International Civil Aviation Organization

The Second Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/2)

Bangkok, Thailand, 20 – 24 March 2023

Agenda Item 4: Implementation of CNS-ATM Systems

UPDATE ON IATA'S AIRCRAFT EQUIPAGE AND CAPABILITY SURVEY

(Presented by IATA)

SUMMARY

This paper provides updated analysis from IATA's Aircraft Equipage and Capability Survey for Asia-Pacific and North Asia conducted in 2022.

1. INTRODUCTION

1.1 After multiple queries about fleet capabilities during past ICAO meetings and other workshops dealing with CNS requirements and possible mandates, IATA conducted a broad and detailed survey in order to build a detailed baseline database for operators in our region.

1.2 The IATA Aircraft Equipage and Capability Survey asked member and non-member airlines for responses that projected forward in a window of where fleet capabilities will be by the end of the 2022 calendar year and beyond.

1.3 This report updates from previous reports after several more airline fleets have been added to the database.

2. DISCUSSION

The survey

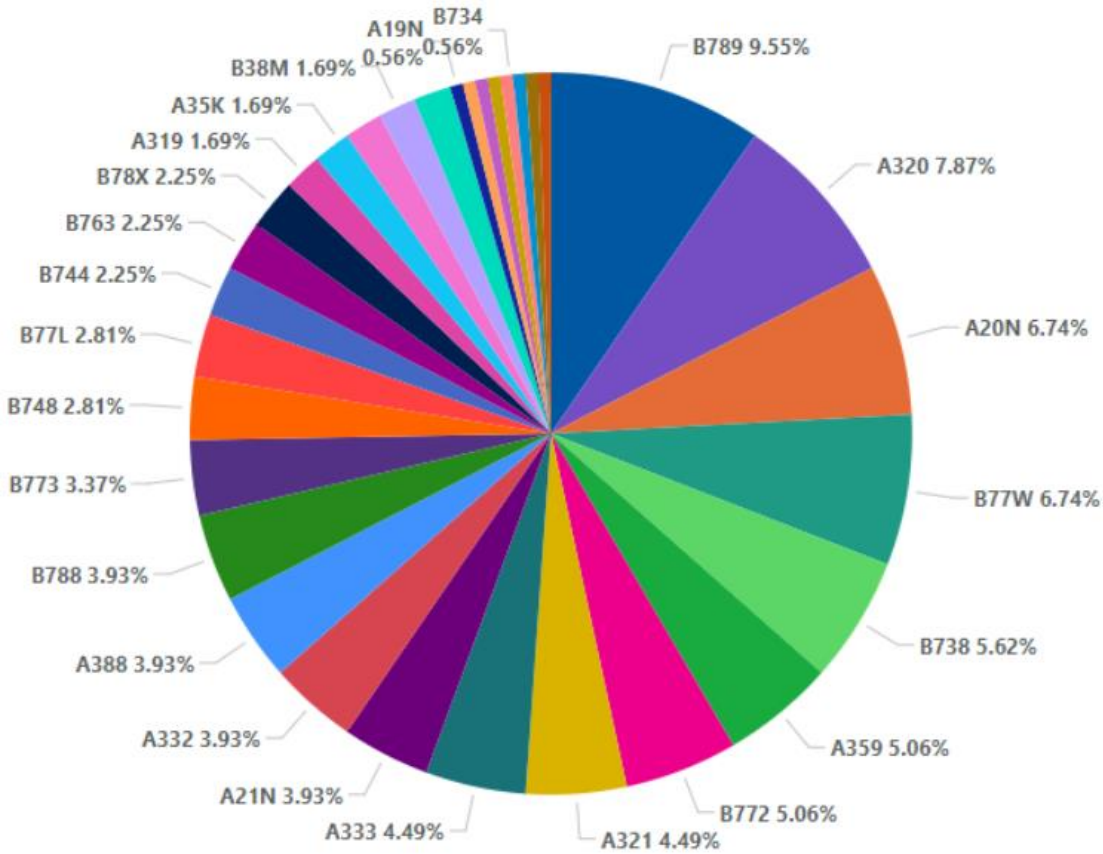
2.1 The survey specifically asked for aircraft fleet capabilities and operating approvals in the domains of PBCS, PBN, GNSS Augmentations, Mode S and SWIM. The airlines were asked to provide indications on future intentions where current capabilities were planned to be enhanced.

2.2 Using the regions (ASPAC and NASIA) and sub-regions (India/BoB, ASEAN, SE Asia and South Pacific ASPAC and NASIA) we are able to further filter responses to gain better analysis of equipage in those areas. Where the data isn't sub-region specific or responses include aircraft that fly in most or all regions, we can obtain additional targeted data from airlines and ANSPs in order to provide a better picture.

