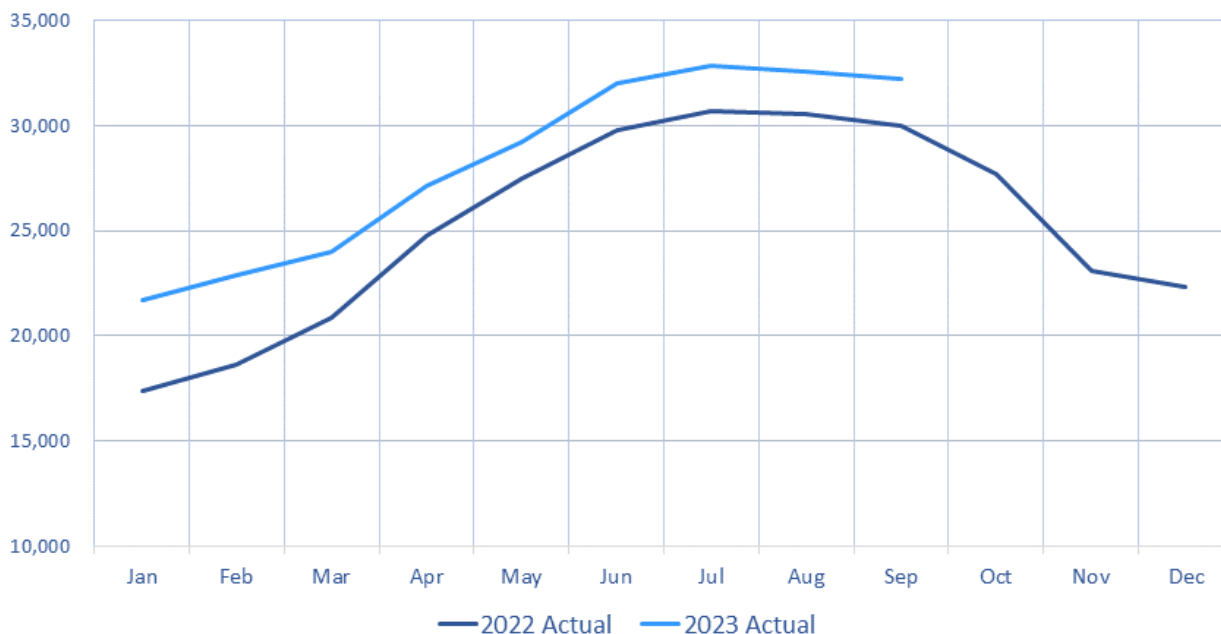
Arrival punctuality in Q3 2023 followed the trend of departure punctuality improving slightly in comparison to Q3 2022, with 65.8% of flights arriving within 15 minutes or earlier of their scheduled arrival time (STA), compared to 64.5% in Q3 2022.

Flights arriving more than 15 minutes ahead of schedule stabilised at 6.8% in Q3 2023. Whilst being good for the passenger experience, this high share can affect operations. Effects being stand availability and air traffic flow management operations (implementation of ATFM regulations because of demand shifts) in the event of aircraft frequently arriving excessively ahead of their schedule.

3 Traffic

Figure 4. Total Flights per Day in ECAC

IFR Flights/Day in ECAC



European flights (ECAC) in average daily terms (Figure 4) increased by 7% when compared to Q3 2022, but were still 7% lower than Q3 2019.

Further information regarding traffic and forecasts is available at the [Forecasting](#) website, also via the [STATFOR Interactive Dashboard \(SID\)](#).

4 Q3 2023 Monthly Summary

Section 4 provides a month-by-month view for Q3 2023, highlighting the main causes of network delay, locations, or disruptions in further detail.

July 2023. The average delay per flight on departure was 24.8 minutes, a decrease of 1.5 minutes when compared to July 2022.

ATC industrial action occurred at Lanzarote, non-ATC industrial action occurred in Italy on 15 July. London Gatwick experienced combinations of ATC, aerodrome capacity and weather delays. Both Lisbon and Tel-Aviv also suffered from ATC capacity delays throughout the month. ATC industrial action at Fuerteventura and Lanzarote airport throughout the month generated delays.

August 2023. The average delay per flight on departure was 22.3 minutes, this increased by 1.1 minutes per flight when compared to August 2022.

A Flight Data Processing System (FDPS) failure in the UK and Italy generated high ATFM delays and flight cancellations on August 28th, the failure also had effects at low-capacity airports such as those in the Greek islands as flights blocked parking positions and could not depart. Catania airport fully reopened early August three weeks after a fire in the terminal. Lisbon and London Gatwick airports continued to be impacted by systemic ATFM arrival delays. Convective summer weather also affected the network throughout the month.

