ATM Network Performance Report

May 2019

Table of contents

Summary

This report focusses on the performance of the Air Traffic Network in May 2019. The combined 75th percentile performance during May for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **3.3** minutes. The median airborne delay across these airports was **0.5** minutes. These results met the KPI targets. The 75th percentile decreased compared to the same period last year while the median was steady.

The airborne delay outcomes for May were the second lowest observed in FY 2019. This corresponded with a low number (13) of notable events in May – the lowest in FY 2019 – as a result of relative favourable weather conditions. There were eight notable events in Melbourne, three in Sydney, and one each in Brisbane and Perth.

The performance for the FY 2019 year to date is above the targets for the median (0.7 minutes, with target 0.5) and 75th percentile (3.7 minutes, with target 3.4). Compared to the same period in FY 2018 there has been an increase in the median (from 0.6 minutes) and the 75th percentile (from 3.5 minutes).

There were 13 notable events in May, which are summarised under each of the airport sections below**.** Five of these notable events resulted in a prolonged and moderately elevated airborne delay for the entire day (i.e. 75th percentile greater than seven minutes across the entire day). These events are labelled in **Figure** 1. Eight events resulted in a shorter and more intense period of elevated airborne delay (i.e. two or more consecutive hours where the 75th percentile was over 10 minutes).

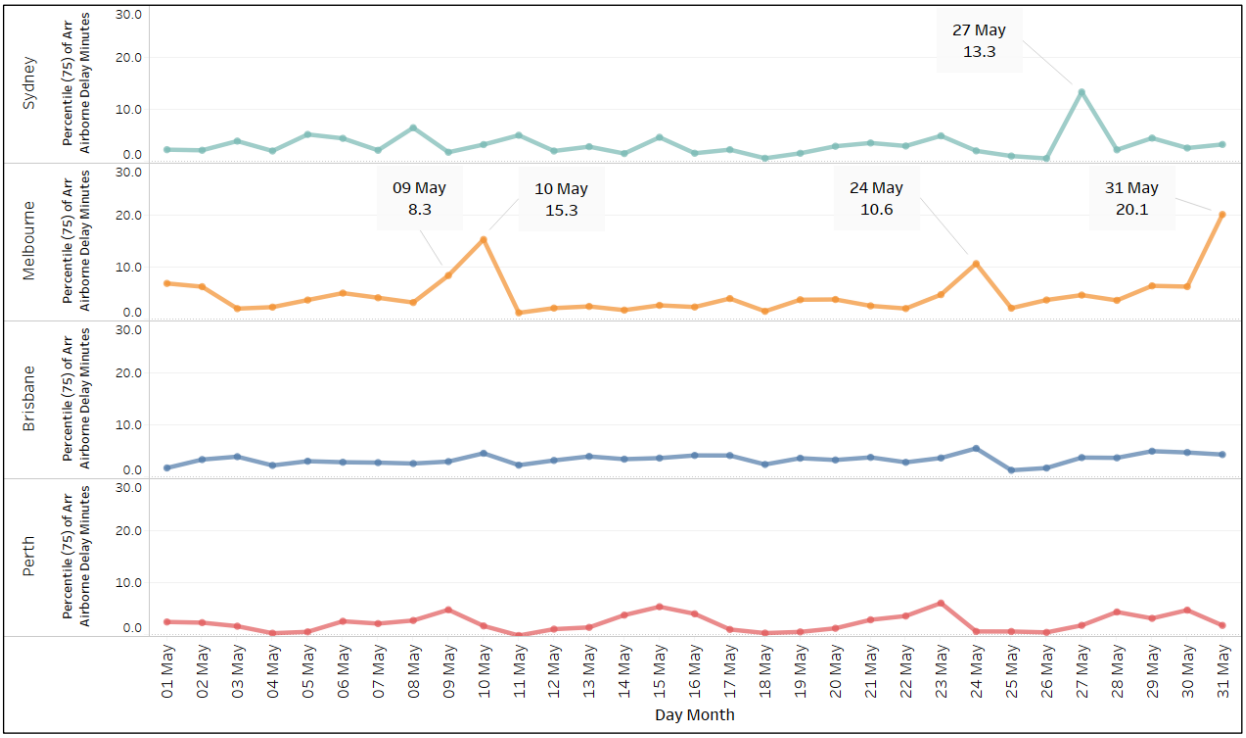

Figure 1: Notable prolonged delay impact events during May 2019

Numbers underneath the dates indicate the extent of the 75th percentile of airborne delay in minutes across the day.

Network Wide Performance

Airborne delay

The combined median and 75th percentile airborne delay at the four major airports is indicated in **Figure 2**.

