

The Problem with Women in Aviation...

Evidence indicates that women aviation workers are just as safe as men. So what is holding women back from making aviation a career? Finding the answer to that question is vital because there's a looming global crisis in pilot and engineer numbers.

It's impossible to write about the lack of women pilots and engineers in New Zealand's aviation community without also considering still-held perceptions about women's ability to be safe in the air, or to ensure others are.

To test the breadth of such opinions, CAA safety promotion staff conducted a 'straw poll' of 30 members of the public.

Four respondents said they didn't think they had ever flown with a woman airline captain.

Three said it was no longer a surprise to hear a woman making the captain's introductory announcement, and her ability to fly safely was not a concern to them.

Of the 23 who said a woman captain had been a surprise to them, 20 were unworried about safety. "She wouldn't be up the front, if she couldn't do the job."

So the issue of how able women pilots are, doesn't seem to exist to any large degree, in the minds of the public.

The Evidence

Research is also unsupportive of any disquiet over the ability of women fliers to be safe.

An American study¹ in 1986, of National Transportation Safety Board data, found male pilots were 60 per cent more likely to have an accident than women pilots, and male pilots were twice as likely to have fatal accidents.

A decade later, a study² of American pilots found that when adjusted for age and experience, men and women commercial pilots had about the same accident rates.

American research in 2000³ found that while there were real physiological differences between men and women aviators, the advantages and disadvantages of those differences affected both sexes. For instance, it found women had faster reaction times, seen as vital in an emergency. But other research in 1989 found men had superior visual spatial ability, needed to operate in a three-dimensional environment, such as flying⁴.

Even at the pointy end of flying – combat – research indicates that women fliers are at least as safe as men, if not more so.

A study⁵ in 2014 found that, while 10 per cent of US army helicopter pilots are women, they figure in three per cent of accidents.

So, if the safety of women in aviation is not the issue, why do so few of them participate in the sector?

The combat study's author, Major Seneca Peña-Collazo, an AH-64 Apache helicopter-gunship pilot, says the real problem is the culture.



Photo courtesy of Tracy Lamb.

Tracy Lamb, former Virgin Australia senior first officer: "There's no evidence to suggest that female and male pilots are any different in terms of safety levels."

1 *Pilot-error accidents: male vs female.* Vail G and Ekman L, St Mary's University of Minnesota, 1986, in *Aircrew Co-ordination and Communication*, 2006.
2 *Comparing Pilot-error Accident Rates of Male and Female Airline Pilots.* Mcfadden K, Northern Illinois University, 1996.
3 *Gender Differences in an Aviation Physiology Environment.* Howell C, Embry-Riddle Aeronautical University, 2000.
4 *Sex Differences in Cognitive Abilities* (1st ed.) Halpern D, Claremont McKenna College, California, 1989.

5 *Women in Combat Arms: A Study of the Global War on Terror.* Peña-Collazo S, US Army Command and General Staff College, 2014.

Continued over >>

» Continued from previous page

"It is a culture that presupposes women's physical inferiority and lack of psychological and emotional coping mechanisms. It is a culture that values hypermasculinity and is resistant to change anything that would challenge long-standing traditions."

Australian researchers⁶ surveyed about 1100 pilots, including about 270 women. Despite female pilots earning significantly higher scores than their male counterparts on actual performance measures, both sexes had significantly more negative perceptions of female pilots' proficiency and safety orientation.

The Numbers

In 1998, in New Zealand, the proportion of women commercial pilots was an average 4.6 per cent of all CPL and ATPL aeroplane and helicopter pilots. In the 18 years since, there's been a sluggish increase to 6 per cent.

Latest figures, however, do show that in New Zealand, 9.45 per cent of all CPLs and ATPLs under the age of 38 are women.

So the rate of women becoming pilots is increasing.

But slowly. And that's a problem because, according to a study by Boeing⁷, there's soon to be a chronic, worldwide shortage of pilots.

