Aircraft & Engine Valuation Panel

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6 June 2022

AFRA
AIRCRAFT FLEET RECYCLING ASSOCIATION

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Fleet Status

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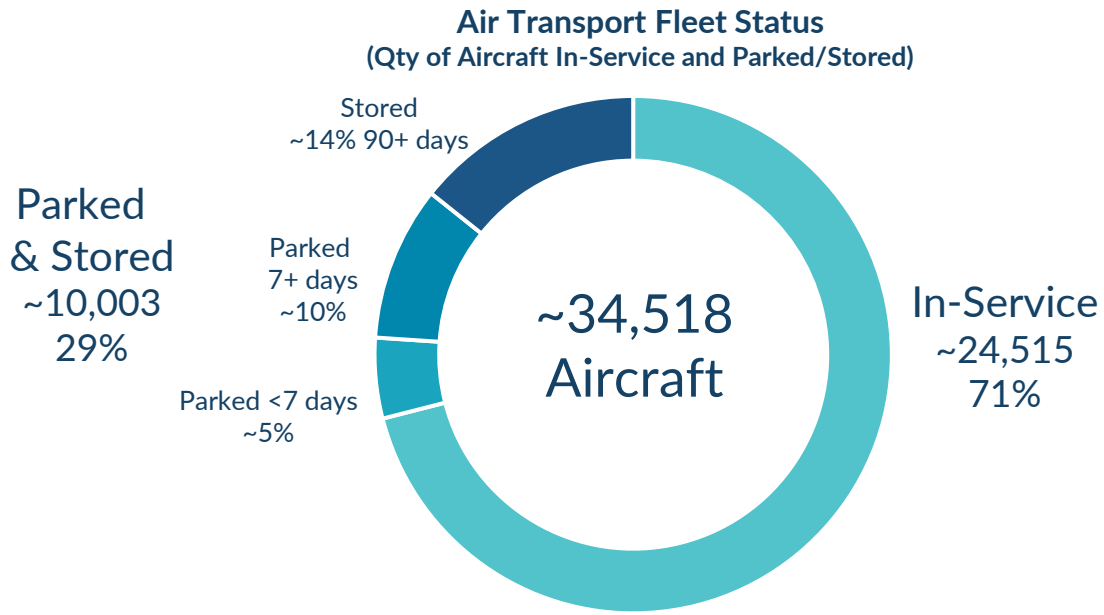
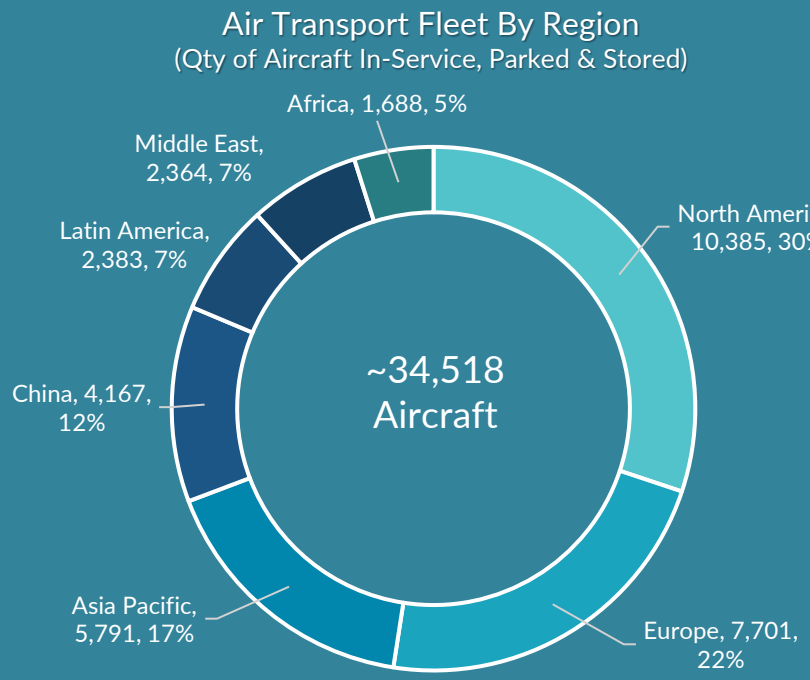
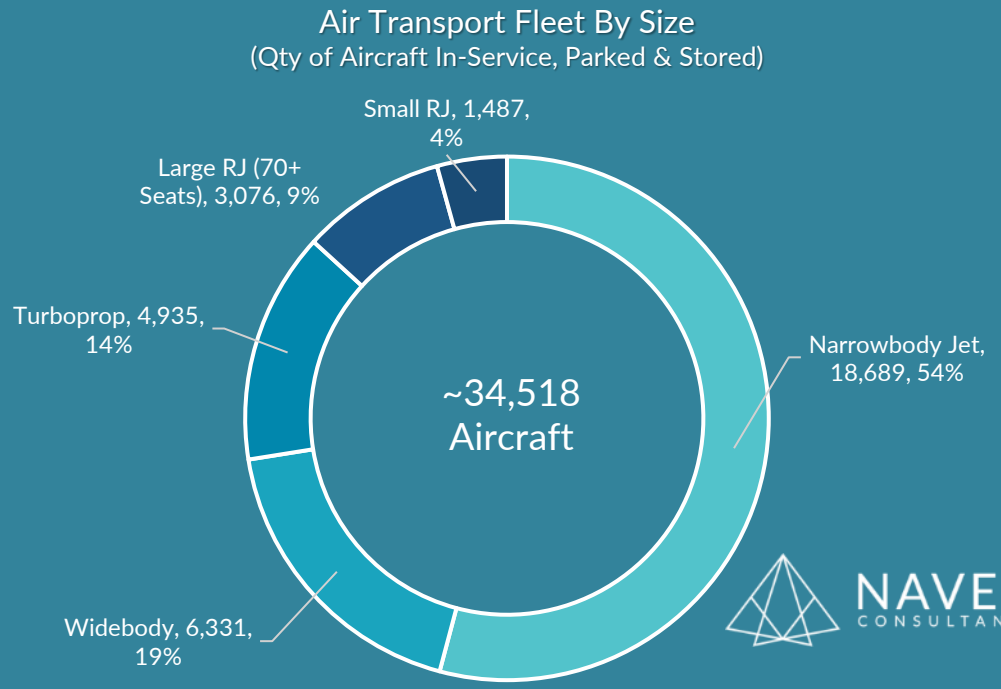
Fleet Status

In late May, ~71% of the global air transport fleet is in active service and ~29% parked/stored



- ~71% of the fleet is in active service (~24,515), and ~29% (10,003) are parked or stored. This is a deterioration since April, when ~68% of the fleet was in active service
- However, the fleet situation continues to be fluid. There are many short-term aircraft parked for less than seven days (~1,738) and a further ~3,337 that have been parked for less than 90 days. There are ~4,928 aircraft that have been stored for longer than 90 days
- Airlines continue to respond to waves of demand by moving lots of aircraft from parked/stored to in-service and back to parked

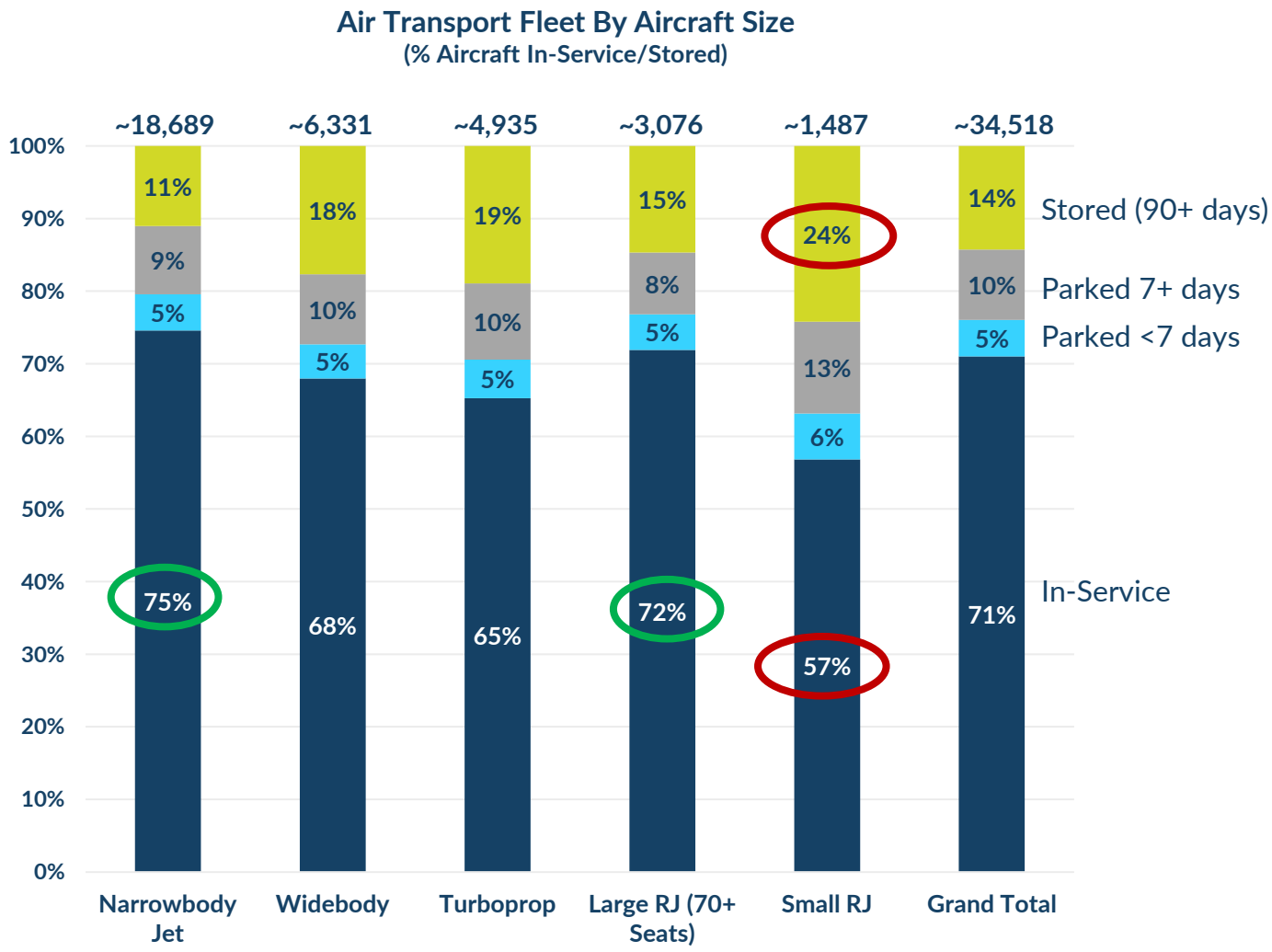




Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

Fleet Status

Narrowbody aircraft have the highest % of their fleet in-service with ~75% active



Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

- Overall, ~71% of the fleet is actively in-service. However, as can be seen, the size of the aircraft makes a difference
- Domestic travel has been recovering quickly (as seen by the USA and up to recently, China which are both large markets) – since these flights don't cross borders where there might be travel restrictions
- In April, 70% of narrowbody aircraft were in active service, lower than in May. China accounts for much of the difference due to their continued zero-COVID policy
- Consequently, narrowbody aircraft (A320ceo and neo family, 737NGs and MAX) and larger regional jets (e.g., E-Jet, E2, CRJ700-1000s) are leading the way in terms of in-service aircraft by size
- 725 of 70+ seat regional jets (such as Embraer E-Jets and CRJ700-1000s) are in-service (up from 69% in April)
- Smaller 50-seat regional jets (e.g., Embraer 145 family and CRJ200s) aren't faring as well, driven by scope changes, fuel price, and upguaging in the US that has led to more 70+ seat jets and relatively higher cost of operation of the 50 seaters. Note how 24% of smaller RJs are in longer-term storage. Many of these are headed for retirement
- Widebody aircraft remain slower to come back into active service. ~68% are actively flying in May 2022, the same as April

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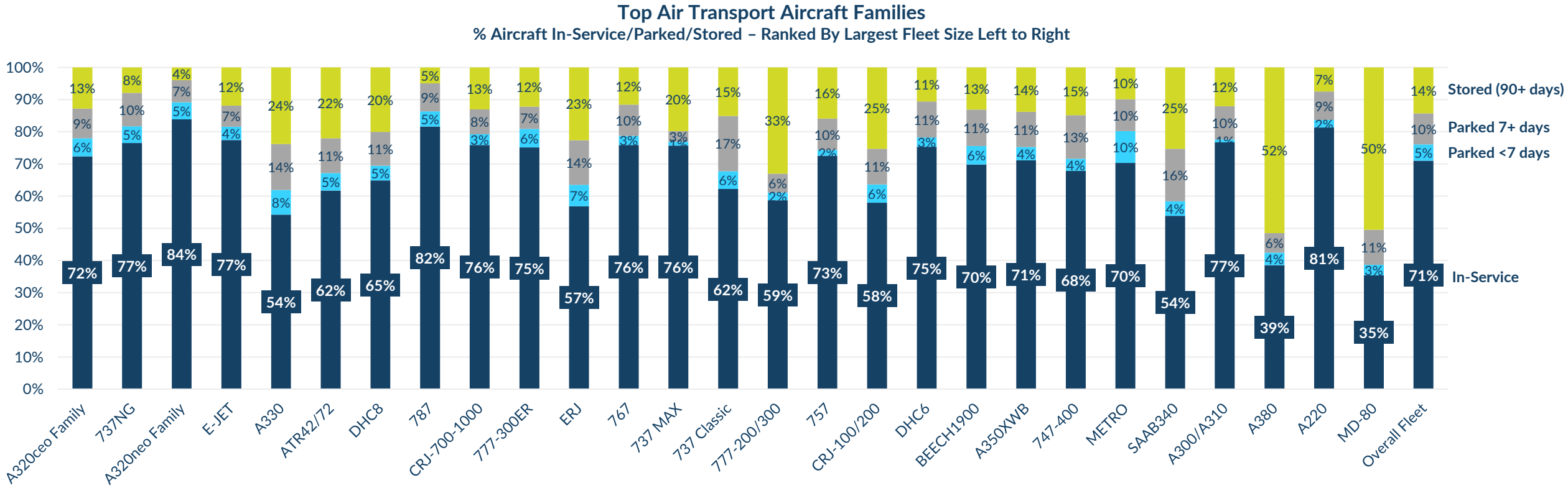
Airlines continue to fly their youngest, most efficient and right-sized aircraft



- Even though 71% of the fleet is in active service, there are clear winners in terms of aircraft models and those that have fallen out of favor due to their size or economics
- Airlines, in cost-containment mode, are flying their newest aircraft, typically those under warranty or not due heavy checks or engine shop visits (e.g., A320neos, 737NGs, 787s, A350s)
- The 777-300ER has remained popular for passenger and freight/passenger flights – hence 75% are actively in-service (up from 74% in April)
- Larger regional jets are also popular such as the E-Jet (77% in-service - up from 75% in April) CRJ700-1000 family with ~76% in active service (up from 73% in April)
- Cargo aircraft such as A300/A310, 747-400, 767, and 757 freighters are, unsurprisingly, active
- 737NG has ~77% of its fleet in-service, helped by the large fleet in the USA. This is up from 71% in April
- The A320neo family has the highest % of the fleet in active service (~84%) – up from 81% in April. The A380 has only 39% of its fleet in-service (up from 37% in April)

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

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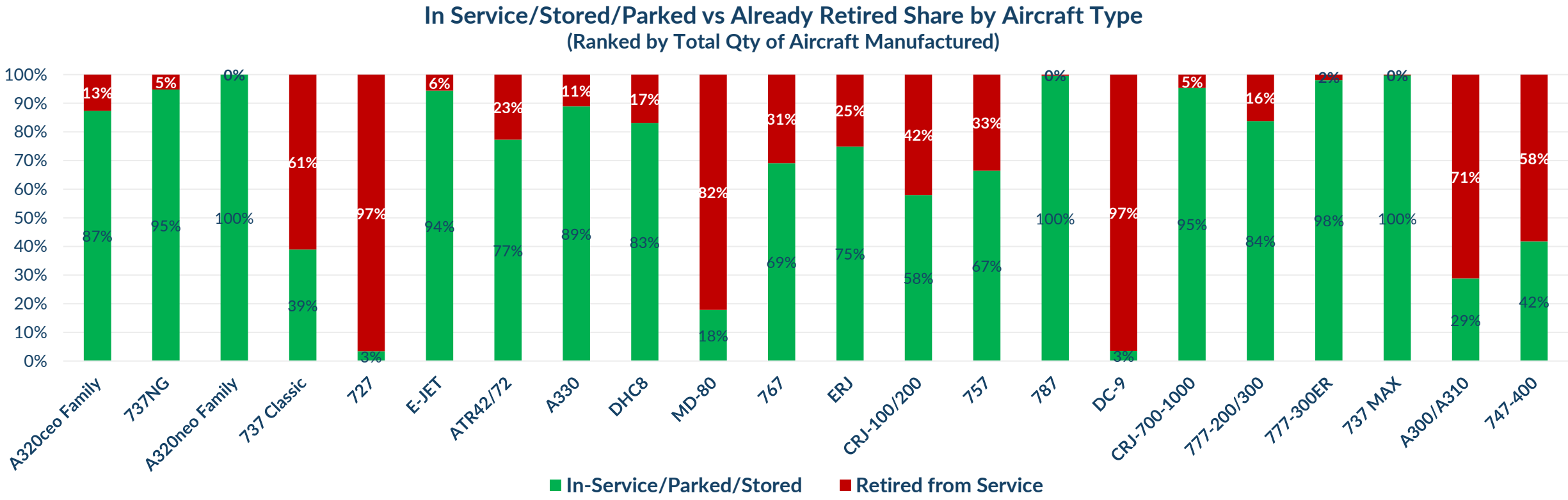
Most of the top aircraft families in-service, stored or parked are at the “growth” or early “mature” phase of the product lifecycle



- NAVEO has compared the total number of in-service vs. retired aircraft from commercial service as a share of total production volume (excluding test aircraft and losses)
- The USM market by aircraft type has a sweet spot where a sufficient quantity of harvestable parts is available and enough aircraft generating MRO to require them
- Most aircraft major in-service platforms have seen less than 25% of total production enter retirement
- Platforms where a healthy supply of harvestable USM parts exists, include the 737 Classic, 747-400, CRJ-100/200, ERJ, and A300/A310

