

Women in the Workplace:

A Shift in Industry
Work Culture



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apega.ca/inclusion

1. Acknowledgements

We would like to thank everyone who shared their time, ideas, experiences, and expertise with the Association of Professional Engineers and Geoscientists of Alberta (APEGA) for enabling us to complete this project. *Women in the Workplace: A Shift in Industry Work Culture* represents the work we have done so far to identify and address the barriers women face in engineering and geoscience workplaces in Alberta. The findings in this report will be instrumental for increasing diversity and inclusion in these professions.

Partners

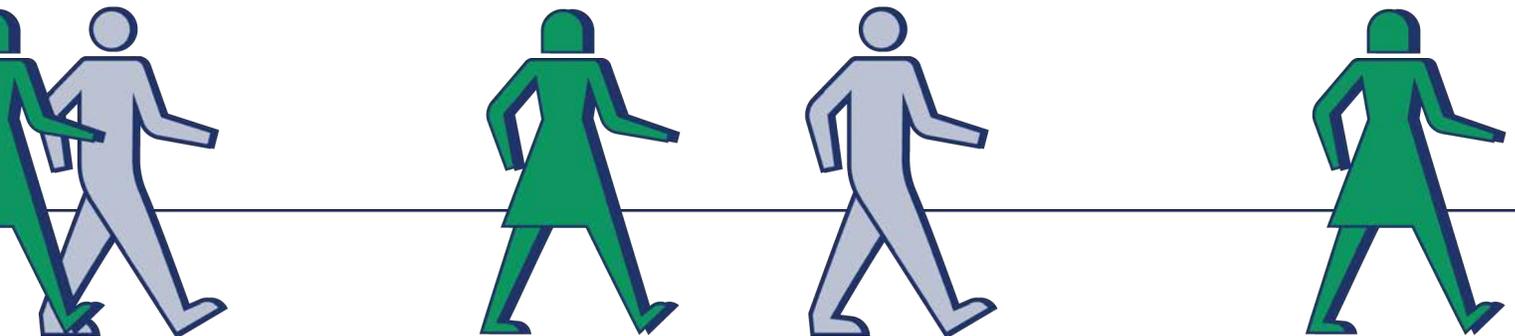
- Alberta Women's Science Network (AWSN)
- Engineers Canada
- Five employer partners who chose to remain anonymous in external reports
- Schulich School of Engineering, University of Calgary
- Women in Science, Engineering, Technology, and Trades (WinSETT)

Contributors

- Women in APEGA Advisory Group
- 2,765 respondents to APEGA's online survey on diversity and inclusion
- 329 APEGA members who participated in consultation focus groups (held virtually, in person, and by phone)
- APEGA staff who provided technical and communications support, shared resources, and participated in running consultations

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2. Contents

1. Acknowledgements	2
Partners.....	2
Contributors.....	2
Funding	2
2. Contents.....	3
Table of Figures	4
3. Definitions	5
4. Executive Summary	8
5. Overview	11
6. Member Survey and Consultations	13
7. Barriers.....	21
7.1. Workplace Environment	21
7.2. Career Development and Advancement	24
Career Progression.....	24
Pay Equity.....	26
7.3. Bias, Discrimination, and Harassment.....	28
7.4. Maternity or Parental Leave	30
7.5. Work-Life Balance	31
7.6. Perceived Characteristics of Women and Societal Issues	32
8. Recommendations and Actions	33
8.1. Take Action	34
9. Future Work	36
10. References.....	37

Table of Figures

Figure 1. Project timeline, 2018–2021	11
Figure 2. Compiling the report	12
Figure 3. Gender of survey respondents	13
Figure 4. Generation of survey respondents.....	14
Figure 5. Year of birth of female survey respondents	15
Figure 6. Size of most current workplace.....	16
Figure 7. Survey respondent field of work	17
Figure 8. Engineering discipline by gender.....	18
Figure 9. Geoscience discipline by gender	19
Figure 10. Top seven barriers identified by project participants	21
Figure 11. Perception of whether gender affects treatment in the workplace.....	23
Figure 12. Size of organizations that participated in the When Women Thrive survey.....	24
Figure 13. Labour-market trends of 2018 employer participant data	25
Figure 14. Pay by gender by years (Mercer 2020)	27
Figure 15. Survey respondents' reports of having faced gender-based discrimination	28

3. Definitions

Benevolent sexism: Attitudes about women that seem positive in tone (e.g., women should be cherished) but that connote inferiority to men based on fragility, lack of competence, or need for help and protection (Glick and Fiske 1996).

Bias: Prejudice in favour of or against one thing, person, or group compared with another, usually in a way considered to be unfair (Lexico 2021).

Discrimination: The unjust or prejudicial treatment of different categories of people or things, especially on the grounds of race, age, or sex (Lexico 2021).

Equal Pay for Equal Work: Addresses situations in which men and women do the same work. Requires men and women be paid the same for the same job, or substantially the same job (Ontario Government 2021).

Gender: The socially constructed roles, behaviours, expressions, and identities of girls, women, boys, men, and gender-diverse people. It influences how people perceive themselves and each other, how they act and interact, and the distribution of power and resources in society. Gender identity is not confined to a binary (girl or woman, boy or man) nor is it static; it exists along a continuum and can change over time. There is considerable diversity in how individuals and groups understand, experience, and express gender through the roles they take on, the expectations placed on them, and their relations with others, along with the complex ways gender is institutionalized in society (Canadian Institutes of Health Research 2015).

Gender discrimination: The process of differentiation among persons based on characteristics that are not adequate or relevant to the activity for which the differentiation is made. It presupposes a discriminatory treatment, based on subjective criteria (gender), in the processes of selection, compensation, promotion, professional training, and recognition of professional merits. Furthermore, gender discrimination can take subtler and informal forms, such as social exclusion, isolation, and the avoidance of interpersonal contact (Dipboye and Colella 2005).

Gender non-binary: Describes people who feel their gender cannot be defined within the margins of a gender binary. Instead, they understand their gender in a way that goes beyond simply identifying as a man or a woman. Some non-binary people may feel comfortable within transgender communities and find this is a safe space to be with others who do not identify as cisgender, but this is not always the case (LGBT Foundation 2021).

Harassment: A form of discrimination. It includes any unwanted physical or verbal behaviour that offends or humiliates you. Generally, harassment is a behaviour that persists over time. Serious one-time incidents can also sometimes be considered harassment (Canadian Human Rights Commission 2020).

