

Aircraft & Engine Valuation Panel

AFRA Annual Conference
6 June 2023

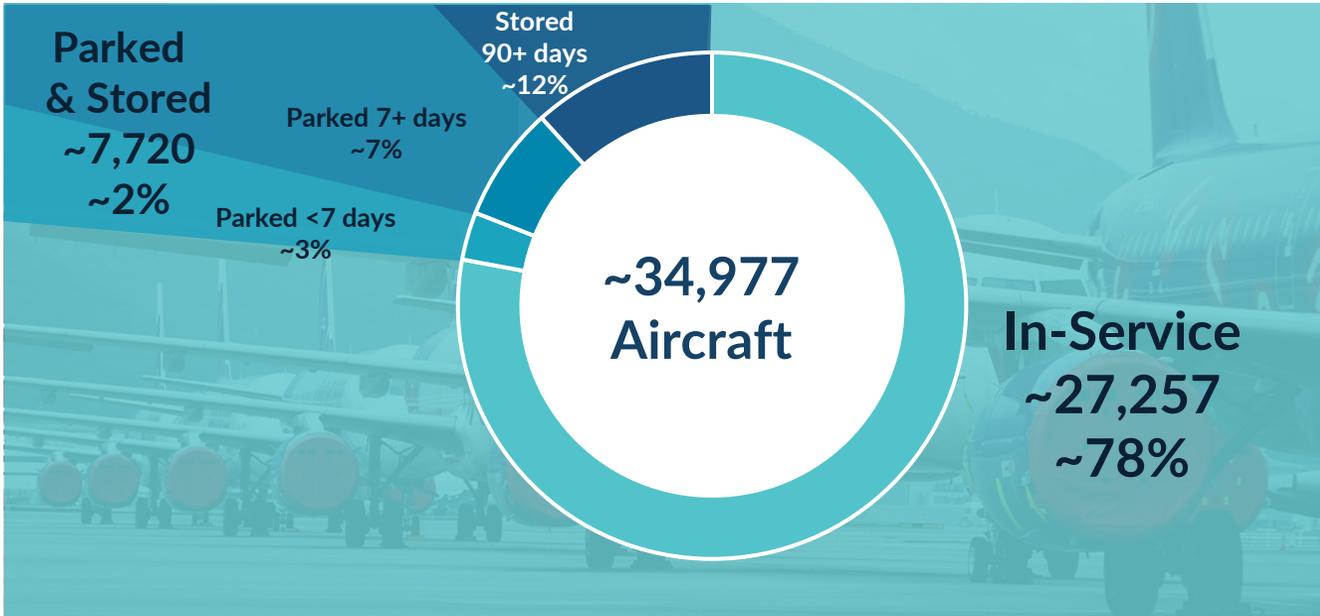


Fleet Status



In late-May, ~78% of the global air transport fleet was in active service, and ~22% parked/stored

Air Transport Fleet Status May 2023
(Qty of Aircraft In-Service and Parked/Stored)

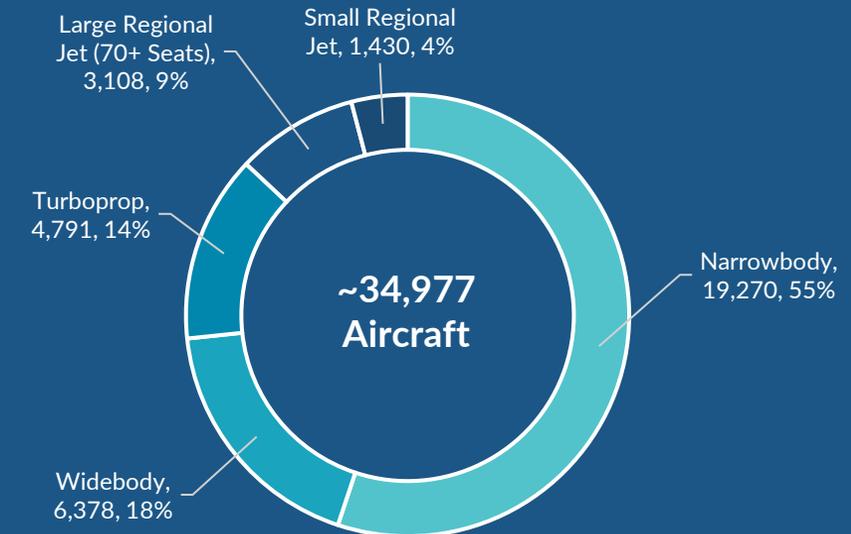


- ▲ ~78% of the air transport fleet is in active service (~27,257), and ~22% (7,720) are parked or stored
- ▲ This is an improvement on February 2023 when ~77% of the fleet was in active service, so the improvement continues
- ▲ However, as we've seen, the fleet situation continues to be fluid. Many short-term aircraft parked for less than seven days (~1,067), and a further ~2,561 parked for more than seven days and less than 90 days.
- ▲ There are ~4,092 aircraft that have been stored for longer than 90 days. That's down from ~4,422 seen in February

Air Transport Fleet By Region
(Qty of Aircraft In-Service, Parked & Stored)

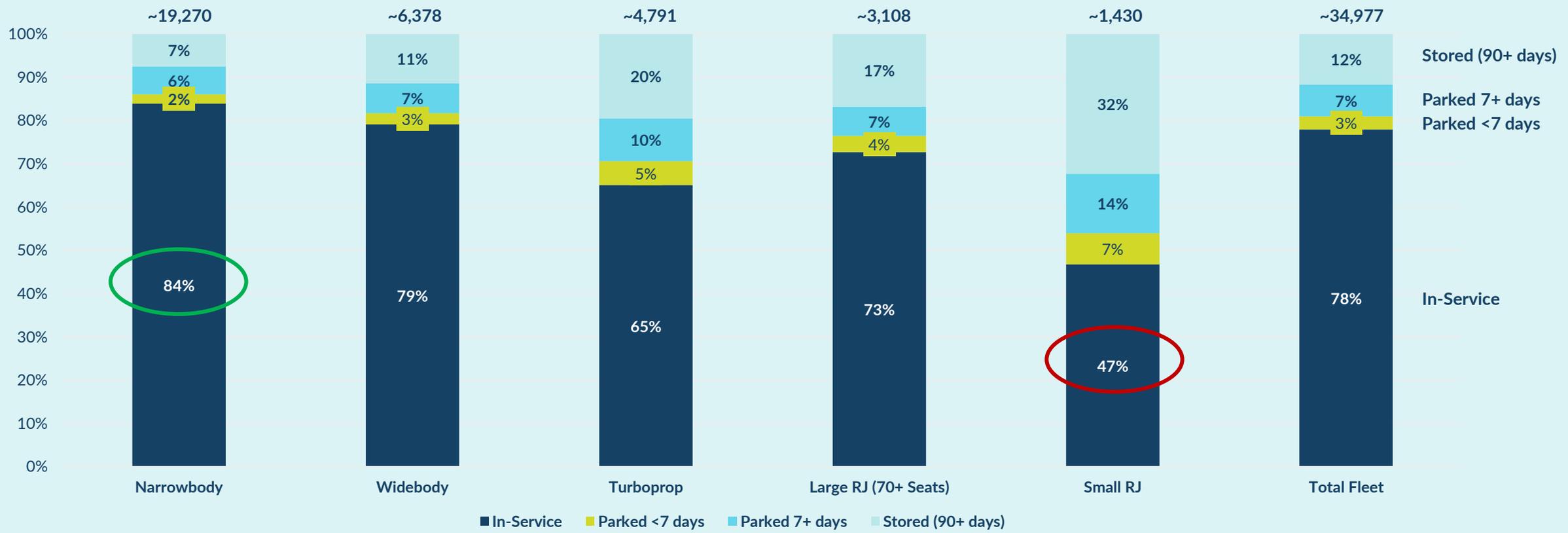


Air Transport Fleet By Size
(Qty of Aircraft In-Service, Parked & Stored)



Narrowbody aircraft continue to lead the traffic recovery, with ~84% actively flying

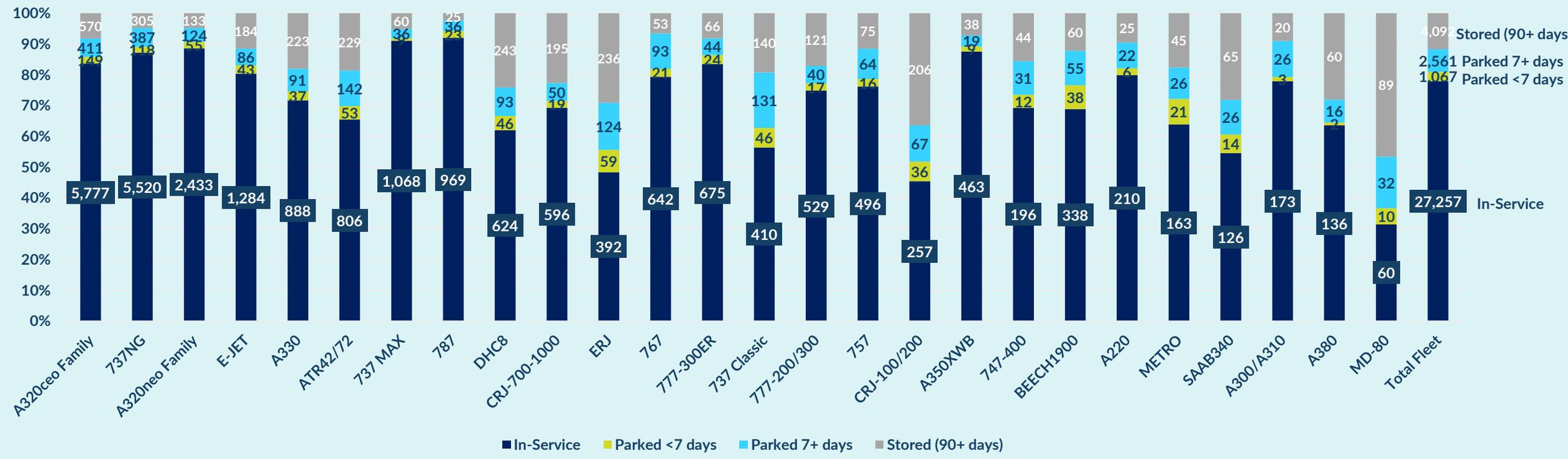
Fleet Status by Aircraft Size – May 2023
 % Aircraft In-Service/Parked/Stored – Ranked By Largest Fleet Size Left to Right



- ▲ Narrowbody aircraft such as 737NG/MAX and A320ceo/neo family have been vital to the traffic recovery and continue to lead with ~84% in active service (up from 82% in February), driven particularly by the domestic US, intra-regional flying, and China’s recovery
- ▲ It’s encouraging to see Widebody aircraft continuing to climb back. ~79% are in active service (up from 76% in February), and this is a higher % than regional aircraft and turboprops
- ▲ Smaller regional jets (e.g., Embraer 145 family and CRJ200s) continue to struggle with a large proportion (~53%) of the fleet parked/stored. This is driven mainly by airlines upgrading to larger aircraft (e.g., E-Jets, E2s, A220s) and relatively higher fuel prices

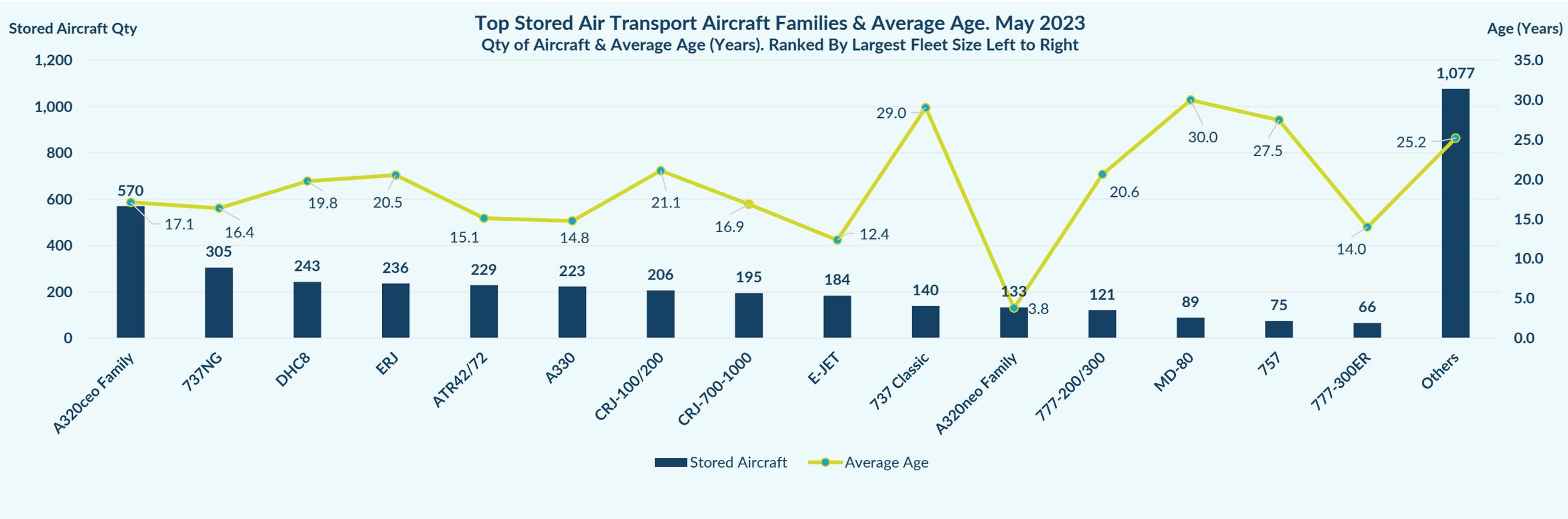
The 737NG, 787, A220 and A320neo lead the way with the highest % of fleet in active service