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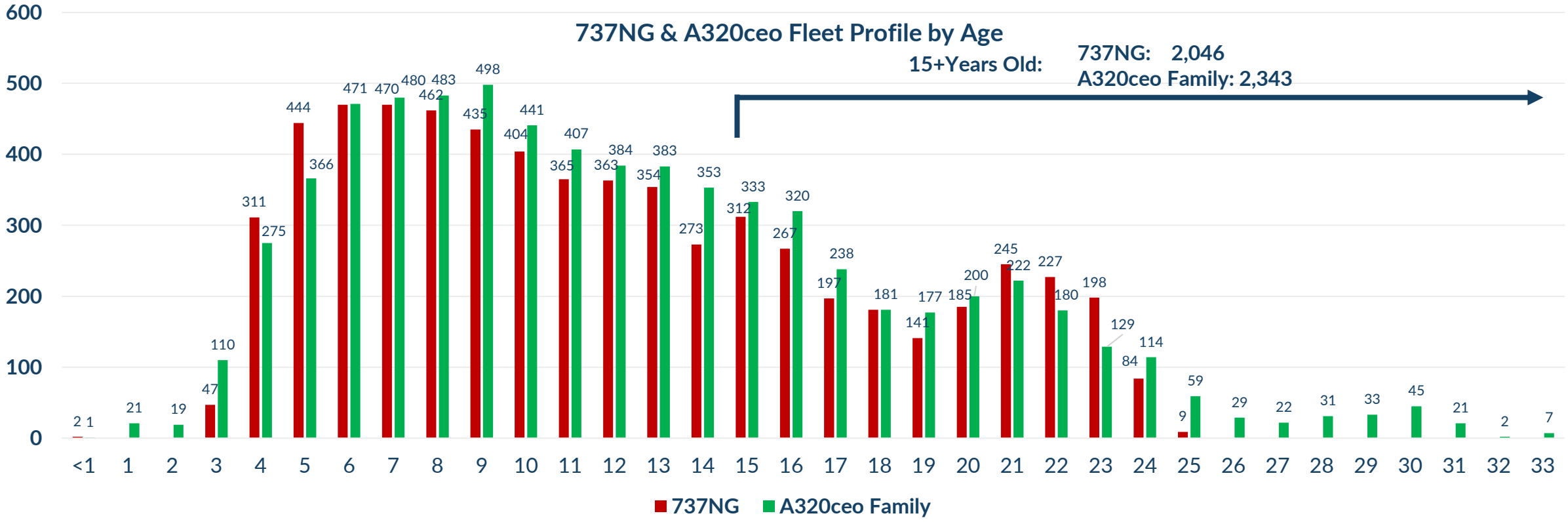
Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

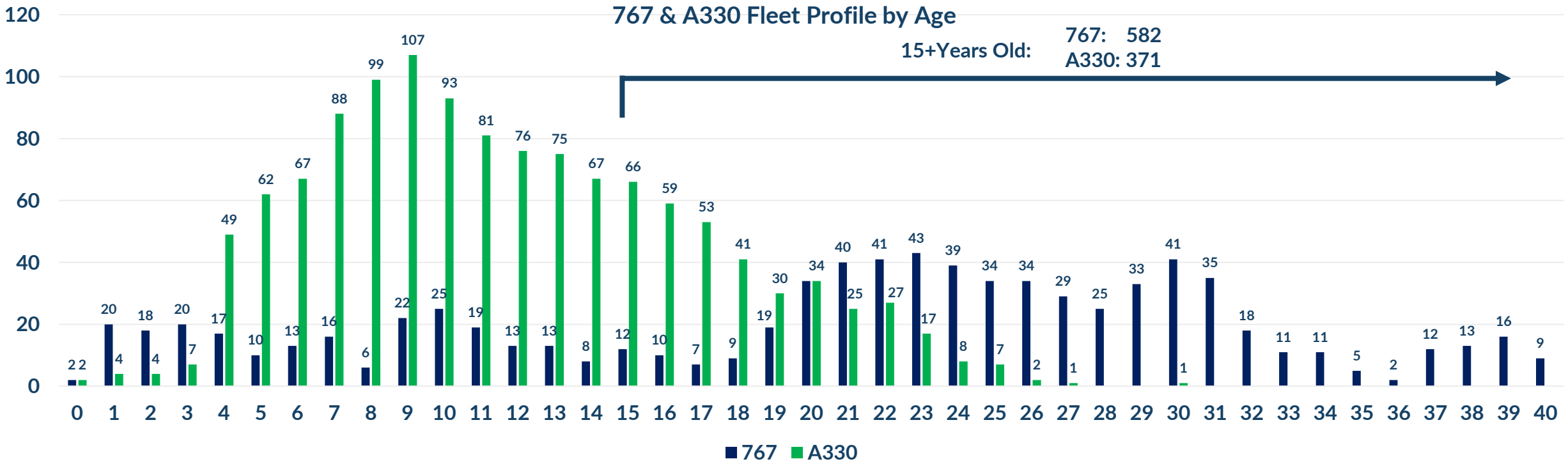
The 737NG and A320ceo underpin the current narrowbody fleet



- The A320ceo and 737NG fleets are relatively young, driven by solid deliveries over the past decade
- ~47% of 737NGs and 45% of A320ceo family aircraft are 10 years of age and younger
- Approximately half of the V2500s and CFM56-7B engines haven't yet had their first shop visit

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

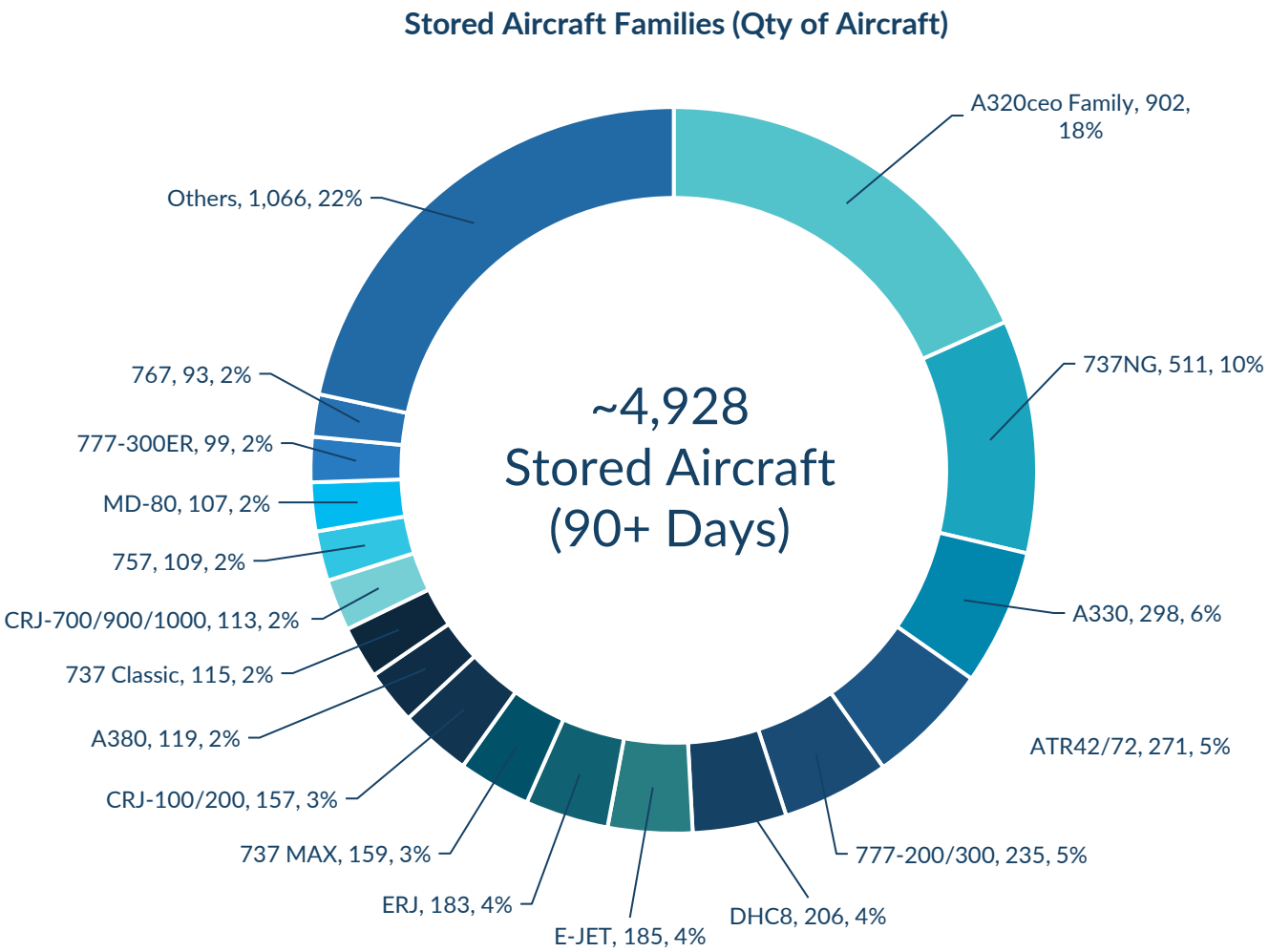
The 767 and A330 are key widebody aircraft – with the 767 a popular freighter



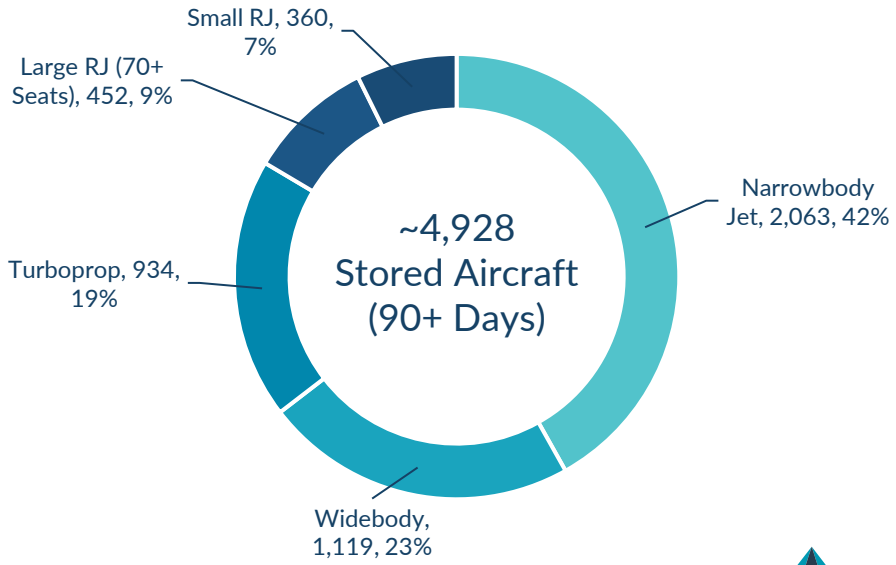
- Contrary to popular belief, the A330 is still a relatively young aircraft. The average age is 11.8 years. The 767 average age is 20.9 years. That's because, as can be seen, many A330s are under 15 years old
- There are four times as many A330s under 15 years old (881) compared to 767s (222)

