Engineers Canada's Submission to the Standing Committee on the Status of Women

Economic Security of Women in Canada

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Overview

Engineering careers are vast and versatile. They range from infrastructure, to healthcare, agriculture, entertainment, business, and more. From developing advancements in green technology to implementing systems that keep Canadian communities safe, engineers develop innovations that support Canada's competitiveness globally. An engineering career is thus an opportunity for individuals to make a difference, while also providing engineers themselves with many benefits, including a competitive salary. Engineering, along with business and health, is one of three disciplines found among Canada's top one per cent of earners. While the median income (plus our 10 per cent factor) in Canada is $35,200, the median annual salary for engineers is $72,000.[1]

Facilitating the entry and the retention of women into careers in engineering is therefore a key opportunity to increase women's economic security. Yet women, who make up 50.4 per cent of the Canadian population, comprise less than 12 per cent of practicing licensed engineers and only 19 per cent of undergraduate engineering students. Engineers Canada believes that the engineering profession should be reflective of the diverse demographics of the Canadian population. The engineering profession exists to serve and protect the public interest, and it will be in a better position to do so if it is representative of Canadian society.

Throughout this document, Engineers Canada highlights a number of key issues related to women in the engineering profession, along with recommendations for actions that the federal government should undertake in order to improve women's economic security and to ensure the equal participation of women in the Canadian economy. These recommendations will serve to help the House of Commons Standing Committee on the Status of Women answer the following questions:

- What elements influence women's income, including the gender pay gap and occupational segregation?
- What is the effect of unpaid care work, as well as part-time and precarious work, on women's economic security?
- What measures and strategies can be used to increase women's entry, participation, retention and representation in economic leadership positions? These positions include those in the private and public sectors, on corporate boards, and in the sphere of science, technology, engineering and mathematics

In particular, Engineers Canada's recommendations focus on addressing the challenges that discourage women from entering and/or from remaining in the engineering profession. This includes addressing:

- Women's entry into the engineering profession,
- Pay inequity in the profession, and
- Inflexible maternity leave.

[1] http://business.financialpost.com/personal-finance/managing-wealth/how-does-your-salary-stack-up-to-the-rest-of-the-country-a-look-at-what-canadians-make; https://www.randstad.ca/hot-jobs/engineering-jobs-in-demand/

Women's entry into the engineering profession

Engineers Canada is working to increase the representation of women within the engineering field through its 30 by 30 initiative. Engineers Canada has a goal of raising the percentage of newly licensed engineers who are women to 30 percent by the year 2030; currently this figure is at 17 percent, and has held steady at this rate over the last year three years.[2] The 30 by 30 initiative has received national support from engineering regulators and other stakeholders in the profession.

But in order to address the issues that are affecting women's entry into the profession, engineering stakeholders need to be supported by national, government-driven policies that encourage youth—and especially girls—to consider pursuing post-secondary engineering education and an engineering career.

Youth engagement in STEM subjects and post-secondary engineering enrolment

Given the ubiquity of technologies and their rates of change, foundational skills in STEM will prepare any Canadian youth for any future career path they choose to pursue—regardless of their gender.

While representation of women on university and college campuses across Canada has increased over the past decades, post-secondary enrolment rates for women in STEM subjects are low. According to a 2011 analysis done by Statistics Canada, among high school students with grades between 80 - 89 per cent, approximately 52 per cent of boys chose a STEM university program, but only 22 percent of girls chose the same.[3] The same study showed that female high school students with grades higher than 90 per cent in mathematics were less likely than their male counterparts with lower grades to major in a STEM subject at university. Additionally, more than 30 per cent of male students who had grades below 80 per cent and attended university chose a STEM program, while only about 10 per cent of women did the same.[4]

The numbers are even lower for enrolment in post-secondary engineering programs in particular. Too often when discussing the STEM disciplines is the emphasis placed on science, technology and mathematics, with engineering being forgotten. Yet engineering is equally as important as it is fundamentally the ability to solve complicated and future-minded problems. Yet enrolment and graduation rates of women in undergraduate engineering programs continue to be significantly lower than other disciplines. In 2011, women between the ages of 25-34 in the science and technical streams

[2] Engineers Canada (2017). "Women in Engineering." Retrieved April 25th, 2017, from: https://engineerscanada.ca/diversity/women-in-engineering.