Top Air Transport Aircraft Families Fleet Status – May 2023
 % Aircraft In-Service/Parked/Stored – Ranked By Largest Fleet Size Left to Right. Qty of Aircraft



- As the traffic recovery continues and ~78% of the air transport fleet is in-service, the likelihood of an aircraft being in service varies, and there are some clear winners and those that are struggling
- The 787 is the fleet leader, with ~92% of the fleet in service
- Teething troubles frustratingly persist with new engines such as GTF and LEAP, and this accounts in part for some of the latest models (e.g., A320neo, A220) having aircraft parked/stored
- Aircraft where a high proportion of the fleet are cargo freighters, such as the Airbus A300/A310, 767, and 757 freighters, are, unsurprisingly, active
- The 777-300ER remains popular, with ~83% in service. It's valued for its cargo capacity. Hence, ~81% are in-service.
- The A330 is making a comeback with ~72% of the fleet in service. This is an improvement from February when 68% were in-service
- The 737 MAX has an encouraging 91% in service
- The 737NG workhorse has 87% of its fleet in service, higher than the rival A320ceo family ~84%. The increasing popularity of the 737NG as a freighter may account for part of this difference, along with large fleets in North America and China, where domestic travel has been particularly strong

There are ~4,092 aircraft in storage (inactive for 90+ days)

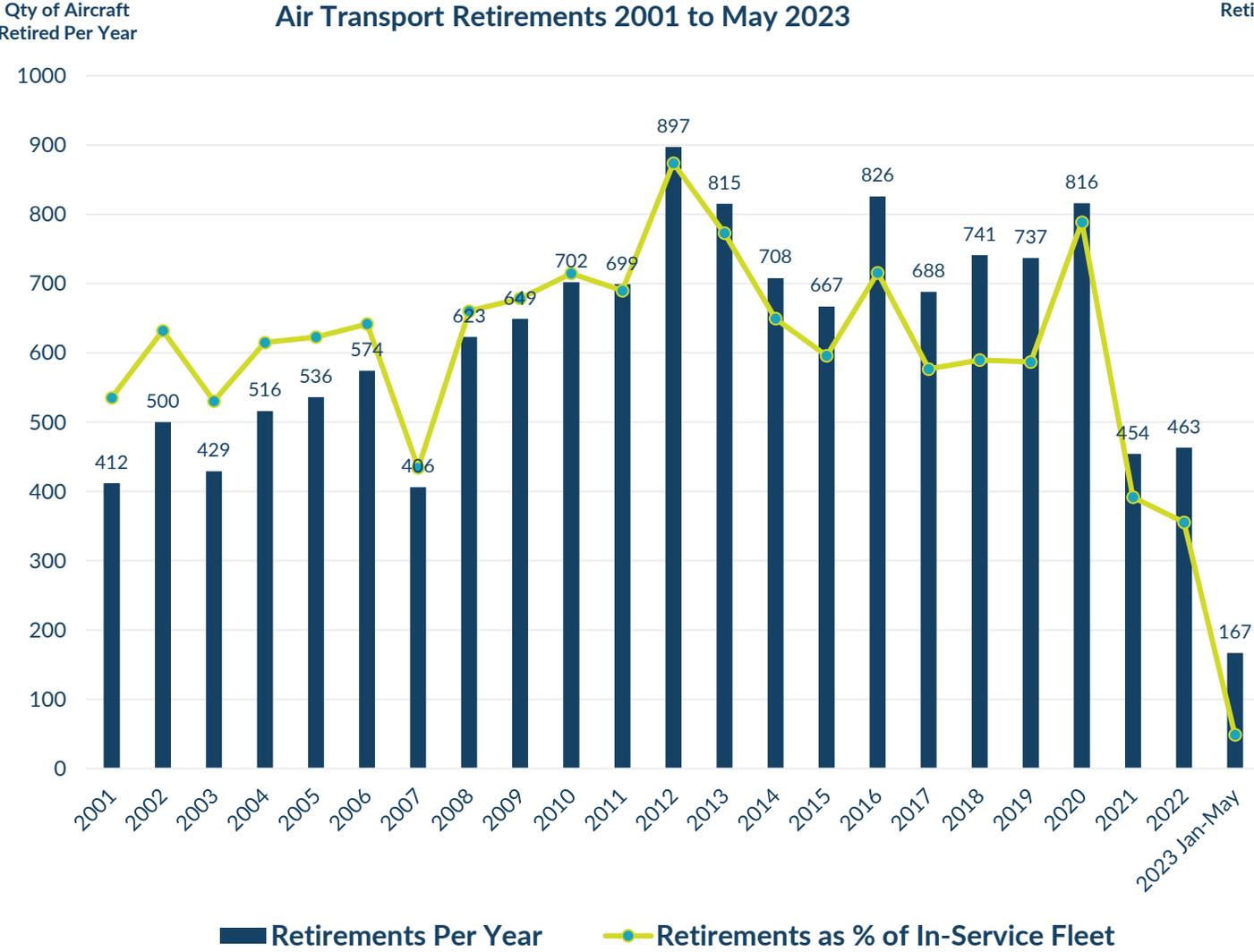


- ▲ 12% of the air transport fleet has been stored for over 90+ days. The leader with more than double the next family is the A320ceo family
- ▲ ~570 A320ceo family aircraft have been stored for 90+ days. These aircraft have an average age of 17.1 years. Once aircraft reach 16-18+ years, they become vulnerable to retirement, particularly if the owner/operator doesn't want to perform the major airframe maintenance check or engine shop visit. Some of these aircraft will be heading for cargo conversion.
- ▲ There are ~305 737NGs in storage with an average age of 16.4 years. The 737NG is a popular freighter, so a number of these parked aircraft are awaiting cargo conversion and will fly again

- ▲ It's frustrating for operators, owners and OEMs to see ~133 A320neo family aircraft having been stored for over 90 days, many suffering from technical engine-related issues
- ▲ There is a long tail of ~1,077 other aircraft with an average age of 25.2 years that are vulnerable to retirement. This does include ~60 737 MAX with an average age of just 4.8 years. They will return to service
- ▲ Approximately 1,364 737NG family aircraft and 506 A320ceo family aircraft are forecasted to be converted to freighters between 2023 and 2032

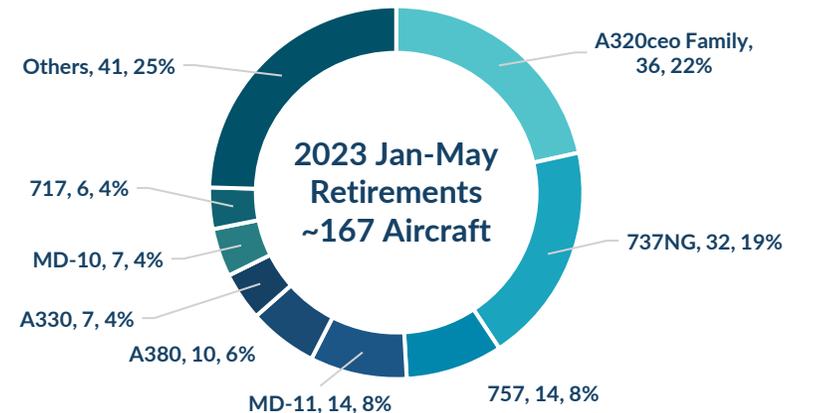
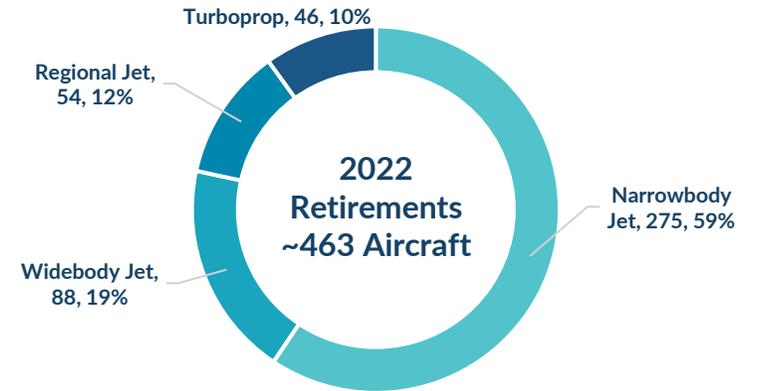
~463 air transport aircraft were officially retired in 2022. So far, in 2023 ~167 aircraft have retired by May

Air Transport Retirements 2001 to May 2023



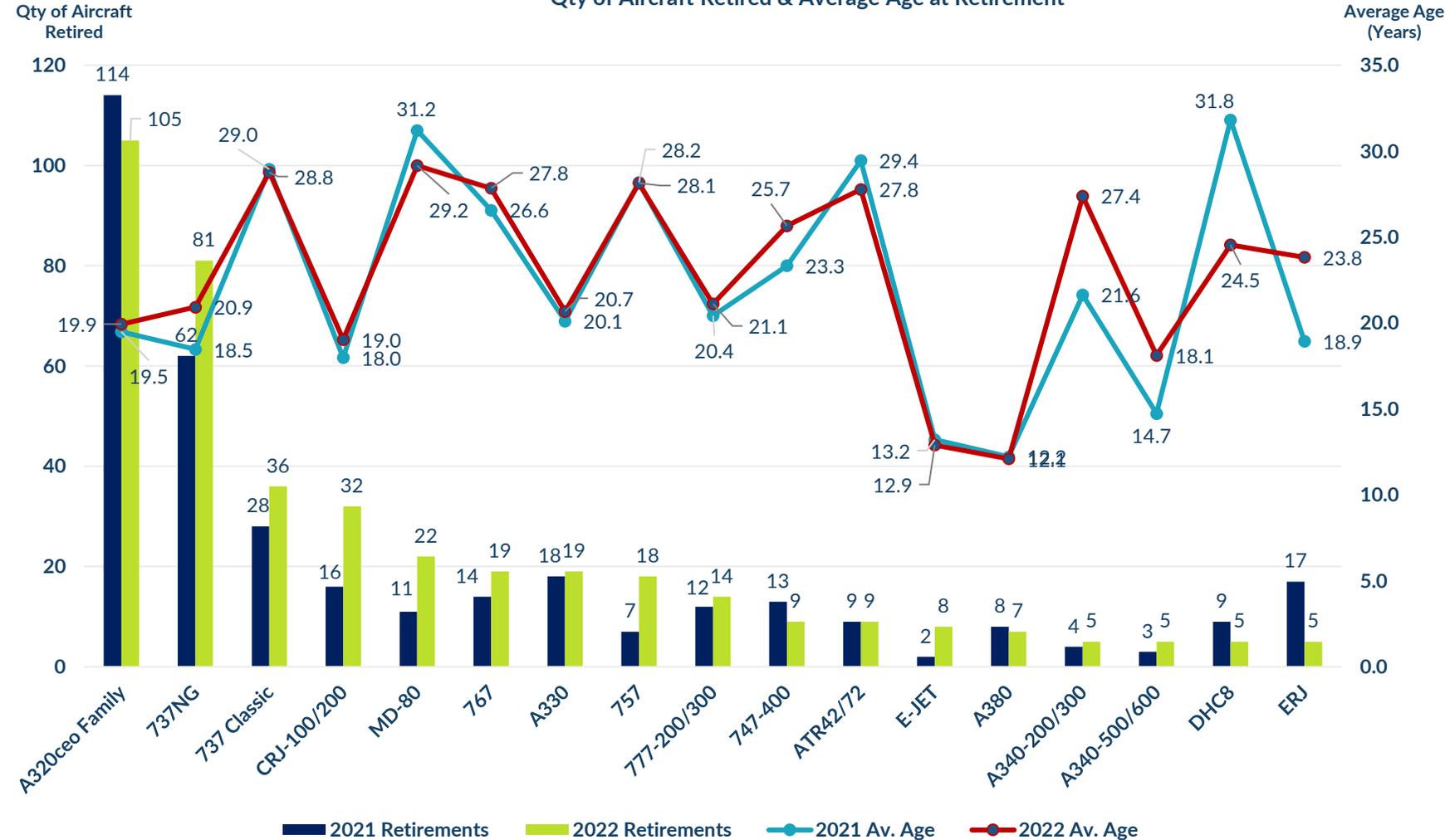
Source: Aviation Week Fleet Discovery May 2023. Naveo analysis