Inclusive workplace culture: A work environment that makes every employee feel valued while also acknowledging their differences and how these differences contribute to the organization's culture and business outcomes. An inclusive workplace is characterized by positive action, wherein any impact of bias, discrimination, or unequal opportunity is negated (BasuMallick 2020).

Mentorship: The guidance provided by a mentor, especially an experienced person in a company or educational institution (Lexico 2021).

Microaggression: A statement, action, or incident regarded as an instance of indirect, subtle, or unintentional discrimination against members of a marginalized group such as a racial or ethnic minority (Lexico 2021).

Misogyny: Dislike of, contempt for, or ingrained prejudice against women (Lexico 2021).

Old boy's club or network: An informal system in which wealthy men with the same social and educational background help each other (Merriam-Webster Online Dictionary 2021).

Member-in-training: These members have met academic requirements but need more work experience to qualify for professional membership with APEGA. They are designated as an engineer-in-training or geoscientist-in-training and must complete their engineering or geoscience work under the supervision of a licensed professional member.

Pay equity: Compares the value and pay of different jobs and requires employers to pay jobs traditionally done by women the same as jobs traditionally done by men if the jobs are of equal value. The value of jobs is based on the level of skill, effort, responsibility, and working conditions (Ontario Government 2021).

Reverse discrimination: A term that describes perceived or alleged discrimination against members of a dominant or majority group in favour of members of a minority or historically disadvantaged group. Groups may be defined in terms of ethnicity, gender identity, nationality, race, religion, sex, or sexual orientation (Wikipedia 2021).

Salary Survey: This annual publication shares market trends on compensation and benefits collected through an annual, voluntary survey of engineering and geoscience employers operating within Alberta.

Sex: A set of biological attributes in humans and animals. It is primarily associated with physical and physiological features including chromosomes, gene expression, hormone levels and function, and reproductive and sexual anatomy. Sex is usually categorized as female or male, but there is variation in the biological attributes that comprise sex and how those attributes are expressed (Canadian Institutes of Health Research 2015).

Sexism: Prejudice, stereotyping, or discrimination, typically against women, on the basis of sex (Lexico 2021).

Sponsorship: A kind of helping relationship in which senior, powerful people use their personal clout to talk up, advocate for, and place a more junior person in a key role (Harvard Business Review 2021).

Toxic masculinity or toxic bro culture: A set of attitudes and ways of behaving stereotypically associated with or expected of men, regarded as having a negative impact on men and on society as a whole. The destructive messages associated with toxic masculinity can lead to men feeling entitled to engage in violence against women (Lexico 2021).

Traditional male work environment and male-dominated industries: Male-dominated occupations are those that comprise 25 per cent or fewer women. Male-dominated industries and occupations are particularly vulnerable to reinforcing masculine stereotypes that make it even more difficult for women to excel (Catalyst 2021).

Unconscious bias: Social stereotypes about certain groups of people that individuals form outside their own conscious awareness. Everyone holds unconscious beliefs about various social and identity groups, and these biases stem from the tendency to organize social worlds by categorizing. Unconscious bias is far more prevalent than conscious prejudice and is often incompatible with conscious values. Certain scenarios can activate unconscious attitudes and beliefs (University of California San Francisco 2021).

Workplace barriers: These can be physical, attitudinal, social, or related to communication—anything that prevents true workplace inclusion for all employees. Typically, workplace barriers disproportionately affect members of certain groups (based on gender, sex, ethnicity, religion, place of origin, and many other components of identity).



4. Executive Summary

In March 2018, the Association of Professional Engineers and Geoscientists of Alberta (APEGA) began a three-year project to examine the barriers women face in engineering and geoscience workplaces. The project, partially funded through a grant from Status of Women Canada (now called the Department for Women and Gender Equality), is now complete.

This report contains the results from all phases of the project, which included an extensive online survey, in-person follow-up consultations, a historic pay-equity analysis of five years (2014–2018) of APEGA’s annual *Salary Survey* data, an internal-labour-market report on women in the workplace, and a pilot project with five employer partners. This report also provides data-backed policy recommendations for decreasing barriers in the workplace and increasing women’s participation in engineering and geoscience workplaces.

Our final analysis of the survey data showed men and women experience engineering and geoscience workplaces in different ways. There were notable discrepancies between men’s and women’s responses to questions about facing gender-based discrimination in the workplace and the barriers they perceive women face in the workplace compared to men. More than half (52 per cent) of all male survey respondents rated their workplace comfort level as Extremely Comfortable, compared to only 37 per cent of female respondents. Female survey respondents were much more likely to report gender-based discrimination in the workplace (59 per cent) compared to males (12 per cent). In fact, male respondents who selected that gender matters Very Much in the workplace expressed concern that diversity measures have “gone too far” and now discriminate against qualified white men (22 per cent).

During the in-person consultations, a few key themes emerged in the responses participants gave when asked about the biggest barriers women face in engineering and geoscience workplaces. We grouped the barriers into seven major categories (Table 1). Outliers that did not fit into these major categories account for 1.6 per cent of the issues mentioned.

Table 1. Barriers faced by women in engineering and geoscience

Category of Barriers	Mentions (%)
Traditionally male work environment	27.8
Career development and advancement	20.5
Bias, discrimination, and harassment	17.0
Maternity or parental leave issues	14.8
Work-life balance issues	9.8
Perceived characteristics of women	5.5
Societal issues	3.0

Table 2 outlines the policy recommendations suggested most frequently by consultation participants. Almost two and half per cent of respondents felt no policies could address these issues in engineering and geoscience workplaces. An additional 7.3 per cent of comments were not relevant to the categories or did not address a specific policy recommendation, and thus were omitted.

Table 2. Most mentioned policy recommendations by consultation participants

Policy Recommendation	Mentions (%)
Family leave changes	25.3
Human resources recommendations	24.1
Education and awareness campaigns	16.8
Mentoring and champion supports	13.2
Executive buy-in	7.0
Clear whistleblower policies	3.9
No policies will help	2.4

Within these broad categories of policy recommendations, 23.6 per cent of the comments mentioned policies supporting family leave, encouraging men to take family leaves, and providing greater support for those returning from leave.

Of the comments related to work-life balance, 22.1 per cent expressed a desire for more flexible policies allowing part-time work and work-from-home options. Of the comments related to career and advancement, 19.3 per cent mentioned clarity and transparency around pay and salary would be beneficial to women and 9.1 per cent mentioned more formal mentor and champion support in the workplace would increase clarity around career advancement.