[3] Statistics Canada (2011). "Gender differences in science, technology, engineering, mathematics, and computer science (STEM) programs at university." Retrieved April 10, 2017, from: http://www.statcan.gc.ca/pub/75-006-x/2013001/article/11874-eng.htm.

[4] University of Alberta. (2002-2017). "Undergraduate Researchers Dig into Diversity in Engineering." Retrieved April 19, 2017, from: http://www.engineering.ualberta.ca/en/NewsEvents/Engineering%20News/2017/April/Undergraduateresearchersdigintodiversityinengineering.aspx.

had accounted for 59 per cent of all science and technology graduates; compared to only 23 per cent of female graduates in engineering within the same year.[5]

Consensus exists that getting youth engaged in STEM subjects is a key vehicle to increasing a child's interest in engineering. Many engineering stakeholders are involved in delivering outreach programs for this reason, with the ultimate goal being to increase enrolment in engineering programs. Often these outreach programs are specifically targeted to young women, as they are less likely to identify engineering as a possible career choice. Understanding the core reasons for why girls are less likely than boys to pursue STEM subjects beyond high school would better prepare these engineering stakeholders to delivered targeted youth engagement strategies to young women at a time in their lives when they could take the preparatory steps to enter the engineering field should they so choose.

Labour market information and post-secondary engineering enrolment

Information that revolves around the engineering labour market and current unemployment rates of recent post-secondary graduates need to be readily available for policy makers, industries, students and educational institutions. However, data sources in Canada "have significant shortcomings, including their relatively short-term nature"[6] when referring to critical labour market information. National surveys of graduates have been conducted in the past; however, the majority of them have failed to provide the "detailed, accurate, consistent, extended, and up-to-date information on graduate outcomes that is needed."[7] Having this information available will inform youth, specifically women entering into post-secondary engineering programs, about the prospects of securing meaningful employment in the engineering workforce.

Recommendations

Recommendation #1: Fund research to investigate why women are not pursuing post-secondary engineering education

In order to increase the number of women in post-secondary engineering education, the federal government first needs to better understand the reasons why women are currently not choosing to pursue this educational path. Government funding is required to gain this important knowledge, and this research should specifically identify the existing factors that are deterring young women from pursuing post-secondary engineering disciplines.

[5] Statistics Canada (2011). "Gender differences in science, technology, engineering, mathematics, and computer science (STEM) programs at university." Retrieved April 10, 2017, from: http://www.statcan.gc.ca/pub/75-006-x/2013001/article/11874-eng.htm.

[6] Finnie, R., et al. (2016). "Barista or Better? New Evidence on the Earnings of Post-Secondary Education Graduates: A Tax Linkage Approach – Executive Summary." Retrieved April 26th, 2017, from: https://static1.squarespace.com/static/5557eaf0e4b0384b6c9b0172/t/5796ca2be58c6252c0d41d3b/1469499948298/EPRI-ESDC+Tax+linkage_Exec+Sum.pdf.

[7] Finnie, R. (2016). "Barista or Better? New Evidence on the Earnings of Post-Secondary Education Graduates: A Tax Linkage Approach." Retrieved April 26th, 2017, from: http://www.iariw.org/dresden/finnie.pdf.

Recommendation #2: Continue funding for co-op placements and work-integrated opportunities for students in STEM undergraduate programs

Engineers Canada is encouraged by the federal government's support for increasing funding for co-op placements and work-integrated opportunities for students in STEM undergraduate programs. In order for students, and particularly women, to gain critical, hands-on experience for their chosen STEM career, as well as connect with employers and potential mentors within that profession, these avenues need to be available throughout a student's post-secondary education and not just within their last years of education. These opportunities available throughout undergraduate programs increase the possibility of an individual's successful entry into that profession.

Recommendation #3: Ensure federally funded programs like PromoScience address root causes that deter women away from engineering

Engineers Canada is encouraged by the commitments made to PromoScience in the 2017 federal budget, which support STEM learning activities for Canadian youth, specifically for underrepresented groups such as women. The federal government should also commit to incorporating the above-mentioned research into its funding criteria for federal programs such as PromoScience so that these programs can address the root causes that influence women to not pursue engineering. Moreover, programs being considered for PromoScience funding should also specifically target engineering.