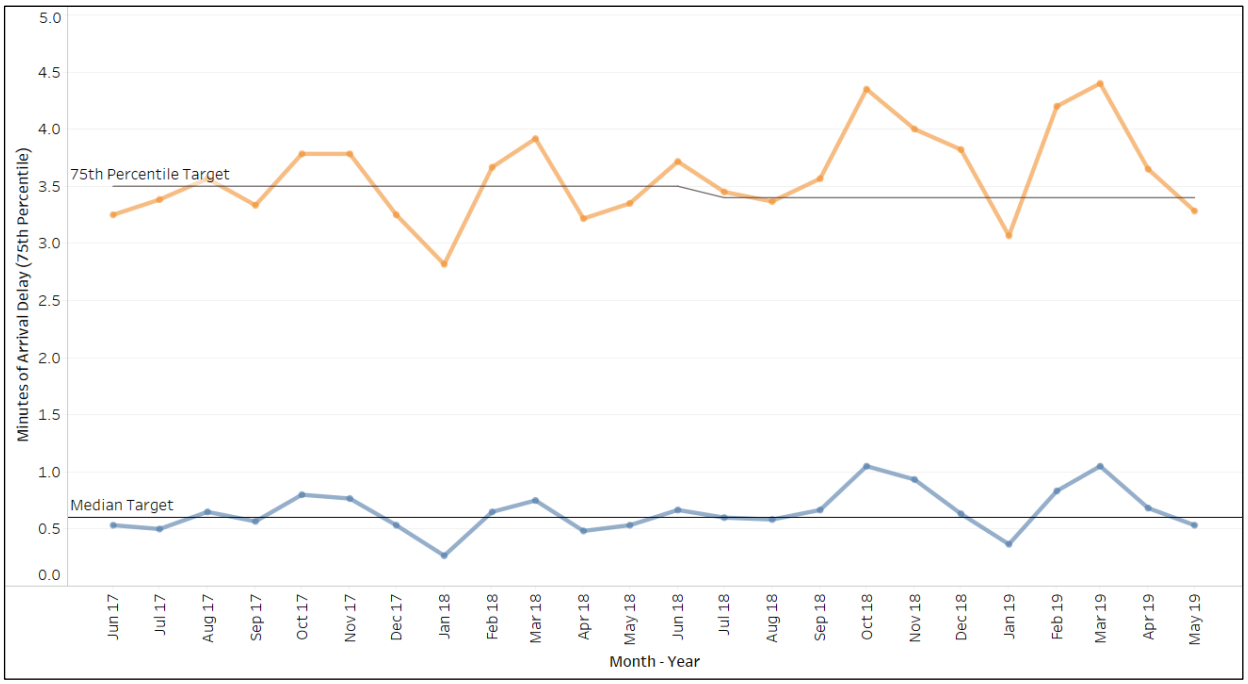

Figure 2: 24-month trend for airborne delay

The long term (48-month) trends of the 75th percentile airborne delay for each of the four major airports are depicted in **Figure 3.** The trends for Sydney and Melbourne are upwards, and the trends for Brisbane and Perth are downwards. More detailed analysis for each airport is presented later in this report.

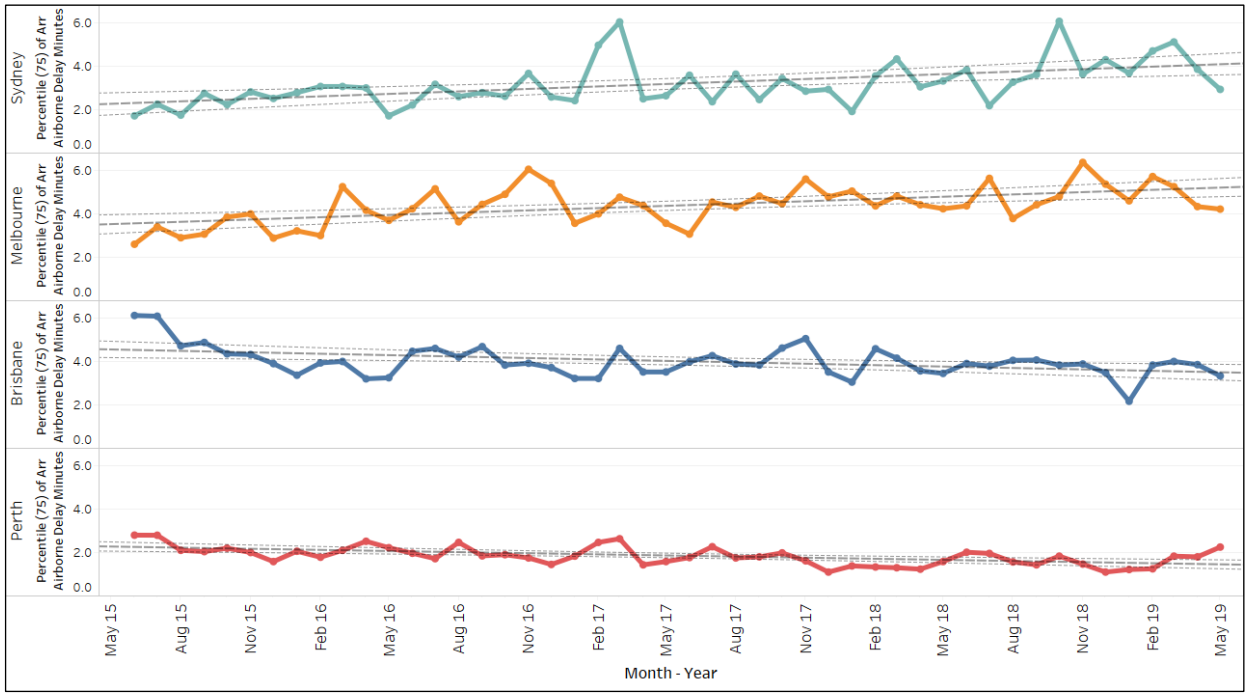

Figure 3: 48-month trend for airborne delay (75th percentile) by airport

The monthly total minutes of airborne delay for Sydney, Melbourne, Brisbane and Perth combined is depicted in **Figure 4**. Figures are adjusted for the number of days in the month. May was the second lowest month of adjusted total delay in 2018-19.