Finally, 8.5 per cent of the comments related to bias, discrimination, and harassment suggested a policy recommendation that would create an effective reporting structure for whistleblowers to report wrongdoing without fear of reprisal.

We hired Mercer, an external consulting firm, to analyze historical pay equity using APEGA *Salary Survey* data from 2014–2018, focusing particularly on potential gender-based differences in pay and benefits. The firm conducted a year-over-year analysis of five years' data to investigate trends that may emerge over several years—an approach considered more reliable than compiling aggregate, single-year data. The five-year analysis showed entry-level pay is not significantly differentiated by gender, but there is a statistically significant difference between male and female pay at the qualified and senior levels. In 2018, for example, the average senior female base salary was 88.4 per cent of the male base salary.

Additionally, Mercer conducted an internal-labour-market analysis survey in 2019 to give us a better picture of opportunities for women in the industry. Mercer surveyed 42 APEGA permit-holding companies about hiring, promotion, and retention processes in their organizations. Quantifying these industry trends is an invaluable first step towards reducing the barriers women face in engineering and geoscience careers in Alberta.

Table 3. Hiring, promotion, and retention trends

Rates	Women (%)	Men (%)
Hiring (Earliest career levels)	15	16
Promotion (Level A- to levels A, B, and C)	3	6
Exit (Early professional levels)	12	10
Exit (Executive level)	14	4

Through this project, APEGA has identified and quantified the barriers women have faced—and continue to face—in the engineering and geoscience professions. This report examines the identified barriers and provides data-backed recommendations of actions that can be taken by individuals, leaders, and organizations to better support women in the workplace and ultimately encourage a business culture of belonging, inclusion, and diversity that will create equity within the professions.

5. Overview

In March 2018, APEGA initiated a three-year project to examine the barriers women face in Alberta engineering and geoscience workplaces. The project was partially funded through a grant from Status of Women Canada, which is now called the Department for Women and Gender Equality. In May 2018, women comprised only 13.2 per cent of professional engineers and 19.3 per cent of professional geoscientists licensed with APEGA. As of August 2021, women are still greatly underrepresented in APEGA’s membership, accounting for only 14.2 per cent of professional engineers and 21.2 per cent of professional geoscientists in Alberta.

For decades, anecdotal evidence of gender discrimination in the workplace—particularly in science, technology, engineering, and math fields—has been reported and discussed extensively. Much of the academic and quantifiable data on workplace barriers for women has emerged from studies on the American workplace, which, although similar to the Canadian workplace in many ways, does not necessarily reflect a Canadian context.

Data collection and validation for this project involved five key stages (Figure 1):

1. online survey of individuals
2. group and individual consultations
3. statistical analysis of historical gender-based pay equity
4. collaborations with employer partners to test policy suggestions compiled through the survey and consultation phases
5. generation of a labour-market map for participating engineering and geoscience companies throughout Alberta



Figure 1. Project timeline, 2018–2021

During the data-gathering phases of the project, members shared incredibly emotional accounts of their own experiences, those shared with them by others, and those they witnessed. We were greatly moved by the openness and trust shown to us, the APEGA project team, and we extend our deepest thanks to these participants. We hope the resulting report does justice to their stories, identifying and addressing the challenges these women experienced. Please be aware the information in this document can elicit a strong emotional response.

APEGA recognizes there are important differences between sex and gender. Due to respondents using both terms interchangeably, for the purposes of the project and this report, we will combine the terminology for sex (male and female) and gender (man and woman) to describe gender-based responses and actions. Responses from project participants who are transgender were included in the dataset based on the respondent’s self-identified gender. There was a small number of project participants who identified as non-binary. While their responses, experiences, and recommendations were closely reviewed (and generally mirror the aggregate themes), the number of responses was not statistically significant and the small sample size made it challenging to maintain anonymity, so the responses were not included in the results.

Finally, it is important to note the information and experiences described below were gathered before the COVID-19 pandemic and thus reflect pre-pandemic workplace contexts. The online survey was conducted from January 2019 to March 2019, and the consultations were conducted from January 2019 to June 2019.



Figure 2. Compiling the report

6. Member Survey and Consultations

APEGA collected information directly from our members to investigate whether gender-based discrimination exists in Alberta engineering and geoscience workplaces and, if so, to identify the specific barriers that need to be addressed. We gathered information by surveying and consulting APEGA members, including current, future (university students), and past (retired, changed profession) members.

The online survey received 2,765 responses. Of the survey respondents, 90 per cent were current APEGA members, our target audience for this project, and six per cent were not—they may have been individuals not yet licensed or those who have left the professions. Two respondents who did not appear to have any relationship to the engineering or geoscience professions were omitted from the analysis.

Of the 2,673 respondents associated with the professions, 55 per cent were male, 44 per cent were female, and one per cent identified as non-binary or chose to self-describe (Figure 3).