2.3 This paper covers updated analysis of data from over 4500 aircraft now held in the equipage and capability database.

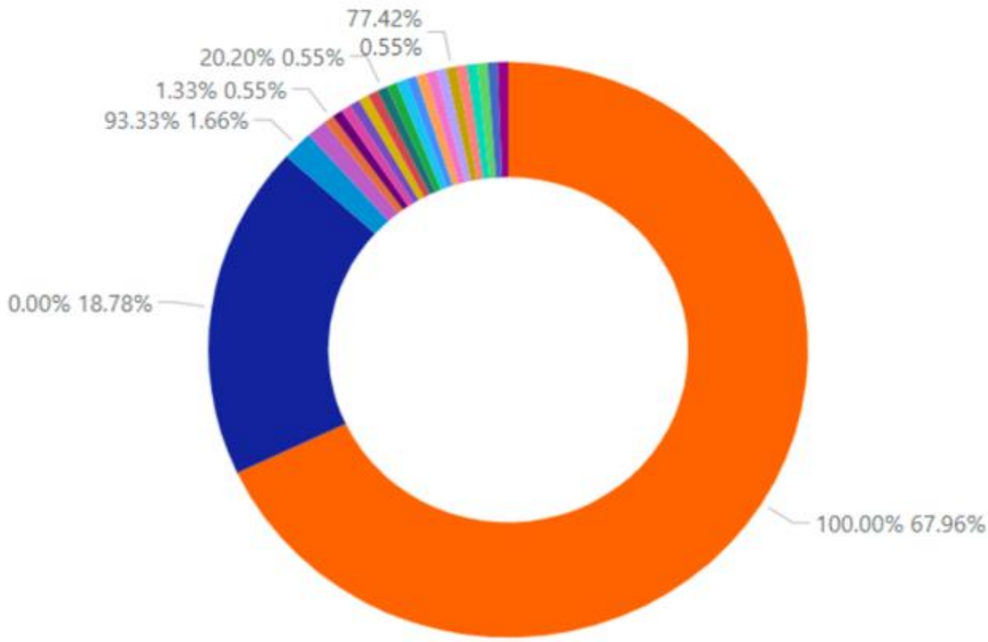
Aircraft Fleet Composition

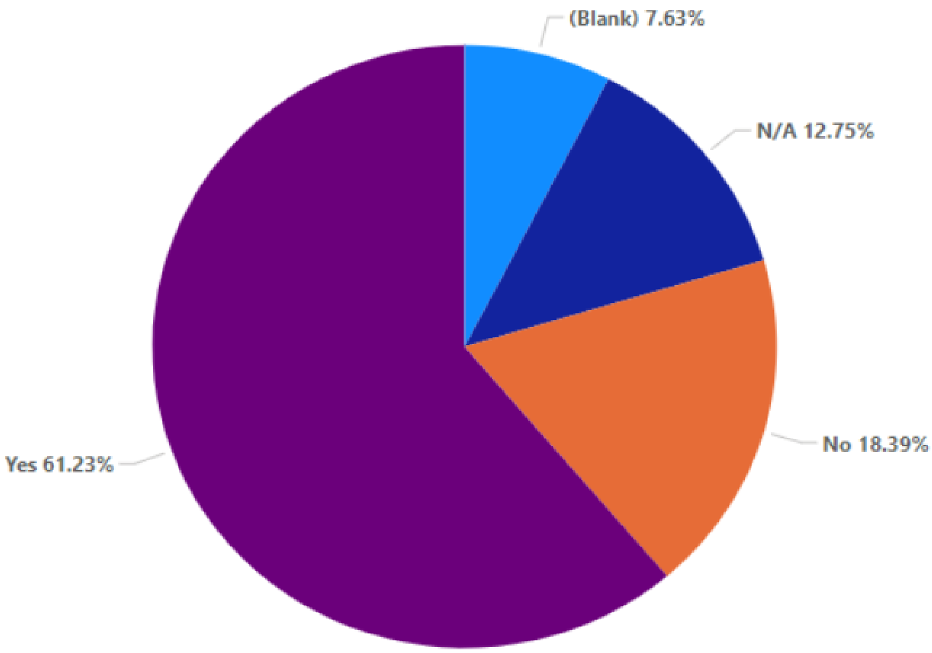
2.4 Earlier reported analysis showed the highest presence of aircraft types were B738 and A320 with 16.17% and 15.13% shares respectively. The ratios have shifted with the additional airlines, now showing B789 as the most popular model with 9.55% whilst A320 is still the second most prevalent type.



