Time To Embrace Diversity

CEA's Next Challenge For a Shrinking Workforce.

Retiring Boomers

"[There is] a large and growing need to replace retiring engineers as they exit the workforce. This is particularly relevant for civil, mechanical, electrical and electronic engineers [...]. Replacement demand for engineers is an important theme that will be relevant for the next decade as the baby boom generation retires."

Engineers Canada June 2015

Why Diversity?

1. Diversity initiatives expand the talent pool.
    - *In a CareerCast report on the 10 toughest jobs to fill in 2016, data scientists and engineers take top honors. Engineers are hard to hire, period. Effectively cutting the talent pool in half by not maximizing female and minority talent exacerbates the problem*
2. Diverse teams make better decisions.
    - *Decades of academic studies have shown that socially diverse groups are more innovative than their homogeneous counterparts. When people from different backgrounds, genders, and races come together to solve problems, they bring with them different information, opinions, and perspectives.*

Why Diversity ?

3. Diverse teams better serve their customer base.

- *Chances are good that many of your customers are women. Your customer base is likely racially diverse too — and becoming increasingly so each year.*

4. Diverse companies make more money.

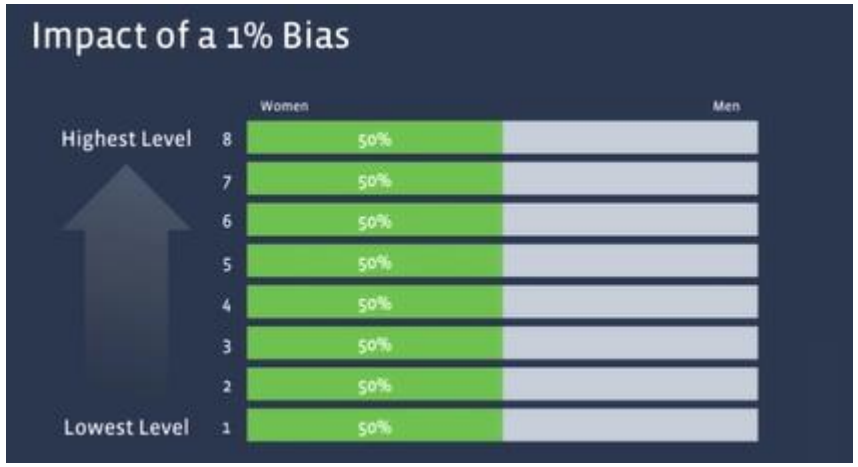
- *In testing the performance of 2,360 companies globally over the last six years, analysis shows that on average corporations with women on their leadership team do better than without. We also find that companies with one or more women on the board have delivered higher average returns on equity, lower *gearing, better average growth and higher price/book value multiples over the course of the last six years*

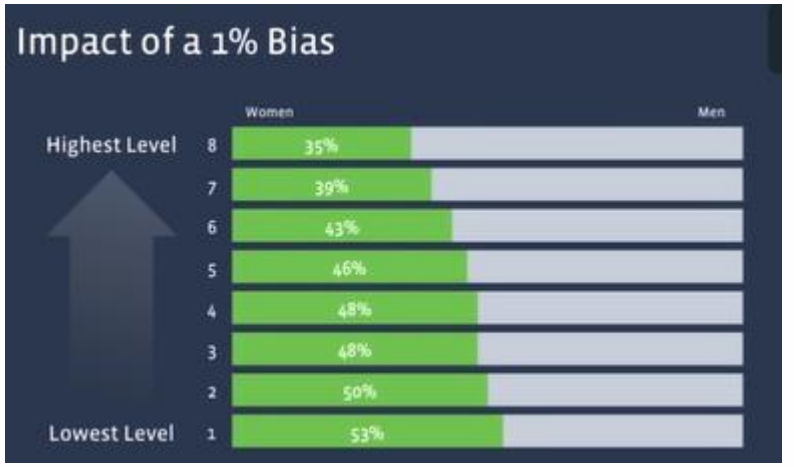
- ** Gearing- it measures the ratio of activities funded by owner's funds versus creditor's funds- another way of measuring how Leveraged the firm is…*

Attracting and Retaining Women

- Less than 13 % of practicing licensed engineers in Canada are women
- In a North-American study following 700 engineering students through 4 years of college and 5 years after they graduated:
  - ✓ *Women's experience of their education differed along two critical dimensions — they encountered a culture where sexism and* ***stereotypes were left unaddressed****, and they saw only* ***lip service offered toward improving society****—and both of these disproportionately alienated them.*

Even a Small Bias is Huge





Using a computer simulation where the highest performing men are evaluated only 1% higher than high performing women leads to a systematic reduction of women at the top over time. Imagine when you have only 20% women to begin with….