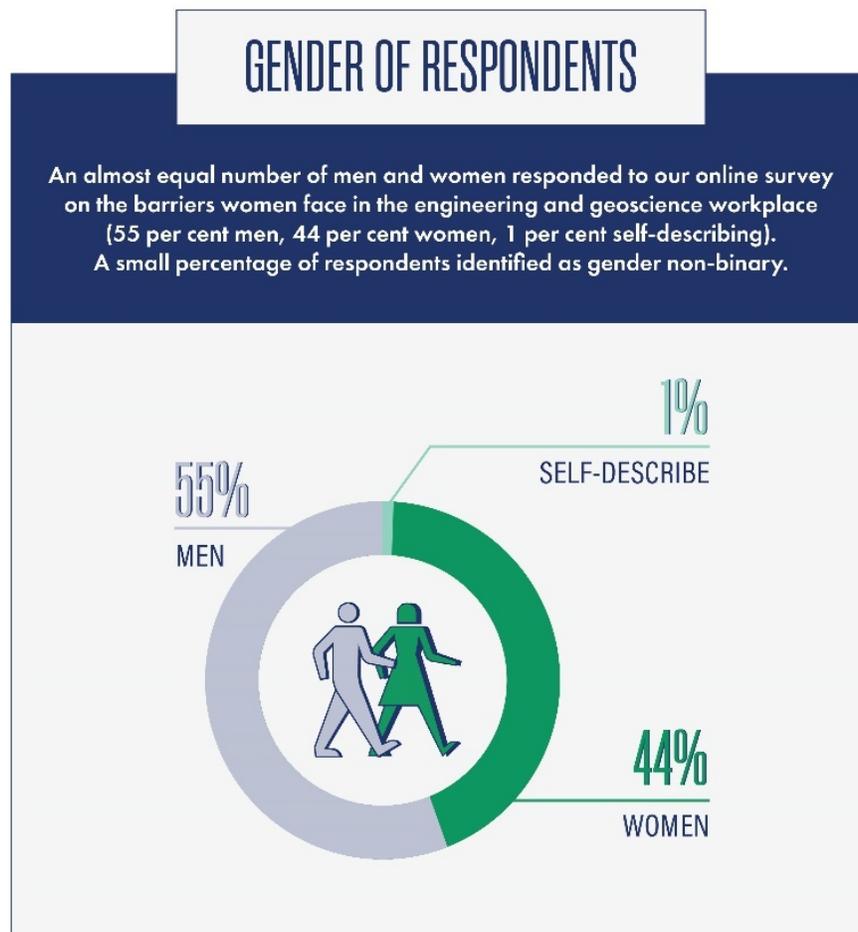


Figure 3. Gender of survey respondents

Millennials and generation Z had the greatest female participation in the survey, and gender representation was pretty even for generation X. Earlier generations were less engaged, likely because there are very few female engineers and geoscientists in those generations (Figures 4 and 5).