May 2023



The average age of the ~463 aircraft retired in 2022 was 24.7 years slightly up on 2021

Top 17 Air Transport Aircraft Retirements in 2022 vs 2021
Qty of Aircraft Retired & Average Age at Retirement



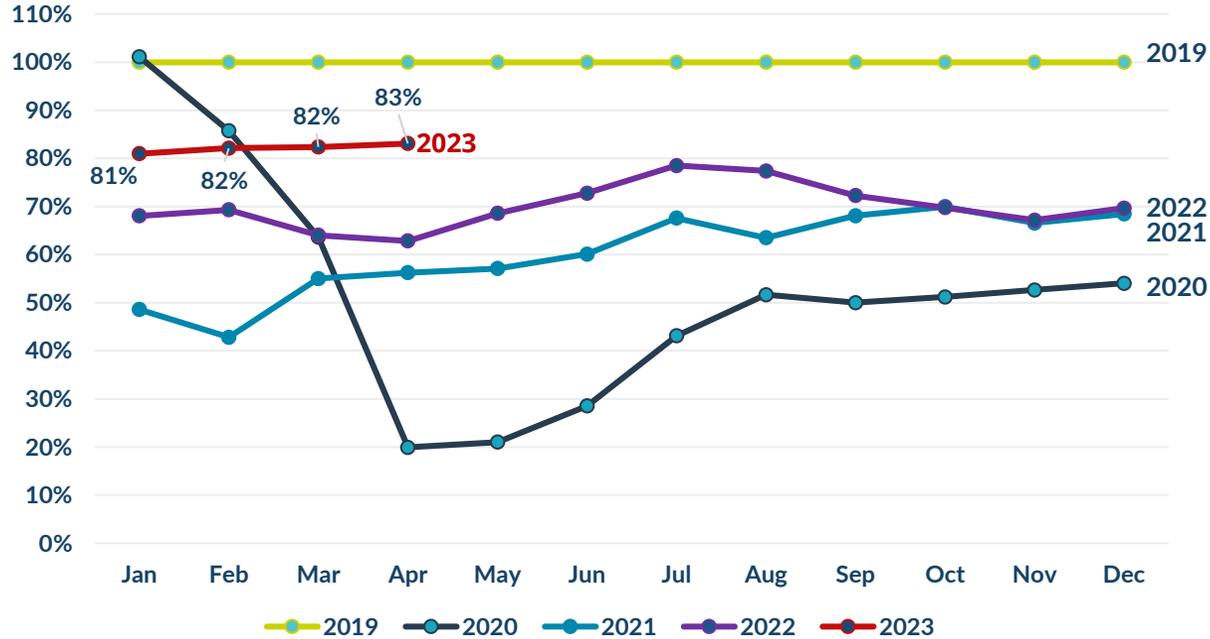
- ▲ The average age of the ~463 aircraft retired in 2022 was 24.7 years. This compares to 24.3 years for 454 aircraft retired in 2021
- ▲ In the 2000s, the average age of retired aircraft was ~27.9 years. 2012 to 2019 saw the average age of retired aircraft hover between 24.7-25.3 years
- ▲ Some retired aircraft had long lives (e.g., the MD-10s retired by FedEx had an average age of 42 to 43 years)
- ▲ However, the retired Embraer E-Jets had an average age of 11 years and the retired A380 ~11.5 years
- ▲ The 443 737NGs that have been retired had an average age of 18.3 years, and the 1,074 A320ceos retired so far had an average retirement age of 19.4 years

A photograph of an aircraft engine on a runway. The engine is the central focus, showing its large fan and complex internal structure. The aircraft's wing and landing gear are also visible. In the background, there are mountains and other aircraft on the tarmac. A dark blue overlay covers the left side of the image, containing the text "Aircraft & Engine Discussion" in white, italicized font, with a yellow underline.

Aircraft & Engine Discussion

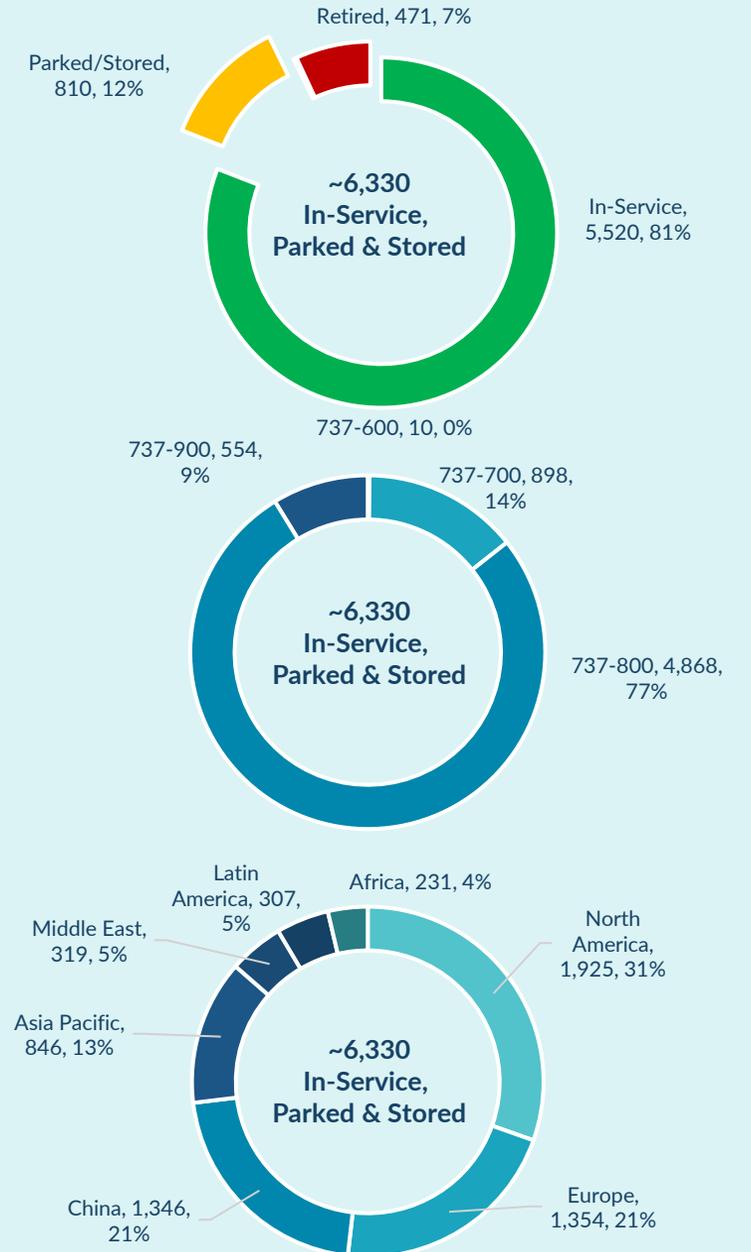
Fleet Snapshot: Boeing 737NG

737NG Monthly Flying Hours Compared to Same Month in 2019



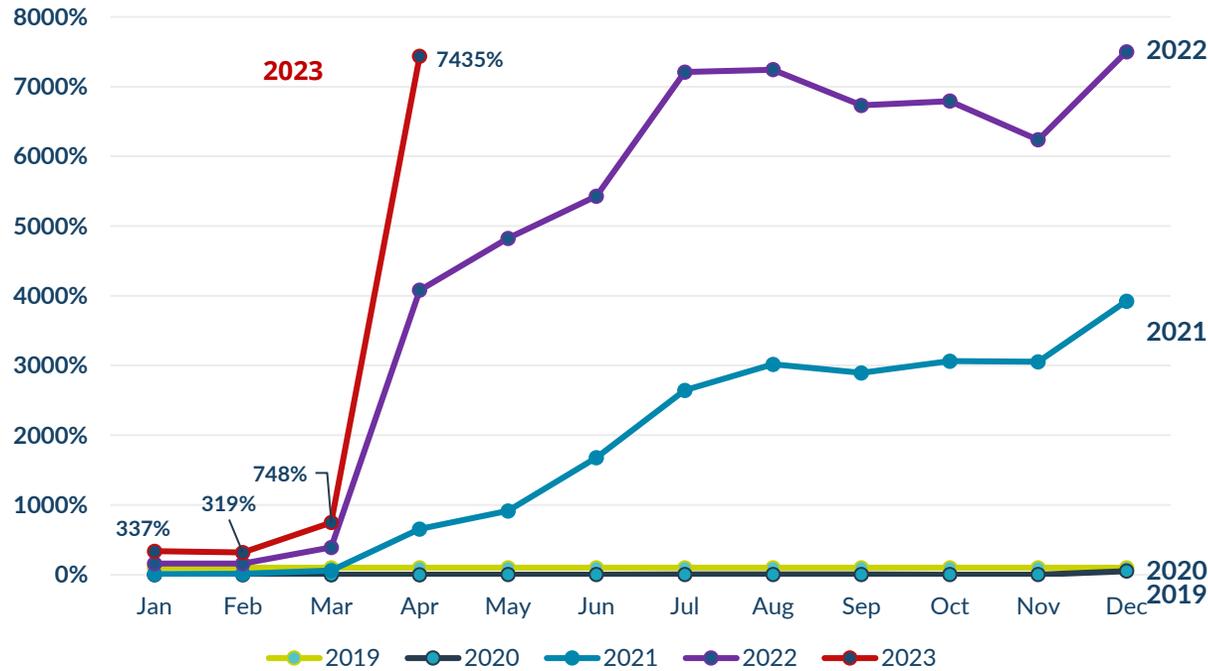
Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Retired	Current Fleet Average Age (Yrs)
737-800	CFM56-7B	4285	583	10	122	12.1
737-700	CFM56-7B	744	154	10	288	17.6
737-900	CFM56-7B	484	70		8	10.2
737-600	CFM56-7B	7	3		53	20.9
Total		5520	810	20	471	12.8

737NG Fleet Status May 2023



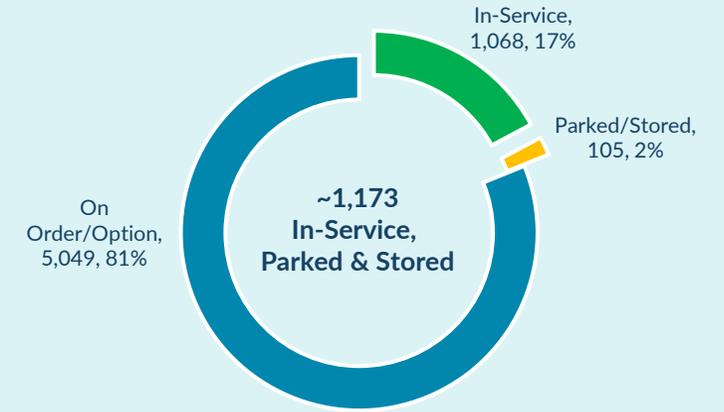
Fleet Snapshot: Boeing 737 MAX

737 MAX Monthly Flying Hours Compared to Same Month in 2019



Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Current Fleet Average Age (Yrs)
737 Max 8	LEAP-1B	905	103	3,350	3.4
737 Max 9	LEAP-1B	163	2	200	2.5
737 Max 10	LEAP-1B			1,138	
737 Max 7	LEAP-1B			361	
Total		1,068	105	5,049	3.3

