

The challenges females face in The Aviation and Aerospace Industries

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The aviation and aerospace industries have developed comprehensively since their establishment many years ago. Eventually, these male-dominated sectors have experienced substantial changes to include more female aviators, engineers, technicians, air traffic controllers, executives, and other professionals. Determined women advanced this process through participation in aircraft engineering fields and by pursuing professions as airline pilots. Nevertheless, women have faced persistent barriers that have slowed their entry, retention, and progression. Serious issues experienced in the past still exist today and can be overlooked in recruitment, training, scheduling, promotion, workplace culture, and leadership. Hence, there is a need to identify these issues and suggest solutions that will increase the participation and advancement of women in aviation and aerospace (International Labour Organization [ILO], 2024).

Females Entering The Workforce In Engineering And Other Prominent Positions In The Aviation Industry

Women have been present in aviation since its earliest decades. However, their representation remains low in areas such as aircraft maintenance, aerospace engineering, flight operations, and piloting. ICAO reported in 2026 that women account for approximately 4% of pilots, 3% of aircraft maintenance engineers and technicians, and 20.6% of air traffic controllers globally (International Civil Aviation Organization [ICAO], 2026). This underrepresentation poses a challenge to the industry, governments, educational institutions, and employers because aviation faces continuing demand for skilled workers.

The belief that engineering, piloting, maintenance, and technical leadership are male occupations may discourage girls from considering these careers. Women may also encounter biased assumptions about competence, exclusion from informal networks, unequal access to assignments, poorly fitting uniforms or equipment, harassment, and a lack of transparent promotion opportunities. Failure to recruit and retain women reduces the available talent pool and can worsen workforce shortages. Understanding why women do not enter, remain in, or advance within the sector is therefore essential (Federal Aviation Administration [FAA], 2022).

The Absence Of Role Models

One of the main reasons for the underrepresentation of women in aviation and aerospace is the limited visibility of role models in some technical and operational occupations. Young women may not believe that they can fit into engineering, maintenance, piloting, or executive roles if they rarely see women performing them. Exposure to successful professionals, instructors, managers, and mentors can make these careers appear realistic and attainable.

The media, schools, professional associations, airlines, airports, manufacturers, and universities can improve the situation by sharing the experiences of women in different occupations rather than presenting only a few exceptional pioneers. Role models should include women from varied racial, economic, national, and family backgrounds. The FAA Women in Aviation Advisory Board recommended coordinated outreach, mentorship, data collection, recruitment reform, and organizational accountability to address barriers throughout a woman's aviation career (FAA, 2022).

Lack Of Information

Another factor that hinders adequate representation is a lack of accurate career information. Teachers, parents, career advisers, and students may have a limited understanding of the range of occupations in aviation and aerospace. Piloting is highly visible, but the sector also requires engineers, technicians, dispatchers, air traffic controllers, safety specialists, data analysts, cybersecurity professionals, airport managers, cabin crew, human-factors experts, and many others.

Providing girls with information before they make subject and career choices is important. Schools should connect STEM subjects with practical aviation problems, arrange visits to airports and engineering facilities, and explain training pathways, scholarships, licensing, medical requirements, costs, and employment prospects. Employers should offer internships, apprenticeships, cadet programmes, work experience, and outreach designed for students who may not have family connections in aviation. Information alone is insufficient, but it can remove uncertainty and challenge stereotypes.

Financial Barriers

The cost of flight training, engineering education, licensing examinations, medical certification, relocation, equipment, and unpaid or low-paid early-career experience can discourage women and other underrepresented groups. A person may be interested in flying but unable to finance the hours required for a professional licence. Scholarships and loans may be fragmented, competitive, or difficult to understand.

Employers and governments can reduce this barrier through sponsored training, apprenticeships, paid

internships, transparent cadet financing, grants, and partnerships with schools and universities. Financial support should be accompanied by fair selection criteria and career guidance so that programmes do not favour applicants who already possess aviation knowledge or personal networks. The ILO identifies access to quality employment, training, career progression, and decent working conditions as central to attracting and retaining women in aviation (ILO, 2024).

Lack Of Practical Inspiration

Lack of practical experience is another factor that promotes women's underrepresentation. Organizations should consider giving girls and women hands-on experience because it can make an unfamiliar career concrete. Simulator sessions, maintenance workshops, robotics projects, introductory flights, airport operations visits, engineering challenges, and job-shadowing can demonstrate the skills involved.

These activities should not be one-time publicity events. They should connect participants with continuing mentoring, education pathways, scholarships, and employment opportunities. Employers should also measure whether outreach programmes lead to applications, training completion, employment, and retention instead of judging success only by attendance numbers.