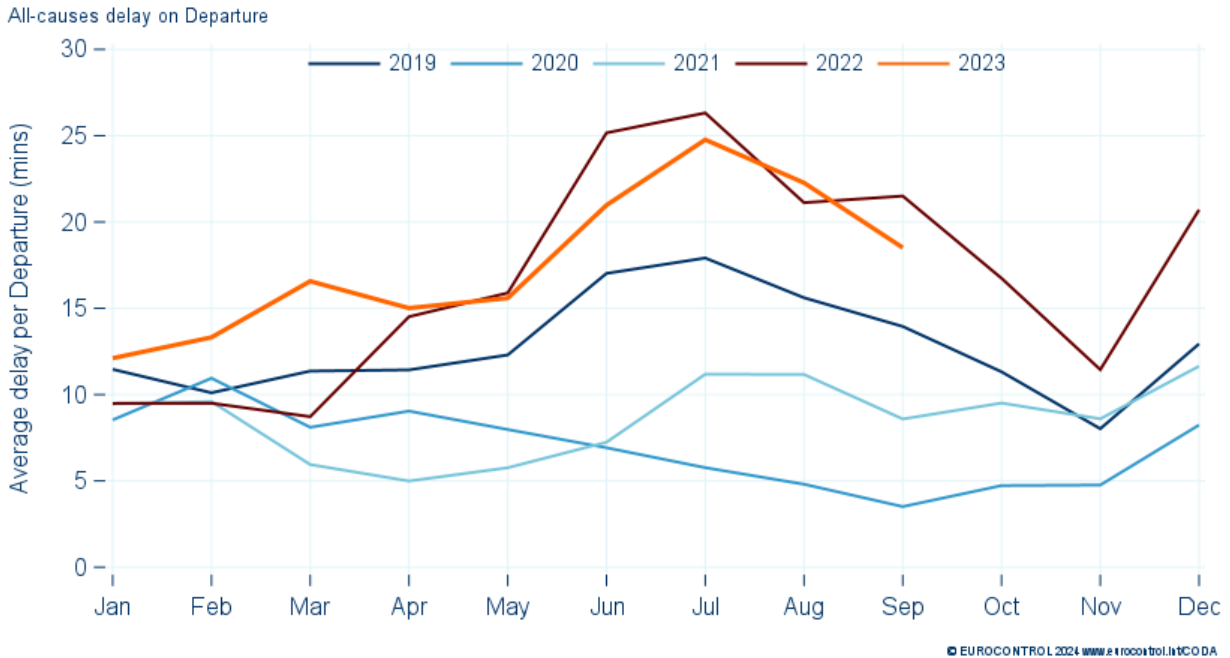
September 2023. The average delay per flight on departure was 18.5 minutes, a significant decrease of 3.0 minutes compared to September 2022 where the average delay per flight was 18.5 minutes per flight.

Flights departing London Gatwick airports continued to see the impact of en-route ATFM regulations as well as ATFM arrival regulations on inbound flights, caused by weather, ATC staffing and aerodrome capacity regulations. Lisbon airport continued to see apron capacity issues causing additional local delays. ATC industrial action at Lanzarote and Fuerteventura airports continued throughout the month.

5 Average Delay per Flight (Departure)

The average delay per flight on departure in Q3 2023 decreased to 22.0 minutes per flight from 22.8 minutes in Q3 2022. July and September saw decreases in delay, with the average delay in August higher than the equivalent period (Q3) in 2022.

