



WORKING PAPER

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 2: Timely and safe use of new technologies

2.2: Addressing safety risks related to evolving aviation technologies

**LEVERING TECHNOLOGY AND OVERSIGHT ACTIVITIES TO ASSESS PILOT
AGE LIMIT**

(Presented by Canada and co-sponsored by Australia, Brazil, Japan, New Zealand,
the United Kingdom and International Air Transport Association (IATA))

EXECUTIVE SUMMARY

This working paper promotes the impact of evolving technologies on upper age limits for pilots, including for commercial aviation. This working paper reflects on the history of pilot age limits internationally, as advances in both medical and aviation technology, improvements in health outcomes and operational safety performance, and State policies on discrimination and inclusivity, have led to an increase to pilot upper age limits. This working paper proposes International Civil Aviation Organization (ICAO) Member States to consider the mitigation measures that may be available to maintain an acceptable level of aviation safety in the context of a raised or unlimited age limit for pilots, considering that pilots shall meet the aeromedical and operational performance standards consistent with acceptable levels of safety, irrespective of age.

Actions: The Conference is invited to:

- a) take note of the multiple determinants of safe health status and operational performance for pilots in modern aviation safety systems, which are not purely age dependent;
- b) support Member States to consider principles of inclusivity and evidence-based decision making on aeromedical fitness and operational performance rather than focus solely on age; and
- c) request ICAO to conduct a survey to collect data from Member States relating to health and performance status of commercial pilots regarding age.

1. INTRODUCTION

1.1 The purpose of this working paper is to question the reliance upon age-limits as tools for promoting aeromedical safety. The paper summarises the evolving population morbidity and mortality trends as well as the medical, training and operational innovations that are impacting aviation safety. Current human health and performance standards in aviation focus on non-age-related health conditions, and the long-standing practice of using age as a criterion for safety is now considered outdated and unsupported by recent evidence. This shift reflects a more nuanced understanding of health and capabilities, emphasizing performance standard assessment over age-based assumptions.

1.2 The history of international commercial air transport operations pilot age limitations was closely related to the presence of high-risk medical conditions and was used as an easy proxy indicator of fitness. Initially set at 60 years of age in the 1960s, the limit was raised to 65 in 2006, allowing older pilots to serve in multi-pilot crews based on improved medical evidence, improved population-based health outcomes and operational safety data. While ICAO sets these international Standards, States can impose different standards domestically, with many demonstrating that higher or unlimited age limits for pilots can be supported safely.

1.3 Worldwide there has been an increase in life expectancy¹, which has been shaped by medical advances in diagnosis, treatment, and prevention. At the same time, surveillance of the aviation system has become more precise and forms an important part of safety management systems.

1.4 The global aviation community is evolving, as too is the health trends of populations globally. Two leading causes of aviation related fatalities are mental health conditions and problematic substance use (e.g., alcohol and other drugs)². These causes of aviation related fatalities tend to present in a younger demographic.

1.5 Strategic Objectives are closely aligned with 15 of the 17 United Nations (UN) Sustainable Development Goals (SDGs), including the initiative of the Next Generation of Aviation Professionals (NGAP) Programme to ensure a sufficient supply of qualified aviation professionals for the future. ICAO collaborates with United Nations Educational, Scientific and Cultural Organization (UNESCO), International Labour Organisation (ILO), International Telecommunication Union (ITU), and UN Women to support the NGAP Programme, which contributes to SDG 4 to foster a diverse and inclusive aviation workforce, further aligning ICAO's initiatives with the broader UN SDGs to promote sustainable growth and social development for all. Fundamentally, this means including all pilots regardless of age, whether recruiting older candidates or retaining existing pilots.

2. DISCUSSION

2.1 Notwithstanding the more permissive approaches to age taken by individual ICAO Member States for pilots operating within domestic airspace, in the international context ICAO imposes upper age limits for pilots engaged in international commercial and airline operations.

2.2 The purpose of establishing an upper age limit for pilots, along with increasing the frequency of medical examinations at various age thresholds, is to mitigate the risk of subtle or sudden incapacitation due to medical causes. The ICAO *Manual of Civil Aviation Medicine* (Doc 8984) states that “older license holders have a significantly increased incidence of medical conditions of importance for flight safety (1.2.25).” Much has changed in aviation safety and the approach to risk management systems, as well as aviation and population health since that document was published. It is now appropriate to explore whether this statement retains the strength and validity it held at the time of publication.