Recommendation #4: Ensure federal funding for labour market studies

Similar to the movement of incorporating financial literacy into provincial education curricula, teaching youth the value of understanding the labour market should be required of federally funded outreach programs. It is essential to have appropriate, timely and up-to-date labour market information available so that all individuals, specifically women, considering undergraduate programs, can make informed decisions about their future education and career path. Evidence regarding labour market performance and current unemployment rates of recent post-secondary graduates need to be readily available for policy makers, industries, and educational institutions in order to make informed decisions.

Recommendation #5: Federal funding on workforce research for the engineering profession

Engineers Canada recommends that the federal government support workforce research funding targeting the engineering profession in order to uncover the reasons why women who enter into the engineering profession leave the field. Given the lack of Canadian research in this topic, this would provide Canadian evidence to policy-makers on outlining the reasons women choose to leave the profession

Addressing pay inequity in the engineering profession

Engineers Canada's labour market report has projected that there will be 100,000 job openings in the engineering profession between 2015 and 2025 as the economy continues to grow and as the baby boom generation retires.[8] Canada needs engineers of all genders and backgrounds, but the reality is that

[8] Engineers Canada (2015). "Engineering Labour Market in Canada: Projections to 2025." Retrieved April 10, 2017, from: https://engineerscanada.ca/sites/default/files/Labour-Market-2015-e.pdf.

Canada's labour market conditions are different for men and women; specifically when considering the wage gap within the profession. This wage gap has had a significant role in discouraging women from entering the engineering profession in Canada.

Many factors can contribute to a wage gap experienced between men and women such as experience, educational background, occupational differences, and industry. However, in many cases, an inexplicable gap remains. In Canada, women on average earn 87 cents for every dollar a man makes.[9]

In the engineering profession in particular, men continue to earn more money annually than women. The evidence abounds across the country at all levels of the engineering profession:

- An Education Policy Research Initiative (EPRI) study found that male engineering graduates are on average earning approximately $15,000 more than women in their first year of employment following graduation. By the 13th year following graduation, the pay gap between men and women grows to a difference of $20,000[10].
- The same EPRI study found the average annual salary for a non-managerial position in the engineering profession is $88,792 for men, while women earn approximately $83,350 for the same position.
- Senior management positions in the engineering profession have a much larger pay discrepancy between men and women as men earn approximately $162,268 annually while women earn approximately $148,433 per year; a difference of almost $14,000 annually between genders for the same position.[11]
- Evidence from British Columbia indicates that the median salary of a professional engineer who is male was 13 per cent higher than his female counterpart; $107,000 and $92,702 respectively[12].
- Saskatchewan data tells a similar story—engineers who are women get paid less than their male counterparts in eight out of ten engineering disciplines, with a gap ranging from eight per cent to 16 per cent. When the data is broken down by education, women with a Bachelor's degree were earning 16 per cent less, with a Master's degree 11 per cent less, and with a PhD 20 per cent less. The same trends were observed when engineers were classified by experience level[13].
- Ontario also has a noticeable gap in base pay between male and female engineers, with the gap being as high as 10 per cent at senior levels[14].

[9] CTV News (2017). "Canada's pay gap: Women earn 87 cents on the dollar." Retrieved April 11, 2017, from: http://www.ctvnews.ca/business/canada-s-pay-gap-women-earn-87-cents-on-the-dollar-1.3315893/.
[10] University of Ottawa – Education Policy Research Initiative. (2015-2017). "EPRI-ESDC Tax Linkage Project Interactive Results." Retrieved April 20th, 2017, from: http://www.epri.ca/esdc-tax-linkage-project-interactive-results#degree-earners-average-earnings.
[11] Ibid.
[12] Association of Professional Engineers and Geoscientists of British Columbia. (2016). "Compensation Survey." Retrieved April 30th, 2017, from: https://www.apeg.bc.ca/Careers/Compensation-Survey.
[13] Association of Professional Engineers and Geoscientists of Saskatchewan. (2016). "Salary Survey: May 2016." Retrieved May 1, 2017, from: https://www.apegs.ca/Portal/Sites-Management/FileDownload/DataDownload/32116/APEGS%20Salary%20Survey%20Report%202016/pdf/1/1033.
[14] Ontario Society of Professional Engineers. (2015). "Crisis in Ontario's Engineering Labour Market: Underemployment Among Ontario's Engineering-Degree Holders." Retrieved April 30th, 2017, from: https://www.ospe.on.ca/public/documents/advocacy/2015-crisis-in-engineering-labour-market.pdf.