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

There are ~4,928 aircraft that have been stored for 90+ days



- ~14% of the 34,518 air transport aircraft have been in-active and stored for 90+ days
- The average age of the parked fleet is ~18 years
- Narrowbody aircraft makeup ~42% of the stored aircraft
- The A320ceo and 737NG are the top stored aircraft families



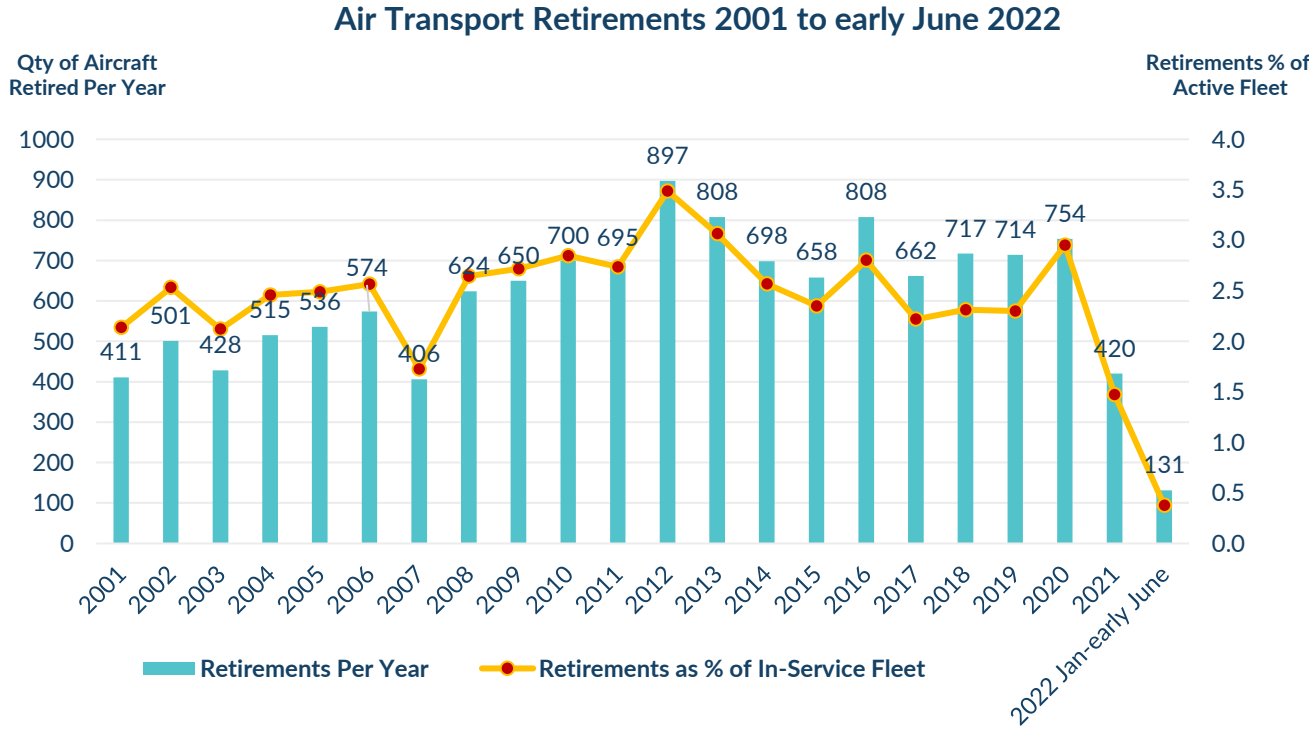
Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

Retirements

Only ~420 aircraft were officially retired in 2021 - the lowest level since 2007

- The retirement tsunami that was expected has, so far, failed to materialize. 2021 saw the lowest official retirements since 2007, with only ~420 aircraft being recognized as being officially retired from service
- Why? Parking and long-term storage are relatively cheap. Airlines and lessors prefer to wait and see how traffic (and residual values) recovers. There's no point retiring an aircraft if there's a chance it could come back into service or selling it for part-out at a later date, when demand for MRO is higher, which would yield higher revenue
- Some aircraft described as "parked/stored" will likely already have been retired, so the total number will likely increase. But, it takes time for the data to catch up to the on-the-ground reality. For example, 2021 retirements were below the 20 year average of ~627 retirements per year. But, 2021 numbers are way lower than was expected.
- This means that there hasn't been a flood of USM to compete with OEM spares, and this also helps USM pricing of existing inventory
- As a % of the active fleet, retirements have typically hovered between 1.7% and 3.5%. The average has been 2.6%. The rate in 2021 was 1.5%. So far, as of early June 2022, ~131 aircraft have been officially retired
- If fuel prices remain high, we expect this to put pressure on aircraft retirements as it did in 2008
- Retirements will increase in the coming years (many older aircraft are due for retirement), but this depends upon the pace of the recovery, fuel price, new aircraft production issues being addressed, etc.

Source: Aviation Week Fleet Discovery. Early June 2022. Naveo analysis



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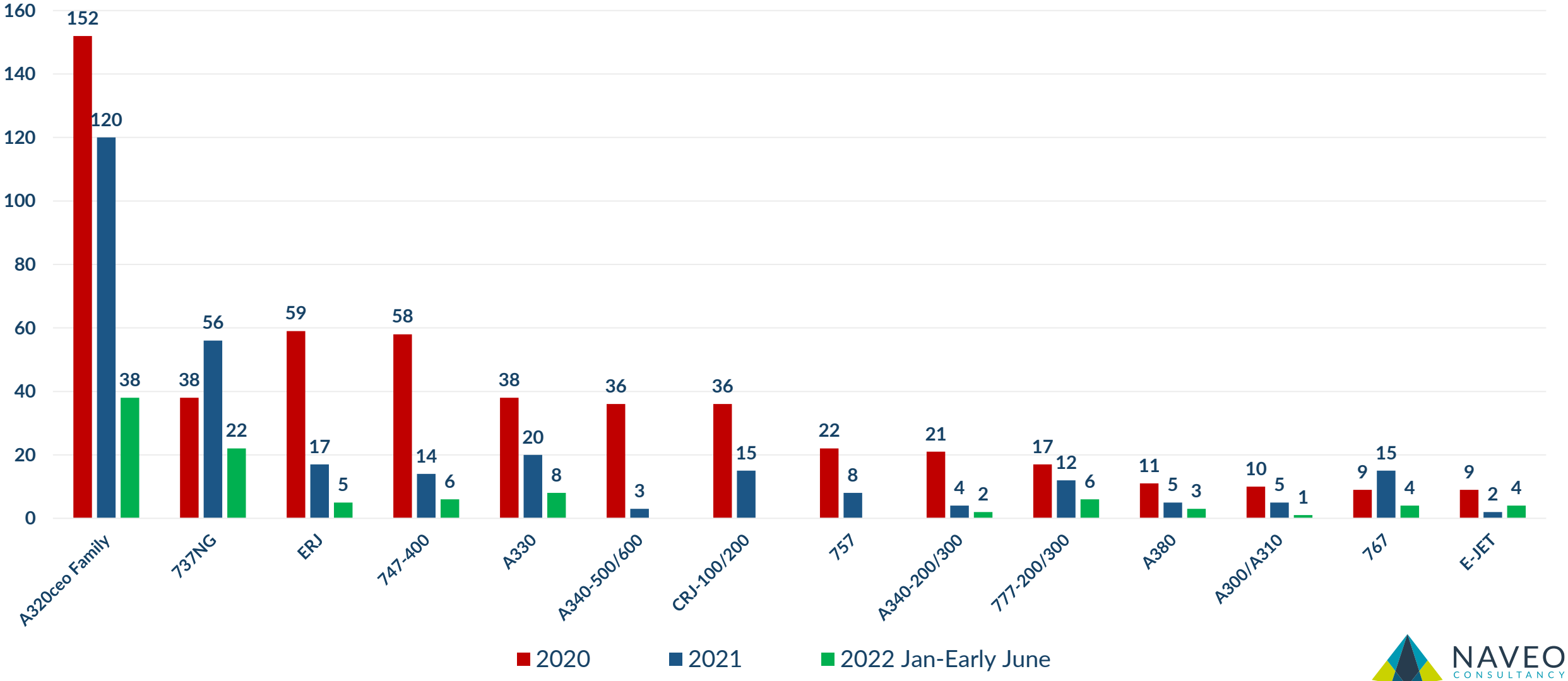
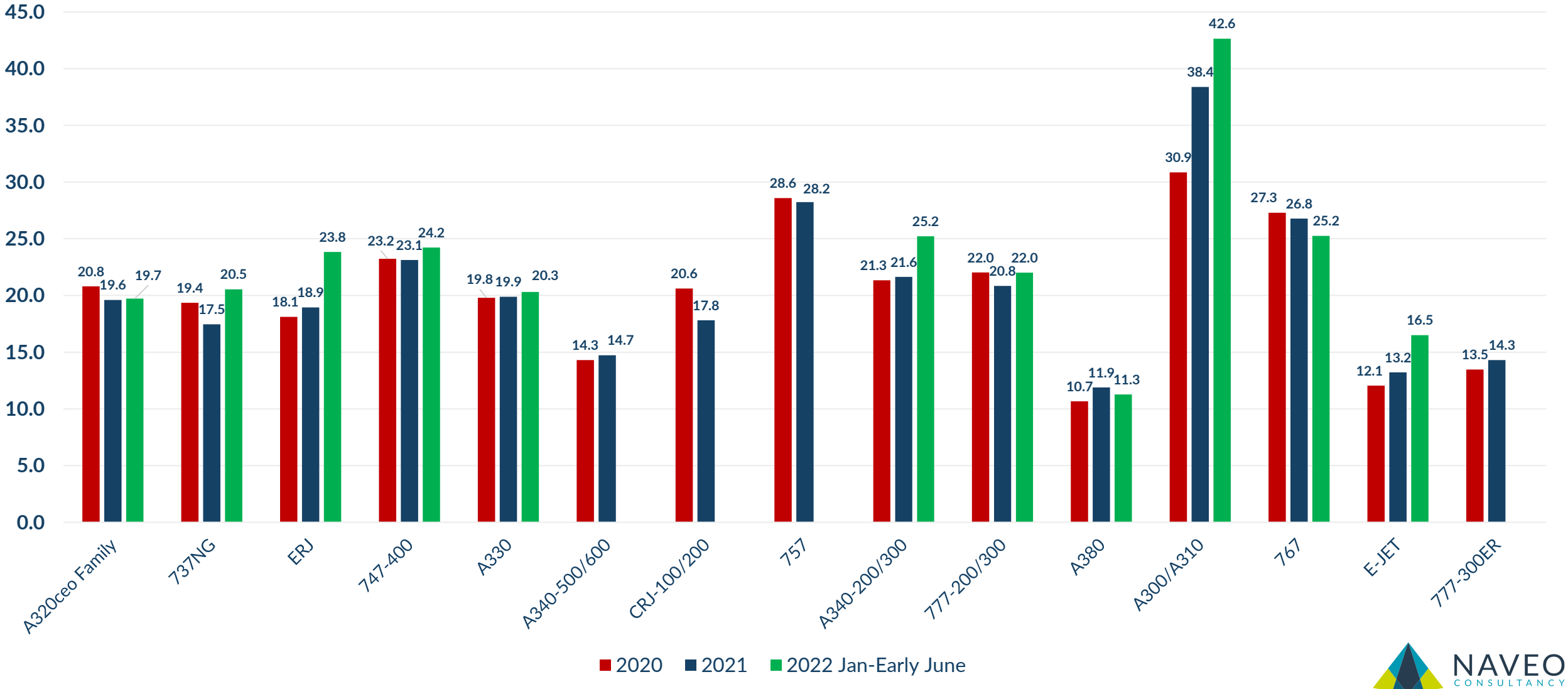
Top Aircraft Family Retirements 2020, 2021 & Jan-Early June 2022