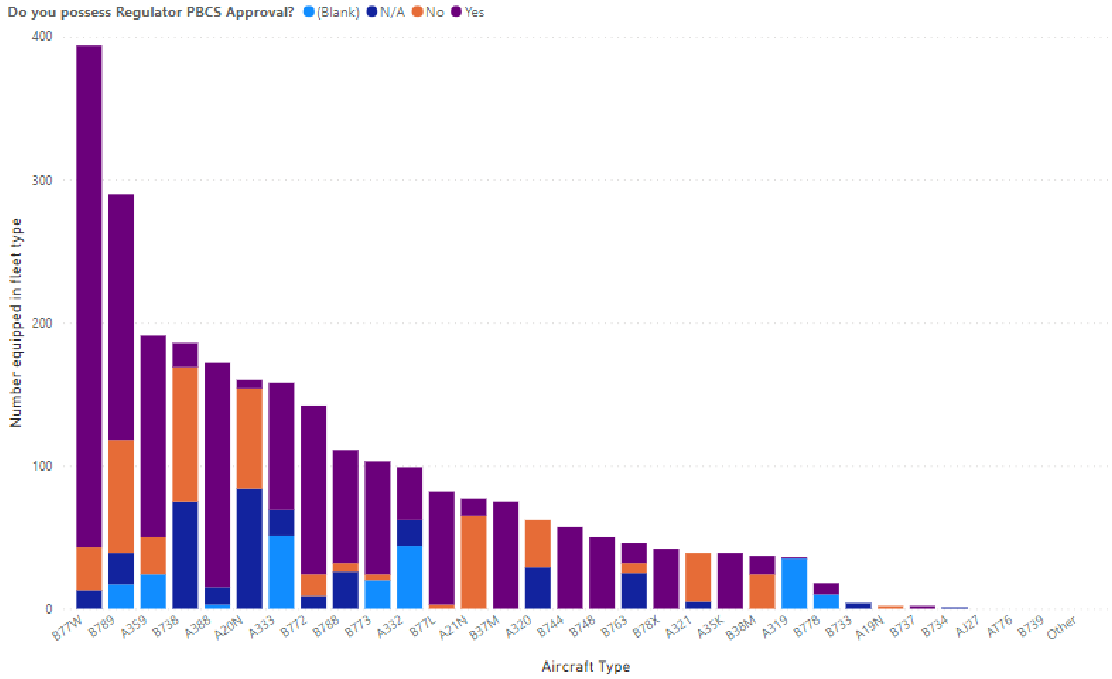
PBCS:

2.5 Percentage of entire fleets in the database that are reported as CPDLC and ADS-C equipped has increased from 56% to almost 68% which has pushed total percentage of equipped aircraft up to 61.23%.



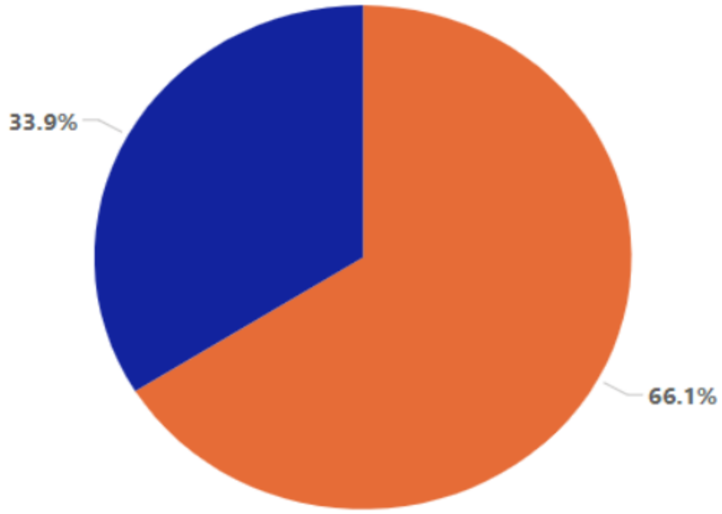


2.6 A large number of aircraft added to the database since last report are recorded as having both PBCS capability and regulatory approval (eg: B77W numbers increased from just under 350 to almost 400 with most additions PBCS compliant):

