



**INFORMATION PAPER**

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PLANNING FOR GLOBAL AVIATION SAFETY IMPROVEMENT**

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**Theme 2: Future approach to manage aviation safety**  
**Topic 2.4: Evolution of the Global Aviation Safety Plan**

**POTENTIAL SAFETY RISKS CAUSED BY PILOT SHORTAGE**

(Presented by the International Air Transport Association (IATA))

**SUMMARY**

It is to be expected that there will be potential safety risks arising from the effects of a pilot shortage. This information paper presents the reasons why a pilot shortage is imminent; it highlights the potential safety risks such a shortage could create; and it identifies mitigation strategies, but does not pretend to present an exhaustive list of all possible solutions.

**1. CAUSES FOR PILOT SHORTAGE**

**1.1 Increased production and delivery of new aircraft.** Every week, a combined total of 28 new aircraft roll off the assembly lines at Airbus, Boeing, Bombardier and Embraer factories; the fastest production rate in the history of commercial aviation. This has a direct impact on pilot demand. According to Boeing's latest forecast, there will be a worldwide demand for more than half a million new commercial pilots over the next two decades.

**1.2 Increased sourcing for pilots in growth regions (South East Asia, Middle East).** Boeing projects that the Asia-Pacific Region will need 216 000 new pilots in the next 20 years, more than in any other part of the world, and accounting for 40 per cent of the global demand.

**1.3 High cost of pilot license, entry-level low wages and reduced career interest.** For many students the cost of obtaining the license is a challenge and the low wages for job entry-level pilots (e.g., approximately \$22 400 in the United States) is a deterrent when faced with the perspective of having to repay the substantial debt incurred to obtain the license, which may be well in excess of \$100 000. Furthermore, other industries (e.g., IT, medicine, banking, etc.) are more appealing to younger generations than aviation.

**1.4 Large numbers of retirements of experienced captains.** In November 2006, ICAO revised the maximum age for certain pilots in international operations from age 60 to age 65. On 13 December 2007 the Fair Treatment of Experienced Pilots Act (the Act) was signed into law by the United States President, allowing United States pilots to remain in function an additional five years. In

2013 we started seeing the first large-scale departures in the United States when pilots reached the age of 65.

1.5 **More stringent regulations.** On 1 August 2013 a new rule came into effect in the United States increasing the required flying time to qualify as a first officer on a United States airline from 250 hours to 1 500 hours. As a result, many larger United States carriers currently recruit pilots who have attained the required 1 500 hours from regional airlines. This is creating a shortage of pilots for some regional carriers, which have already started to reduce their route networks and close smaller hubs, due to this situation.

1.6 **Shortage of qualified instructors.** We are already experiencing a shortage of qualified instructors. Many instructors are being reassigned into flight operations. In addition, due to the new ruling, young pilots act as instructors to gain the minimum hours required before switching to operations. This causes a high turnaround of instructors with little experience.

## 2. **POTENTIAL SAFETY RISKS THAT MAY RESULT FROM PILOT SHORTAGE**

*The following points correspond to the shortage causes listed above.*

2.1 **Higher congestion of airspace and airports.** The projected fleet growth over the next two decades (36 770 new aircraft according to Boeing and over 31 000 according to Airbus) will create higher congested airspace and airports with a potential for more safety risks, requiring highly trained pilots.

2.2 **Asia-Pacific market as the biggest traffic growth region.** The Asia-Pacific market will be the first region to face the full impact of increased traffic density, and needs to prepare highly qualified personnel through training and equipment for the coming challenges. Also, communication is, and will remain, a challenge since a good command of aviation English is not fully established. As a result, misunderstandings in ATC communications might increase in the future creating further safety risks.

2.3 **Shortage of candidates.** In the near- and long-term future there might be less and less applicants among the younger generations to choose a career in aviation. The benefits the aviation industry offers may not be able to compete with what other professions are offering; making it more difficult to attract well educated young people into the aviation industry. Over time, this may result in lower entry-level knowledge of the younger aviators. The pool of qualified applicants to select from will become smaller.

2.4 **Less experience on flight decks.** With the increased retirement volumes of experienced captains in some parts of the world, we will see an increase of less experienced crew pairings. This could have a negative impact on safety during operation, in particular when non-standard situations occur.

2.5 **More stringent regulations.** More rigid regulations and higher entry level requirements create additional financial burdens and, through the delayed entry time, an additional gap for personnel hiring (due to longer time to train).

2.6 **Instructor shortage.** Unavailability of instructors and larger pool of less experienced and qualified instructors may lower the standards of training. The outcome would be an entry-level pilot with less skills and knowledge than we are seeing today. Furthermore, instructor shortage might impact training content and training duration for entry-level pilots in a negative way.

### **3. MITIGATING THE POTENTIAL SAFETY RISKS RESULTING FROM PILOT SHORTAGE**

3.1 Ab-initio and recurrent training for pilots need to reflect the expected increased workload created by denser airspaces in the future. IATA recommends implementing evidence-based training (EBT) in the pilot training scheme to better prepare them for the future demands and challenges of a more congested airspace. Furthermore, new systems for air traffic control and new operating procedures need to be put into place to safely and efficiently handle a higher traffic density.

3.2 The Asia-Pacific Region needs to be prepared for the future challenges higher traffic volumes will create; this includes upgrades of air traffic control systems, improvement of airport infrastructure and harmonization of pilot training according to the international standards, with a high focus on aviation English.

3.3 To mitigate a shortage of applicants, airlines should consider creating grants and loans systems to help the new generation of aviators successfully obtain their license. Furthermore, airlines and national aviation authorities should cooperate to publicly advertise and promote job opportunities in aviation in order to create more awareness among young people about the multiple career possibilities that exist in this industry.

3.4 An extension to the retirement age, from 60 to 65, is a good short-term solution to mitigate pilot shortage, but to effectively handle this problem the number of ab-initio training students must be increased. This can only happen when the capabilities of training institutions are further enlarged and new training institutions founded. We urge governments to facilitate and promote the growth of flight training institutions.

3.5 Stringent regulations need to be more specific and offer more exemptions to the rule when the necessary prerequisites are met. A high number of flying hours does not necessarily mean a higher level of skills and knowledge. The focus should not be on the number of flying hours but on the training content and delivery. A rigid hour-based restriction for entry-level pilots could be replaced by a clear definition of skill sets and competencies that an entry-level pilot has to demonstrate to obtain his/her license.

3.6 To overcome a shortage of instructors and large pools of less qualified instructors, airlines and training institutions should look into ways on how to increase the attractiveness of this profession through better career opportunities (e.g., job rotation - combination of flying and teaching periods of time) or by offering better benefits.) Also, the airlines should encourage their pilots who have lost their license due to medical reasons, or who have reached their retirement age, to continue to be active as simulator instructors.

### **4. CONCLUSION**

4.1 There are many aspects to the pilot shortage issue and no single reason can be pointed out as its sole cause. The suggested mitigation strategies listed above do not represent all the possible solutions to address the pilot shortage problem and potentially associated safety risks, but it is clear that further programmes need to be developed to be prepared for the future expansion of air traffic. States are encouraged to consider the safety concerns that a pilot shortage could create, as presented in this information paper.