Source: Aviation Week Fleet Discovery. Early June 2022. Naveo analysis

Average Aircraft Retirement Age 2020, 2021 & Jan-Early June 2022



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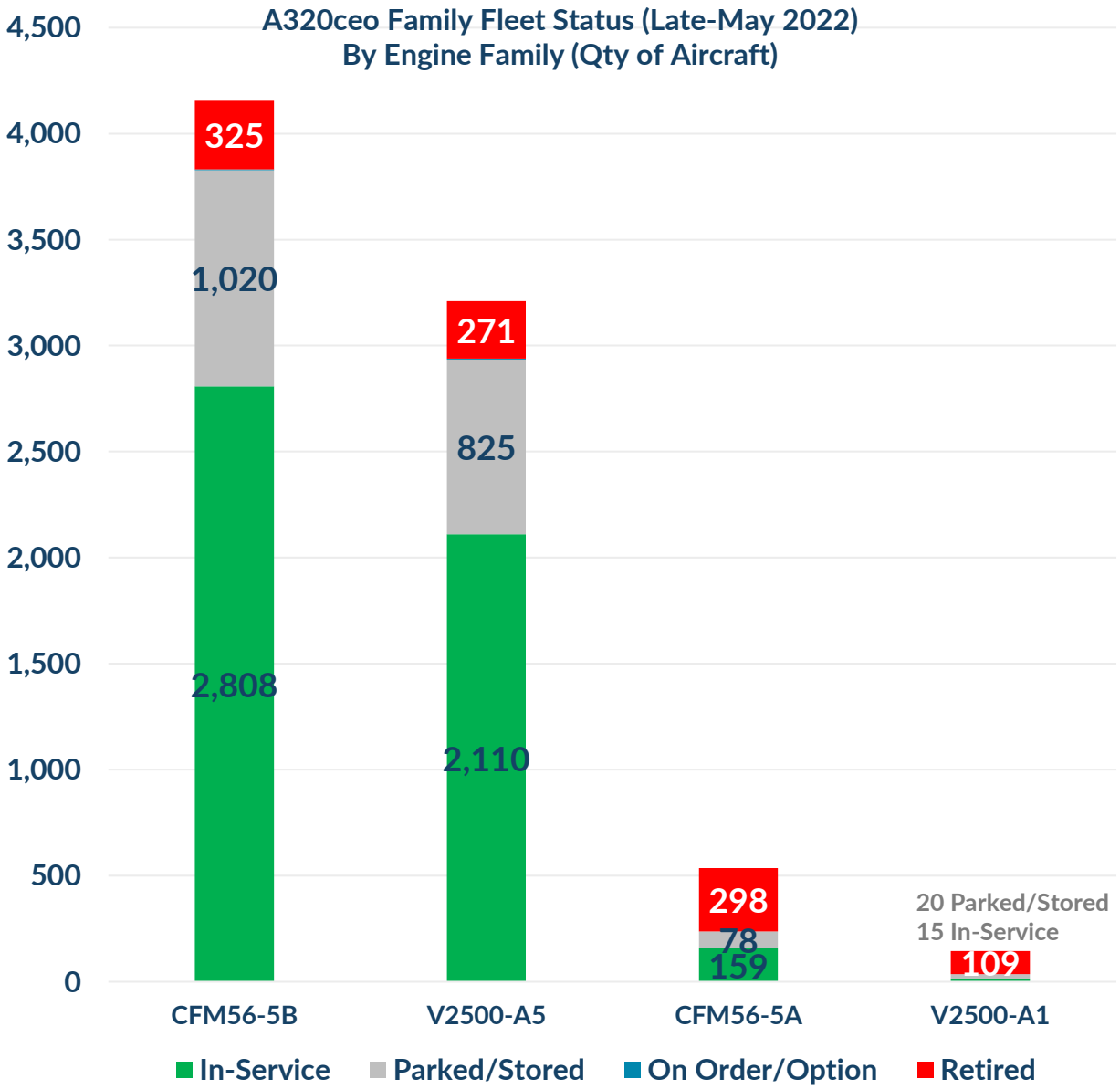
Source: Aviation Week Fleet Discovery. Early June 2022. Naveo analysis

Aircraft & Engine Discussion

A320ceo Family Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
A318ceo	19	10	**29**	14.6	44
A319ceo	886	320	**1,206**	16.2	246
A320ceo	3,005	1,108	**4,113**	12.3	632
A320F		1	**1**	16.2	
A321	1,174	503	**1,677**	9.9	96
A321F	8	1	**9**	21.1	
Total	**5,092**	**1,943**	**7,035**	**12.4**	**1,018**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

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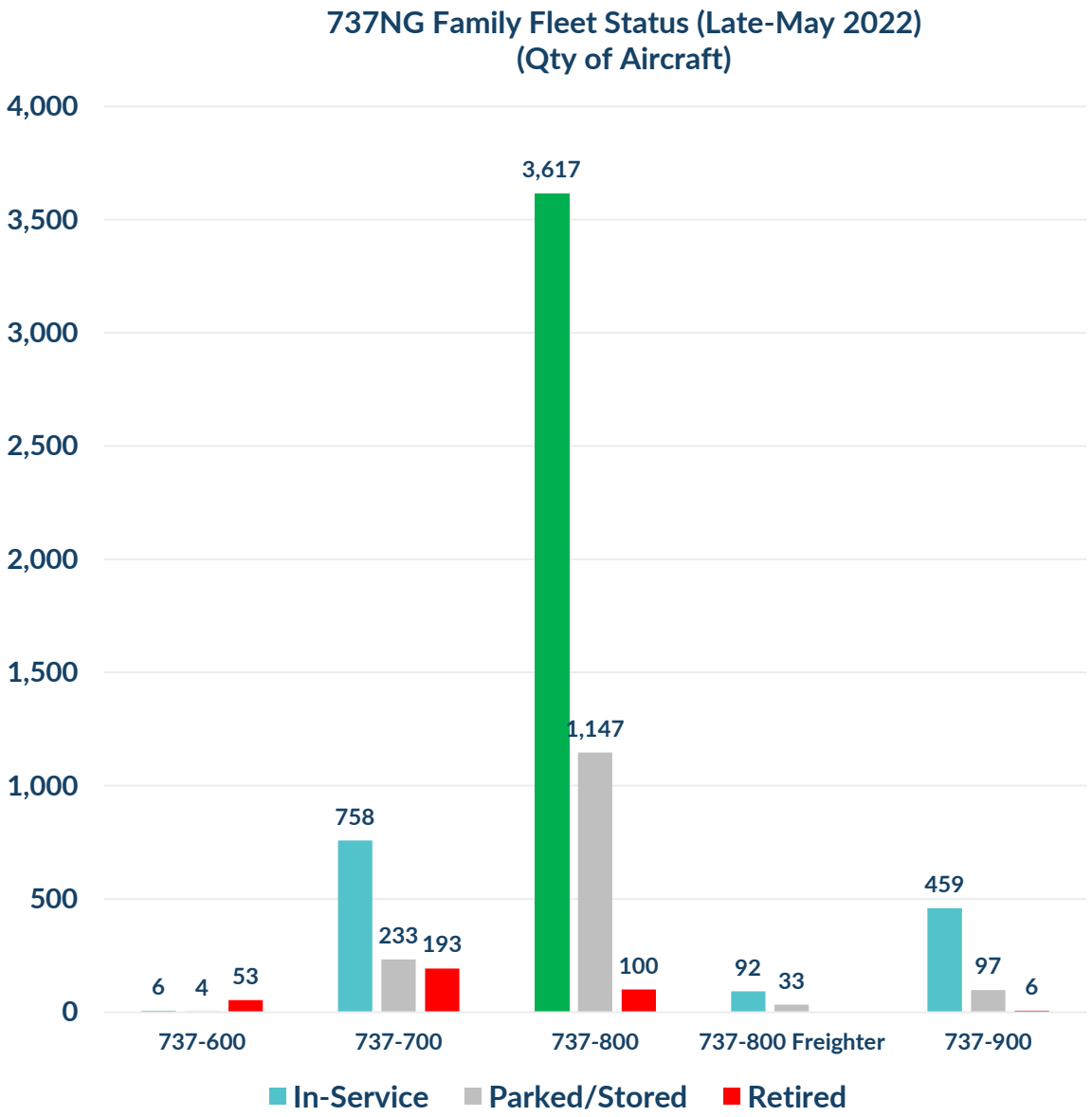
737NG Family Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
737-600	6	4	**10**	19.9	53
737-700	758	233	**991**	17.1	193
737-800	3,617	1,147	**4,764**	11.0	100
737-800 Freighter	92	33	**125**	18.8	
737-900	459	97	**556**	9.2	6
Total	**4,932**	**1,514**	**6,446**	**11.9**	**352**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