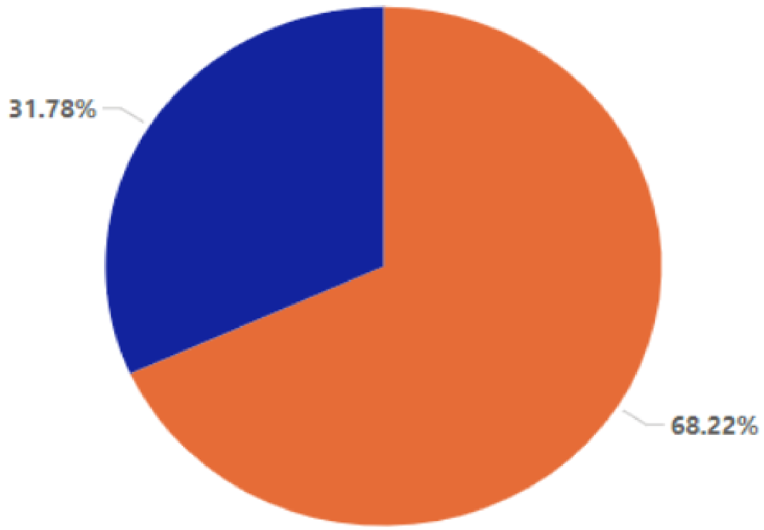


ABAS

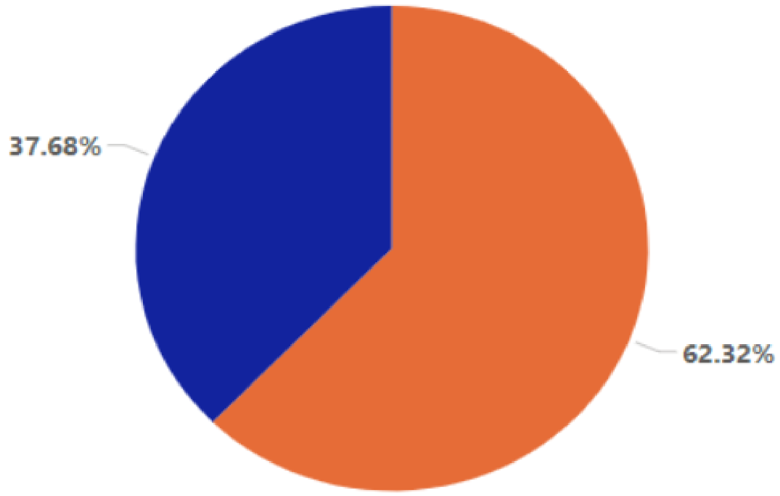
2.7 Overall, ABAS capability for all aircraft in the database increased very slightly from 65% to 66.1%.



2.8 Wide-body ABAS capability increased from 58% to 68.22% with most of the non-capable aircraft still being the older models with limited remaining lifetime.

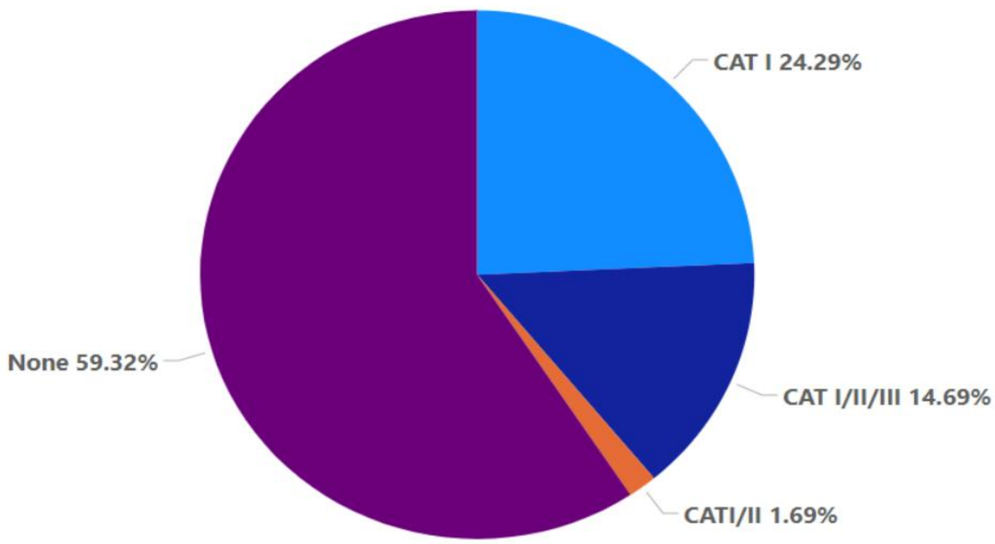


2.9 Narrow-body ABAS capability dropped by over 7% to 62.32% with more of the non-capable aircraft still being either older models or those that operate within a smaller sub-region.

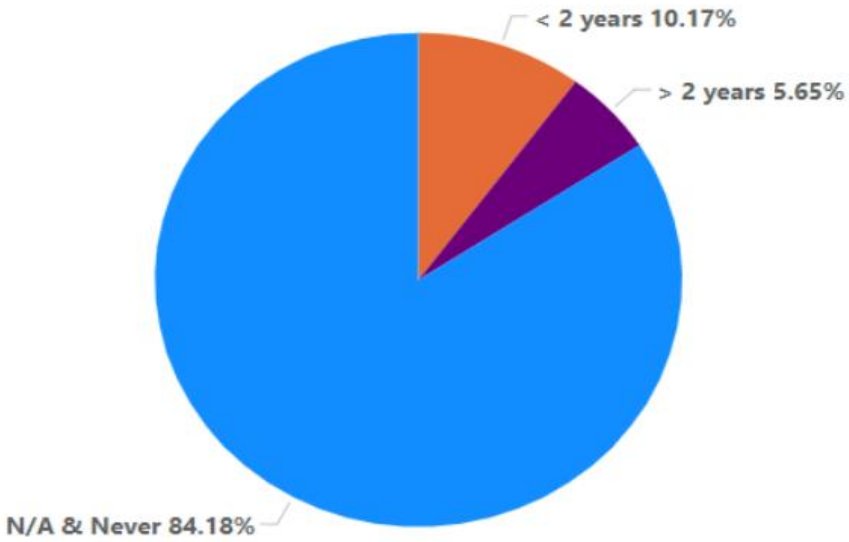


GBAS

2.10 Percentage of aircraft without GBAS capability increased just over 2% and remains reflective of locations with or without the infrastructure or alternative navigation infrastructure. Equipped aircraft remain primarily divided between CAT I capability and CAT I/II/III with only a few just CAT I/II.