Workplace Culture, Harassment, And Bias

Aviation occupations often depend on teamwork, trust, communication, and safety reporting. A workplace culture that tolerates sexist remarks, harassment, exclusion, or retaliation can damage both employee well-being and safety. Women who are greatly outnumbered may feel pressure to prove their competence repeatedly, avoid reporting problems, or conform to a masculine workplace culture.

Organizations need confidential reporting systems, prompt and fair investigations, anti-retaliation protections, clear conduct standards, leadership accountability, and regular climate assessments. Training should address practical behaviours, not merely legal definitions. Promotion, flight assignments, training opportunities, and performance evaluations should be based on transparent criteria. The FAA advisory board identified organizational culture, harassment, discrimination, and limited advancement pathways as interconnected barriers rather than isolated individual experiences (FAA, 2022).

Family Matters And Work Design

Female engineers and aviators may also aspire to be partners, parents, or caregivers. However, irregular schedules, overnight trips, reserve duty, relocation, long training periods, fatigue, and limited childcare can make it difficult to balance professional and family responsibilities. These

pressures also affect men, but women often carry a larger share of caregiving and may face additional assumptions about pregnancy and motherhood.

Pregnancy should not automatically end or stall an aviation career. Employers should comply with applicable discrimination, maternity, safety, and accommodation laws; provide clear pathways for temporary duty modification; protect seniority where required; and support a safe return to work or flight status. Flexible scheduling, predictable rostering, part-time options where operationally feasible, parental leave, childcare support, lactation facilities, and return-to-training programmes can improve retention. Policies should be designed for all caregivers so that using them does not mark women as less committed.

Equipment, Medical Standards, And Human Factors

Aircraft, tools, uniforms, cockpit layouts, protective equipment, and work procedures have often been designed around male body dimensions. Poorly fitting equipment can affect comfort, performance, and safety. Organizations should procure a wider range of sizes and include women in testing and design.

Medical and fitness standards should be evidence based, job related, and applied consistently. Research, training data, fatigue models, and safety technologies should include women in sufficient numbers so that systems do not reproduce male-only assumptions. Equal treatment does not always mean identical treatment; safe accommodation may be needed for pregnancy, breastfeeding, or equipment fit without lowering professional standards.

Leadership And Career Progression

Women's representation may improve at entry level while remaining low in captain, instructor, chief engineer, executive, and board positions. Informal sponsorship, opaque selection systems, interrupted career timelines, and limited access to high-visibility assignments can slow progression.

Employers should publish representation and promotion data, review pay and advancement outcomes, use diverse selection panels, standardize interview criteria, and provide leadership development. Mentoring offers advice, while sponsorship involves senior leaders actively recommending qualified women for opportunities. Both are valuable, but neither should substitute for fair systems.

IATA's 25by2025 initiative encouraged participating airlines to increase women in senior roles and traditionally underrepresented occupations by 25% or to at least 25%. IATA reported that, among participating organizations, women in flight-deck roles rose to about 6% and women in senior roles to

about 31% between 2021 and 2023, showing progress while also demonstrating how far flight operations remain from balanced representation (International Air Transport Association [IATA], 2025).

Possible Solutions To The Problem

The industry should adopt solutions across the full career pathway rather than rely on motivational messages alone. These solutions include:

- early STEM and aviation outreach linked to real training pathways;
- scholarships, apprenticeships, paid internships, and affordable flight-training finance;
- visible role models, mentoring, peer networks, and sponsorship;
- transparent recruitment, pay, assignment, and promotion systems;
- strong anti-harassment and anti-retaliation procedures;
- flexible and predictable work arrangements where operationally possible;
- pregnancy, parental-leave, childcare, and return-to-work support;
- equipment and technology designed for a diverse workforce;
- regular collection and publication of gender-disaggregated workforce data; and
- leadership accountability for measurable recruitment, retention, and promotion outcomes.

Targets may focus attention and accelerate action, but numerical goals should be paired with merit-based, transparent selection and removal of structural barriers. Hiring women without changing workplace culture may increase entry but not retention. Likewise, mentoring cannot compensate for unaffordable training or discriminatory assignment systems.

Conclusion

The representation of women in aviation and aerospace remains inadequate, especially among pilots and maintenance engineers. The causes include limited role models, incomplete career information, high training costs, lack of practical exposure, workplace bias, harassment, family and scheduling pressures, equipment design, and unequal access to advancement. These barriers interact across a career and cannot be solved by asking women simply to become more confident or improve networking.

The industry has more opportunities and initiatives than in the past, but progress remains uneven. ICAO's 2026 figures demonstrate that women still account for only a small minority of pilots and aircraft maintenance professionals. Sustainable improvement requires coordinated action from schools, regulators, employers, unions, professional associations, training organizations, and families. By improving access, culture, working conditions, and accountability, aviation and aerospace can widen their talent pool while strengthening innovation, safety, and workforce resilience (ICAO, 2026; ILO, 2024).

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