

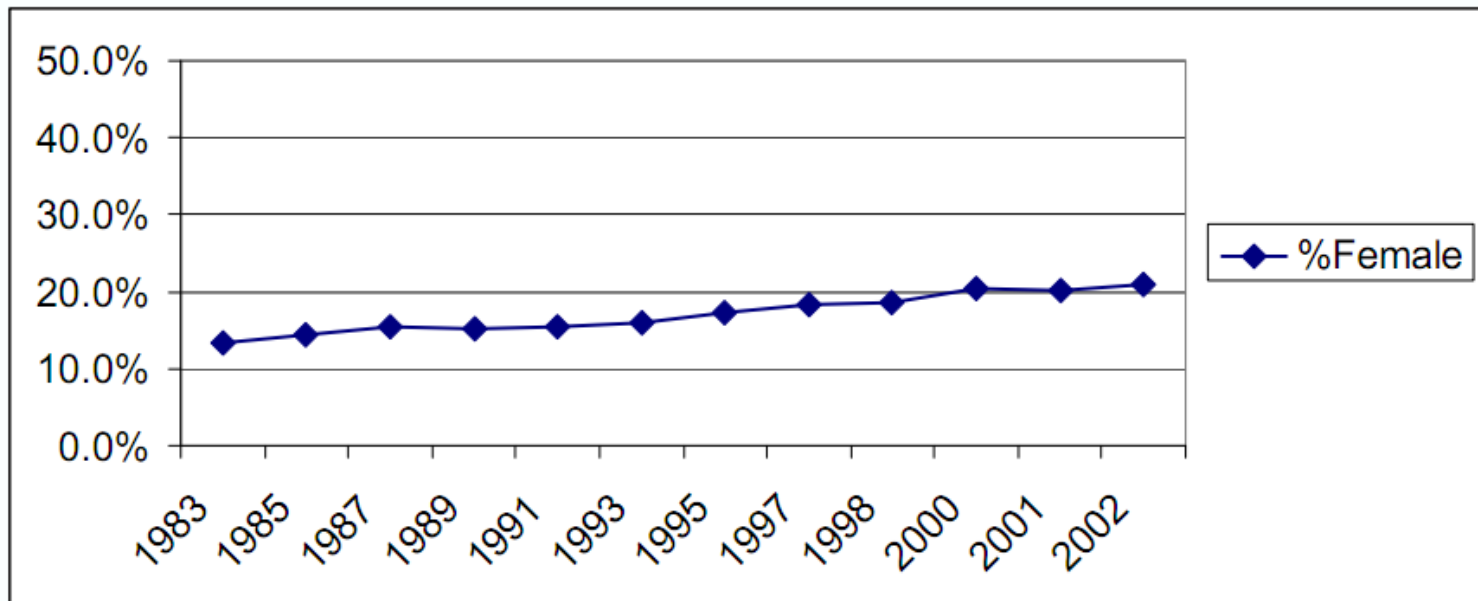


# Retention Strategies for Women in Engineering

Judi Hess, CEO  
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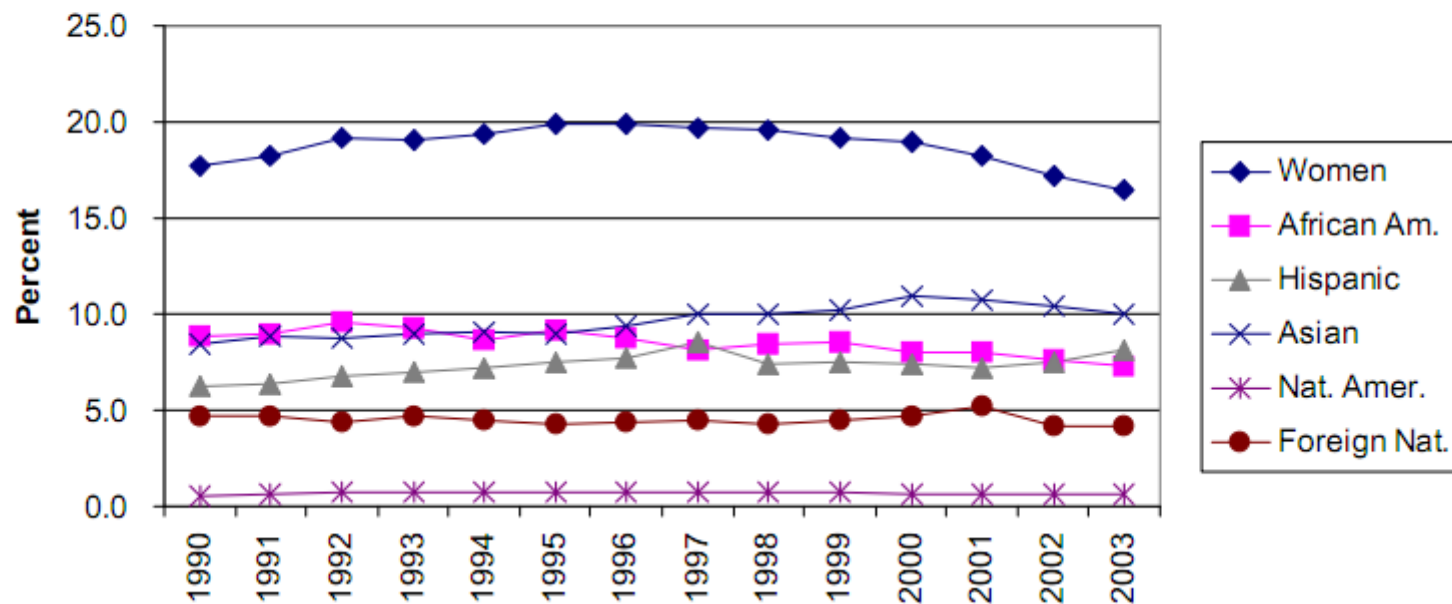
## Percentage of Engineering Degrees Awarded to Women



National Science Board 2006 Science and Engineering Indicators  
USA



## Women and Minorities as a Proportion of First-Year Undergraduate Engineering Enrollments, 1990 to 2003



Source: CPST, data derived from Engineering Workforce Commission

**First-year enrollment in engineering dropped 3% to 103,834 in 2003. Even more disturbing is the continuing decline in recent years of women and African Americans as a proportion of first year enrollments.**