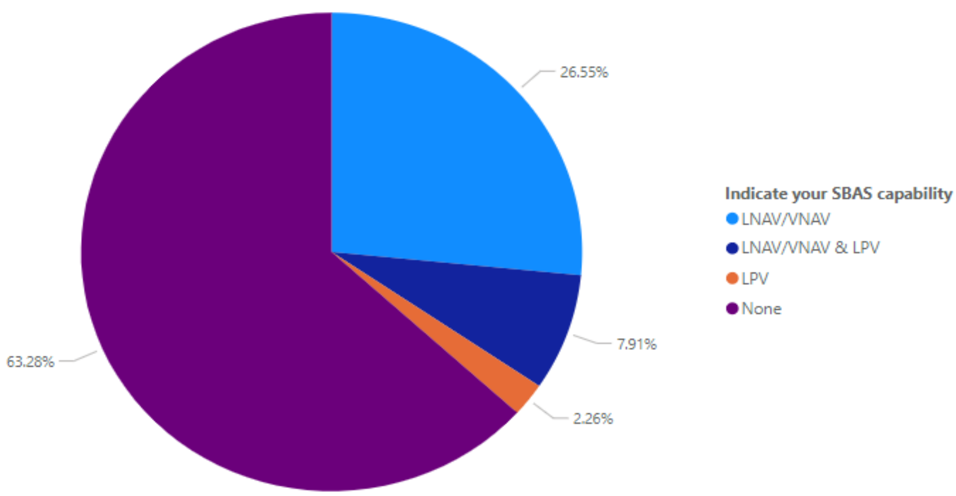
2.11 With the increased numbers of non-GBAS capable aircraft, there is also a marked increase (78% to 84.18%) of responses indicating no intention of future fitment or reporting it N/A which is treated as the same. Of those that do intend to fit in the future, there is still more that intend to adopt the capability in the shorter term rather than the medium-long term.



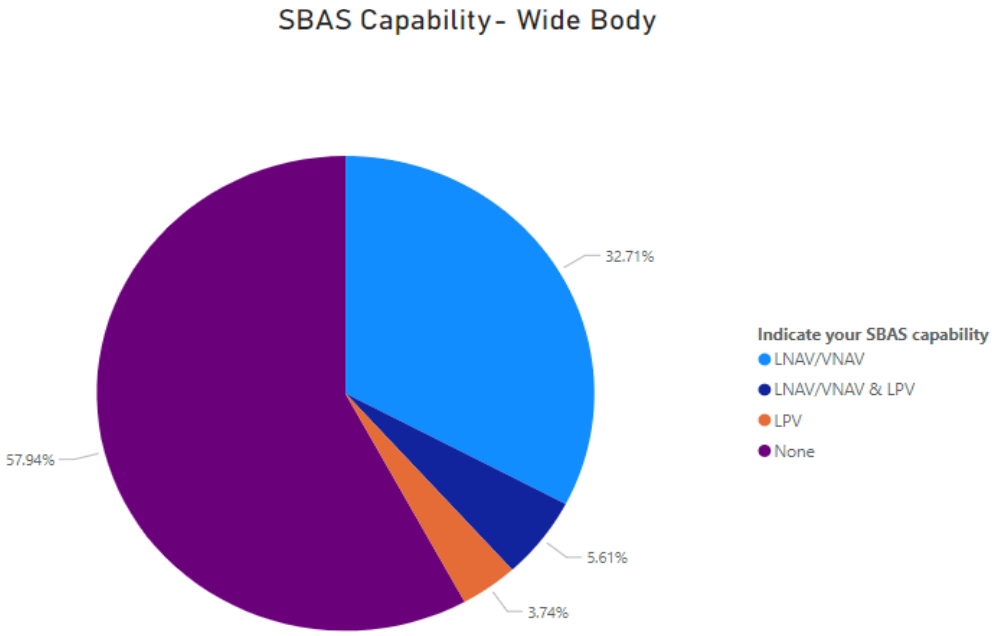
SBAS

2.12 The proportion of aircraft that are SBAS equipped / not equipped has remained constant. Again, this is likely a reflection of current areas of SBAS application or alternative navigation infrastructure meaning further cost of investment is not justified. The percentage of equipped aircraft that are LNAV/VNAV and LPV capable has doubled to almost 8% reducing the percentage of those with just LNAV/VNAV.