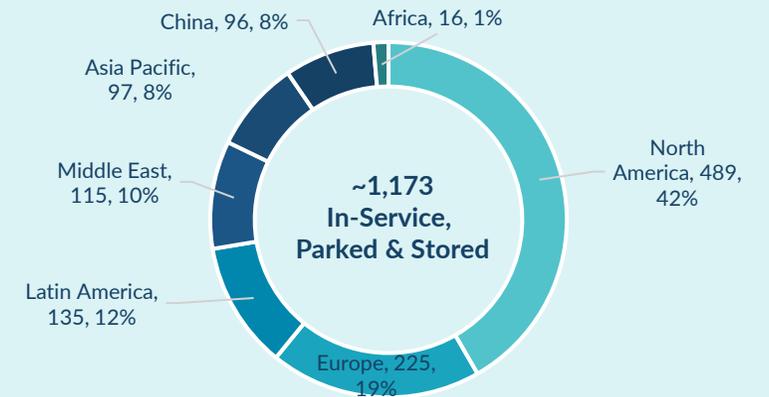
737 MAX Fleet Status May 2023



737 Max 9, 165, 14%



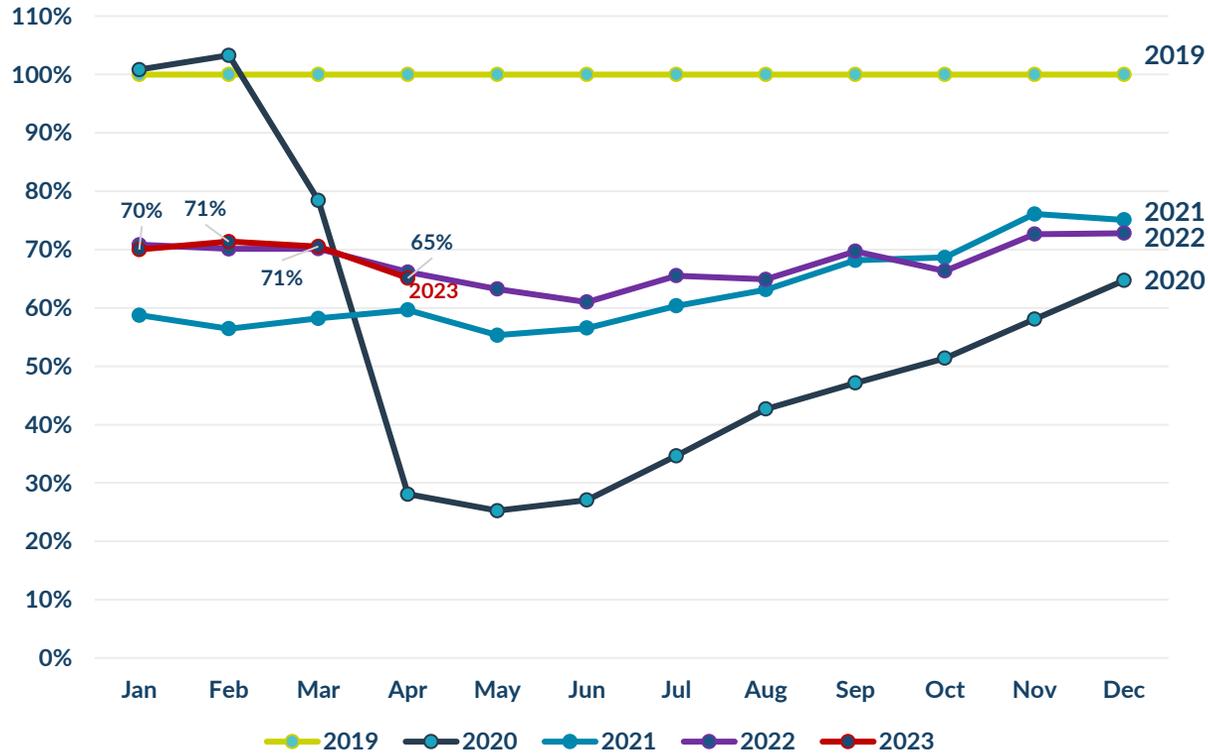
737 Max 8, 1,008, 86%



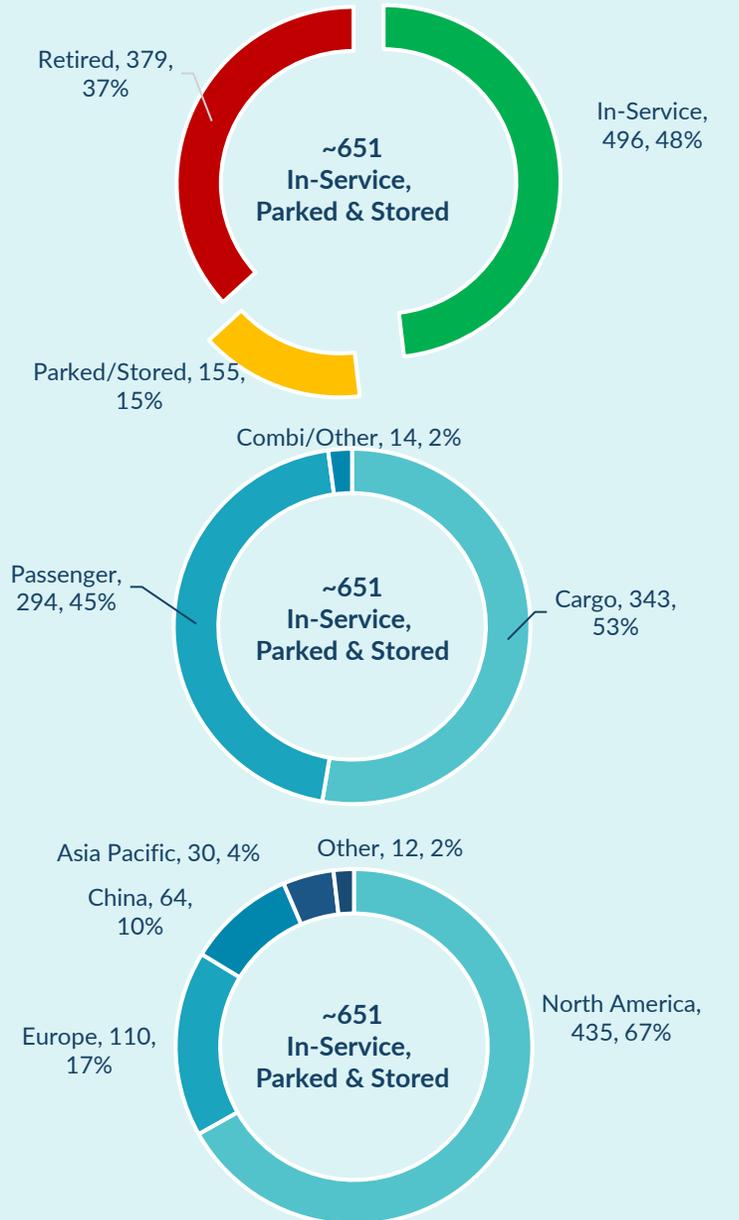
Fleet Snapshot: Boeing 757

757 Fleet Status May 2023

757 Monthly Flying Hours Compared to Same Month in 2019



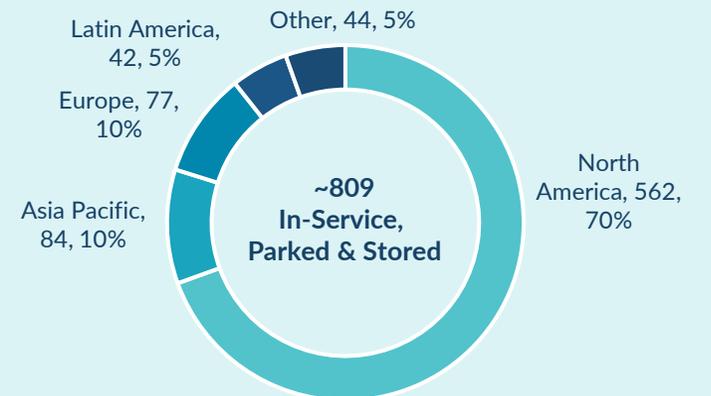
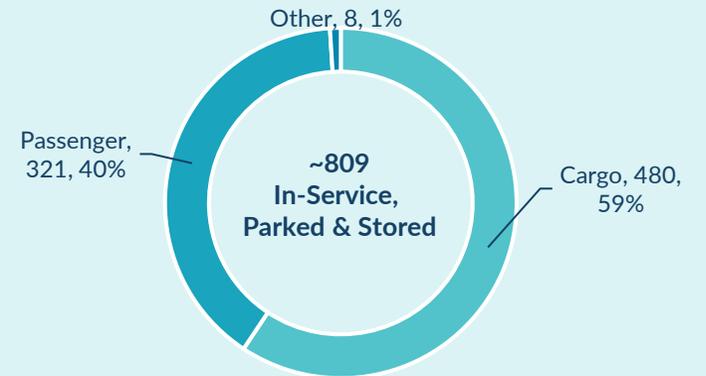
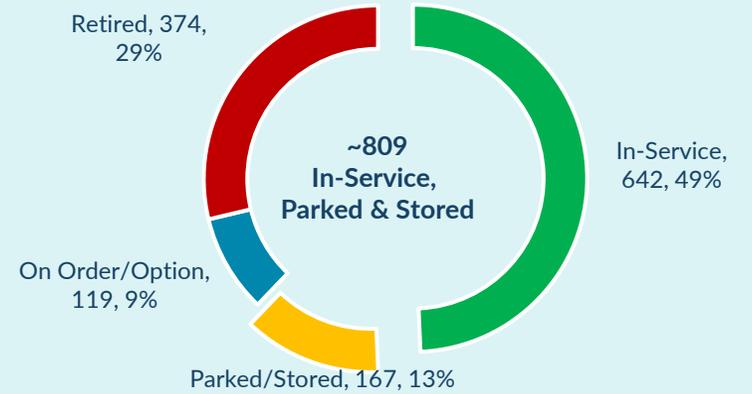
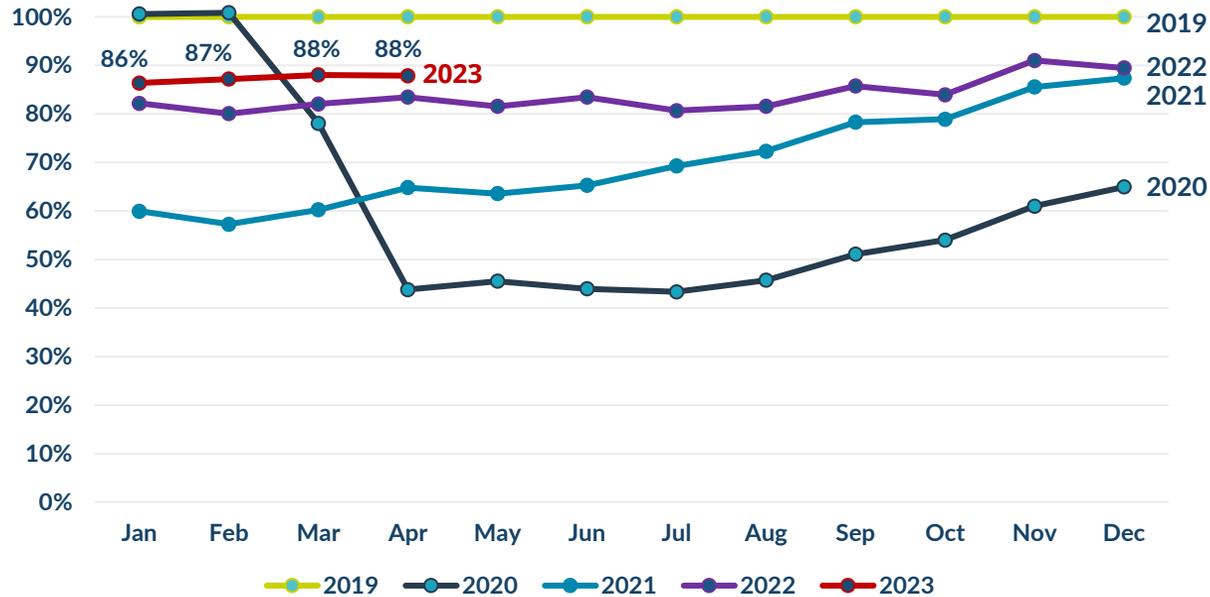
Aircraft	Engine	In-Service	Parked/Stored	Retired	Current Fleet Average Age (Yrs)
757-200	PW2000	173	52	182	28.4
	RB211-535	277	97	194	28.0
757-300	PW2000	16			20.4
	RB211-535	30	6	3	22.0
Total		496	155	379	27.7