The 2014 research found there'll be a 558,000 shortfall of pilots over the next two decades.

The demand in the Asia-Pacific region represents 40 per cent of those numbers – the highest need in the world.

But it's not just about the number of women needed to help fill that gap.

The Qualities

Peter Stockwell, from Hamilton's CTC Aviation – who in 2014 made a public call for more women to make aviation their career – believes that the industry is also missing out on the particular skills they bring to flying.

"Generally speaking," says Peter, "I believe they perform better than men in a cockpit environment, where close cooperation is best practice.

"I think women, generally, are less aggressive, less confrontational, and better able to communicate in effective ways."

A CTC flight instructor, Emma-Jane Lacy, agrees with 2011 Austrian research⁸ into glass cockpit behaviour, that pointed to women having better situational awareness than men.

"The women I've taught seem to have an ability to build an excellent mental picture of their surroundings – key to flight safety," Emma-Jane says.

Tracy Lamb, Global RPAS Safety Manager with aviation advisory company, SGS – and formerly a Virgin Australia senior first officer – says multiple studies indicate women's management styles, and their ability to multi-task, also add value to airliner safety.

"There's no evidence to suggest that female and male pilots are any different in terms of safety levels," she says.



In July 2015, the image of San Francisco software engineer, Isis Anchalee, was used in a tech recruitment poster campaign. The world of social media exploded with comments about her appearance, many doubting she could be an engineer and look the way she did. That led to a global social media image campaign where women engineers were photographed with placards describing what they did. The CAA's two women engineers, Beth Coughlan (left) and Andrea Wadsworth took part.

A three-year British study⁹ of 7500 people in 40 countries also confirms what many people have 'known all along'. Women are less likely to take risks than men.

According to the authors, "women are more than twice as likely to be shrewd and vigilant about risk than men.

"Wary risk types help to counterbalance adventurous types," the authors say, "as they tend to be vigilant, extremely organised, and demand high standards."

Bearing that out is the recollection of former CAA Investigating Officer, fixed wing and rotary pilot, and flight instructor, Cathy Penney. She recounts that she and her former husband, Ted, used to fly a couple to the races at Wairoa in Hawke's Bay, during the 1970s.

When they later became friends, the couple told her that the difference between the pair was that Ted, if he got himself into difficulty, was a good enough pilot to get himself out of it again. Cathy, they said, would never have got into difficulty in the first place.

The culture that regards women as less safe aviation workers than men may be fading.

Emma-Jane Lacy, from CTC Aviation, says she's never come across male students reporting they did not want to be trained by a female, because of safety.

"The only ones I've had issues with, male instructors have also had issues with.

"Trainees have reported that they enjoy flying with female instructors. They find them more patient than the men, and more constructive in their approach."

The (Virtually) Invisible Woman Engineer

If there are few women pilots, the situation with women engineers is even worse.

Latest statistics show that of the 2463 aviation engineers in the country, 24 – or one per cent – are women.

The Boeing study also found that over the next two decades, there'll be a global shortfall of 609,000 engineers. Again, the highest demand will be in the Asia-Pacific region.

CAA System Safety and Project Specialist, Beth Coughlan, became an aerospace engineer because she was good at maths and science at school.

"And aerospace engineering looked cool!"

Beth says one of the biggest barriers to women becoming aviation engineers is the general consensus, in her opinion, that it's women who need to change, and not the work environment.

"But diversity in the workforce actually adds to safety. For instance, under Safety Management Systems, one of the first steps is to identify hazards.

"If everyone in the room is alike, with shared experiences, all thinking the same way, it is much harder for them to 'think outside



Airways Chief Operating Officer, Pauline Lamb, struggles to identify any innate differences between male and female air traffic controllers that would make one sex better suited to the work than the other.

the square' to identify all possible hazards. Diversity – including women staffers – brings that outside thinking to the process."

Working for the CAA's Aircraft Certification Unit is Airworthiness Engineer, Andrea Wadsworth.