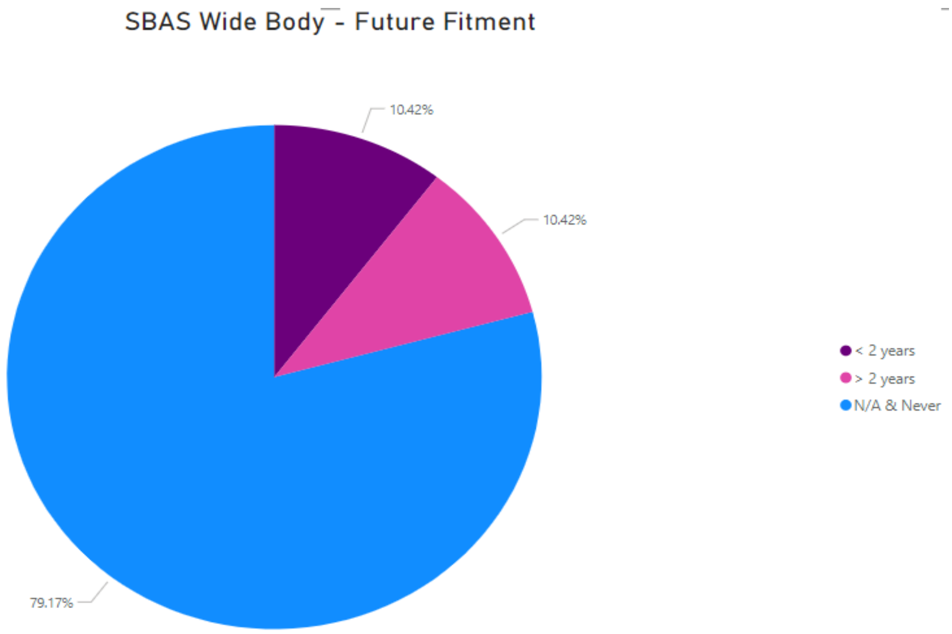
SBAS Capability - All Aircraft



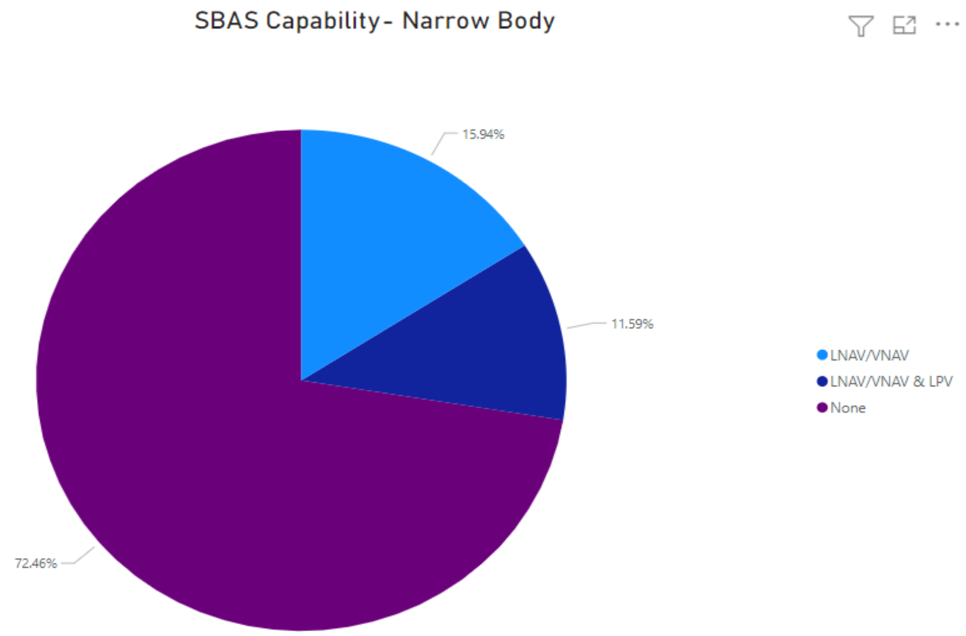
2.13 For the wide-body fleets, the proportion of SBAS capabilities is largely unchanged since last analysis.



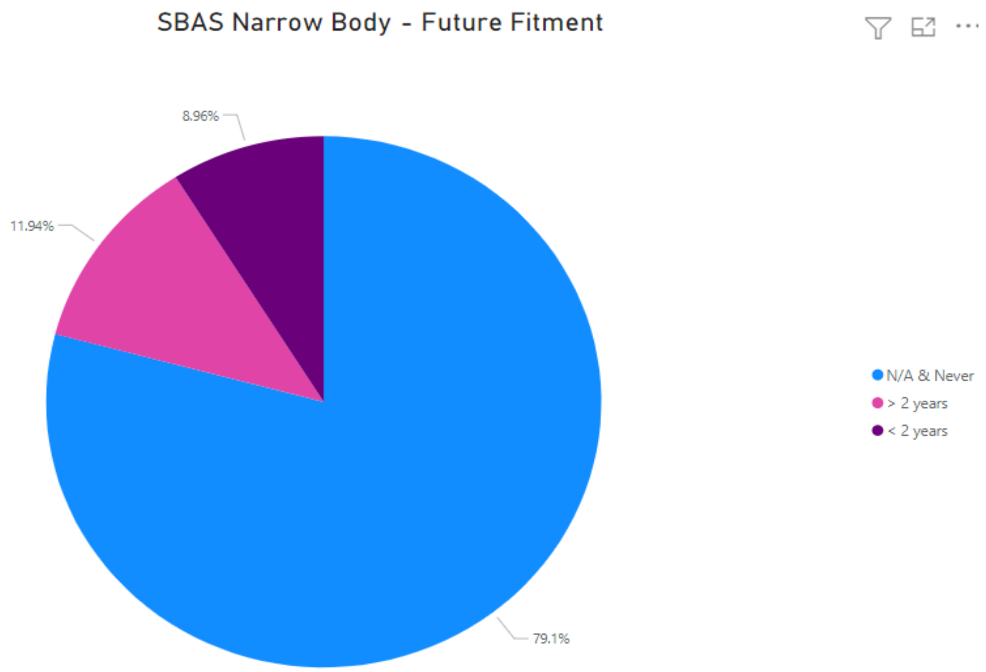
2.14 Since last report, the number of responses indicating no plans to fit for SBAS capability on wide-body aircraft has increased almost 10%. Again, this is likely a reflection of current areas of application or alternative navigation infrastructure meaning further cost of investment is not justified. Airlines who are equipping with SBAS are doing so based upon their individual operational requirements and business case, with the proportion between those intending to fit within or later than 2 years remaining the same.