Fleet Snapshot: Boeing 767

767 Fleet Status May 2023

767 Monthly Flying Hours Compared to Same Month in 2019



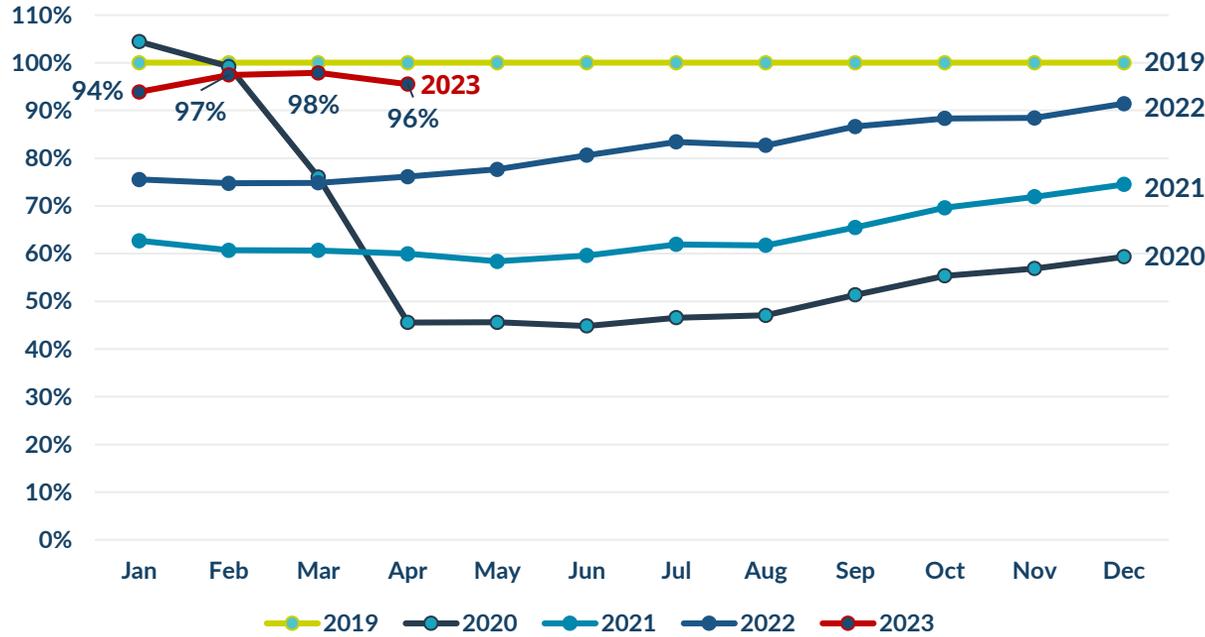
Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Retired	Current Fleet Average Age (Yrs)
767-200/ER	CF6-80A	30	16		50	38.9
	CF6-80C2	14	7		23	26.8
	JT9D	4	7		68	38.5
	PW4000-94		1	18	13	32.7
	Unknown				1	
767-400ER	CF6-80C2	33	5			22.0
767-300/ER	CF6-80A				24	
	CF6-80C2	462	88	101	90	17.9
	JT9D				13	
	PW4000-94	97	39		67	25.9
	RB211-524GH	2	4		25	30.4
Total		642	167	119	374	21.3

Source: Aviation Week Fleet Discovery. May 2023. Naveo analysis

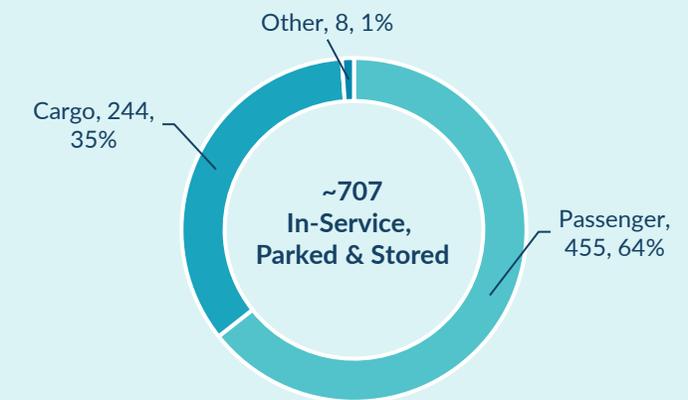
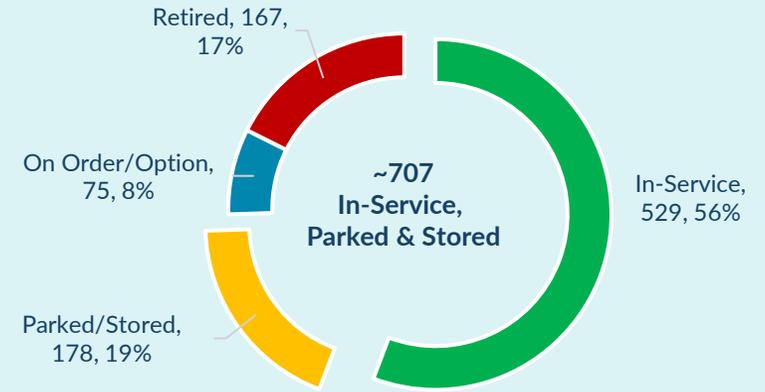
Fleet Snapshot: Boeing 777-200/300/Freighter

777-200/300/Freighter Fleet Status May 2023

777-200/300/Freighter Monthly Flying Hours Compared to Same Month in 2019



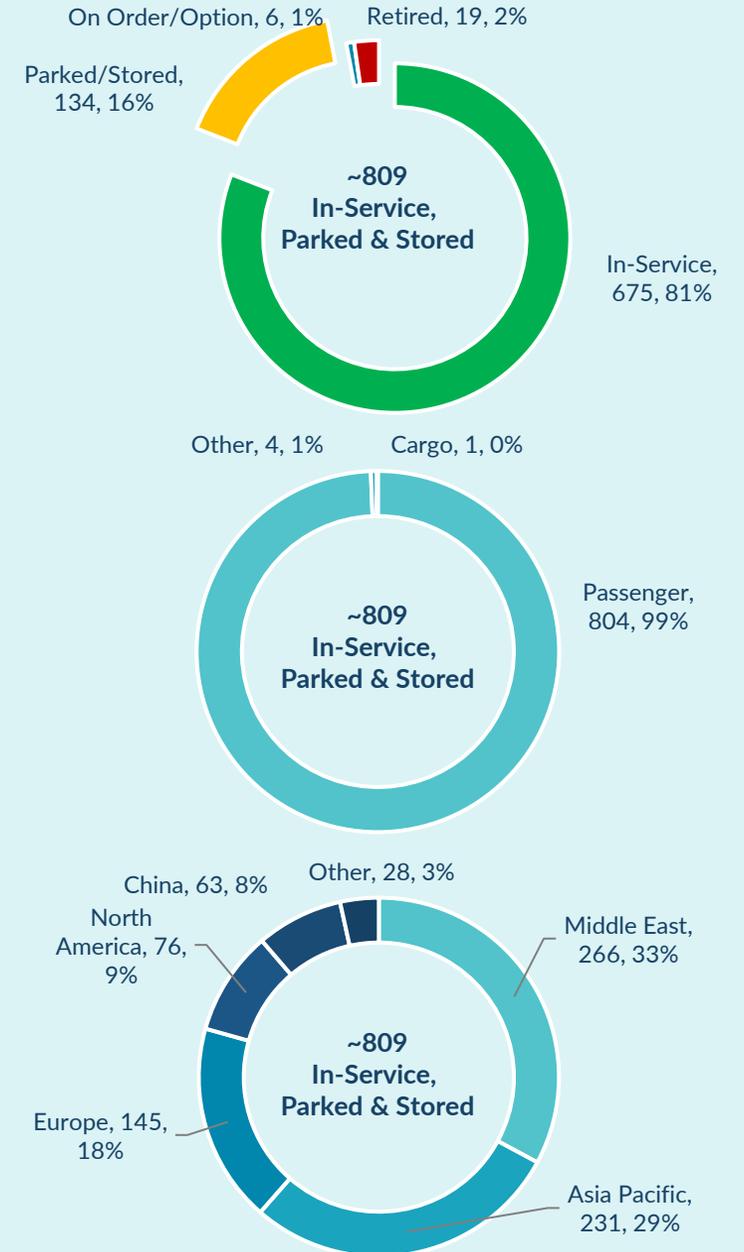
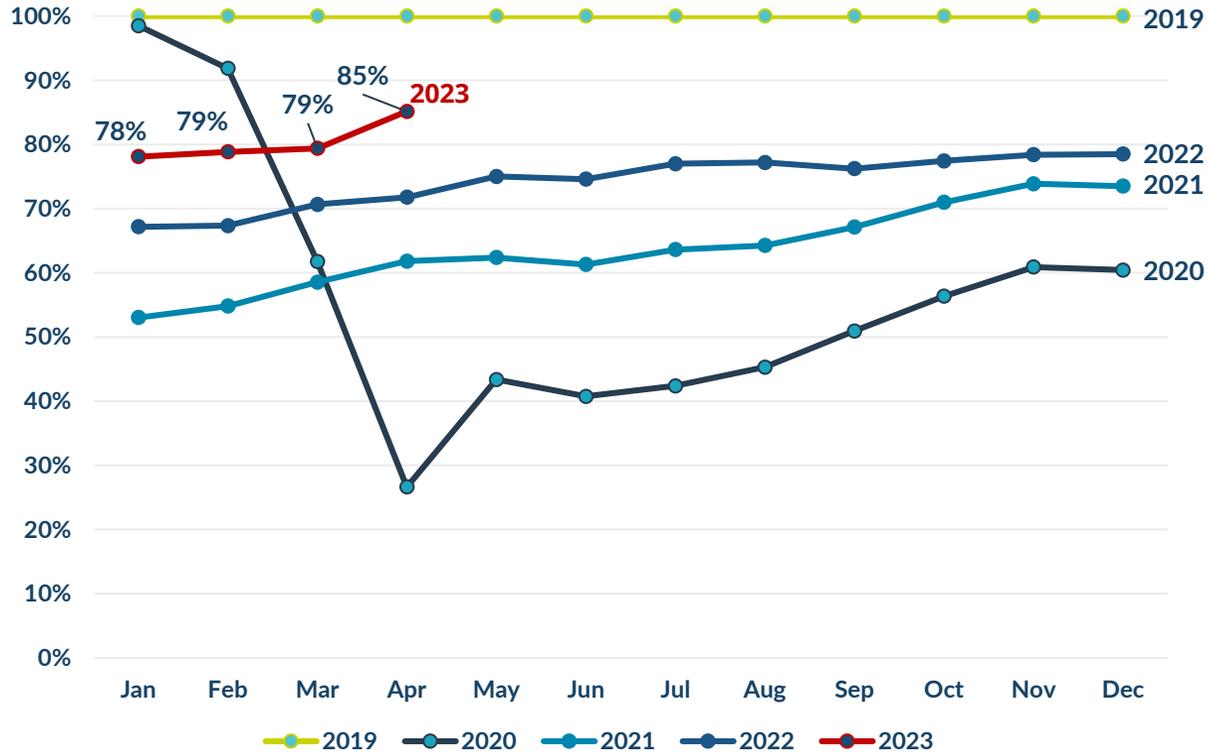
Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Retired	Current Fleet Average Age (Yrs)
777-200	GE90-94B				9	
	PW4000-112	19	11		33	25.0
	TRENT 800				15	
777-200/ER	GE90-94B	85	45		31	21.7
	PW4000-112	52	13		28	20.2
	TRENT 800	75	62		31	21.3
777-200F/LR	GE90-110B	216	15	72	6	8.2
	GE90-115B	64	4	3		8.2
777-300	PW4000-112	8	4		6	23.9
	TRENT 800	10	24		8	21.9
Total		529	178	75	167	16.0



Fleet Snapshot: Boeing 777-300ER

777-300ER Fleet Status May 2023

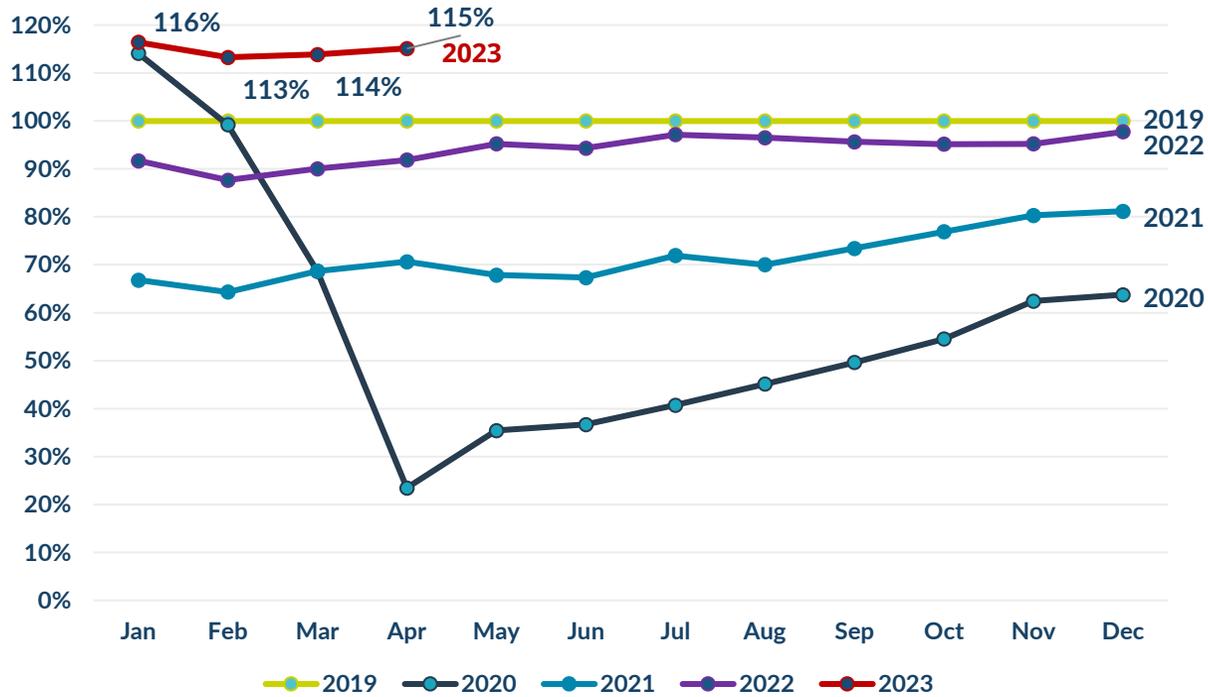
777-300ER Monthly Flying Hours Compared to Same Month in 2019



Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Retired	Current Fleet Average Age (Yrs)
777-300ER	GE90-110B	2				11.7
	GE90-115B	673	133	6	19	10.4
777-300ERF	GE90-115B		1			18.3
Total		675	134	6	19	10.4

Fleet Snapshot: Boeing 787

787 Monthly Flying Hours Compared to Same Month in 2019

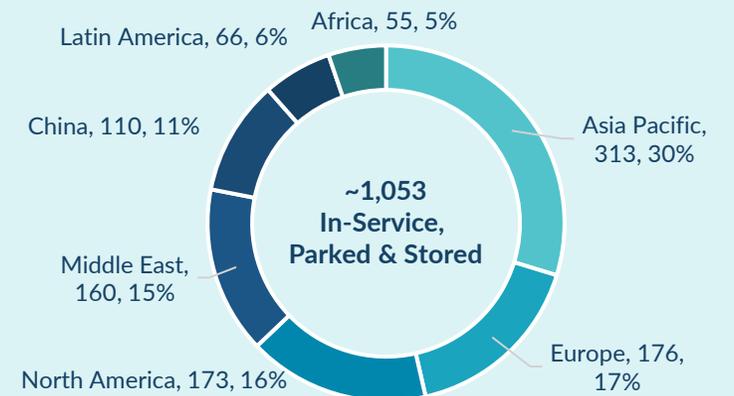
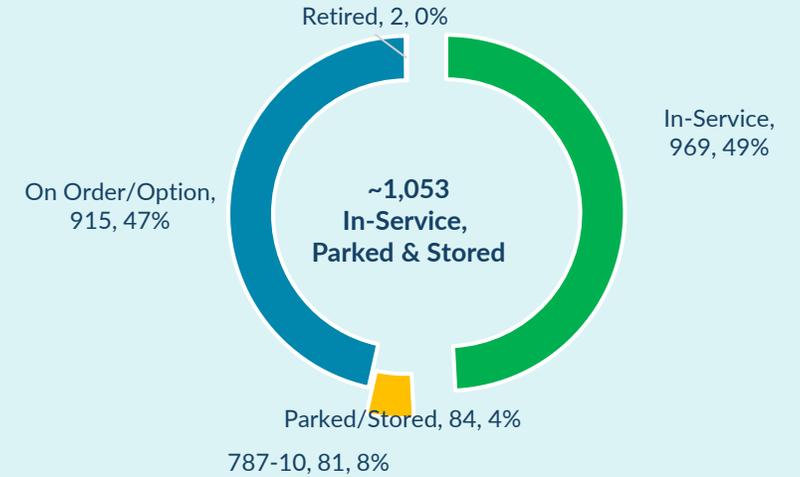


Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Retired	Current Fleet Average Age (Yrs)
787-9	GENX-1	356	20	578		5.2
	TRENT 1000	184	27	78		6.0
	Unknown			78		
787-8	GENX-1	237	18	15		8.5
	TRENT 1000	116	14	8	2	8.9
	Unknown			10		
787-10	GENX-1	53	3	121		3.3
	TRENT 1000	23	2	27		4.0
Total		969	84	915	2	6.5

Source: Aviation Week Fleet Discovery. May 2023. Naveo analysis

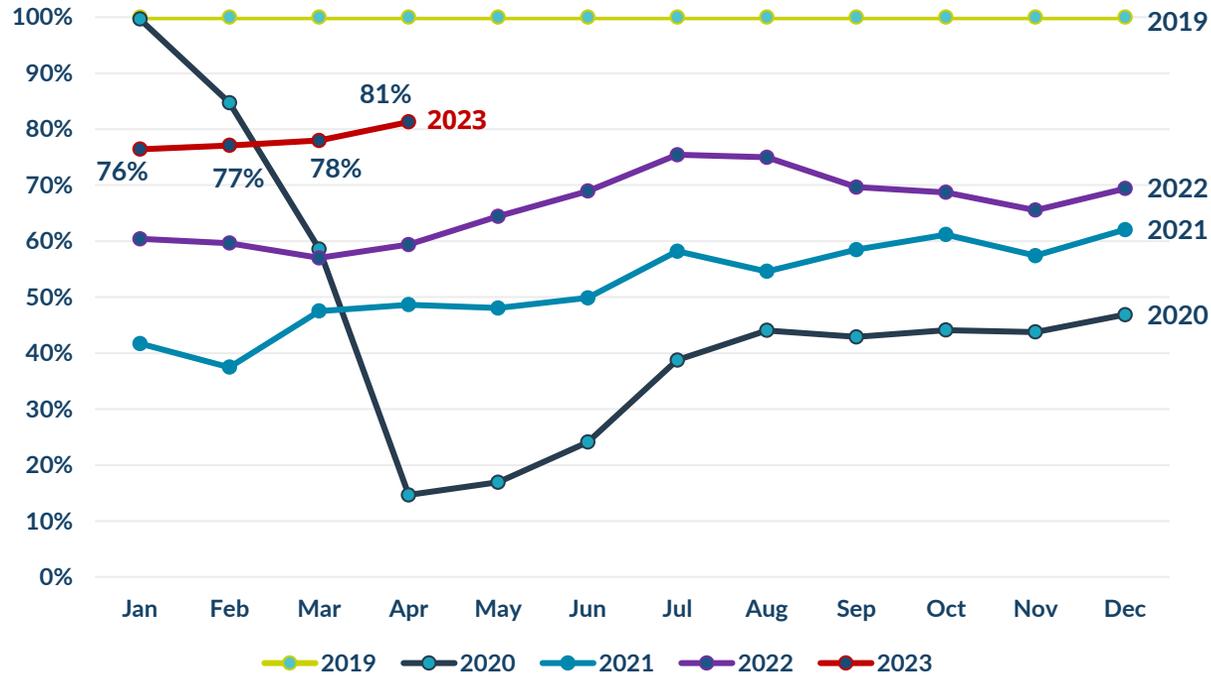
May 2023

787 Fleet Status May 2023



Fleet Snapshot: Airbus A320ceo Family

A320ceo Family Monthly Flying Hours Compared to Same Month in 2019

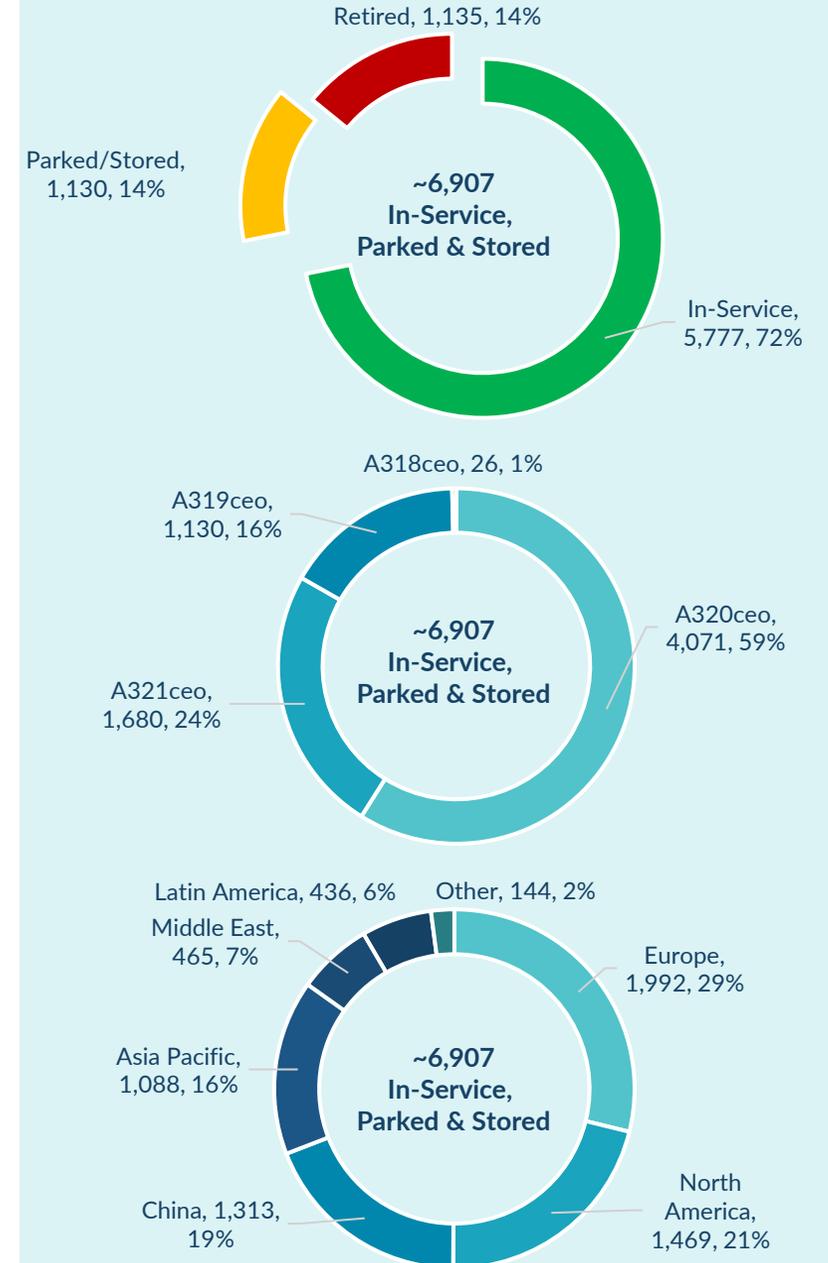


Aircraft	Engine	In-Service	Parked/Stored	Retired	Current Fleet Average Age (Yrs)
A318ceo	CFM56-5B	17	9	32	15.2
	PW6000			15	
A319ceo	CFM56-5A	90	18	36	22.9
	CFM56-5B	509	125	191	15.9
	V2500-A5	315	73	91	17.4
A320ceo	CFM56-5A	90	31	269	27.8
	CFM56-5B	2,033	365	120	11.8
	V2500-A1	13	18	113	31.3
	V2500-A5	1,272	249	171	13.9
A321ceo	CFM56-5B	609	90	45	10.7
	V2500-A5	829	152	52	11.1
Total		5,777	1,130	1,135	13.3