"An engineering degree seemed like the best combination of maths and science, and applicable and useful in real life," she says.

The women say being an engineer – or not – is down to individual traits, not gender.

"At university" says Andrea, "my grades were just as high, if not higher, than my male friends in the same classes.

"Not all women are cut out for engineering, but you'll meet a lot of men who aren't either."

Beth and Andrea are part of Futureintech, an initiative by the Institution of Professional Engineers, to encourage young men and women into the sector.

But Andrea says encouraging young women is tough going.

"I went to a recent Futureintech forum, and the only women there were the mothers of the boys attending.

Beth says support at schools is really essential to bring girls in.

"How many career advisors know about aeronautical engineering?"

The women agree that role models are vital.

"The lack of women in aviation is self-perpetuating," says Beth. "Men have any number of role models and mentors who they can relate to, and who can help inspire and shape the direction of their career. The small number of women in aviation creates a vicious circle."

6 *Gender Issues in Aviation: Pilot Perceptions and Employment Relations.* Mitchell J, Kristovics A, and Vermeulen L, Western Sydney University, 2006.

7 *Current Market Outlook 2015-2034: "Demand unprecedented for pilots and technicians".* Boeing, 2014.

8 *Gender Issues in Usability of Glass Cockpit for General Aviation Aircraft.* Koglbauer I, Braunstingl R, Fruehwirth K, Grubmueller E, Löscher S, Institute of Mechanics, Graz University of Technology (Austria), 2014, in *Absent Aviators: Gender Issues in Aviation*, 2014.

9 *Managing Risk – The Human Factor.* Geoff Trickey and So Yi Yeung, Psychological Consultancy Ltd, 2011, data updated 2016.

Continued over >>

Elsewhere in Aviation...

There are higher numbers of women in air traffic control. Twenty-two percent of the workforce are women, which according to Airways, correlates with the percentage of applicants for ATC roles.

Three of the seven-member Airways executive are women, as is its head of training, and the board chair.

Chief Operating Officer, Pauline Lamb, struggles to identify any innate differences between male and female air traffic controllers, that would make one sex better suited to the work than the other.

"Being a team player is important to the role, and women are generally good team players," she says.

"But generally, the skills needed to make a good air traffic controller are spread pretty evenly.

"Spatial awareness is important. If you can play three-dimensional chess, and always have a Plan B, C, and D in your back pocket, then you should do well.

"The sorts of skills used with gaming, I'm sure, help with the aptitude tests we run as part of the selection process.

"As expertise in information technology increases among young women, so too does the number of them interested in becoming an air traffic controller."

Pauline Lamb says there's no discernable difference in test scores between male and female.

Where there is a challenge for women, she says, is in the area of career-family balance. "Airways tries to be really flexible to accommodate air traffic controllers who are also mothers.

And if they leave to raise their family and wish to return later, we help to support their training to do that.

"Many women underestimate their qualities, so we also encourage them to put their hands up for professional development. That way we can have a diverse managerial community."

President of the New Zealand Association of Women in Aviation, Sue Telford, agrees that to encourage females, the sector has to become more flexible.

"It's an expensive career to train in, and often, just as women are making their way up the aviation career ladder, thoughts of starting a family intervene.

"I'm not aware of too many general aviation organisations yet, catering for the need of women to take time out to raise children, and then allowing them to re-enter the company in the same role."

