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# Enabling a Sustainable Career Path for Women in Transport Engineering

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# Background

- In the 2011 census, the engineering labour force included only 11.8% women.
- In 2016, the proportion of women in the engineering labour force was 12.4%.
- In 2023, women made up only 13% of the workforce

***What makes some women engineers stay when many others leave?***



# Reasons and consequences

Despite considerable work to encourage girls and women to enter the profession, engineering continues to be heavily male dominated, a situation which has implications for quality and gender equity.

Women may have experienced being isolated, overlooked and marginalised in the prevailing masculine culture of engineering workplaces.

The masculine culture of engineering tends to undervalue and marginalise women.

Direct links between the fulfilment of women engineers' expectations of career satisfaction and commitment, and their persistence in the profession

Consciously or unconsciously, women engineers have to counter damaging attitudes in addition to responding to the challenges everyone faces to succeed in a chosen career.

Parenting responsibilities are made to feel conspicuous

# Fact of career retention

Most women aged 36 to 45 years believed they had achieved career 'realisation'

Fraszczyk & Piip 2019

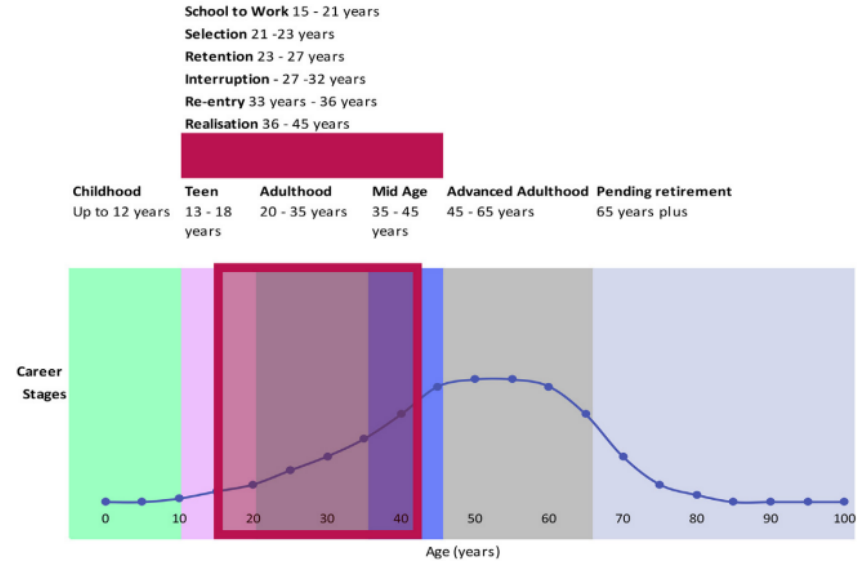


Fig. 2. Women's careers in transport stages compared to life and career stages.

# Fact of career retention

- They had all entered the profession strongly believing in themselves as engineers, a belief that had endured despite the difficulties they encountered.
- Their persistence in the profession appeared to be connected to steps they had taken to ensure that their work environment matched their expectations of interesting, challenging and enjoyable work in a supportive and inclusive culture.
- The stronger the individual's feelings of personal fulfilment and belonging in the profession, the more likely she is to persist with engineering





## Women stay in job persistence factors

- Individual's level  
personality characteristics: attitudes, behaviours and aspirations,
- Workplace culture  
social/cultural workplace environment enables engineers' expectations of career satisfaction and commitment



# Workplace culture for women

First, they oil the wheels of the job and the organisation.

Second, they shape who is included and who is excluded at work.



# A Good Transport Engineer

*Since technical matters are traditionally masculine, it is argued, and most engineers are male, technical expertise is the strongest indicator of a good engineer. Along with this greater respect in the profession for the technician, a stereotype has arisen that women's strengths lie more in communication and coordination, that is the people skills, rather than technical skills.*

Receiving positive feedback from their managers about their performance, was clearly a factor in their confidence and workplace satisfaction.





# A research in Adelaide

From 1974 to 2008, 76 women had graduated as university graduates from the former Institute of Technology with bachelor degrees in civil engineering, and these graduates formed the database for the study.

86% of the cohort, 65 female graduates were surveyed, 86% of respondent rate, 56 surveyed, so overall 74% of the total cohort of graduates responded. (19 missing) who may either be uncontactable or did not complete the survey and were possibly more likely to have left the profession than our respondents, 70% retention rate in a cohort that ranged from 1-35 years since graduation.

Friends in the cohort reported that some were temporarily working as engineers overseas, or taking a career break to travel but intending to return to engineering. Thus, the retention rate of the ATU cohort was certainly higher than 70%.

16 interviewed



# Research Results

- **A good engineer:** amongst the 14 out of 16 who ranked themselves as good engineers and believed that their managers did as well was their obvious enthusiasm for engineering as well as for their present job
- **Workplace culture:** women engineers are more likely to stay in workplaces where their professional and personal expectations of respect and acceptance are met
- **Impact of family responsibilities:** in engineering a lack of family-friendly employment policies, or disapproval for using the policies which were available, resulted in some cases in participants changing their working environment to one where the conditions and/or attitudes were more supportive of work/life balance.
- **Will you stay:** all but one said they will definitely stay in Engineering



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Table 4. Attraction and retention actions suggested for the transport industry.

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**Attraction actions**

- Communicate the social value of engineering – help girls understand that becoming an engineer can help improve and even save lives ([Network Rail, 2015](#))
- Change the image (promote women in transport at events, career days, universities, have a champion, etc.)
- Promote a balanced lifestyle

**Retention actions**

- Offer training
- Offer development (e.g. leadership courses)
- Offer networking
- Offer mentoring
- Provide amenities (e.g. toilets for women, adjust facilities)

# Further Suggestions

- fostering inclusive research initiatives, advocating for gender-responsive transportation policies
- creating mentorship programs
- empower women in academia and industry, ensuring their insights shape safe, accessible, and sustainable transport solutions that reflect diverse community needs