2.15 The non-capable ratio for SBAS remains significantly higher in narrow-body aircraft than wide-body aircraft (increased by 3.46%). Again, this is likely a reflection of its current areas of application or alternative navigation infrastructure, and in some cases potentially due to the limited geographical area of operations for the fleet.

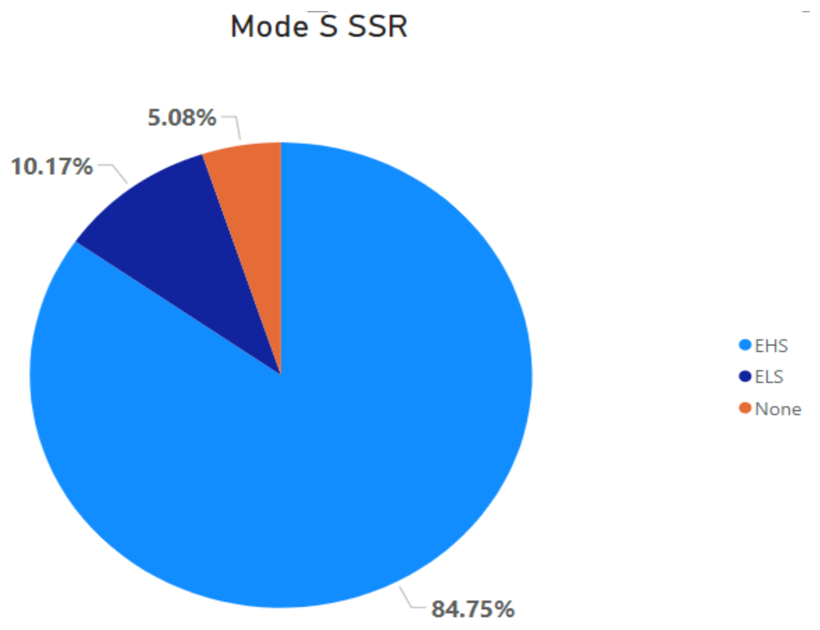


2.16 Commensurately, there is a slight increase (8%) in proportion of narrow-bodies indicating no plans to fit for SBAS capability. Airlines who are equipping with SBAS are doing so based upon their individual operational requirements and business case.