Typical Gender Biases

- Women face a trade-off between likeability and competence
- Blind studies show that **male performance** is overestimated and attributed to their skills. **Female performance** is underestimated and attributed to chance or hard work

Integrating Immigrants

Table 3.6 Sources of Supply for Civil Engineers (Annual Average 2015-19 and 2020-25)

	Average 2015-19				Average 2020-25			
	New Entrants	Net In-Migration	Net Other Mobility	Total Supply	New Entrants	Net In-Migration	Net Other Mobility	Total Supply
British Columbia	178	314	111	604	178	197	-23	352
Alberta	233	179	7	418	252	96	-15	333

Table 4.6 Sources of Supply for Mechanical Engineers (Annual Average 2015-19 and 2020-25)

	Average 2015-19				Average 2020-25			
	New Entrants	Net In-Migration	Net Other Mobility	Total Supply	New Entrants	Net In-Migration	Net Other Mobility	Total Supply
British Columbia	117	133	49	299	114	65	-7	172
Alberta	221	165	5	390	233	37	-5	265

Table 5.6 Sources of Supply for Electrical and Electronics Engineers (Annual Average 2015-19 and 2020-25)

	Average 2015-19				Average 2020-25			
	New Entrants	Net In-Migration	Net Other Mobility	Total Supply	New Entrants	Net In-Migration	Net Other Mobility	Total Supply
British Columbia	118	100	34	252	116	74	-8	182
Alberta	182	146	5	333	194	61	-10	246

25% of new Civil and Electrical Engineers in Alberta will come from International Immigration

Typical Race Biases

- Resumes with “white sounding” names receive 50% more calls
- Blind studies show that mistakes presumed to be made by people of color are judged much more harshly than if presumed to have been made by white people

Working Well With Millennials

1. **Money is only a thing:** Previous generations may have been satisfied simply with increasing paychecks, but the present generation look for jobs that allow them to achieve greater work-life balance. To many millennials, compensation is a "hygiene factor;" above a certain point, adding more won't increase motivation
2. **Think about solving global problems:** Millennials want to work for companies that care about current events of the world and the collective values of humanity. This includes supporting charities and taking an active interest in the local community.
3. **Bridge the "Skills Gap" instead of blaming the education system:** Millennial engineers understand that the best learning occurs during practical, hands-on projects that allow them to be challenged and to continually learn new skills. Encourage experimentation and rapid prototyping to make them feel most empowered.

Working Well With Millennials

4. **They are intelligent too:** Millennials have collected an unfair tag of lacking experience and tools, when they are in fact the most well-educated generation to date, with a keen understanding of global trends. *Allow them to exercise their intellect in the pursuit of their work.*
5. **Enough with the secrecy:** One of the quickest ways to repel millennials is to make them feel like they're being lied to or kept in the dark.
6. **Work = excitement:** If there is one thing millennial engineers hate, it's being made to feel like mindless robots, only capable of performing the same task day after day until retirement.

The Gender Revolution: LGBTQ

- Recent studies have shown that a majority of LGBTQ students and young adults believe their sexual orientation greatly influences their academic and career choices, and not surprisingly they felt excluded from fields lacking “out” role models, including engineering.
- An analysis of 1,427 responses to a 2013 survey of individuals working in STEM fields who identify as lesbian, gay, bisexual, trans*, queer, (LGTBQ) suggests that **in fields with fewer women**, the climate may be less comfortable for anyone who fails to conform to a straight male gender presentation.

STEM= Science, technology, engineering and mathematics

Interestingly Enough…

- Many of the same things women want from an engineering career, millennials want also.
- Many of the unconscious biases faced by women are also faced by non-white community
- The arrival of millennials in the workplace may help greatly with the gender issue in Engineering.
- Improving the gender imbalance will help the LGBTQ community feel more comfortable in the STEM industry.

In Summary…It is Good for Everybody

Increasing **Diversity** will also benefit traditionalist since **retention + engagement = $$$**