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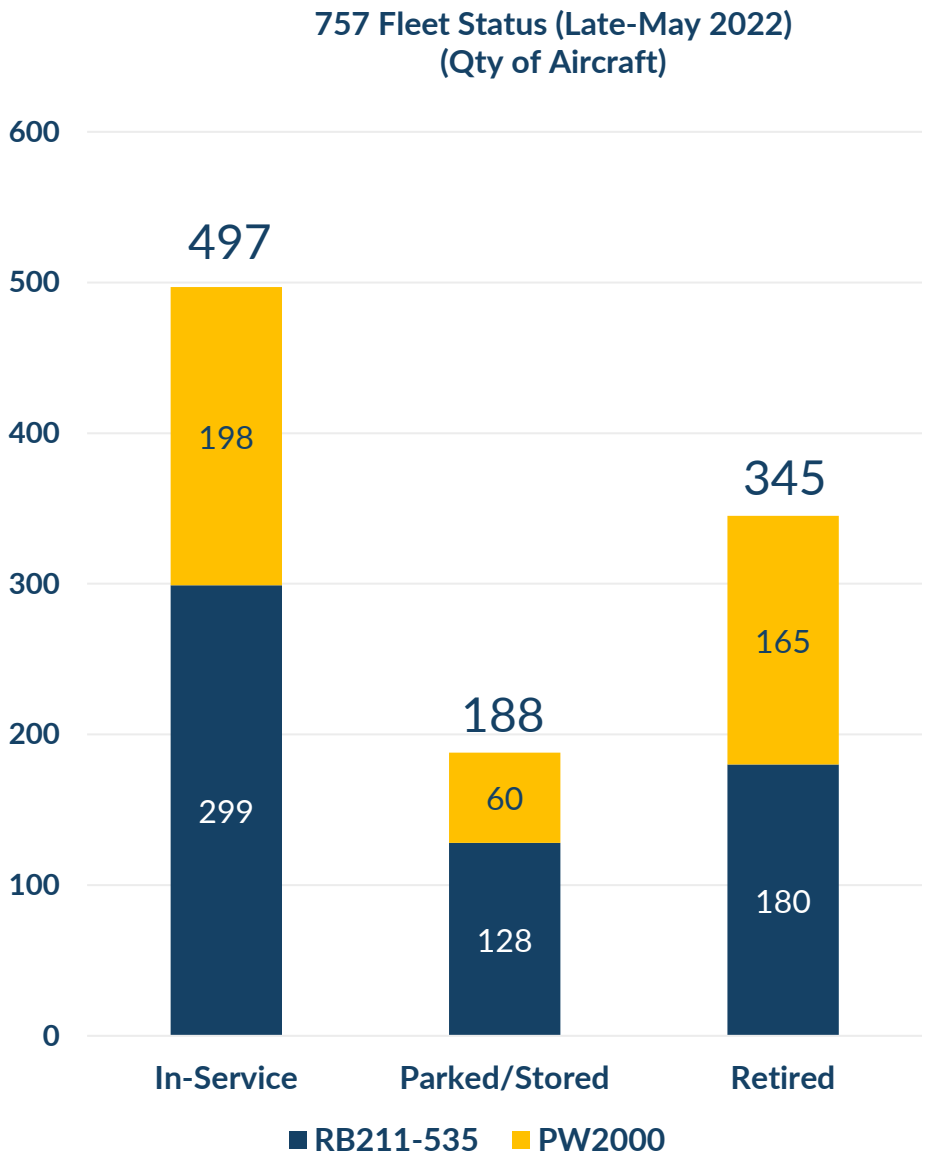
757 Family Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
757-200	154	129	**283**	25.7	306
757-200F/PF/C/combi	300	47	**347**	28.7	39
757-300	43	12	**55**	20.6	
Total	**497**	**188**	**685**	**26.8**	**345**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

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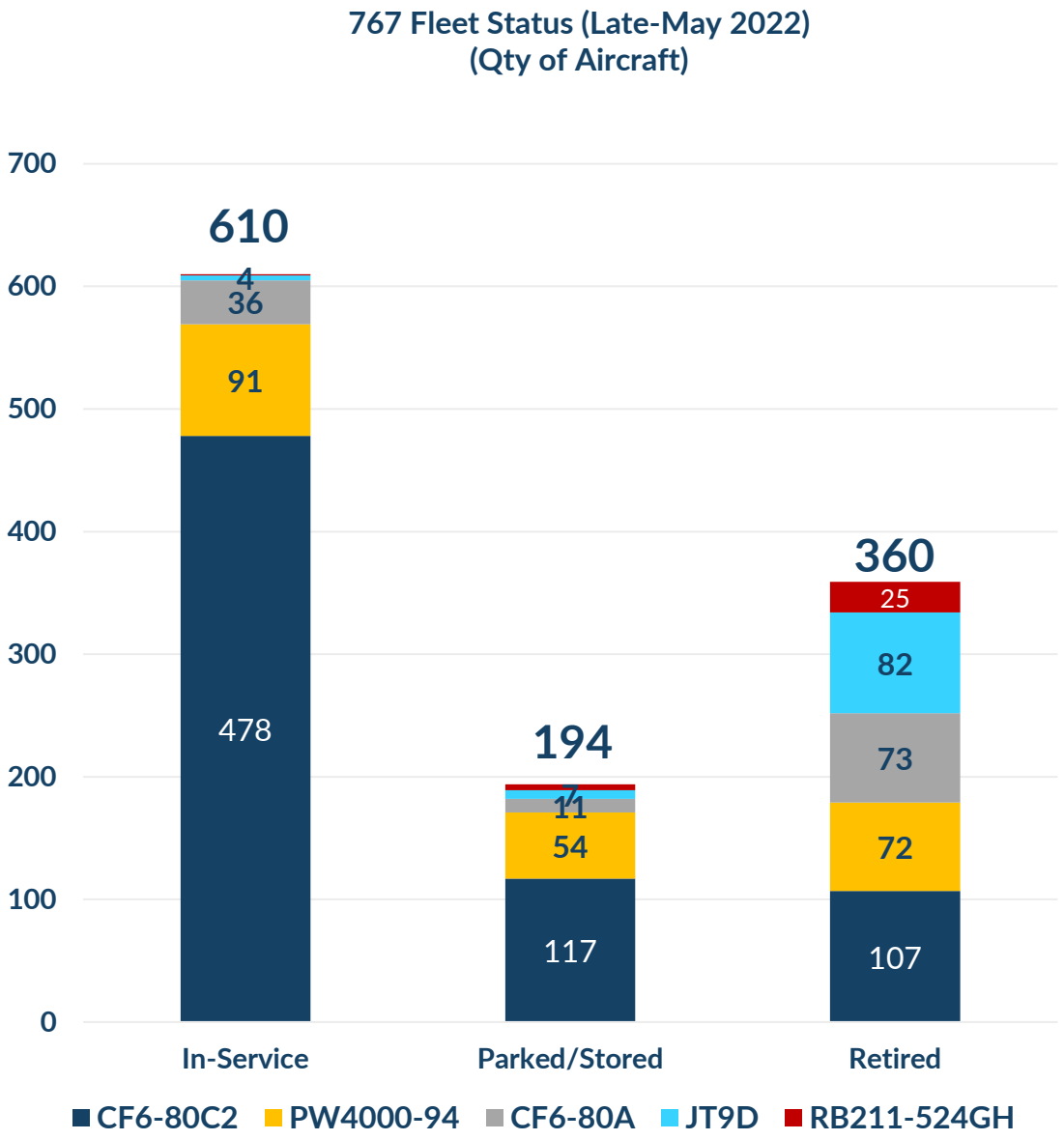
767 Family Fleet Status



Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
767-200/ER	7	13	**20**	28.0	151
767-200/ER Freighter	49	11	**60**	36.8	4
767-300/ER	182	137	**319**	22.3	204
767-300/ER Freighter	345	22	**367**	16.8	1
767-400ER	27	11	**38**	21.0	
Total	**610**	**194**	**804**	**21.0**	**360**