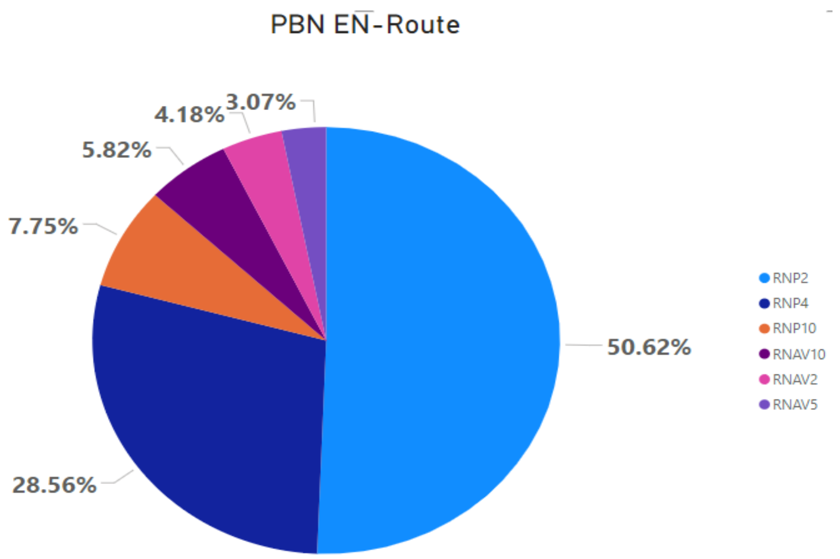
Mode S SSR

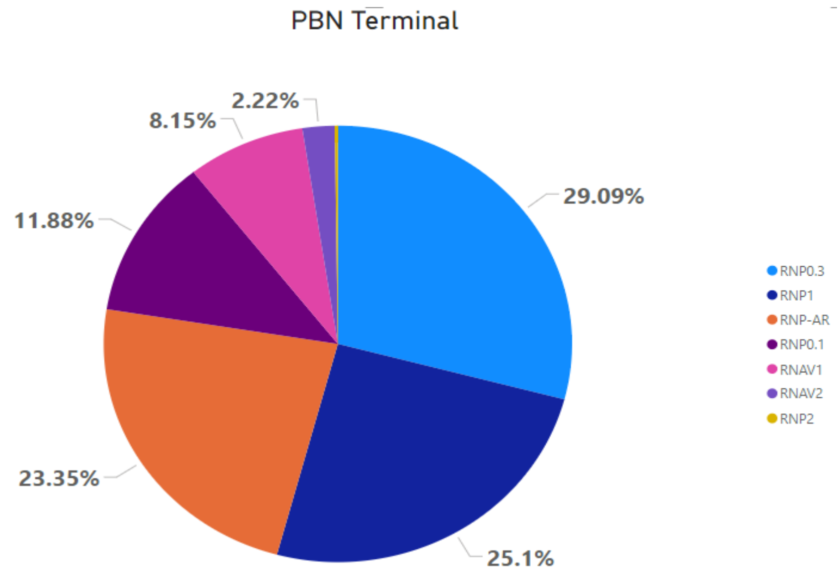
2.17 The proportion of Enhanced Mode S (EHS) capability increased over 14%. There is no indication of how that result aligns with States' ATM automation systems being capable of receiving and utilising EHS data – potential discussion for the Mode S DAPS Working Group.



PBN

2.18 All new aircraft added to the database since last report indicated some type of PBN capability with regulator approval and are currently flight planning and using the capability. RNP2 capability for en-route increased from approximately 45% to over 50%. The wide spread of PBN capability for terminal navigation remained similar ratios to last report.



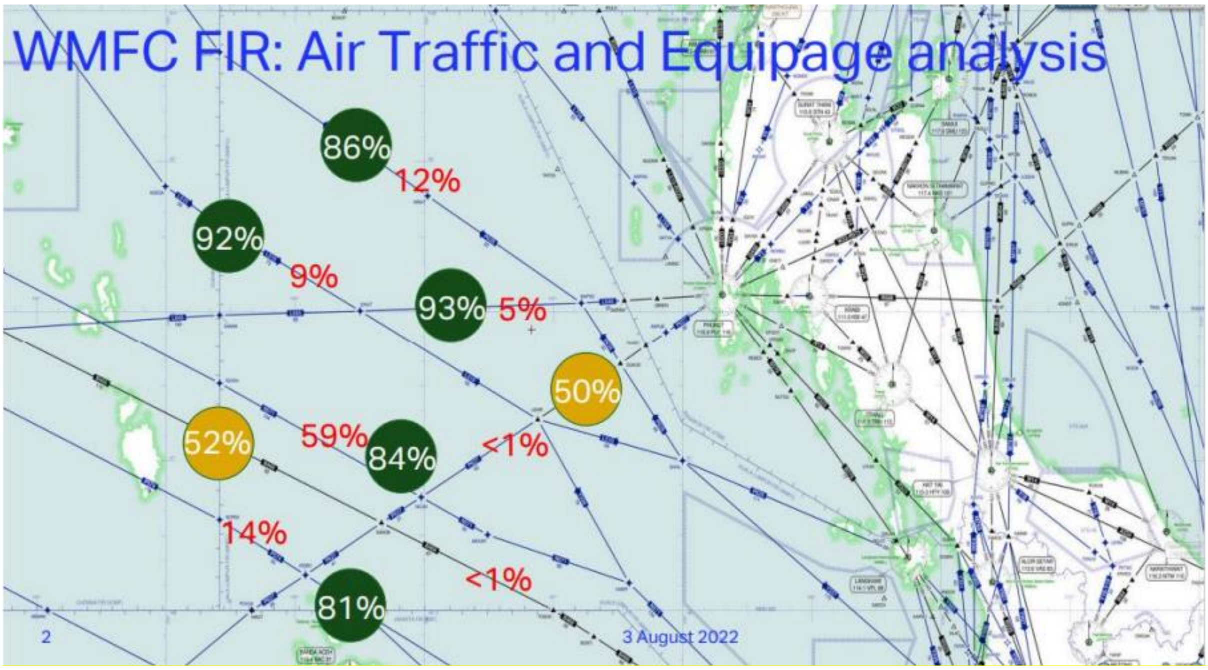


Targeted Analysis:

2.19 The IATA airline equipage survey data needs to be closely analysed with respect to the FIR-specific / airway-specific flight data to derive desired equipage assessment. Operational and/or financial data from ANSPs plays a vital link in this assessment.

2.20 It is also important to note that the assessment results are indicative; it is a kind of gauging – to support decision-making on NAV specifications and CNS/ATM requirements.

2.21 For example, the proposed PBCS trial plan in the Bay of Bengal was derived from the airline equipage survey data - closely analysed with Malaysian ATC flight data. The assessment results confirm that WMFC (Kuala Lumpur) – VOMF (Chennai) FIR crossing traffic is by and large (above 80%) equipped. N571 is the busiest airway (almost 60% FIR traffic), that has above 80% equipped air traffic.



2.22 IATA will continue to collect targeted data as required to enable more specific analyses that can support and inform future discussions within ICAO and other forums.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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