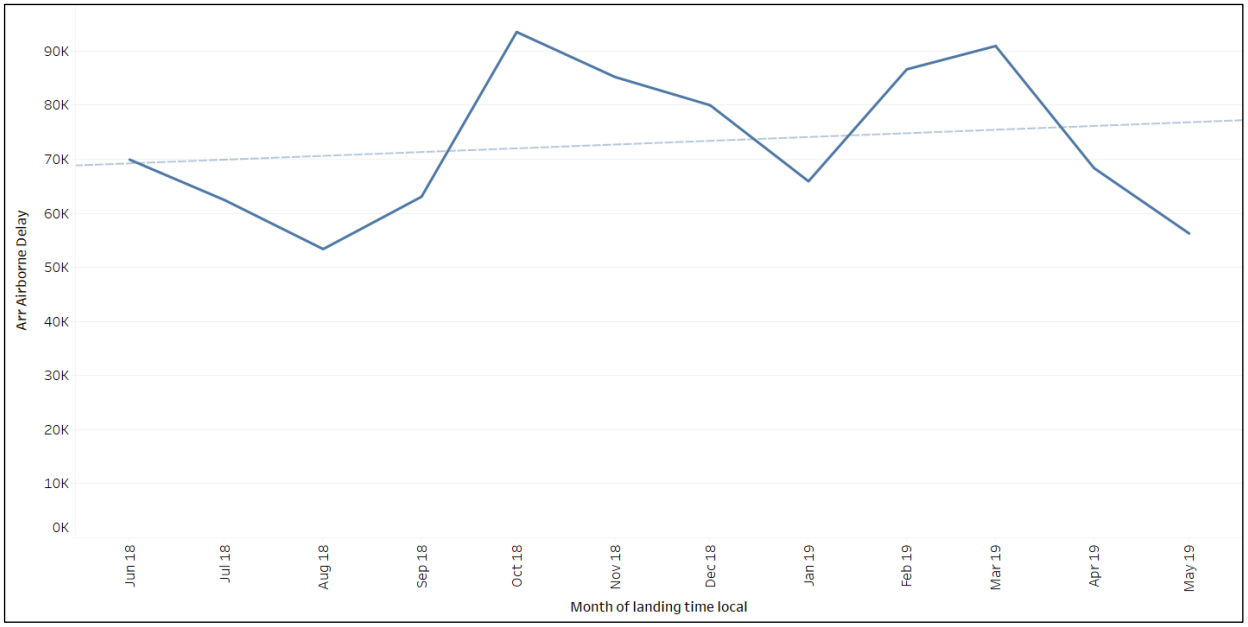

Figure 4: Total amount of airborne delay by month for Sydney, Melbourne, Brisbane and Perth Airports (June 2018 to May 2019, inclusive).

Runway configuration

The runway configuration usage for each airport is shown in **Figure 5**. The availability of Land and Hold Short Operations (LAHSO) at Melbourne increased by around 50% compared to the same month last year (60 hours compared to 41 hours in May 2018). Perth was only able to use single runway operations due to the closure of runway 06/24 for regular maintenance. This increased the number of hours of single runway operations in Perth to 464 hours compared to 90 hours in May 2018. The profile of runway configurations in Sydney and Brisbane was similar to the same period last year.

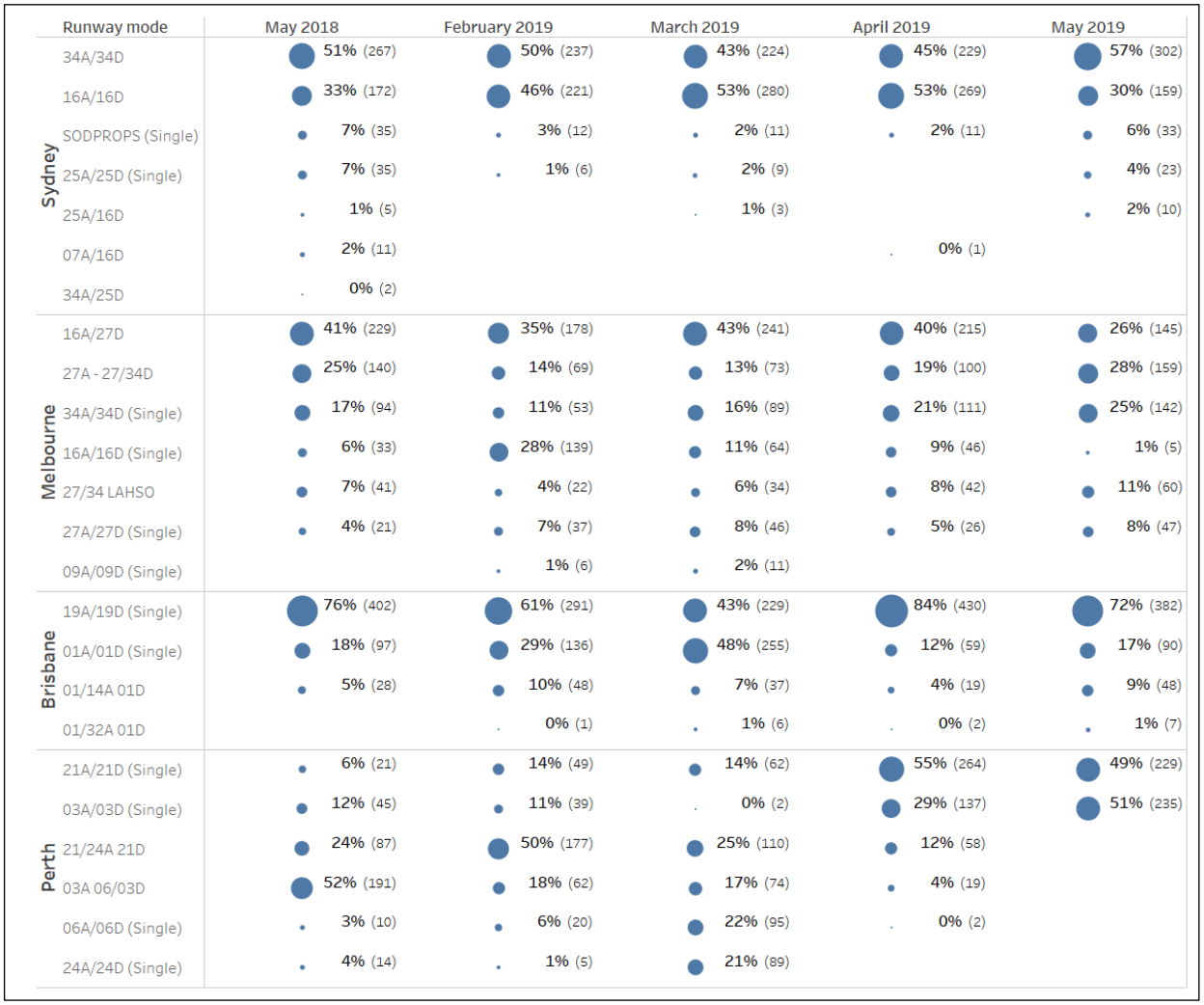

Figure 5: May runway configuration usage (percentage of total and hours in brackets) by airport (Sydney 06-22L, Melbourne 06-23L, Brisbane 06-22L and Perth 06-21L). Single runway configurations indicated in parentheses. Note: Sydney runway mode selection takes into account the Long Term Operating Plan to manage aircraft noise.