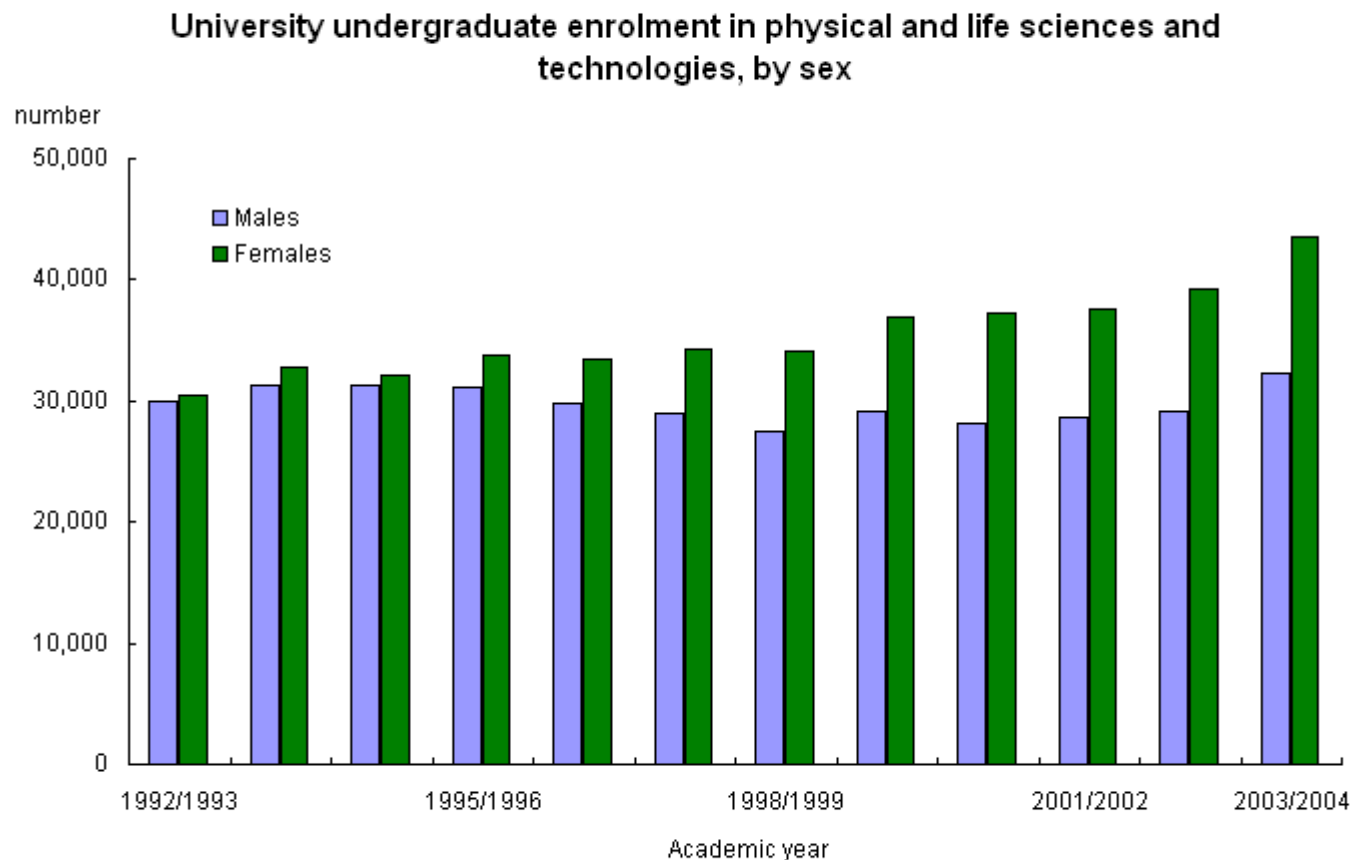


- The percentage of female graduate students in engineering in 2001 was 20%
- The workforce remains as the area of highest under representation for women; only 11% of the engineering workforce in 2003 were women

(Source: Wikipedia, Women in Engineering)



## University undergraduate enrolment in physical and life sciences and technologies, by sex



Source: Statistics Canada, CANSIM table 477-0013.



- Employment figures are another indicator of changing trends. These figures still show that a significant gender imbalance exists in the science and engineering work force.
- The increased enrolment of women in university science and engineering programs has not yet translated into similar shifts in the work force, particularly in engineering.

(Source: Statistics Canada)



- 17.4% of all Undergraduate Engineering Student in Canada are female.  
(Source: Engineers Canada 2010)
- In 2005, industry figures put the proportion of licensed female professional engineers at around only 9%  
(Source: Statistics Canada)



- Gender-diverse recruitment and retention are essential to engineering.

(Source: The Future of Women in Engineering by Nancy Ramsey)

- Attracting is not the issue, retaining is.