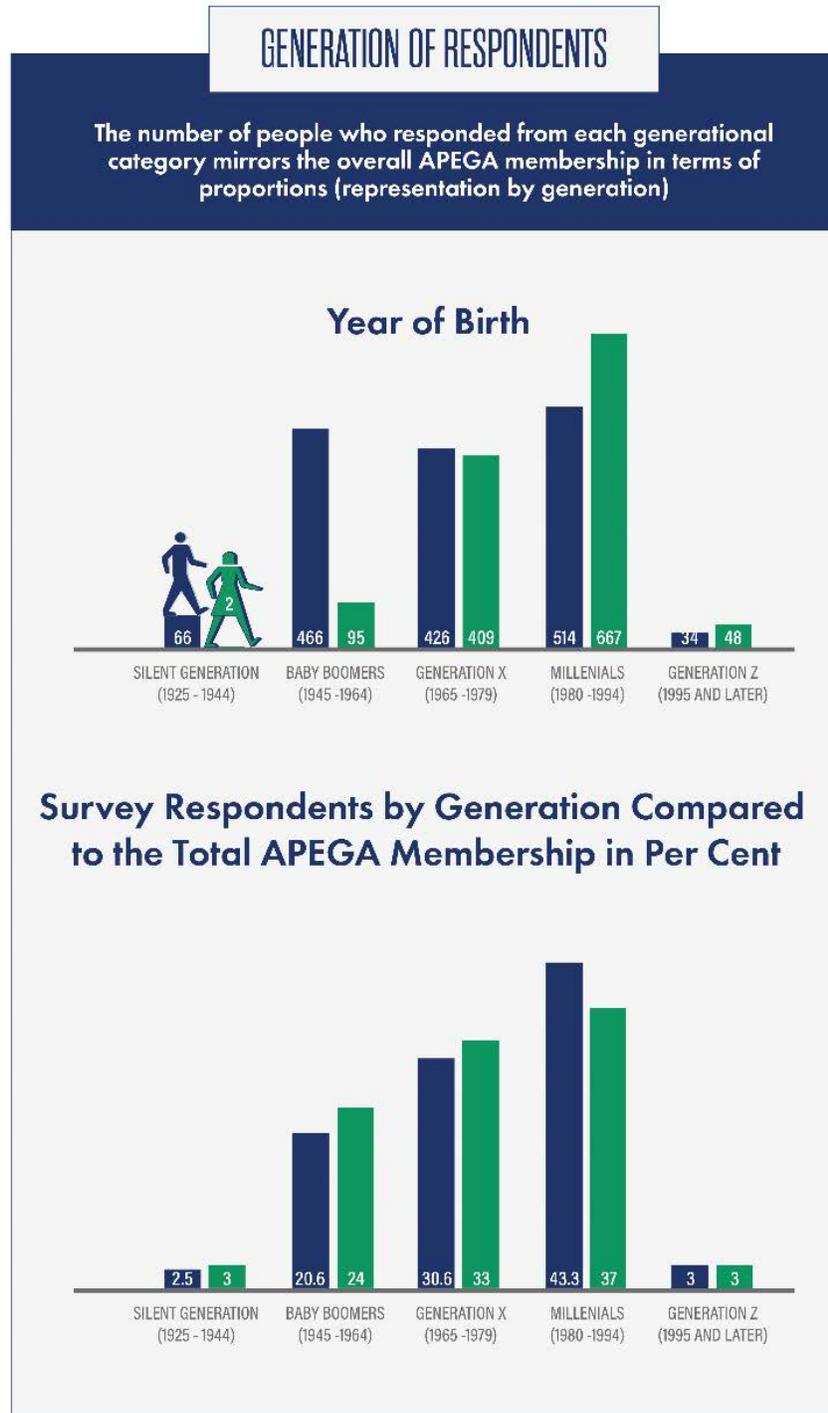


Figure 4. Generation of survey respondents

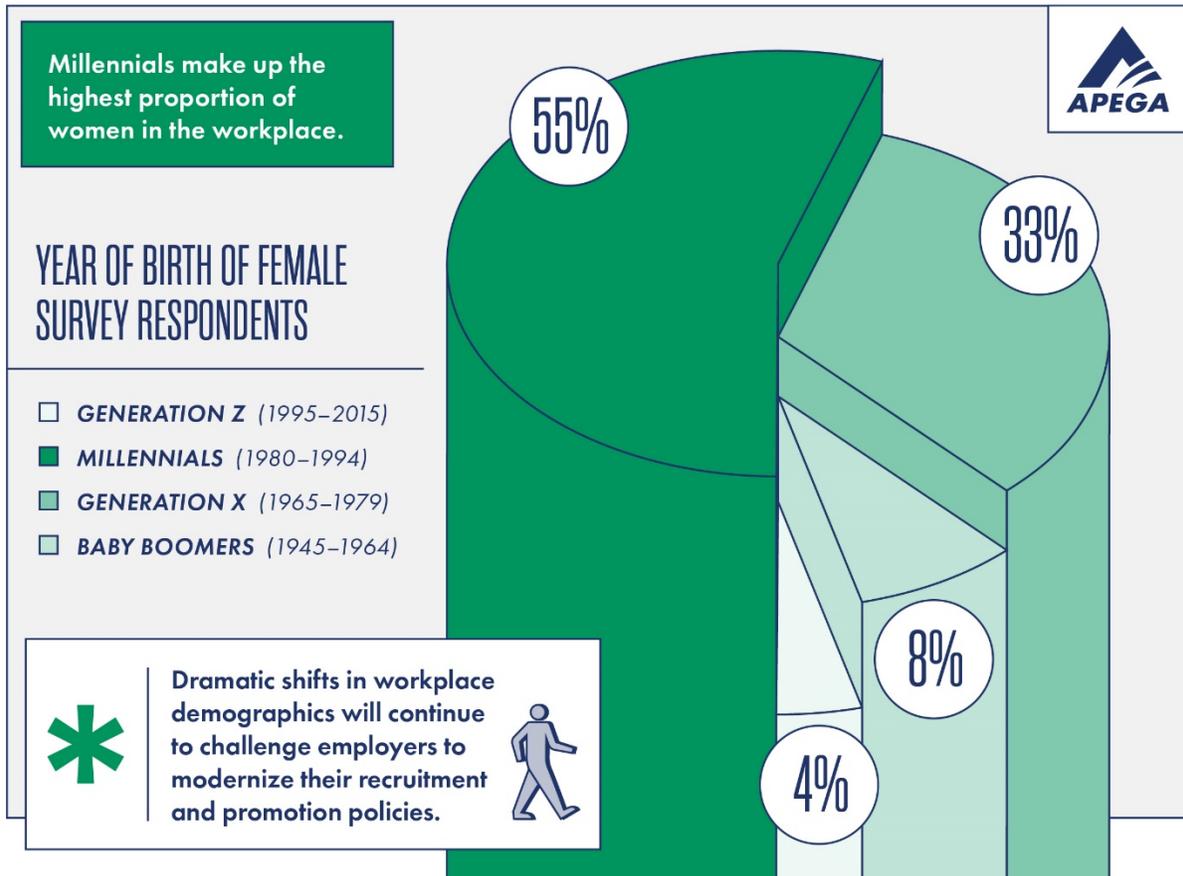


Figure 5. Year of birth of female survey respondents

The largest proportion of respondents stated they work in large organizations (46 per cent), followed by medium (22 per cent) and small (21 per cent).

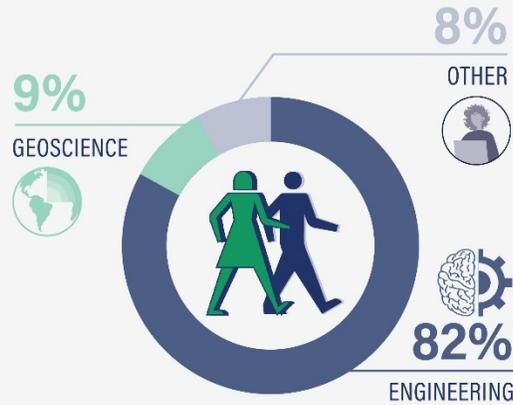
Medium-sized organizations had equal gender representation in female and male survey respondents (22 per cent and 21 per cent, respectively). Female and male respondents mostly worked in large organizations (52 per cent and 41 per cent, respectively) versus small (16 per cent and 24 per cent, respectively). This is shown in Figure 6. Figures 7, 8, and 9 show the distribution of participants by field of work and discipline.



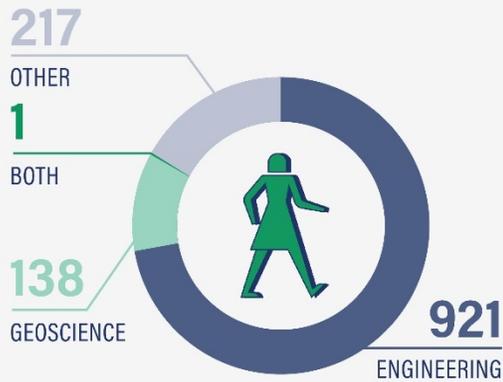
Figure 6. Size of most current workplace

CURRENT FIELD OF WORK

The majority of respondents work in engineering fields.



Field of Work Women



Field of Work Men

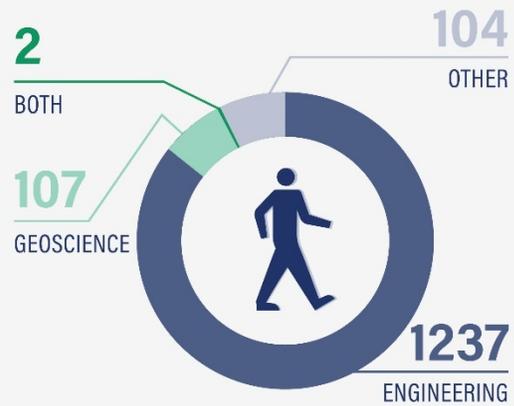


Figure 7. Survey respondent field of work

Women are noticeably under-represented in mechanical and electrical engineering.