Traffic levels and composition changes

Figure 6 shows traffic levels and composition changes since the beginning of 2017. Overall traffic levels are relatively steady across all four airports. The changes in total traffic from 2017 to 2018 were 0.0% at Sydney, 1.7% at Melbourne, -1.3% at Brisbane and 0.2% Perth.

However, there have been changes to the domestic-international flight mix during this time. Sydney, Melbourne and Brisbane have all seen an increase in the level of international traffic (orange bars). In 2018, international traffic increased by 4% in Sydney, 10% in Melbourne and 8% in Brisbane compared to 2017. This indicates that there are more flights potentially impacting on the effectiveness Ground Delay Program as ground delay is only applied to domestic flights. An increase in aircraft that are not required to comply to with a regulated arrival time may lead to increases in airborne delay.

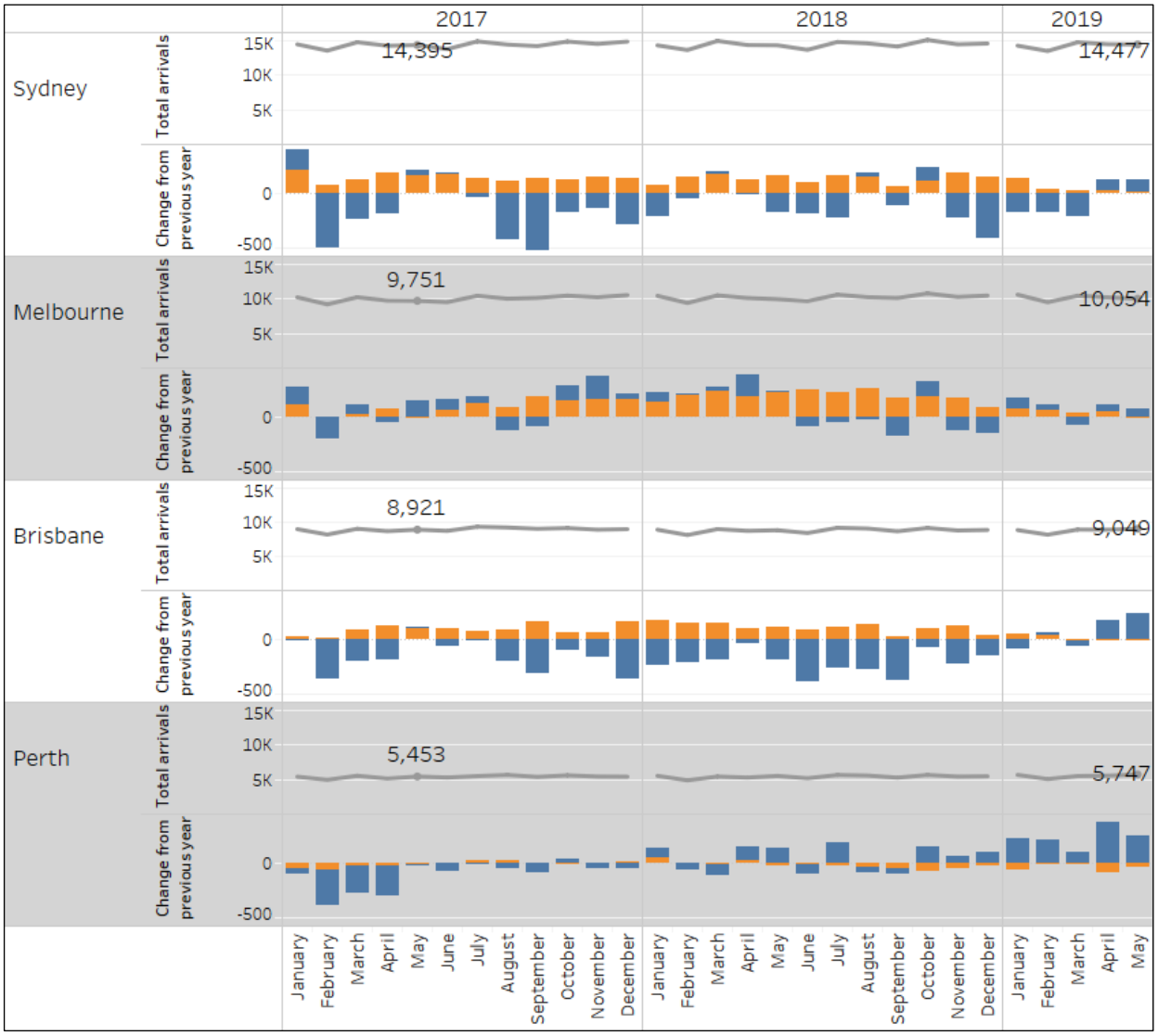

Figure 6: Traffic levels and composition change since January 2017. Grey lines show overall traffic numbers (annotated figures compare current month to same month two years earlier). Coloured bars show change in traffic compared to the same month the previous year for domestic (blue) and international (orange) flights.

Demand and capacity

Figure 7 details estimates of the number of hours each month where demand is significantly above capacity (hours where demand is three or more flights higher than the METCDM rate). The 24-month trend for excess demand is up in Melbourne and down in Brisbane.