Source: Aviation Week Fleet Discovery. May 2023. Naveo analysis

May 2023

A320ceo Fleet Status May 2023

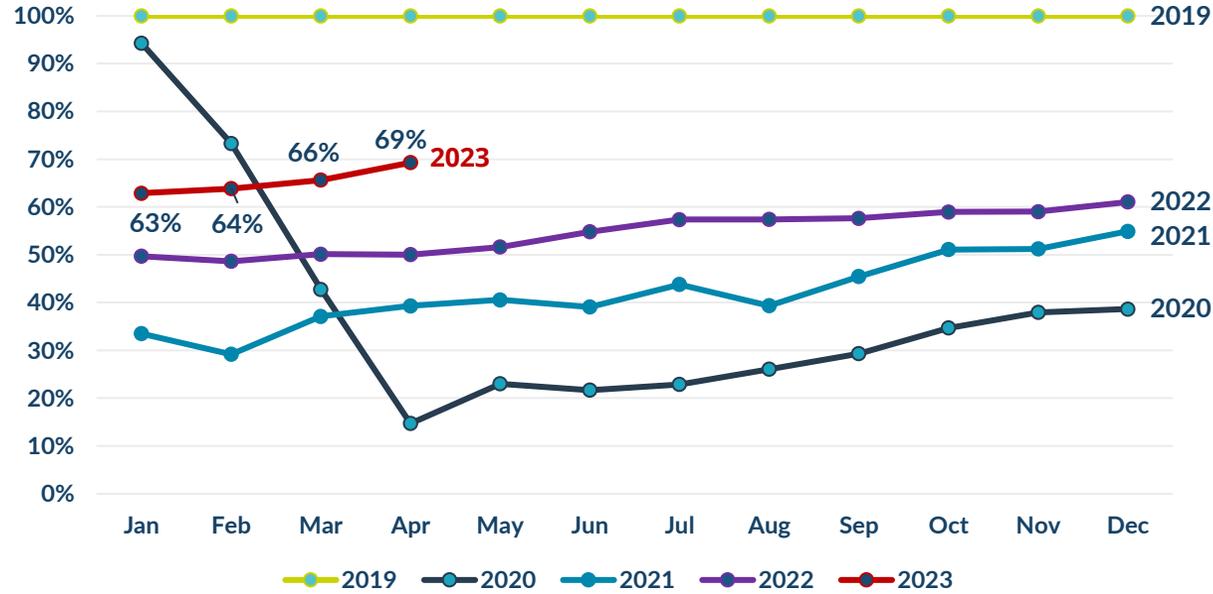


Source: Aviation Week Fleet Discovery. May 2023. Naveo analysis

May 2023

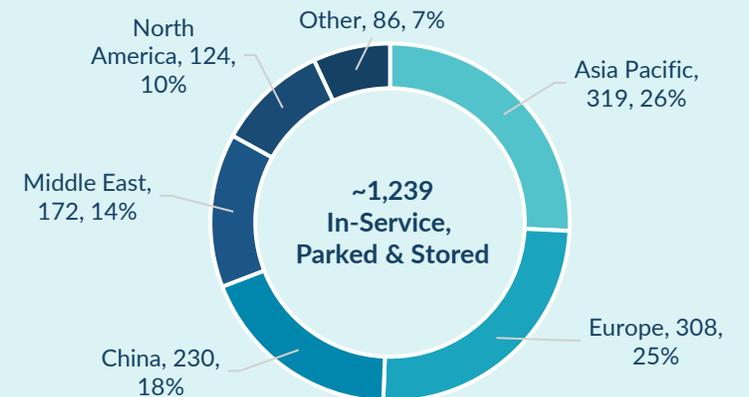
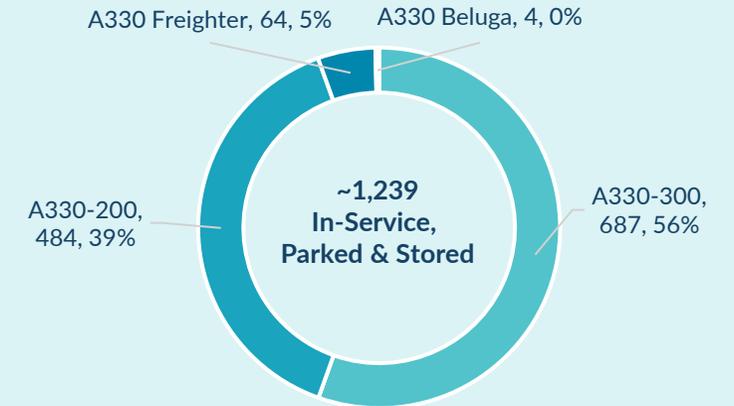
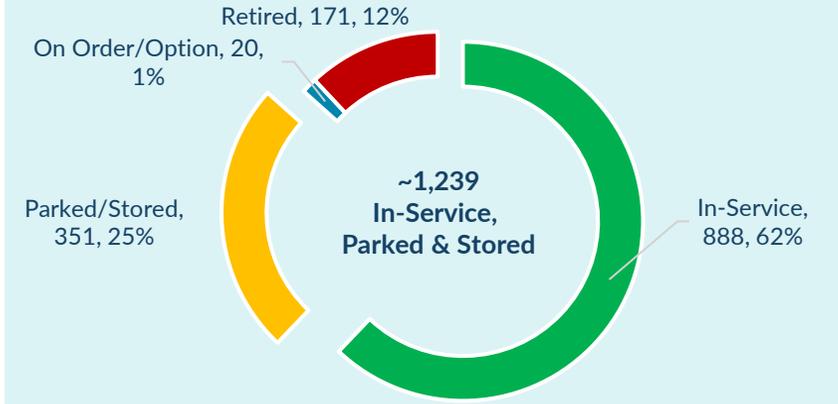
Fleet Snapshot: Airbus A330

A330 Family Monthly Flying Hours Compared to Same Month in 2019
Excludes A330neo



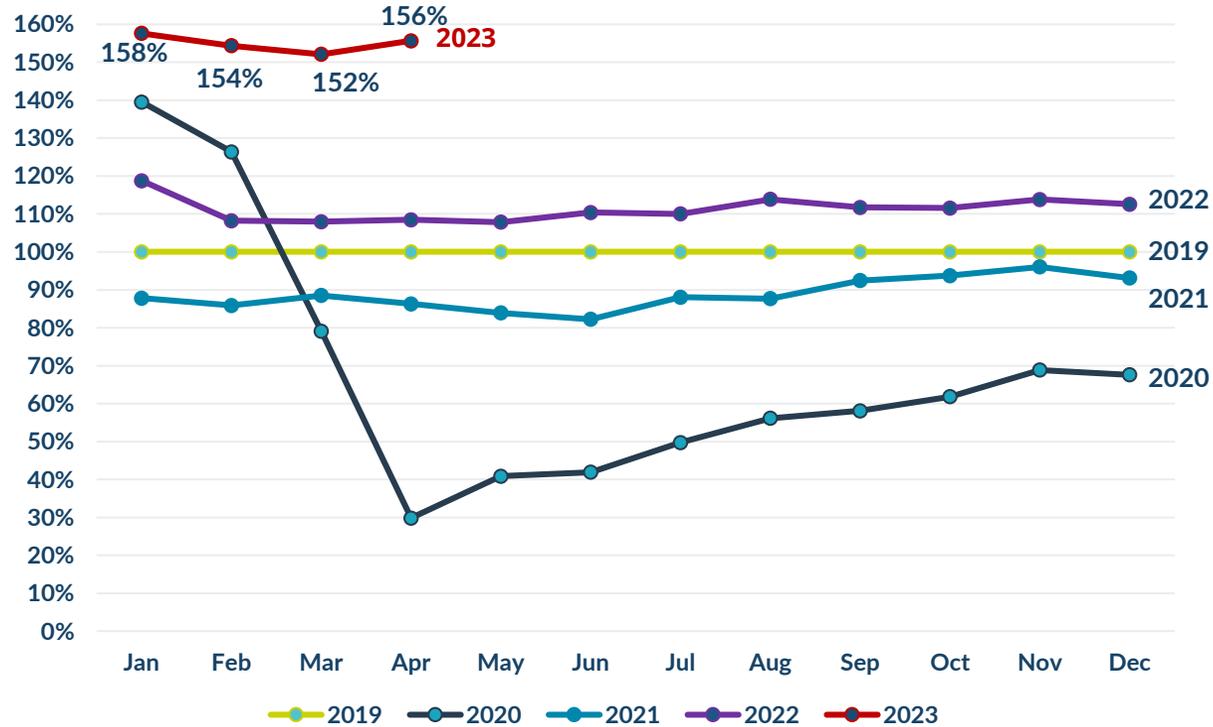
Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Retired	Current Fleet Average Age (Yrs)
A330-200	CF6-80E	104	45		21	15.2
	PW4000-100	32	34		39	15.6
	TRENT 700	160	109	4	38	12.9
	Unknown			8		11.5
A330-200F	PW4000-100	4				11.4
	TRENT 700	35	8			11.9
A330-300	CF6-80E	103	18		19	14.7
	PW4000-100	85	12		35	11.1
	TRENT 700	349	120	8	19	26.6
A330-300F	PW4000-100	2	1			13.6
	TRENT 700	10	4			2.4
A330-700L Beluga XL	TRENT 700	4				12.6
Total		888	351	20	171	1,430

A330 Fleet Status May 2023



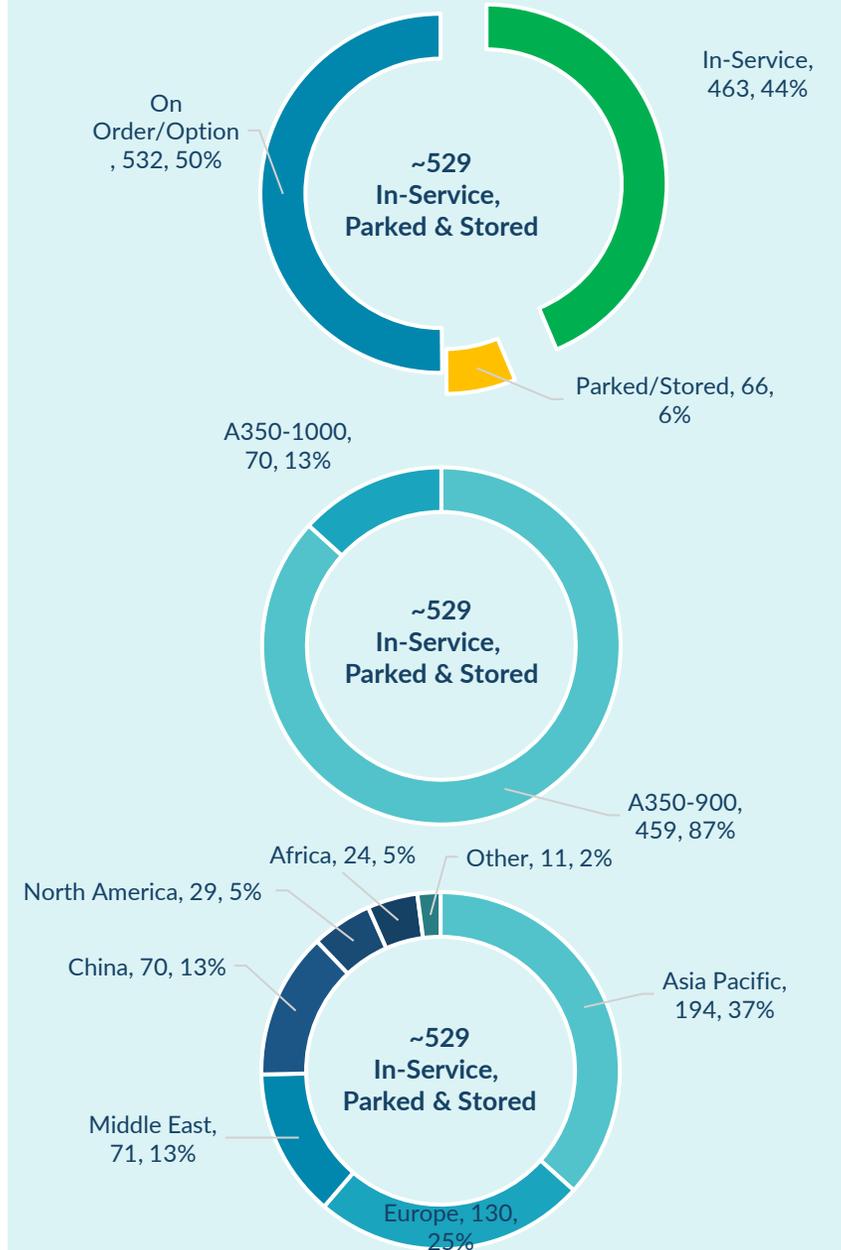
Fleet Snapshot: Airbus A350

A350 Family Monthly Flying Hours Compared to Same Month in 2019
Excludes A330neo



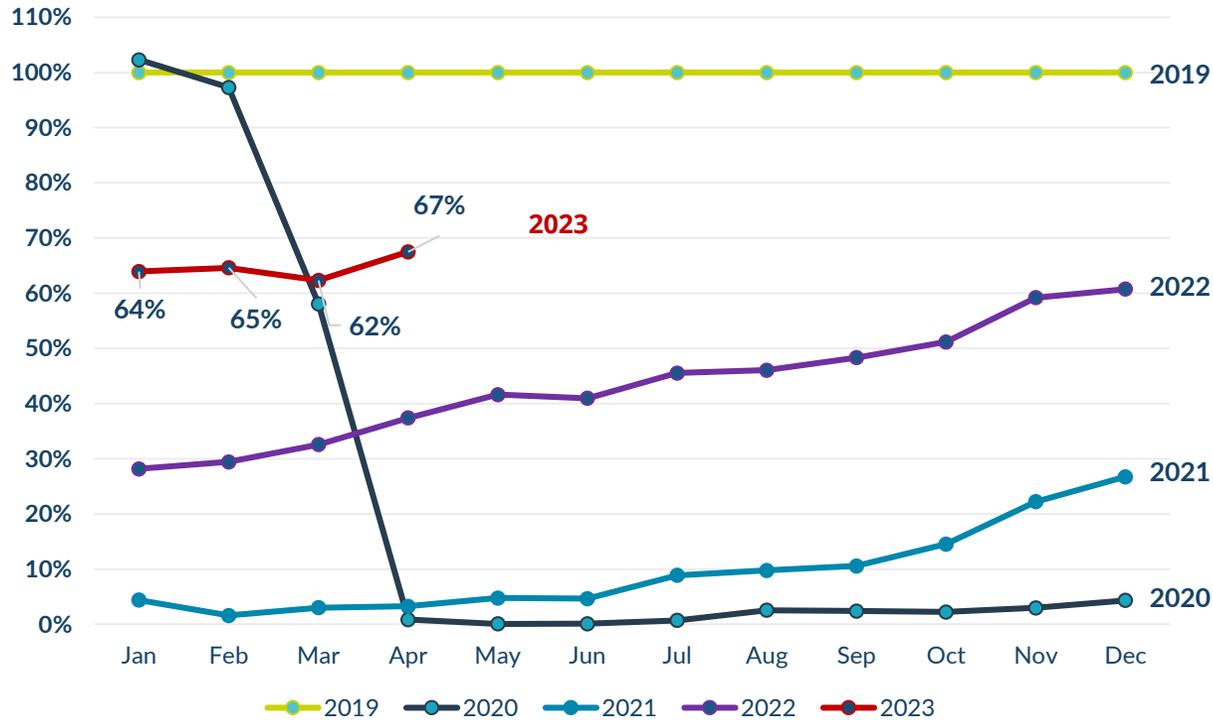
Aircraft	Engine	In-Service	Parked/Stored	On Order / Option	Current Fleet Average Age (Yrs)
A350-1000	TRENT XWB	65	5	117	3.4
A350-900	TRENT XWB	398	61	369	4.3
A350-950F	TRENT XWB			46	
Total		463	66	532	4.2