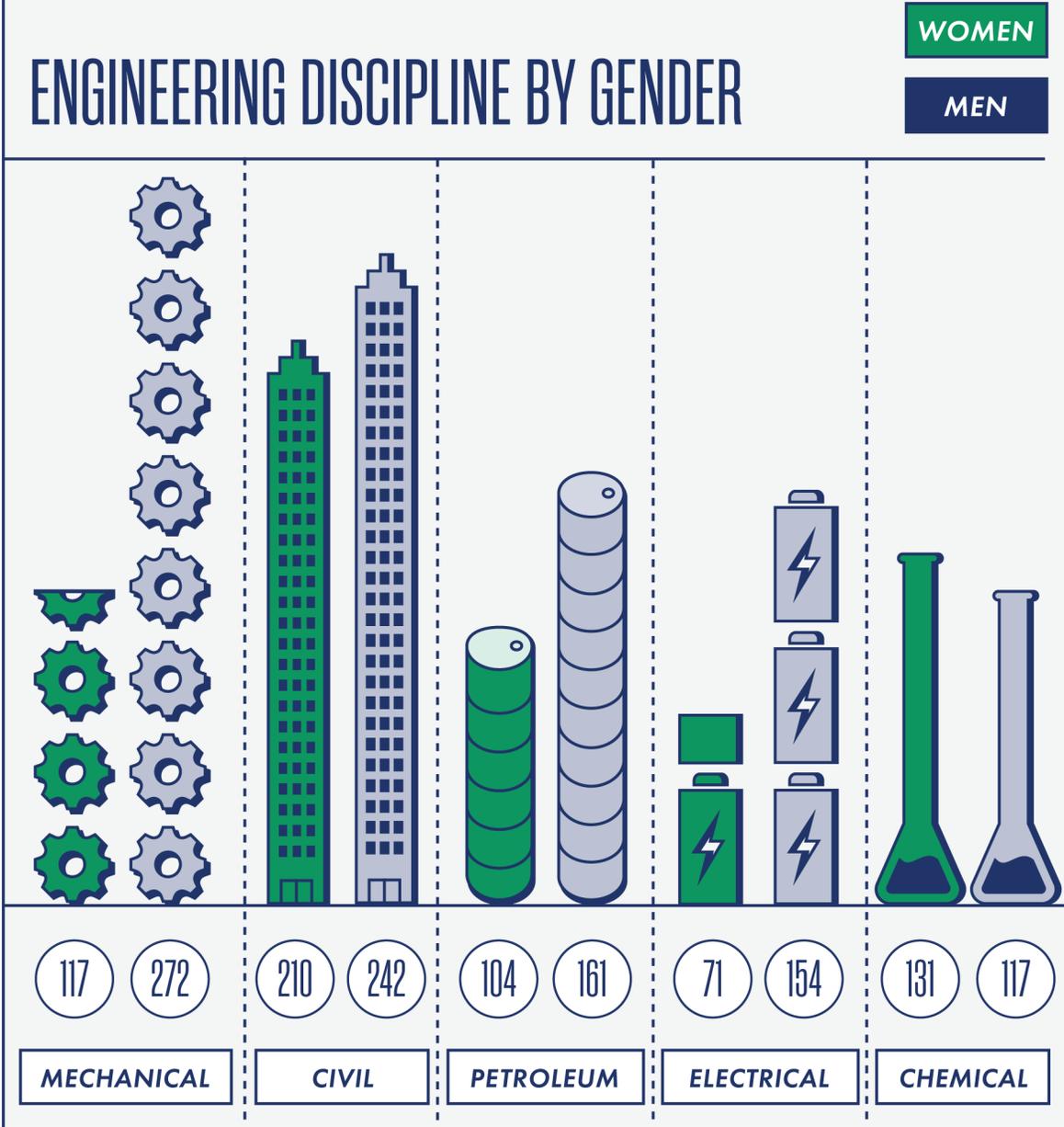


Figure 8. Engineering discipline by gender

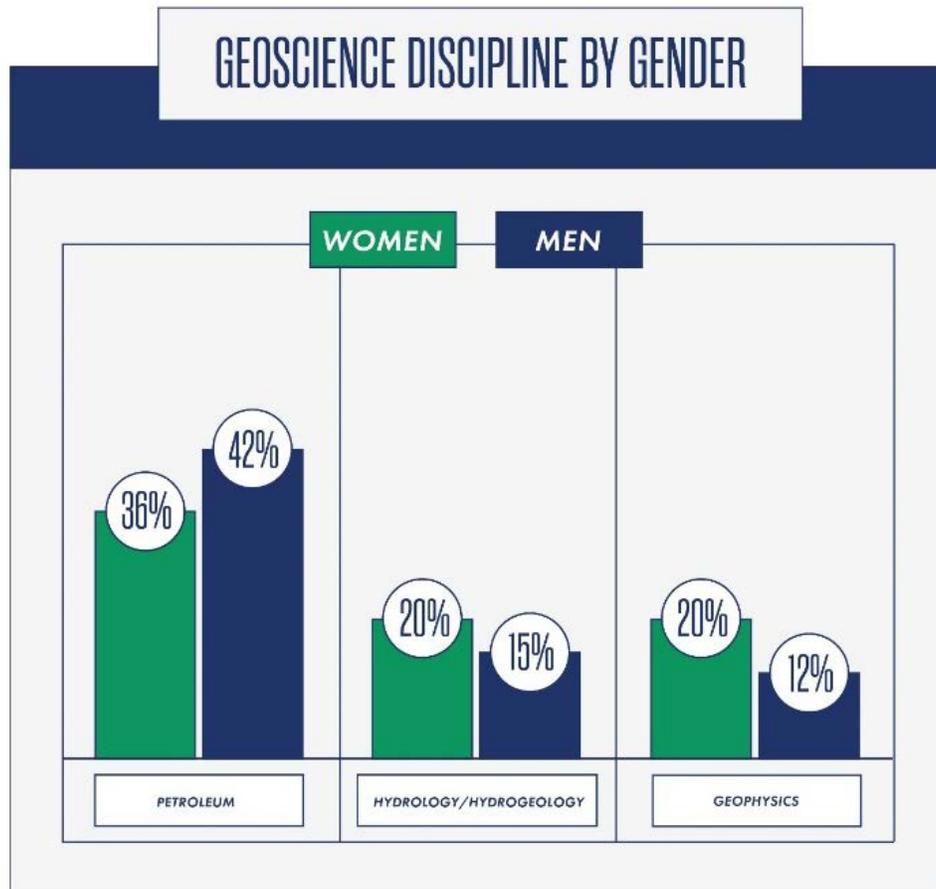


Figure 9. Geoscience discipline by gender

After the survey period closed and we identified preliminary trends, APEGA invited members to attend consultations to elaborate on their experiences and provide qualitative data to shape our understanding of current workplace-culture dynamics. APEGA staff directly engaged with 329 members through 65 one-on-one phone consultations, nine in-person group consultations across the province, seven webinars, and an in-person one-on-one interview.