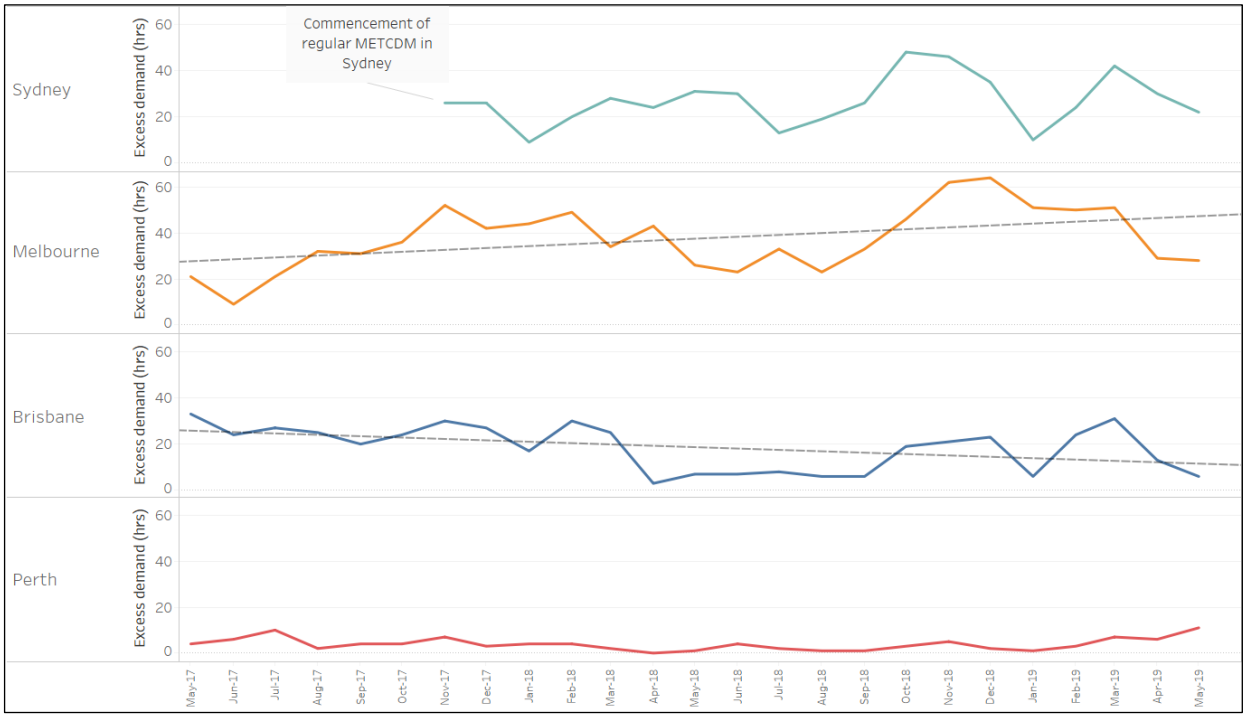

Figure 7: Excess demand estimates. Line indicates number of hours where estimated demand exceeds the METCDM rate for that hour by three or more flights. Demand is estimated using Harmony Base Estimated Landing Time.

Sydney

Airborne delay

The 75th percentile performance figures for airborne delay at Sydney are indicated in **Figure 8.** May performance for the median (0.2 minutes) and the 75th percentile (2.9 minutes) met the targets. Compared to the same month last year, there was a decrease in the airborne delay performance for the 75th percentile (from 3.3 minutes) and no change to the median.

The long-term (48-month) and 24-month trends for airborne delay at Sydney are upwards.

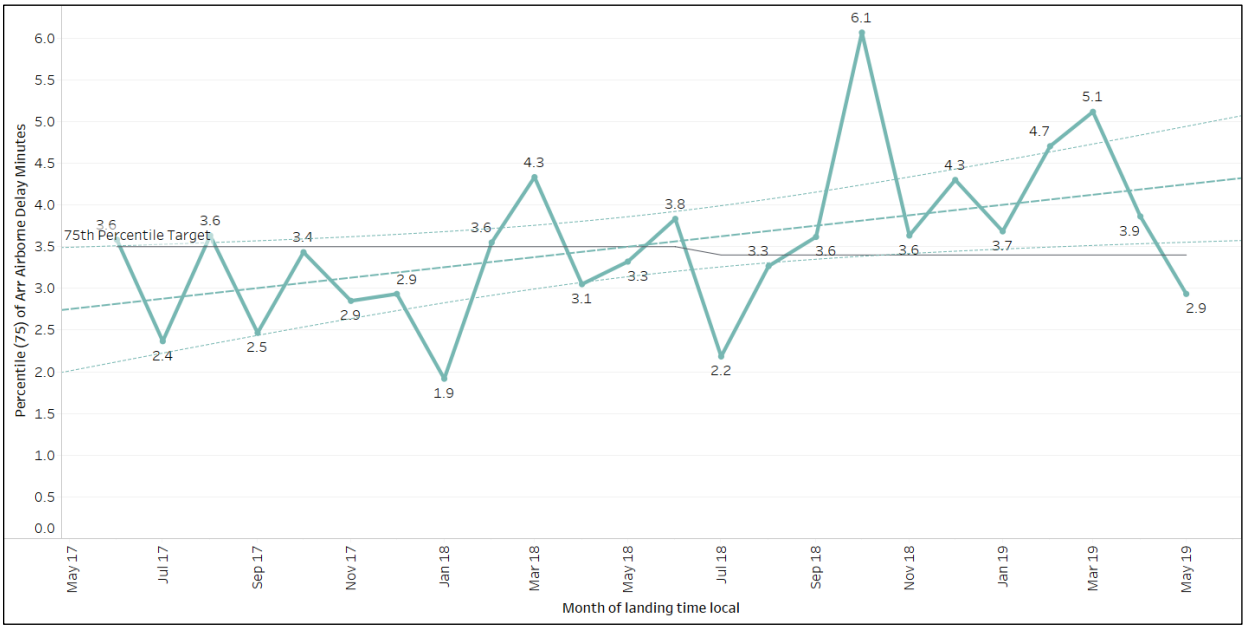

Figure 8: Sydney airborne delay 75th percentile (last 24 months)

Notable events

Table 2 describes the notable airborne delay and other events during May in Sydney.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
8 May	11-12	6.4	Reduced capacity due to strong winds requiring change to single runway operations. Tactical rates reduced.
21 May	07-09	3.4	Concentration of demand due to off-schedule internationals during busy morning period.
27 May	17-22	13.3	Reduced capacity due to missed approaches and runway inspections during extended period of single runway operations.