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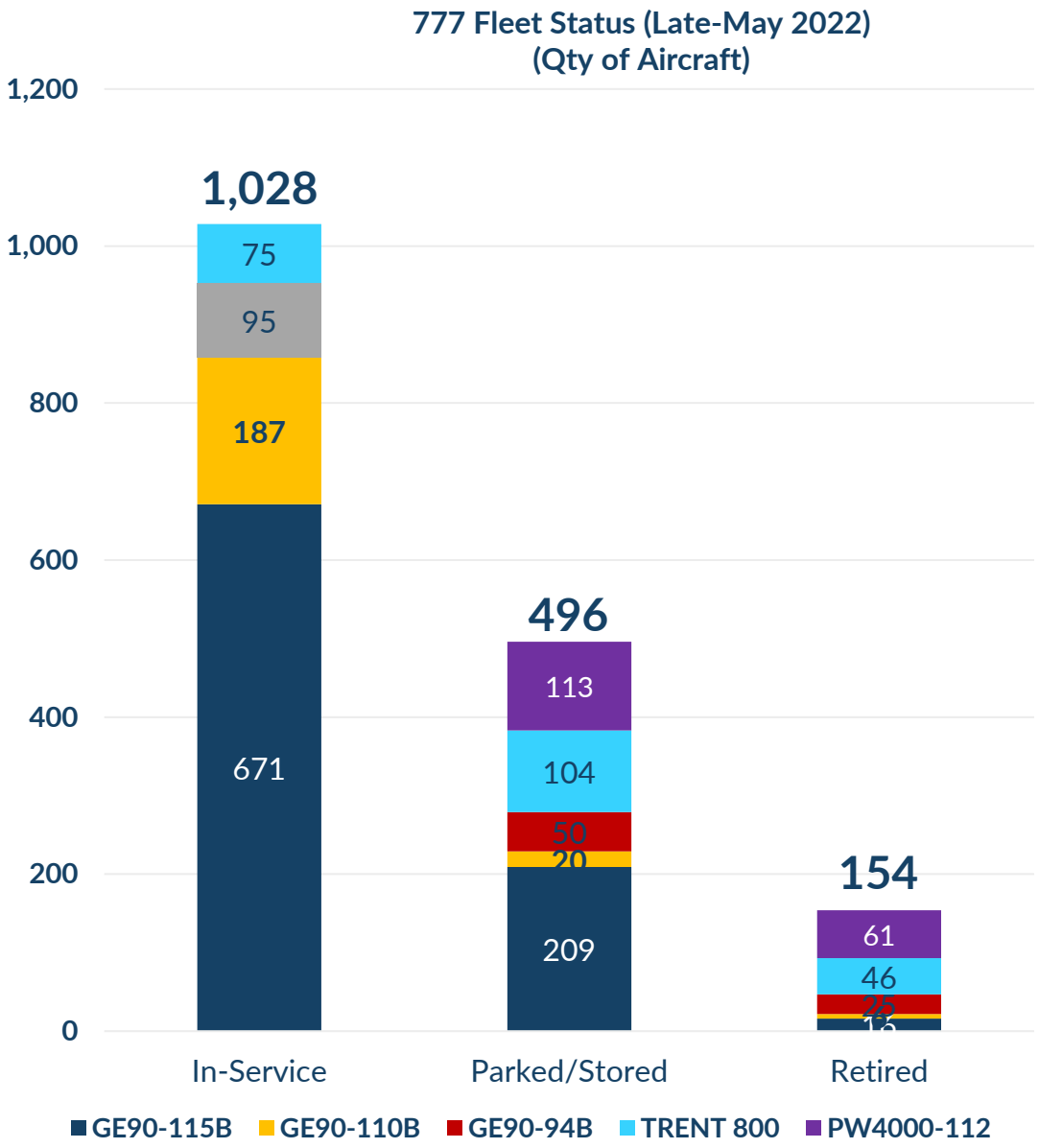
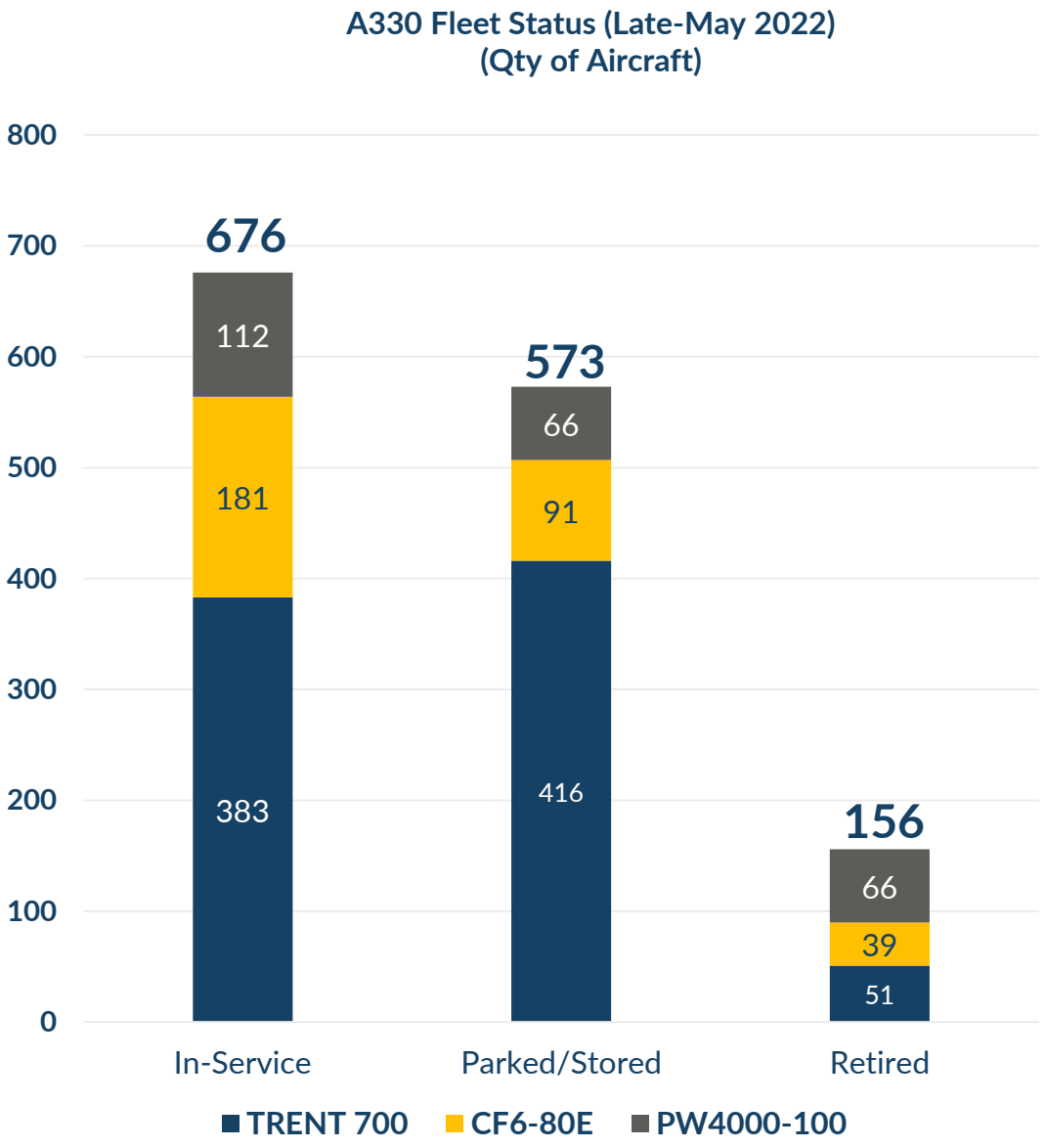
777 Family Fleet Status



Aircraft	In-Service	Parked /Stored	**Current Fleet**	Current Fleet Av. Age	Retired
777-200/ER/LR	415	246	**661**	15.4	129
777-300	3	48	**51**	21.5	9
777-300ER	610	202	**812**	9.4	16
Total	**1,028**	**496**	**1,524**	**12.4**	**154**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

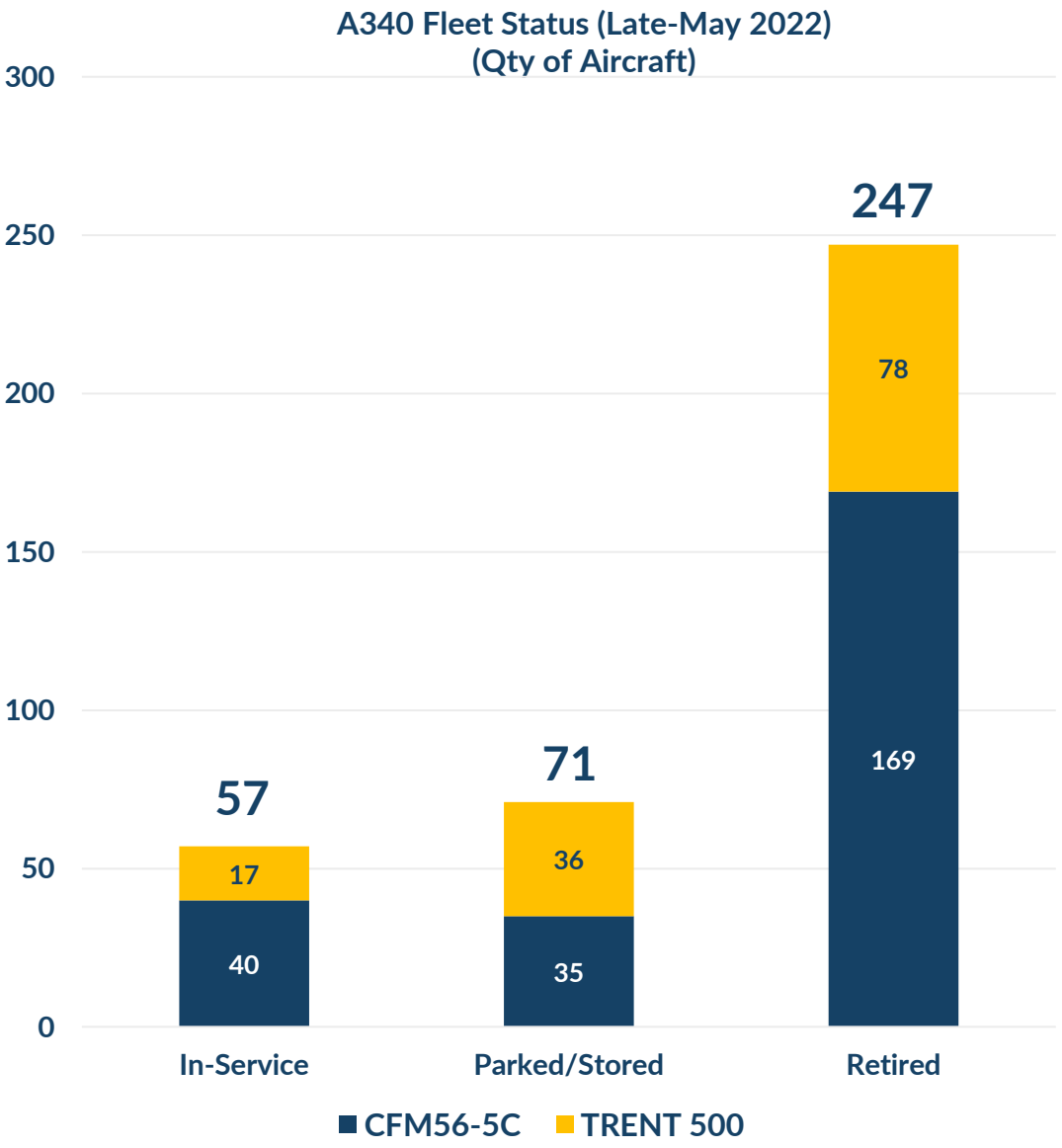
A330 Family Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
A330-200	217	285	502	13.1	86
A330-200F	39	4	43	10.0	
A330-300	409	282	691	10.9	70
A330-300F	11	2	13	16.2	
Total	**676**	**573**	1,249	**11.8**	**156**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