A350 Fleet Status May 2023



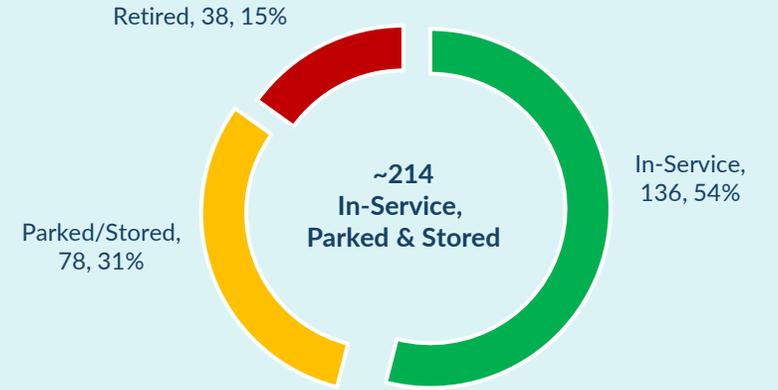
Fleet Snapshot: Airbus A380

A380 Family Monthly Flying Hours Compared to Same Month in 2019



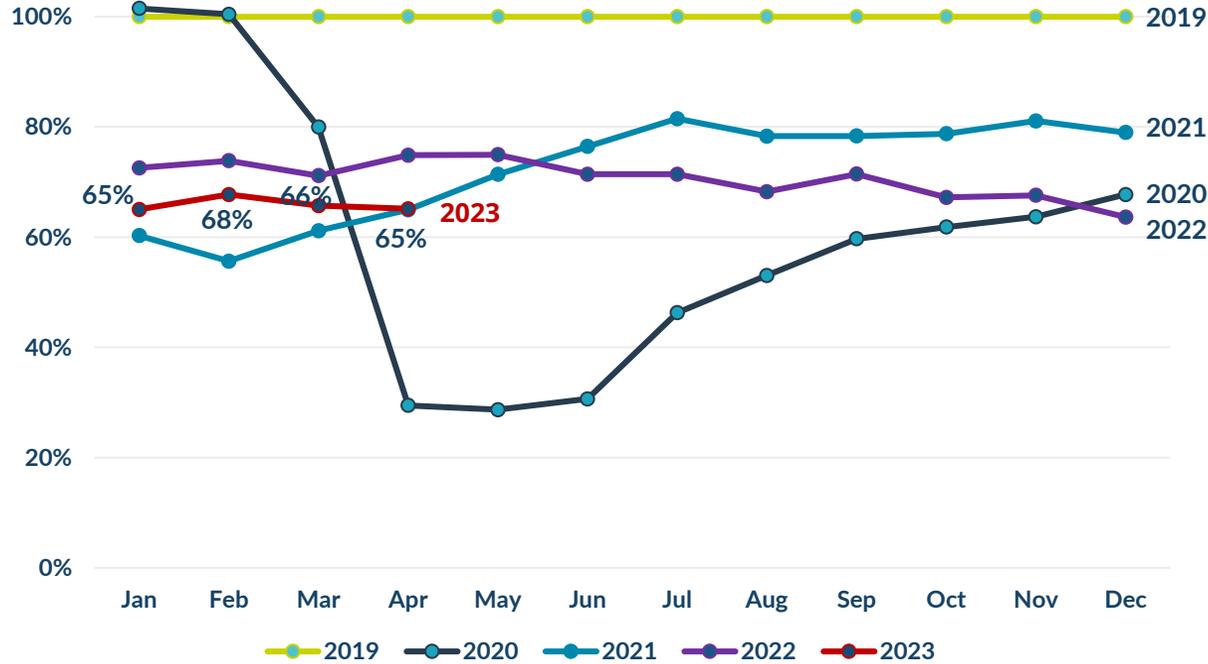
Aircraft	Engine	In-Service	Parked/Stored	Retired	Current Fleet Average Age (Yrs)
A380-800	GP7000	71	47	12	9.7
	TRENT 900	65	31	26	8.5
Total		136	78	38	9.2

A380 Fleet Status May 2023



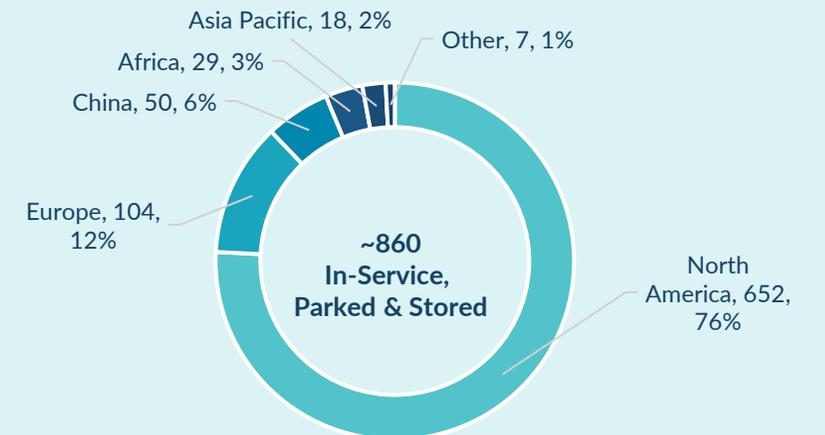
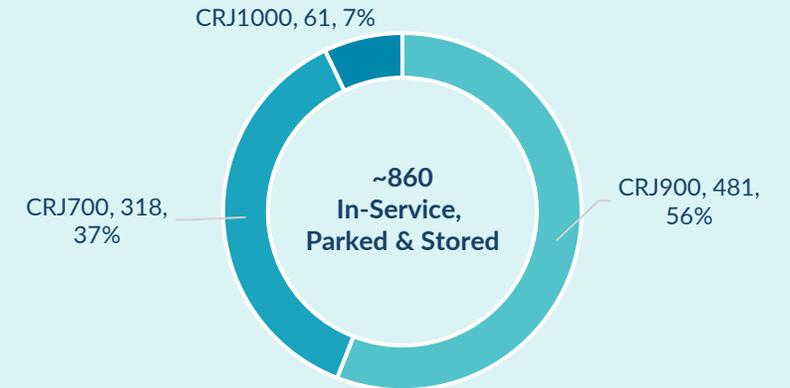
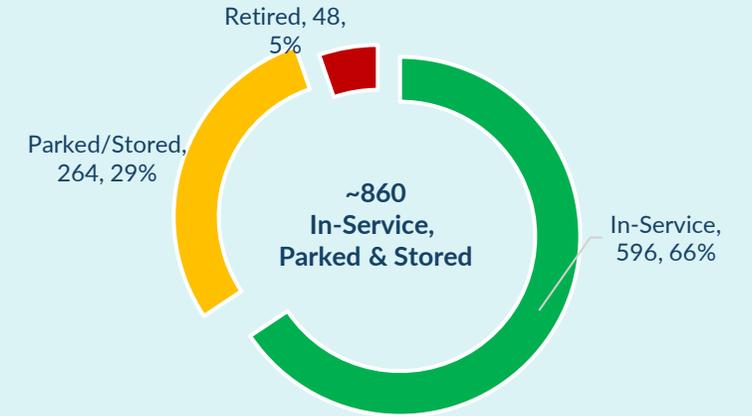
Fleet Snapshot: CRJ700,900 & 1000

CRJ700-1000 Monthly Flying Hours Compared to Same Month in 2019



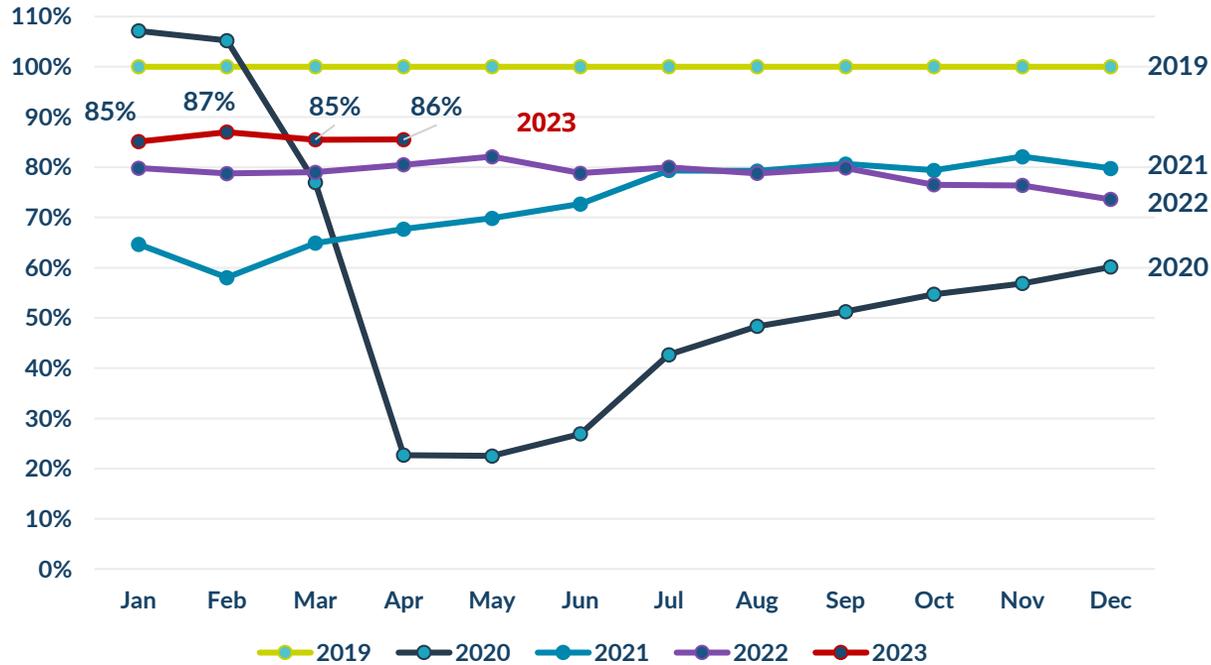
Aircraft	Engine	In-Service	Parked/Stored	Retired	Current Fleet Average Age (Yrs)
CRJ900	CF34-8	373	108	18	11.7
CRJ700	CF34-8	195	123	27	17.6
CRJ1000	CF34-8	28	33	3	9.4
Total		596	264	48	13.7

CRJ700-1000 Fleet Status May 2023



Fleet Snapshot: Embraer E-Jet

Embraer E170-E195 Family Monthly Flying Hours Compared to Same Month in 2019



Aircraft	Engine	In-Service	Parked/Stored	On Order/Option	Retired	Current Fleet Average Age (Yrs)
Embraer 170	CF34-8	116	49		31	16.6
Embraer 175	CF34-8	650	79	314	5	7.8
Embraer 190	CF34-10E	372	145		51	12.5
Embraer 190 Lineage	CF34-10E	10	7		1	12.2
Embraer 195	CF34-10E	136	33		4	11.2
Total		1,284	313	314	92	10.7

Embraer E-Jet Fleet Status May 2023