Engineering is one of three disciplines found among Canada's top one per cent of earners—indeed, engineering graduates earn some of the highest median incomes in Canada[15], in some cases doubling salary expectations of other occupations[16]. Yet the statistics above illustrate the reality that women face in the engineering profession: that they are unequal participants in the engineering workforce. Women are confronted with more economic barriers than men, and they are missing out on substantial earning power, placing them in precarious economic situations when compared to their male counterparts. Not only is this a form of discrimination but also a severe obstacle for retaining women in the profession.

Recommendations

Recommendation #5: Consider instituting strategies, policies, practices, and programs that have encountered success elsewhere to address pay inequity

Engineers Canada supports the federal government's pay equity program, which brings to light the reality of gender pay discrimination within Canada's workforce.[17] Engineers Canada is encouraged to see that the federal government has committed to pay equity legislation in the 2017 federal budget. Engineers Canada is also supportive of a proactive approach to prevent wage discrimination in the first place and move away from a complaints-based system. We encourage the government to consider instituting practices that have been established internationally, such as:

- Gender audits for businesses with more than 10 employees and subsequent fines for non-compliance (Denmark)[18]
- Publishing pay data (Belgium, Finland, United Kingdom) and gender equality programs as part of human resources policies (Iceland)[19]
- Encouraging all Canadian provinces to adopt best practices around equal pay for equal work. The federal government can use the existing model that already exists in some provinces, such as Ontario, which has requirements for both private and public employers to implement strategies to address pay equity.[20]

[15] Statistics Canada (2016). "Education and occupation of high-income Canadians." Retrieved April 30th, 2017, from: http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-014-x/99-014-x2011003_2-eng.cfm.
[16] Queen's University (2014). "Labour Market Outcomes: Summary Results of a Survey of 2006 and 2007 Canadian University Baccalaureate Graduates." Retrieved April 30th, 2017, from: http://www.queensu.ca/planningandbudget/sites/webpublish.queensu.ca.pbwww/files/files/Report%201%20-%20NGOS%20Labour%20Market%20Outcomes%20regular%20sheet.pdf.
[17] Government of Canada. (2017). "Employment and Social Development Canada – Pay Equity." Retrieved April 26th, 2017, from: https://www.canada.ca/en/employment-social-development/programs/pay-equity.html.
[18] European Parliament (2015). "Directorate-General for Internal Policies: Policy Department-Citizens' Rights and Constitutional Affairs." Retrieved April 26th, 2017, from: http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/510026/IPOL_IDA(2015)510026_EN.pdf.
[19] Ministry of Welfare (2015). "Gender Equality." Retrieved April 26th, 2017, from: https://eng.velferdarraduneyti.is/departments/gender-equality/.
[20] Parbudyal Singh and Ping Peng, "Canada's bold experiment with pay equity" (Toronto: York University School of Human Resource Management, 2010), available at: https://yorkspace.library.yorku.ca/xmlui/bitstream/handle/10315/6303/HRM0025.pdf?sequence=1&isAllowed=y.

Recommendation #6: Require organizations, companies and industries to publish annual salary data reports publicly

To further address the existing pay inequity that is seen throughout several STEM professions in Canada, specifically engineering, Engineers Canada encourages the requirement of organizations, companies, and industries to provide public annual salary data reports. These should include the median wage for men and women within the organization, as well as data on the exact salaries and bonuses that are paid to male and female staff annually. This information will create transparency within the profession and enable the elimination of the existing gaps that will be revealed by the reports.

Addressing inflexible maternity leave

The current maternity and parental leave system is seen as one of the contributing factors to the attrition of women in professional roles, and specifically for women in the engineering profession.