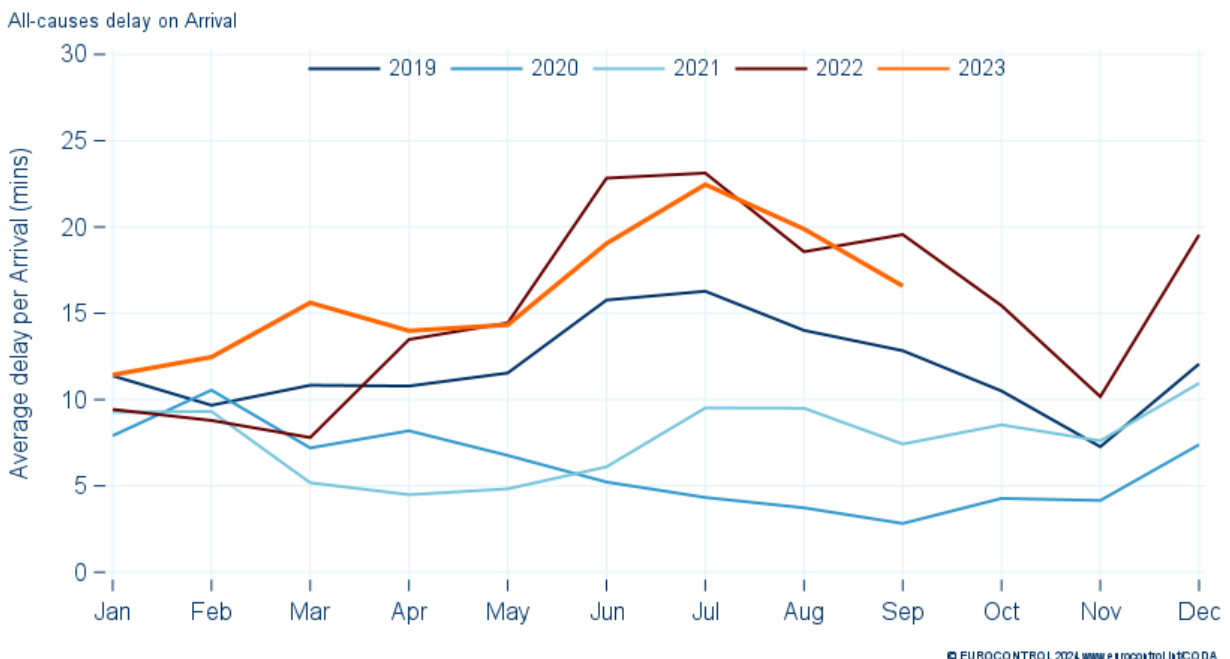
Figure 5. Average Delay per Flight (All-Causes) for Departures



6 Average Delay per Flight (Arrival)

The average delay per flight on arrival (Figure 6) showed a similar trend to that of the departure delay, with the average delay decreasing to 19.7 minutes per flight, compared to 20.4 minutes in Q3 2022.

Figure 6. Average Delay per Flight (All-Causes) for Arrivals



7 Scheduling Indicators

Scheduling correctly is a difficult art: if too long a time is blocked for a flight, the airline will not be able to make best use of resources - staff, airframes, infrastructure. Too short a time can arguably be worse as late flights generate rotational (knock-on) delay with late incoming aircraft and passengers from previous flights having to be accommodated. When flights leave on time but arrive after the scheduled time of arrival, they cause reactionary delays. Schedule padding is essential for air carriers to find schedules, which work with the typical patterns of delay, so that they can deliver passengers on time, and get maximum use out of their aircraft. Consequently, when delays decrease it takes one or two (IATA) seasons for the airline to adapt its schedule accordingly.

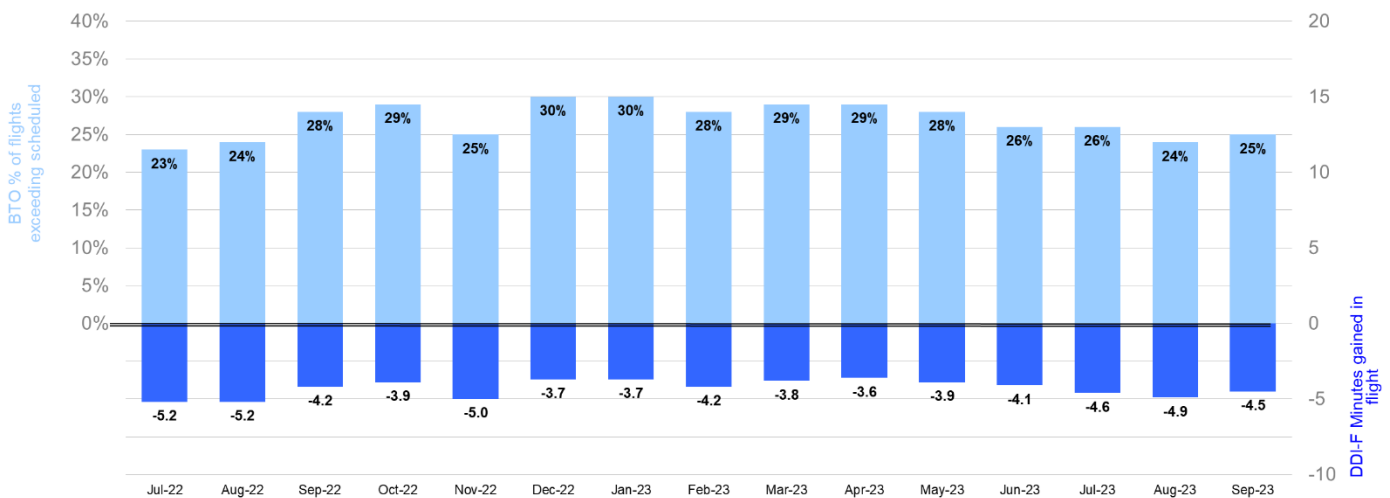
Two CODA scheduling indicators help airline schedulers determine the optimal schedule based on historical flight data:

The Delay Difference Indicator - Flight (DDI-F) or departure delay recovery is the difference between departure and arrival punctuality expressed in minutes. This can be indicated as a positive or negative figure, for example, a flight departing with 20 minutes delay and arriving with 30 minutes arrival delay will have a DDI-F of +10 minutes.