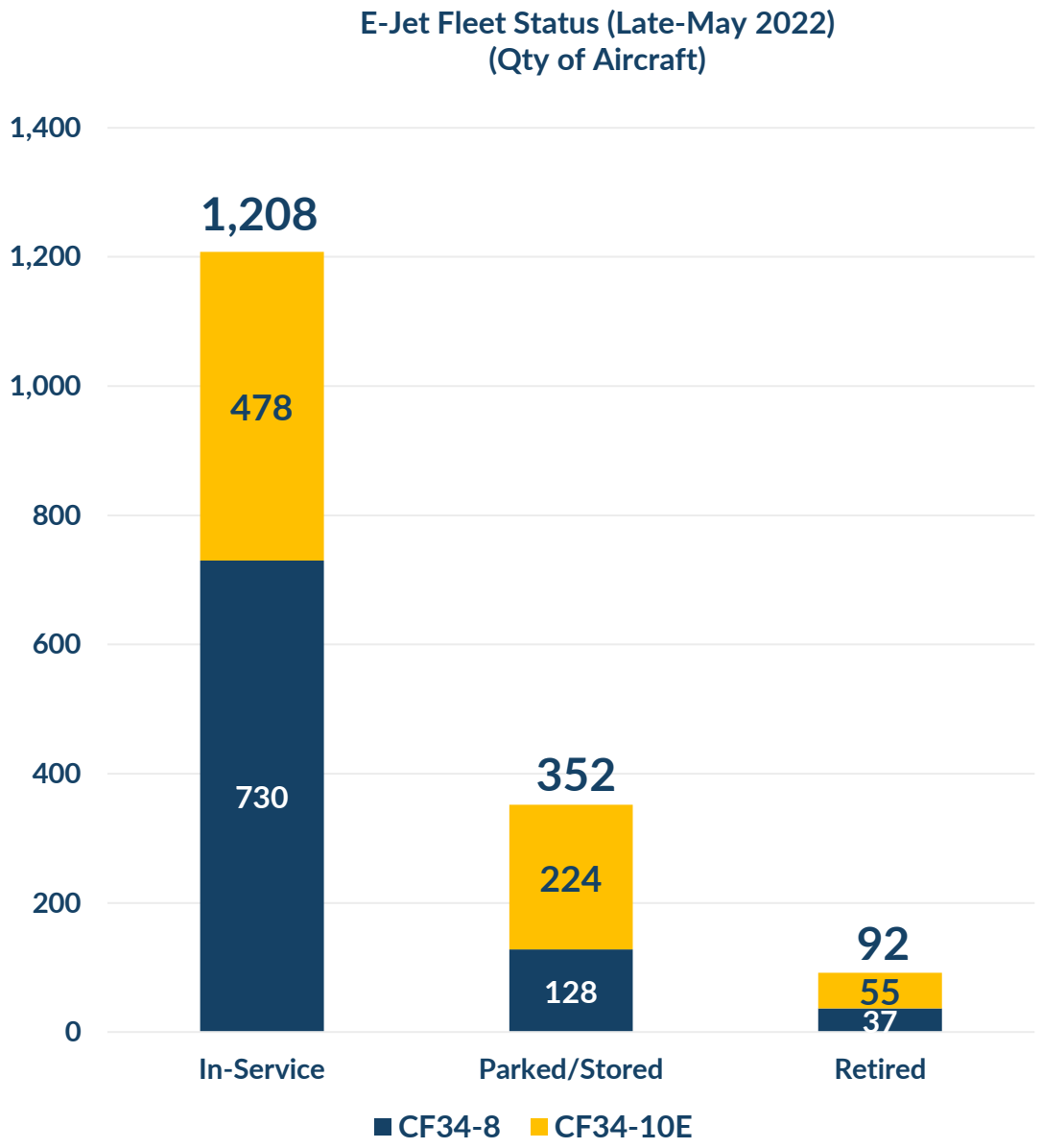
A340 Family Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
A340-200/300	40	35	75	22.1	169
A340-500/600	17	36	53	16.3	78
Total	**57**	**71**	**128**	**19.7**	**247**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

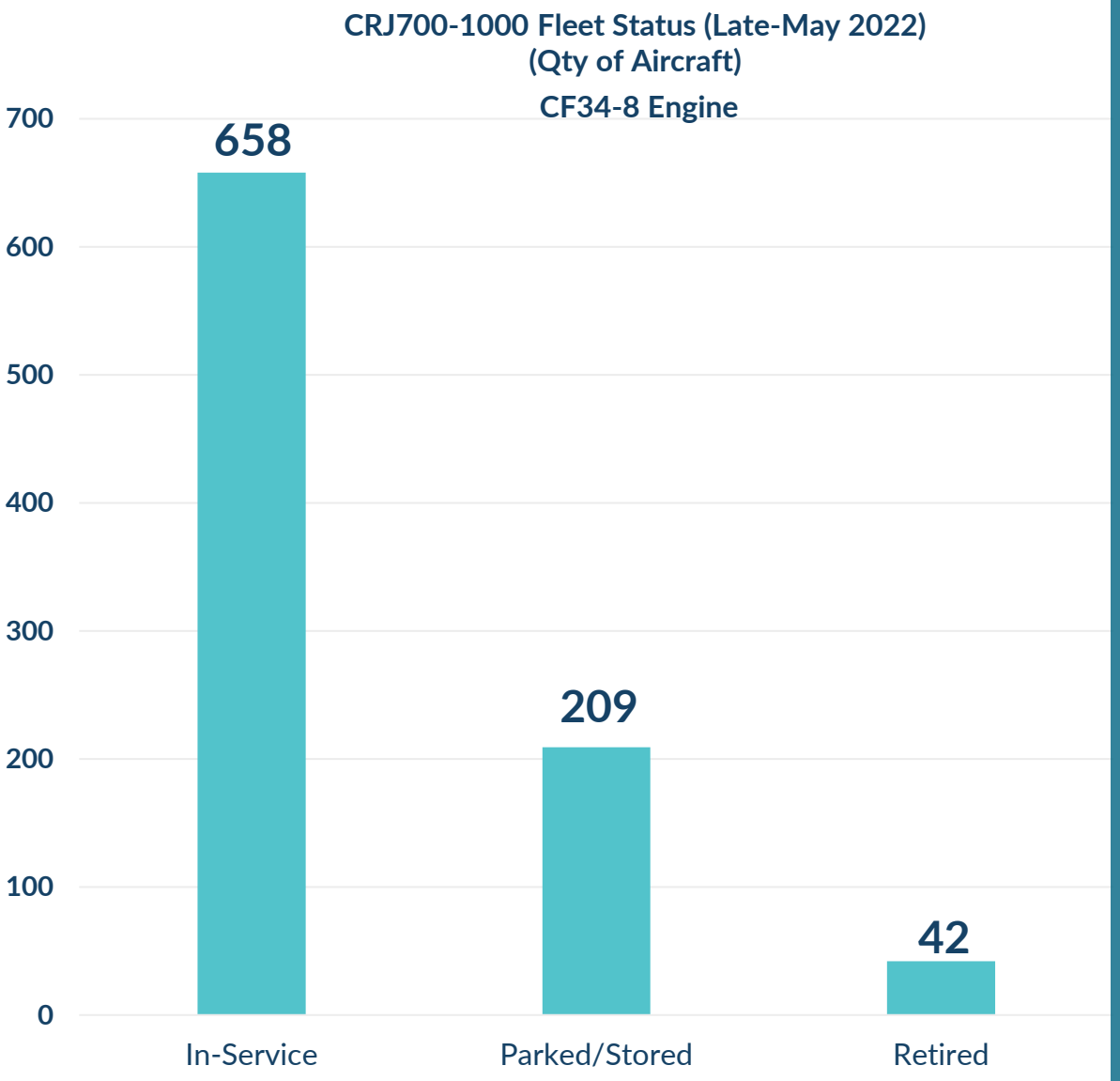
Embraer E-Jet Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
Embraer 170	120	42	**162**	15.6	34
Embraer 175	610	86	**696**	7.1	3
Embraer 190	349	184	**533**	11.6	51
Embraer 195	129	40	**169**	10.2	4
Total	**1,208**	**352**	**1,560**	**10**	**92**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

CRJ700-1000 Fleet Status



Aircraft	In-Service	Parked /Stored	Current Fleet	Current Fleet Av. Age	Retired
CRJ550-700 Series	243	74	**317**	16.6	28
CRJ900	380	105	**485**	10.8	13
CRJ900F	1		**1**	15.6	
CRJ1000	34	30	**64**	8.6	1
Total	**658**	**209**	**867**	**12.8**	**42**

Source: Aviation Week Fleet Discovery. Late May 2022. Naveo analysis

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