Table 2: Notable event descriptions for Sydney.

Melbourne

Airborne delay

The 75th percentile performance figures for airborne delay at Melbourne are indicated in **Figure 9.** May performance for the median (1.1 minutes) and the 75th percentile (4.2 minutes) did not meet the targets. Compared to the same month last year, there was a decrease in the airborne delay median performance (from 1.2 minutes) and no change to the 75th percentile.

The long-term (48-month) trend for airborne delay at Melbourne is upwards.

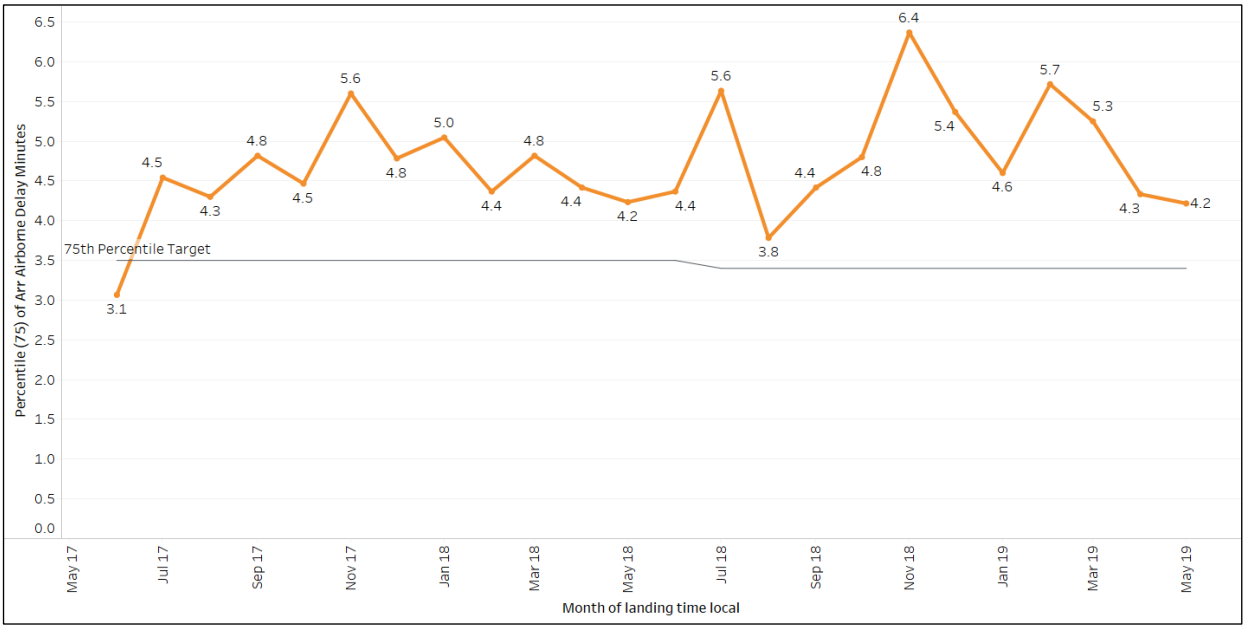

Figure 9: Melbourne airborne delay 75th percentile (last 24 months)

Notable events

Table 3 describes the notable airborne delay events during May in Melbourne.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
2 May	07-08	6.2	Concentration of demand due to off-schedule internationals and enroute weather diversions during busy morning period.
9 May	07-08 & 18-19	8.3	Reduced capacity in peak morning period due to winds requiring single runway operations earlier than planned. Concentration of demand due to late non-compliant flights during extended period of low capacity (single runway operations).
10 May	07-12 & 17-19	15.3	Concentration of demand in the morning due to off-schedule internationals at the beginning of a busy period with low rates. Concentration of demand in the evening due to late non-compliant flights at the beginning of a busy period.

17 May	17-18	3.9	Concentration of demand due to late non-compliant flights in the busy period evening period.
24 May	08-09 & 16-19	10.6	Concentration of demand due to off-schedule internationals in the busy morning period. Concentration of demand due to late non-compliant flights in the busy evening period.
27 May	08-09	4.5	Concentration of demand due to late non-compliant and off-schedule international flights during morning peak period.
30 May	07-08	6.2	Concentration of demand due to late non-compliant and off-schedule international flights during morning peak period.
31 May	07-12 & 18-21	20.1	Reduced capacity due to low cloud impacting visibility. Tactical rates reduced in the morning. Level 1 GDP Revision at 1415L with reduced rates. Further tactical rate reductions required in afternoon and evening.

Table 3: Notable event descriptions for Melbourne.

CTOT variations

The morning peak (0700-1100 local) is in general the most constrained period of the day in Melbourne. Variations from CTOT during the early morning hours are the focus of this section due to regular concentration of demand leading to increases in delay. **Table 4** provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes). Flights that appear at least twice (early) or five times (late) have been included. This facilitates collaboration to identify patterns and causes of delay.

The CTOT against the ATOT (actual take off time) measure is used as a proxy until the COBT (calculated off blocks time) against AOBT (actual off blocks time) can be routinely reported on.