The **European DDI-F in Q3 2023 was -4.7 minutes**, this was a slight decrease in comparison to Q3 2022 where the DDI-F was -4.8 minutes.

The **Block Time Overshoot (BTO)** is the percentage of flights with an actual block time that exceeds the scheduled block time. The **European BTO in Q3 2023 remained stable compared to Q3 2022 at 25%**.

Figure 7. Block Time Overshoot (BTO) and Delay Difference Indicator - Flight (DDI-F) July 2022 – Sep 2023



8 Year-on-Year Trends in All-Causes Indicators

This section summarises the year-on-year trends in the main indicators of delay from all-causes. Here flights are considered delayed from 5 minutes.

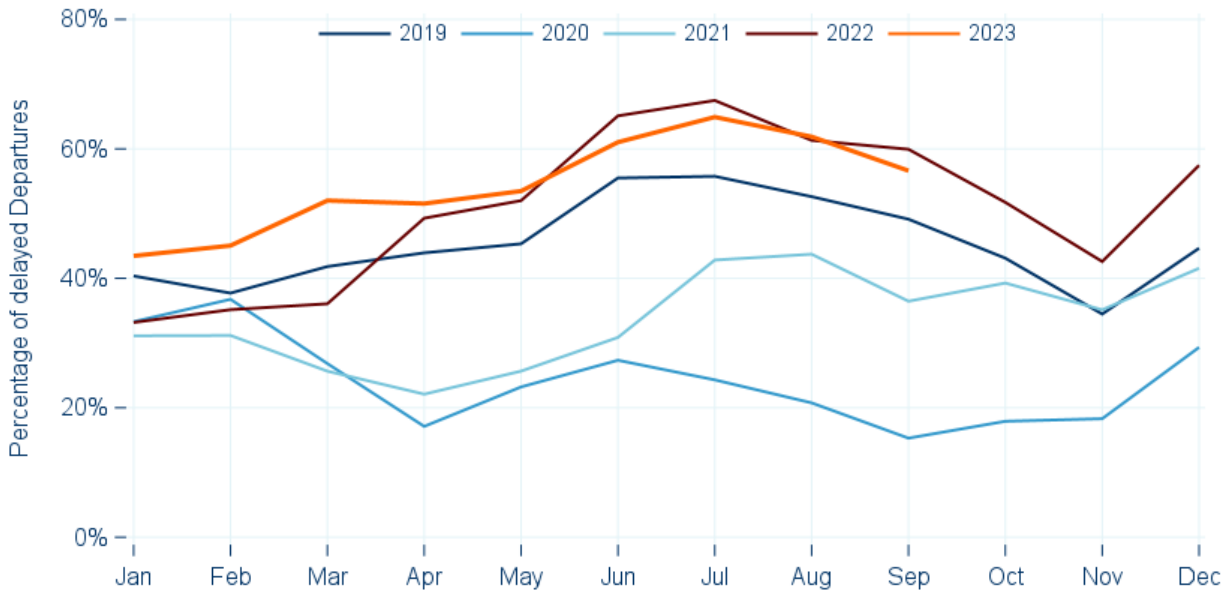
The long-term performance trends can be observed in Figures 8, 9 and 10. In Q3 2023, the average delay per delayed flight on departure (ADDD) was 35.8 minutes per flight, compared to 36.5 minutes in Q3 2022. The percentage of flights delayed on departure ≥ 5 mins (PDFD) slightly decreased to 55.6% compared to equivalent period in Q3 2022 where the PDFD was 55.8%.

Figure 8. Average all-causes delay per delayed flight ≥ 5 mins (departures top, arrivals bottom)