2.3 The International Air Transport Association (IATA) presented A41-WP/70 “*Upper Age Limits for Pilots*” at the 41st Session of the ICAO Assembly in 2022 which summarized the evolution of upper age limits for pilots operating internationally and concluded that the “forced curtailment” of flying privileges based on age constrains the aviation industry in meeting the demand for pilots.

¹ <https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-life-expectancy-and-healthy-life-expectancy>

² <https://pubmed.ncbi.nlm.nih.gov/22272515/>

2.4 Further, arbitrary age limits are unnecessary given the evolution of the overall health and lifespan of the population, advances in medical diagnostics and treatment, the rigour of aviation medical assessment, and the ongoing improvements in aviation safety technology. The focus should be on whether pilots meet the aeromedical and operational safety performance standards consistent with acceptable levels of safety, irrespective of age.

2.5 Setting age limits for pilots does not align with ICAO's Strategic Objectives to promote inclusivity through policies and initiatives aimed at enhancing diversity, equity, and inclusion (DEI) within the aviation industry. Such limits also raise concerns about fairness and equal treatment, as older pilots may feel unfairly excluded despite being capable. The UN SDGs advocate for the right to work without discrimination. Therefore, it is essential to align safety with fair treatment, ensuring age limits are justified by legitimate safety concerns and proportionate to the risk. Alternatives like individualized health assessments could help align age limits with human rights standards, avoiding unnecessary discrimination while maintaining safety. As has already been observed in States that do not have age as the only barrier for domestic operations, the age of the pilot in itself is not a safety barrier, but rather, mitigating actions related to the age of the pilot, such as, the reduction of the period of validity of their medical certificates or other operational restrictions.

2.6 There are a range of health, training and operational innovations that contribute to ensuring pilot safety and performance by providing comprehensive insights into their physical and cognitive well-being, enabling timely interventions and tailored strategies to optimize aviation operations. These innovations include better targeted preventative and treatment healthcare services, cognitive assessment tools to gauge cognitive function, machine learning and artificial intelligence for data analysis and prediction, and virtual reality simulations for realistic training and performance assessment.

2.7 Operational risk mitigation measures implemented by commercial air transport aircraft operators and approved by the State of the operator, such as the required periodic training and assessment of pilots in simulators, can be considered when determining how to ensure that human performance meets or exceeds the required standards, regardless of pilot age. Complex scenarios are used to assess how the pilots perform during routine, preplanned operations, as well as unplanned abnormal and emergency procedures. The focus on older age as a proxy indicator for a reduction in safe health status and safe performance introduces a safety concern with the assumption that relative youth mean a pilot is inherently safer. There is considerable data from civil aviation authorities with and without age limits indicating that most medical conditions of aeromedical concern are now found in younger pilots. Furthermore, many of the serious safety-relevant health issues in the modern aviation industry are not conditions that are related to age – now being mental health and problematic use of substances, whereas historically aviation medicine was most concerned with cardiovascular disease and cognitive decline. The focus should be on whether pilots meet the aeromedical and operational performance standards consistent with acceptable levels of safety, irrespective of age.

2.8 Civil Aviation Authorities considering a higher or unlimited age limit for pilots can take various mitigation measures to ensure safety and competence in the cockpit. These measures include implementing regular and rigorous medical assessments focusing on preventive activities for physical and cognitive health, consideration of local population health data, shifting towards performance-based standards for pilot evaluation, the use of approved training programmes and recurrent testing, adopting a risk-based approach considering experience and individual health profiles, collaborating with medical experts to develop evidence-based guidelines, establishing monitoring and oversight mechanisms for ongoing evaluation, and investing in research to understand the relationship between age, health, and pilot performance. These measures aim to maintain safety standards while allowing experienced pilots to continue flying, contributing to a diverse and skilled pilot workforce.

3. **CONCLUSION**

3.1 In conclusion, a raised or unlimited upper age limit for pilots when coupled with a rigorous oversight programme and advanced technologies does not negatively impact safety, as shown by the experience of many countries in their domestic flying operations and may enhance safety by focusing attention on health status and operational performance directly rather than using age as a proxy. Taking this approach in international operations would allow experienced and capable pilots to continue flying beyond traditional age limits, contributing to a more diverse and skilled pilot workforce, and sustainable civil aviation transportation system. Actions for the Conference are included in the Executive Summary.

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