CTOT Variation	ACID	ADEP	Local - ALDT HOUR	
Early	RXA3653	Mildura	8	3
	QLK280D	Launceston	7	2
Late	QFA613	Brisbane	11	9
	QFA421	Sydney	11	7
	QFA411	Sydney	9	6
	QFA415	Sydney	9	5
	QFA423	Sydney	11	5

Table 4: CTOT variation for Melbourne arrivals 0700-1100 local – May 2019. Number of occasions that each flight departed early or late with respect to its CTOTs (-5 to +15 minutes).

The evening period (1700 to 2000 local) was also analysed as several delay events occurred during this period (**Table 5**).

CTOT Variation	ACID	ADEP	Local - ALDT HOUR	
Early	QLK286D	Launceston	18	5
	QLK58D	Devonport	17	3
	RXA3187	Albury	18	3
	QFA7365	Launceston	21	2
	RXA3683	Mildura	19	2
Late	QFA459	Sydney	19	9
	QFA839	Darwin	17	8
	QFA465	Sydney	20	7
	QFA479	Sydney	20	7
	QFA451	Sydney	19	6
	QFA477	Sydney	20	6
	TGG472	Adelaide	20	6
	JST525	Sydney	20	5
	QFA455	Sydney	19	5
	QFA493	Sydney	20	5
	TGG269	Sydney	20	5
	VOZ352	Brisbane	21	5
	VOZ684	Perth	17	5
	VOZ878	Sydney	20	5

Table 5: CTOT variation for Melbourne arrivals 1700-2000 local – May 2019. Number of occasions that each flight departed early or late with respect to its CTOTs (-5 to +15 minutes).

Brisbane

Airborne delay

The 75th percentile performance figures for airborne delay at Brisbane are indicated in **Figure 10**. May performance met the target for the 75th percentile (3.3 minutes) but not the median (0.9 minutes). Compared to the same month last year, there was a decrease in the airborne delay 75th percentile performance (from 3.5 minutes) and no change to the median.

The long-term (48-month) trend for airborne delay at Brisbane is downwards.

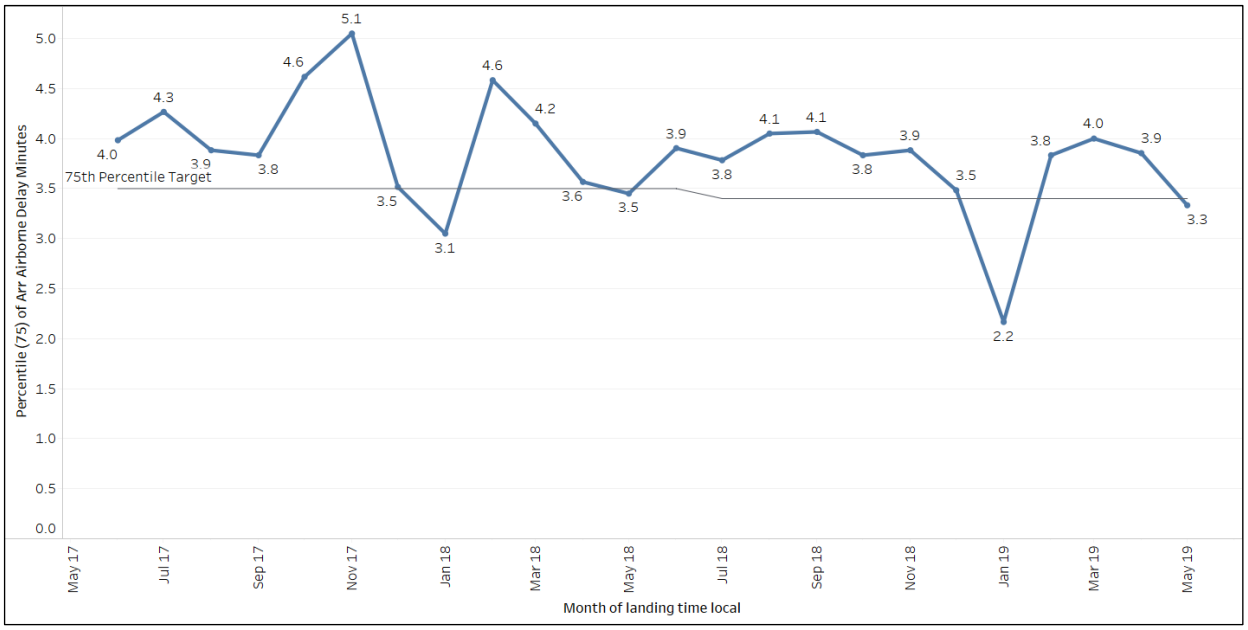

Figure 10: Brisbane airborne delay 75th percentile (last 24 months)

Notable events

Table 6 describes the notable airborne delay events during May in Brisbane.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
24 May	17-18	5.4	Concentration of demand due to late departures from Melbourne flights experiencing taxi delay.

Table 6: Notable event descriptions for Brisbane.

CTOT variations

Variations from CTOT at Brisbane during the afternoon hours (1700-2000 local) are the focus of this section due to regular concentration of demand leading to increases in delay. **Table 7** provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes). Flights that appear at least twice (early) or five times (late) have been included in the table below. This facilitates collaboration to identify patterns and causes of delay.

The CTOT against the ATOT (actual take off time) measure is used as a proxy until the COBT (calculated off blocks time) against AOBT (actual off blocks time) can be routinely reported on.