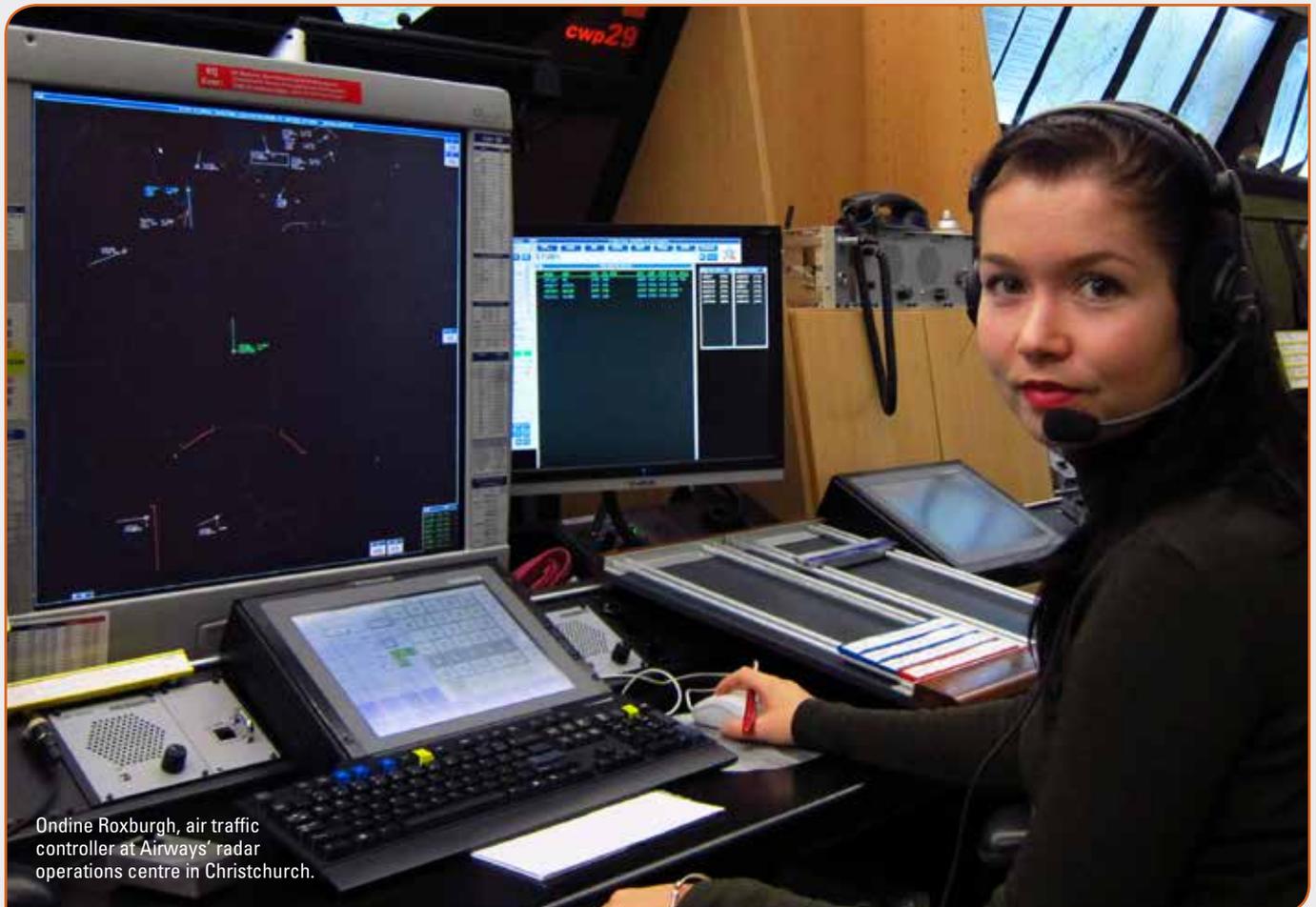
Sue says a combination of that career/family 'rub', still-present sexism, and a lack of role models have combined to make an aviation career invisible in most young women's plans.

"It won't be until we get more women in aviation leadership roles, that girls will look at it as a possible option," she says.

"But we won't get more women in leadership roles, until there's a genuine and widespread acknowledgement that women are perfectly able aviation workers – in some areas, more able than men.

"Aviation is taking time to mature. I go to parliament and there are plenty of women MPs. I go to aviation events, and the room is full of men." ■

Photo courtesy of Airways.



Ondine Roxburgh, air traffic controller at Airways' radar operations centre in Christchurch.