Feedback from the engineering regulators across Canada indicate that the current maternity and parental leave systems is designed for individuals who are unemployed and is generally inflexible to the reality of professionals who take leave for other reasons; that the current system jeopardizes an employer's investment in training and an employee's personal investment in professional and client development; and that the current system does not allow for a parent on leave to respond to questions and issues (i.e. do work) that from a business and project standpoint is necessary.

Taking an extended leave from work under the current inflexible maternity and parental leave system can have a detrimental effect on women's career progression and income prospects.

Impact on work experience and career progression

Individuals who have extensive work experience in the engineering profession have the opportunity to develop the necessary soft and technical skills to succeed within the profession. Work experience often allows individuals to develop communication and team-building skills and an understanding of the industry. The skills gained through work experience often make an individual more employable and provide an individual with a higher possibility of professional development and training opportunities.

Women, however, are more likely to experience work disruptions throughout their careers, for reasons such as child-care responsibilities, which result in women working part-time or stepping away from the engineering profession for eighteen or more months. This can impact women's work experience and their associated prospects for career progression. For example, data from Quebec that on average, female engineers within the province had approximately 14.3 years of engineering work experience, whereas their male counterparts had approximately 17.2 years of related engineering work experience.[21] Women therefore face more barriers than men in developing the necessary skills or qualifications that employers are looking for; and potentially limit their professional development and training opportunities that are deemed necessary for promotion or advancement in the profession.

[21] Ibid.

Impact on earning potential

Furthermore, women with children systematically earn less than those without. On average, women with children make 12 per cent less than women without children, with this gap increasing with the number of subsequent children.[22] The data also suggests that women with children faced an average career interruption of six years with a reduction in hourly earnings of close to 30 per cent compared to those without children. This threatens women's ability to earn as much as men over the course of their career, and could be exacerbated by the recent announcement in the 2017 federal budget that maternity leave could be extended to 18 months.

Professionals currently have no legislated protections of flexible arrangements that would provide for alternative options to the current maternity leave. In the absence of federally regulated flexible work options, mothers who are unable to return to work on a full-time basis following their maternity leave could be extending their work interruptions and thereby threatening their career progression and earning potential.

Recommendations

Recommendation #7: Modernize and improve the current maternity and parental leave system

Engineers Canada is encouraged by the federal government's recent commitment to allow women to claim employment insurance (EI) up to 12 weeks before their due date–expanded from the current standard of eight weeks–if they so choose. However, Canada's maternity and parental leave benefits need to provide greater flexibility for employees' work-life balance during life changes, and allow employees to have access to (federally regulated) flexible work options in lieu of a leave if they so choose.

Canada's current maternity and parental leave system is not a comprehensive strategy to successfully manage the entirety of the lifestyle change that is brought about when adding a child to one's family. While the ability of taking a paid leave should always be an available option, the reality of today is that families require flexibility beyond leave. An employee should have access to arrangements that provide individuals with the ability to make the best family and career decisions. Options for maternity and parental leave should therefore be broadened to include other alternatives than basic leave, such as working part-time, teleworking or job sharing. After 12 months, an individual should have the option to have flexible work opportunities to touch base with their employer if they so choose; i.e. professional development courses or opportunities to take part in work projects or tasks. The current maternity leave system does not provide these alternatives to individuals.

Engineers Canada strongly supports a modernized and improved maternity and parental leave system as a method to reduce the pay inequity and retain qualified and talented women in the engineering profession.

[22] Statistics Canada. (2015). "Earnings of women with and without children." Retrieved April 20th, 2017, from: http://www.statcan.gc.ca/pub/75-001-x/2009103/article/10823-eng.htm#a1.

Overview of Recommendations

In conclusion, Engineers Canada recommends the following to address women's economic security within Canada, and specifically within the engineering profession. The federal government should:

1. Fund research to investigate why women are not pursuing post-secondary engineering education.

2. Ensure federally funded programs like PromoScience address root causes that deter women away from engineering.

3. Consider instituting strategies, policies, practices, and programs that have encountered success elsewhere to address pay inequity.

4. Require organizations, companies and industries to publish annual salary data reports publicly.

5. Modernize and improve the current maternity and parental leave system.

Who we are

Engineers Canada is the national organization of the 12 provincial and territorial associations that regulate the practice of engineering in Canada and license Canada's more than 290,000 professional engineers. Together, we work to advance the engineering profession in the public interest.