We purposefully did not track demographic or professional status information of individual participants because they participated as members of the engineering and geoscience community, not as representatives of their workplaces. Participants represented diversity in:

- gender identity
- age
- career stage (student, member-in-training, professional member, life member, retired member)
- country of education
- former country of residence
- industry (engineering, geoscience, private and public sector, consulting, academia, and research)
- employment and leave status

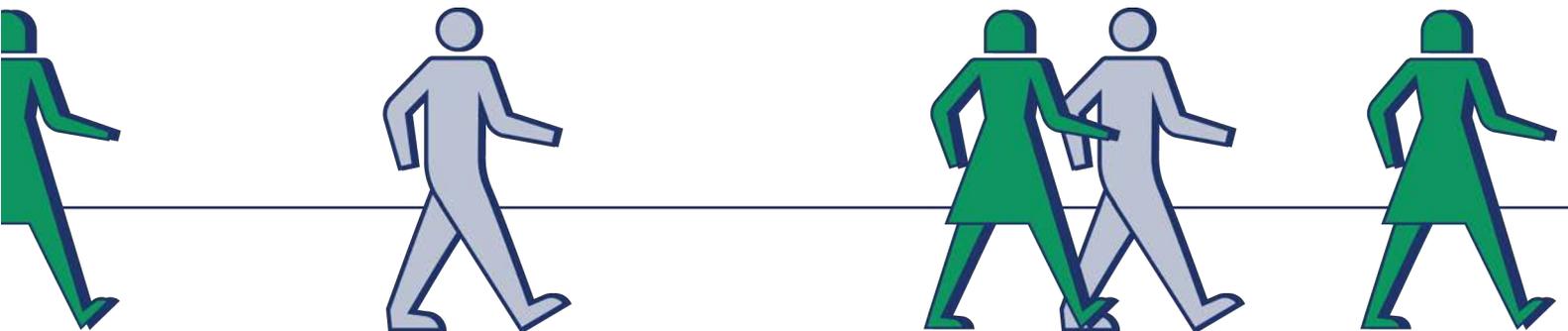
This diversity provided APEGA with a broad perspective on the barriers women face in engineering and geoscience workplaces.

We used an interview-style format for the consultations, with the interviewees providing responses verbally and in writing. We tallied the frequency with which a topic was raised, then grouped the topics into themes identified by project participants.

When asked about the biggest barriers women face in engineering and geoscience workplaces, consultation attendees most frequently mentioned the traditionally male work environment, followed by career development and advancement. Responses to the online survey closely mirrored the barriers shown in Table 4.

Table 4. Biggest barriers women face in engineering and geoscience workplaces

Barriers	Mentions (%)
Traditionally male work environment	27.8
Career development and advancement	20.5
Bias, discrimination, and harassment	17.0
Maternity or parental leave issues	14.8
Work-life balance issues	9.8
Perceived characteristics of women	5.5
Societal issues	3.0
Other barriers	1.6



7. Barriers

7.1. Workplace Environment

In this category, consultation participants most frequently mentioned the workplace is an “old boys’ club” characterized by “toxic bro culture,” leading to a very narrow and restrictive view harmful to men and women.

The next most frequently mentioned was that misogynistic and sexist attitudes are common, and there is a high degree of unconscious bias and microaggression towards women in the workplace.

Individuals with commitments outside of their job (e.g., children, elder care, volunteering, sports) indicated the general industry expectation that professionals be continuously on call and willing to work evenings and weekends made it very difficult to maintain a work-life balance.

TALK AT WORK

Pay attention to the jokes and language used and speak up if something is misogynistic or derogatory.

Practice microaffirmations to combat microaggressions.

These demands are thought to apply to men and women equally, but many participants felt the long hours were more detrimental to women who “carried the emotional workload” of family life.

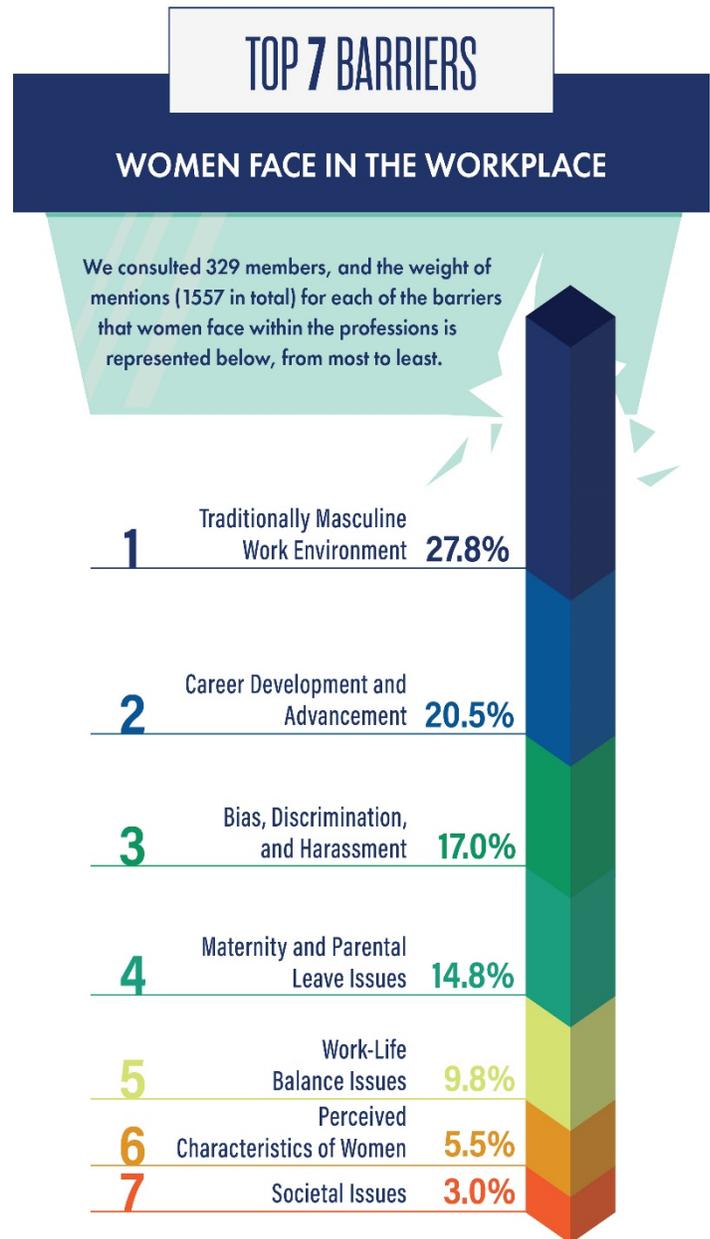


Figure 10. Top seven barriers identified by project participants

The following direct quotations demonstrate how barriers in the workplace environment involve social, psychological, and physical infrastructure factors:

“I have been excluded from client meetings because they were held at strip clubs. I have been told that a company does not send women to the field because the company couldn’t figure out how to protect them from the advances of men. One company would give all the female staff roses for Valentine’s and expect the recipient to hug the Regional Manager who was giving the rose. None of the male engineers received a rose, making it clear that the men and women engineers were different.”

– Female survey participant, senior engineer

“The building I work in now only has a men’s bathroom. If I want to go to the bathroom, I have to put on my parka and my ice cleats, and I have to walk to the next building over. It doesn’t make me feel included in my workplace.”