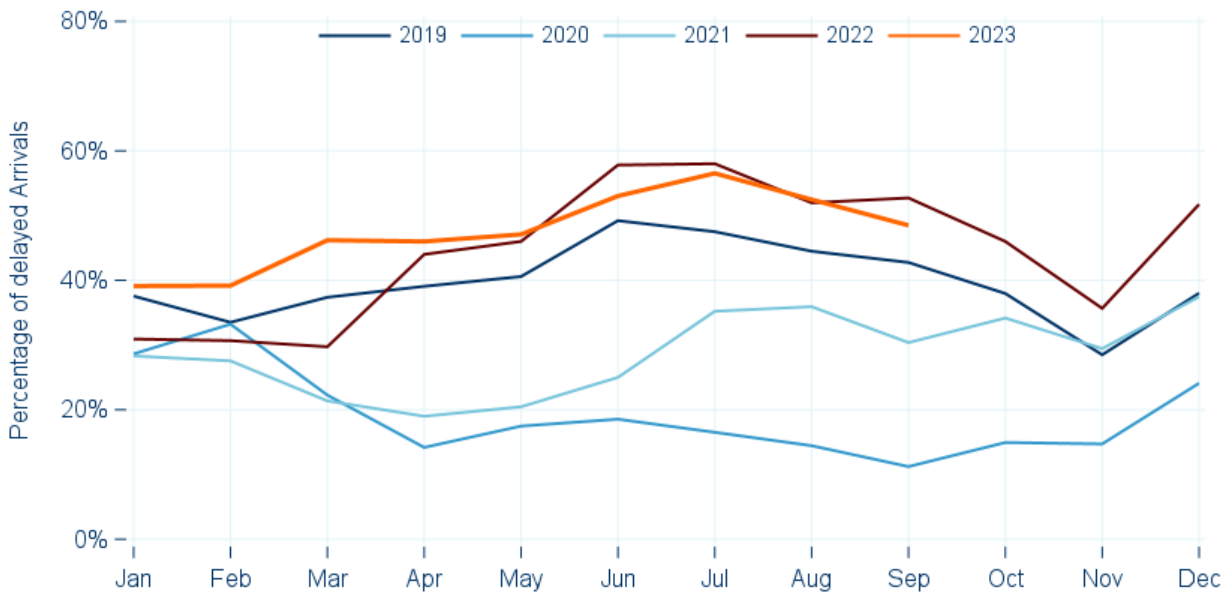
Figure 9. Percentage of flights delayed ≥ 5 mins for all-causes delay (departures top, arrivals bottom)

All-causes delay on Departure



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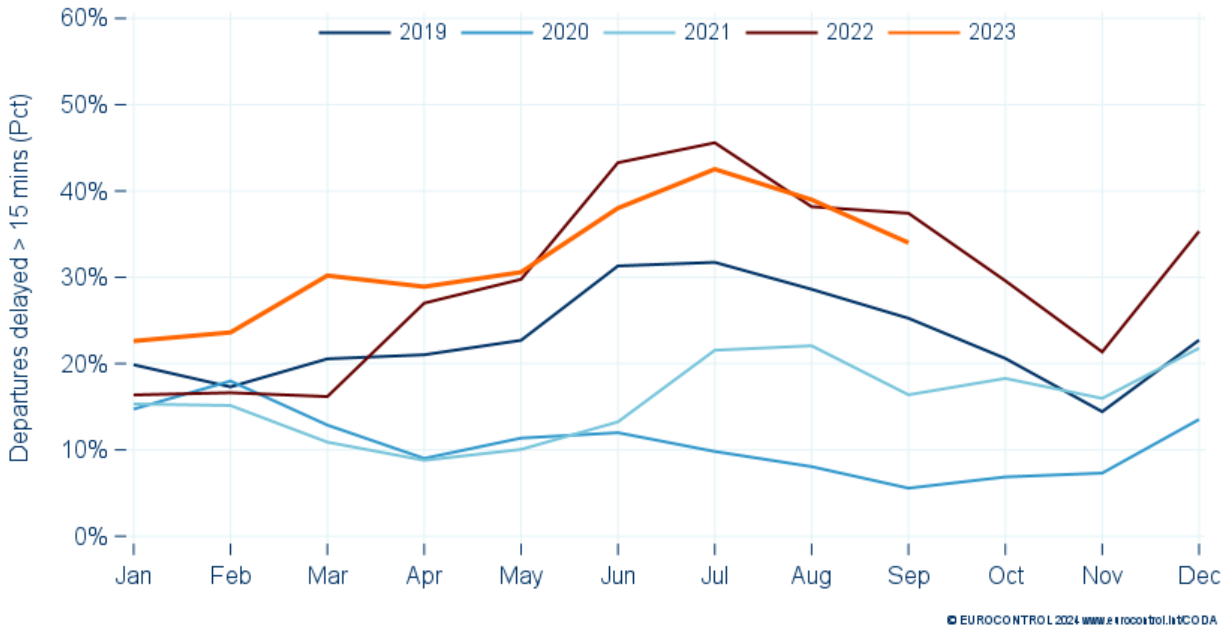
All-causes delay on Arrival