CTOT Variation	ACID	ADEP	Local - ALDT HOUR	
Early	SKP738	YCCA	17	6
	TFX129	Rockhampton	20	4
	JST822	Sydney	21	3
	QLK369D	Rockhampton	20	3
	YJM	Maryborough	19	3
	QLK325D	Bundaberg	18	2
	QLK465D	Moranbah	18	2
	UJN	Toowoomba	19	2
	YJC	Maryborough	19	2
		Toowoomba	19	2
Late	TGG384	Sydney	20	9
	QFA626	Melbourne	18	7
	QFA634	Melbourne	21	7
	QFA825	Darwin	17	6
	VOZ337	Melbourne	18	6
	QFA546	Sydney	20	5
	QFA548	Sydney	20	5
	TGG536	Melbourne	19	5
	VOZ347	Melbourne	20	5
	VOZ351	Melbourne	21	5
	VOZ957	Sydney	17	5

Table 7: CTOT variation for Brisbane arrivals 1700-2000 local – May 2019. Number of occasions (minimum two early; minimum five late) that each flight departed early or late with respect to its CTOT (-5 to +15 minutes)

Perth

Airborne delay

The 75th percentile performance figures for airborne delay at Perth are indicated in **Figure 11**. May performance for the median (-0.1 minutes) and the 75th percentile (2.3 minutes) met the targets. Compared to the same month last year, there was an increase in the airborne delay median performance (from -0.3 minutes) and 75th percentile performance (from 1.6 minutes).

The long-term (48-month) trend for airborne delay at Perth is downwards.

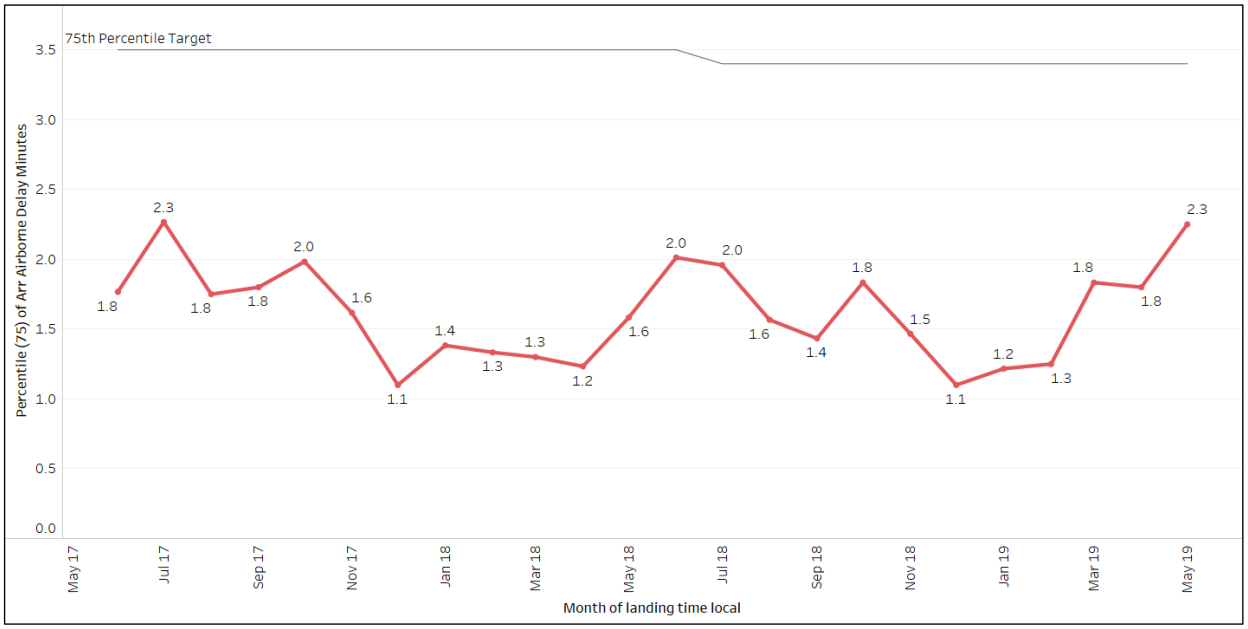

Figure 11: Perth airborne delay 75th percentile (last 24 months)

Notable events

Table 8 describes the notable airborne delay events during May in Perth.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
23 May	10-11	6.0	Concentration of demand due to late non-compliant flights and longer than anticipated flight times.

Table 8: Notable event descriptions for Perth.

Appendix A

Corporate Plan Key Performance Indicator Profile: Arrival airborne delay

Corporate Plan Description:

The median (and 75th percentile) excess time incurred during the arrival airborne phase of flight in reference to the estimated time of arrival for high-volume operations. (High volume operating environments defined as Brisbane, Melbourne, Perth and Sydney).

Corporate Plan Targets:

Year	18/19	19/20	20/21	21/22
75%	3.4	3.3	3.2	3.1
Median	0.6	0.6	0.6	0.6

What is it: Excess time incurred during the arrival phase of flight.

What is measured: It is measured by comparing the estimated flight time and actual flight time for the portion of the flight within 250 NM of the destination aerodrome.

Why 250NM: The 250NM threshold has been identified as the distance from the aerodrome at which tactical arrival demand/capacity balancing measures start taking effect. It is a true reflection of the tactical arrival management of the flight, and is not skewed by other non-related issues such as congestion at the departure aerodrome.

Why measure Median rather than Average/Mean: In some cases, the actual flight time within 250NM of the destination aerodrome will be less than the estimated flight time (e.g.: ATC has provide track shortening). In the dataset, this translates into a 'negative' value for that particular flight.

The Median shows the mid-point of the data set and allows us to demonstrate our impact on all flights, not just the ones that were delayed. Additionally, over short timeframes and small datasets (such as a daily report), Median measurement is more resilient to data errors and small groups of outliers which may skew the average.

Why measure the 75th percentile: This supplements the Median and is valuable to demonstrate how effectively we have managed the arrival of most of the fleet.

The last 25th percentile can typically contain arrival data from flights that were impacted by non-routine events, such as Medical priority traffic or aircraft in an emergency or diversion.

How do we measure:

Uses the high-fidelity Dalí aircraft trajectory model. For Sydney, some assumptions are built in to calculations as the actual flight path is unique for each flight (open STARs).