(Source: IEEE Committee on Women in Engineering)





- Women over the age of 25 earned 78.7 cents for every dollar paid to a man ( 2006) down from 2005 at 79.4 cents

(Source: US department of labor)



- Among Fortune 500 companies the number of female officers has declined. 74 firms in 2007 didn't have one female officer. In 2006 only 64 firms didn't have one female officer

(Source: Catalyst)



- In 2007 women held 14.8% of Fortune 500 board seats  
(Source: Catalyst)



Conference Board of Canada Report 2011, based on Statistics Canada Data



- Between 1987 and 2009 the proportion of women in middle management rose 4%
- At this rate it will take 151 years to equalize

(Source: Conference Board of Canada Report 2011, based on Statistics Canada Data)



- Surveys of women in engineering that have left the discipline in the workforce cite lack of opportunities for promotion
- IPENZ says that after 40 years of age there is a significant pay gap between men vs women engineers



- Women do not break through the glass ceiling in larger numbers today, than they did in the last 20 years, especially in male dominated fields such as engineering.



- There are gender differences between men and women: e.g. Women's craniums are smaller on average (21.65 inches) than men's physically (22.05 inches)





- Harvard President Lawrence Summers suggested recently (2005) fewer women work in science due to genetic inferiority of women with respect to scientific and mathematical ability





- Women leave the workforce to rear children in larger numbers than men during the key performance years (25-39)



- Women bear the burden of aging parents in larger numbers than men



- Women spend more spare time on household chores and family social planning than men which restricts them from working longer hours



- Elections Act of the Dominion of Canada  
“No Woman, Idiot, Lunatic, Criminal shall have the right to vote”

<b>Canada</b>	<b>1917</b>	<b>Quebec</b>	<b>1940</b>
New Zealand	1893	Japan ,China	1947
Australia	1902	Columbia	1954
Denmark	1915	Egypt	1956
Netherlands	1917	Congo	1963
USA	1920	Switzerland	1971
France	1944	Kuwait	2005
Italy	1946	Saudi Arabia	Not Yet



- Historically, and related to typical gender divided roles in the family unit, a certain culture has arisen which must be overcome to enable women to rise in the corporate male dominated environment



- Self-imposed limitations which reduce women's effectiveness in earning power, continuity of employment and ability to devote themselves to their jobs as required to compete with men.



- Accumulative Advantage
- “Outliers” by Malcolm Gladwell
- 10,000 hours of deliberate practice to really master a subject area or skill







- “A female employee is free to choose to dedicate herself to the company at any cost, and, so far as this record suggests she will rise in this organization accordingly. The law does not require companies to ignore or stop valuing ultimate dedication, however unhealthy that may be for family life”

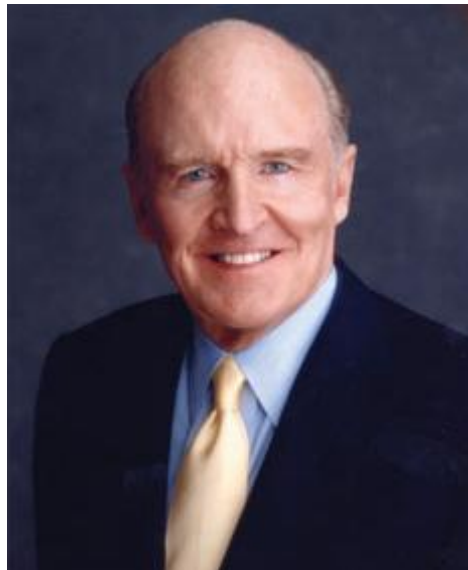


Chief Judge Loretta A. Preska





- “There are no such things as work-life balance. There are work-life choices, and you make them, and they have consequences.”
- Jack Welch, Former CEO of GE





- The best place to find a helping hand is at the end of your own arm.

(Source: Swedish Proverb)



- **Theorem:** If an increase in the retention of women in engineering is desired, which therefore demands an increase in the proportion of women in senior management, **then each women must focus on constantly increasing their earning power**
- **Corollary:** If women focus on earning power and choose to be mothers, they will not be perfect mothers, but rather great role models.



- 10,000-hours: Put in your time and establish your reputation as fast as you can
- Focus on constantly increasing your earning power, even if you take “time on” with children
- Move into management to increase your earning power, and keep on going
- Network – Network – Network along the way!



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