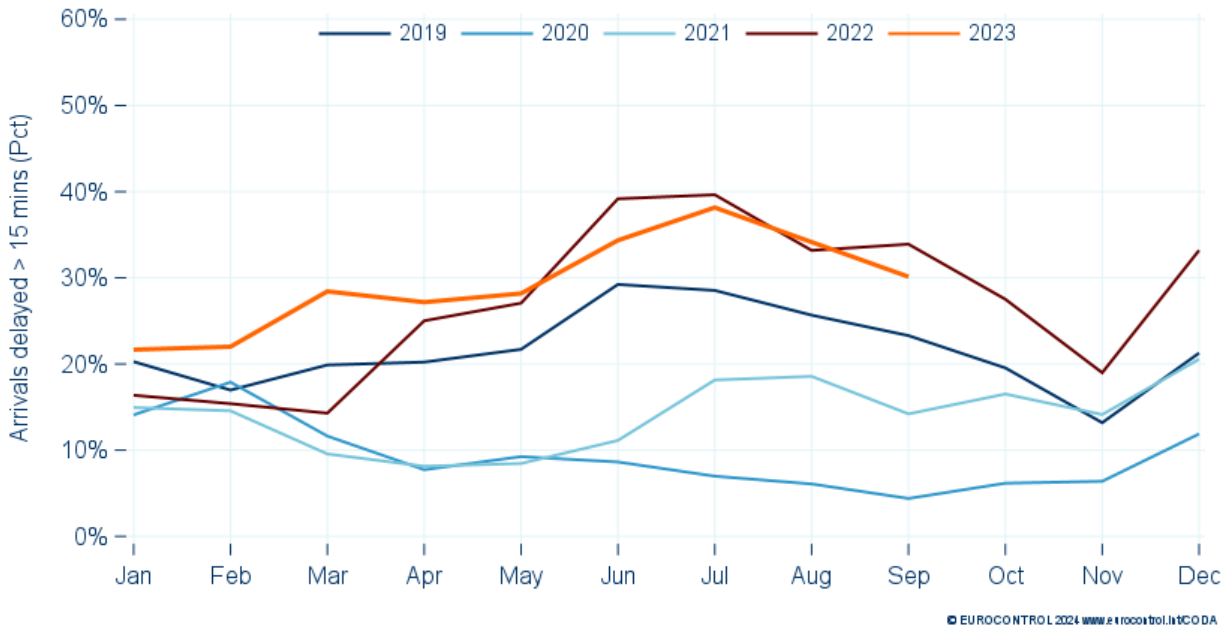
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Figure 10. Percentage of flights delayed >15mins for all-causes (departures top, arrivals bottom)

All-causes delay on Departure



All-causes delay on Arrival



9 Annex Standard IATA Delay Codes (AHM 730)

Others

00-05	AIRLINE INTERNAL CODES
06 (OA)	NO GATE STAND AVAILABILITY DUE TO OWN AIRLINE ACTIVITY Including Early Arrivals
09 (SG)	SCHEDULED GROUND TIME LESS THAN DECLARED MINIMUM GROUND TIME

Passenger and Baggage

11 (PD)	LATE CHECK-IN, acceptance after deadline
12 (PL)	LATE CHECK-IN, congestions in check-in area
13 (PE)	CHECK-IN ERROR, passenger and baggage
14 (PO)	OVERSALES, booking errors
15 (PH)	BOARDING, discrepancies and paging, missing checked-in passenger
16 (PS)	COMMERCIAL PUBLICITY PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items
17 (PC)	CATERING ORDER, late or incorrect order given to supplier
18 (PB)	BAGGAGE PROCESSING, sorting etc.
19 (PW)	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.

Cargo and Mail

21 (CD)	DOCUMENTATION, errors etc.
22 (CP)	LATE POSITIONING
23 (CC)	LATE ACCEPTANCE
24 (CI)	INADEQUATE PACKING
25 (CO)	OVERSALES, booking errors
26 (CU)	LATE PREPARATION IN WAREHOUSE
27 (CE)	DOCUMENTATION, PACKING etc (<i>Mail Only</i>)
28 (CL)	LATE POSITIONING (<i>Mail Only</i>)
29 (CA)	LATE ACCEPTANCE (<i>Mail Only</i>)

Aircraft and Ramp Handling

31 (GD)	AIRCRAFT DOCUMENTATION LATE INACCURATE, weight and balance, general declaration, pax manifest, etc.
32 (GL)	LOADING UNLOADING, bulky, special load, cabin load, lack of loading staff
33 (GE)	LOADING EQUIPMENT, lack of or breakdown, e.g. container pallet loader, lack of staff
34 (GS)	SERVICING EQUIPMENT, lack of or breakdown, lack of staff, e.g. steps
35 (GC)	AIRCRAFT CLEANING
36 (GF)	FUELLING DEFUELLING, fuel supplier
37 (GB)	CATERING, late delivery or loading
38 (GU)	ULD, lack of or serviceability
39 (GT)	TECHNICAL EQUIPMENT, lack of or breakdown, lack of staff, e.g. pushback

Technical and Aircraft Equipment

41 (TD)	AIRCRAFT DEFECTS.
42 (TM)	SCHEDULED MAINTENANCE, late release.
43 (TN)	NON-SCHEDULED MAINTENANCE, special checks and or additional works beyond normal maintenance schedule.
44 (TS)	SPARES AND MAINTENANCE EQUIPMENT, lack of or breakdown.
45 (TA)	AOG SPARES, to be carried to another station.
46 (TC)	AIRCRAFT CHANGE, for technical reasons.
47 (TL)	STAND-BY AIRCRAFT, lack of planned stand-by aircraft for technical reasons.
48 (TV)	SCHEDULED CABIN CONFIGURATION VERSION ADJUSTMENTS.

Damage to Aircraft & EDP Automated Equipment Failure

51 (DF)	DAMAGE DURING FLIGHT OPERATIONS, bird or lightning strike, turbulence, heavy or overweight landing, collision during taxiing
52 (DG)	DAMAGE DURING GROUND OPERATIONS, collisions (other than during taxiing), loading off-loading damage, contamination, towing, extreme weather conditions
55 (ED)	DEPARTURE CONTROL
56 (EC)	CARGO PREPARATION DOCUMENTATION
57 (EF)	FLIGHT PLANS
58 (EO)	OTHER AUTOMATED SYSTEM

Flight Operations and Crewing

61 (FP)	FLIGHT PLAN, late completion or change of, flight documentation
62 (FF)	OPERATIONAL REQUIREMENTS, fuel, load alteration
63 (FT)	LATE CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby (flight deck or entire crew)
64 (FS)	FLIGHT DECK CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.
65 (FR)	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements
66 (FL)	LATE CABIN CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby
67 (FC)	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.
68 (FA)	CABIN CREW ERROR OR SPECIAL REQUEST, not within operational requirements
69 (FB)	CAPTAIN REQUEST FOR SECURITY CHECK, extraordinary

Weather

71 (WO)	DEPARTURE STATION
72 (WT)	DESTINATION STATION
73 (WR)	EN ROUTE OR ALTERNATE
75 (WI)	DE-ICING OF AIRCRAFT, removal of ice and or snow, frost prevention excluding unserviceability of equipment
76 (WS)	REMOVAL OF SNOW, ICE, WATER AND SAND FROM AIRPORT
77 (WG)	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS

Air Traffic Flow Management Restrictions

81 (AT)	ATFM due to ATC EN-ROUTE DEMAND CAPACITY, standard demand capacity problems
82 (AX)	ATFM due to ATC STAFF EQUIPMENT EN-ROUTE, reduced capacity caused by industrial action or staff shortage, equipment failure, military exercise or extraordinary demand due to capacity reduction in neighbouring area
83 (AE)	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and or runway closed due to obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights
84 (AW)	ATFM due to WEATHER AT DESTINATION

Airport and Government Authorities

85 (AS)	MANDATORY SECURITY
86 (AG)	IMMIGRATION, CUSTOMS, HEALTH
87 (AF)	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.
88 (AD)	RESTRICTIONS AT AIRPORT OF DESTINATION, airport and or runway closed due to obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights
89 (AM)	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and or runway closed due to obstruction or weather ¹ , industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights

Reactionary

91 (RL)	LOAD CONNECTION, awaiting load from another flight
92 (RT)	THROUGH CHECK-IN ERROR, passenger and baggage
93 (RA)	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector
94 (RS)	CABIN CREW ROTATION, awaiting cabin crew from another flight
95 (RC)	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)
96 (RO)	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical

Miscellaneous

97 (MI)	INDUSTRIAL ACTION WITH OWN AIRLINE
98 (MO)	INDUSTRIAL ACTION OUTSIDE OWN AIRLINE, excluding ATS
99 (MX)	OTHER REASON, not matching any code above

SOURCE: IATA – Airport Handling Manual (730 & 731)

Standard IATA Delay Code Sub-Codes (AHM 731)

73 (WR)	WEATHER: EN ROUTE OR ALTERNATE Z OUTSIDE AIRCRAFT LIMITS Y OUTSIDE CREW LIMITS X ETOPS
81 (AT)	ATFM DUE TO ATC EN-ROUTE DEMAND CAPACITY, standard demand capacity problems Z ATC ROUTEING Y HIGH DEMAND OR CAPACITY X ENVIRONMENTAL W WEATHER G OTHER
82 (AX)	ATFM DUE TO ATC STAFF EQUIPMENT EN-ROUTE, reduced capacity caused by industrial action or shortage or equipment failure, extraordinary demand due to capacity reduction in neighbouring area Z INDUSTRIAL ACTION Y EQUIPMENT FAILURE X STAFF SHORTAGE W MILITARY ACTIVITY V SPECIAL EVENT

¹ Restriction due to weather in case of ATFM regulation only, else refer to code 71 (WO)

- 83 (AE) ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT, airport and or runway closed due to obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights**
- Z HIGH DEMAND ATC CAPACITY
 - Y INDUSTRIAL ACTION
 - X EQUIPMENT FAILURE
 - W STAFF SHORTAGE
 - V ACCIDENT INCIDENT
 - U MILITARY ACTIVITY
 - T SPECIAL EVENT
 - S NOISE ABATEMENT NIGHT CURFEW
 - P HIGH DEMAND AIRPORT FACILITIES
 - G OTHER
- 85 (AS) MANDATORY SECURITY**
- Z MANDATORY SECURITY CHECK
 - Y SECURITY CONTROL CHECKPOINTS
 - X BAGGAGE AVI SECURITY
 - W BAGGAGE IDENTIFICATION UNLOADING INTENDED
 - V AIRPORT TERMINAL SECURITY
 - U AIRLINE AIRCRAFT SECURITY CHECK
 - T EXTRAORDINARY SECURITY EVENTS
 - G OTHER
- 86 (AG) IMMIGRATION, CUSTOMS, HEALTH**
- Z IMMIGRATION EMMIGRATION
 - Y CUSTOMS
 - X HEALTH
 - G OTHER
- 87 (AF) AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.**
- Z PARKING STANDS LIMITATION NO PARKING STANDS AVAILABLE, EXCLUDING EARLY ARRIVALS
 - Y RAMP CONGESTION, ABNORMAL STAND ACCESS LIMITATION (NON-ATC)
 - X BUILDINGS
 - W GATE LIMITATION NO GATE AVAILABLE EXCLUDING EARLY ARRIVALS
 - V BAGGAGE SORTING SYSTEM DOWN SLOW
 - U NO PUSH BACK CLEARANCE DUE TO INFRASTRUCTURE (NON-ATC)
 - T JET BRIDGE INOPERATIVE
 - S LACK OF CHECK IN COUNTERS
 - R AIRFIELD ELECTRICAL SYSTEM FAILURE
 - P PASSENGER TRANSPORT SYSTEM FAILURE
 - N PUBLIC ADDRESS FLIGHT INFORMATION DISPLAY SYSTEM FAILURE
 - M INSUFFICIENT FIRE COVER
 - J LATE POSITIONING OF AIRCRAFT (WHEN RESPONSIBILITY OF AIRPORT)
 - I SERVICE ROAD RESTRICTION
 - H LATE ARRIVAL OR LACK OF FOLLOW ME VEHICLE
 - G ANY OF THE ABOVE AT THE DESTINATION AIRPORT
- 89 (AM) RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather.**
- Z ATC DEMAND/CAPACITY
 - Y ATC INDUSTRIAL ACTION
 - X ATC STAFFING
 - W ATC EQUIPMENT
 - V ATC ACCIDENT/INCIDENT
 - U MILITARY ACTIVITY/SPECIALFLIGHTS/VIP
 - T ATC SPECIAL EVENT
 - S ATC WEATHER
 - O ENVIRONMENTAL BENEFIT, DELAYED START-UP/PUSHBACK DUE TO USE OF REDUCED STANDARD TAXI TIMES
 - N ATC ENVIRONMENTAL
 - M AIRPORT CLOSURE
 - L RUNWAY/TAXIWAYCLOSURE
 - K MISCELLANEOUS START-UP DELAY (LOCAL ATC)
 - J LOST FLIGHT PLAN BY ATC
 - I LATE PUSHBACK GIVEN DUE TO OTHER REASONS THAN INFRASTRUCTURE
 - H CONSTRUCTION WORK/MAINTENANCE
 - G OTHER
- 93 (RA) AIRCRAFT ROTATION, LATE ARRIVAL OF AIRCRAFT FROM ANOTHER FLIGHT**
- Z LATE ARRIVAL DUE DEPARTURE DELAY AT PREVIOUS STATION
 - Y LATE ARRIVAL DUE ENROUTE DELAY
 - X LATE ARRIVAL DUE DELAY AFTER LANDING
 - W LATE ARRIVAL DUE TO HIGH DEMAND FOR DESTINATION STATION
 - V LATE ARRIVAL DUE TO WEATHER AT DESTINATION
 - U LATE ARRIVAL DUE TO TECHNICAL REASONS



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