– Female consultation participant

INCLUSIVE SOCIAL EVENTS

Evaluate whether your company’s social events are truly social—keep work talk at the office or worksite.

Challenge participation assumptions and practice conscious inclusion. If someone says no once or twice, it does not mean they will never want to be included.

Try to host company events during core business hours.

The survey data also showed men and women experience their workplace environments differently. More than half (52 per cent) of all male survey respondents rated their workplace comfort level as Extremely Comfortable, compared to only 37 per cent of female respondents. Furthermore, even though only three per cent of female respondents rated themselves as Extremely Uncomfortable, this is three times more than the male respondents (one per cent).

Of the female respondents who indicated their workplace culture is not inclusive, 19 per cent acknowledged they experience inclusion within the team they work with daily, which is how they are able to tolerate and navigate complex workplace dynamics.

Male survey respondents who had high degrees of comfort (Extremely Comfortable or Somewhat Comfortable) described their organization as results-oriented or performance-focused (10 per cent) and said they are blind to differences based on gender or race (nine per cent). They were also more likely to say they feel safe, have no issues, or consider gender equity a “non-issue” (11 per cent).

When asked how much gender affects a person’s treatment in the workplace, 58 per cent of all respondents selected Very Much or Some. When those responses are separated by gender, 83 per cent of women selected Very Much or Some, compared to only 38 per cent of men. Conversely, 52 per cent of male respondents said gender matters Very Little or Not at All in the workplace, whereas only 11 per cent of female respondents said the same. Male and female respondents who selected Very Much generally agreed the top reason for gender-based discrimination was bias against women (Figure 11).

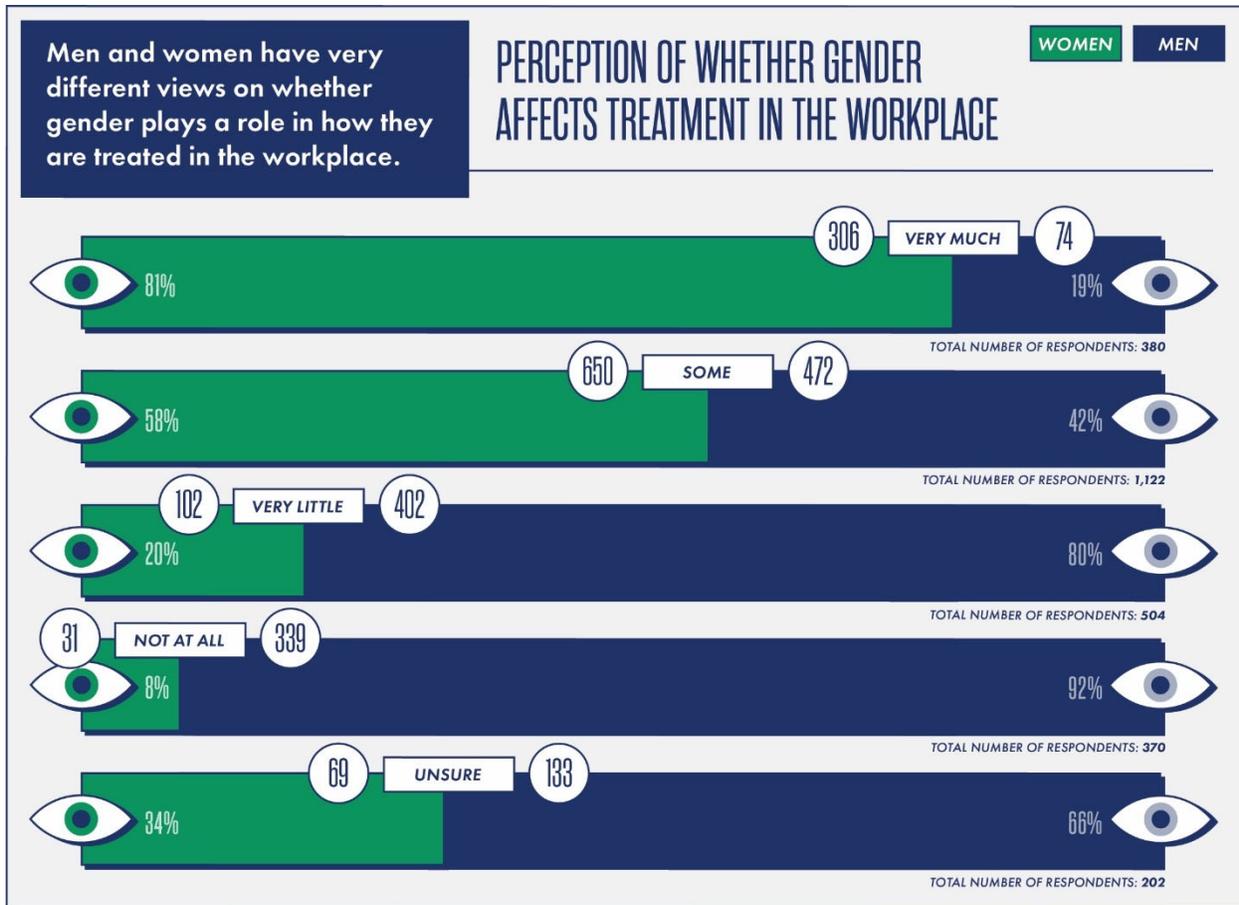


Figure 11. Perception of whether gender affects treatment in the workplace

It is important to note there was a small group of men (six per cent of total male survey respondents) who were very aware of the barriers women face in industry and chose to participate in the survey to elevate others’ voices and acknowledge the work needed to create an inclusive workplace culture for all.

7.2. Career Development and Advancement

Both men and women identified career development and advancement as a top contributing factor to women leaving the professions (11 per cent of males, 13 per cent of females). Of these responses, 31 per cent indicated a belief that women are hired and promoted at lower rates than their male counterparts.

Career Progression

APEGA contracted external consulting firm Mercer to analyze hiring, promotion, and retention rates of engineering and geoscience employers. Using the same survey questions and analyses as it does for its global *When Women Thrive* publications, Mercer created a labour-market map with data provided by 42 of APEGA’s permit-holding companies (Mercer 2019; see Figure 12).

LISTEN TO LEARN

Remember that your experiences and perspectives are your own, and others in the workplace may have very different experiences and perspectives. You do not need to accept them as your own, but you must respect them.

Be open to new perspectives and listen to understand, not just to respond.

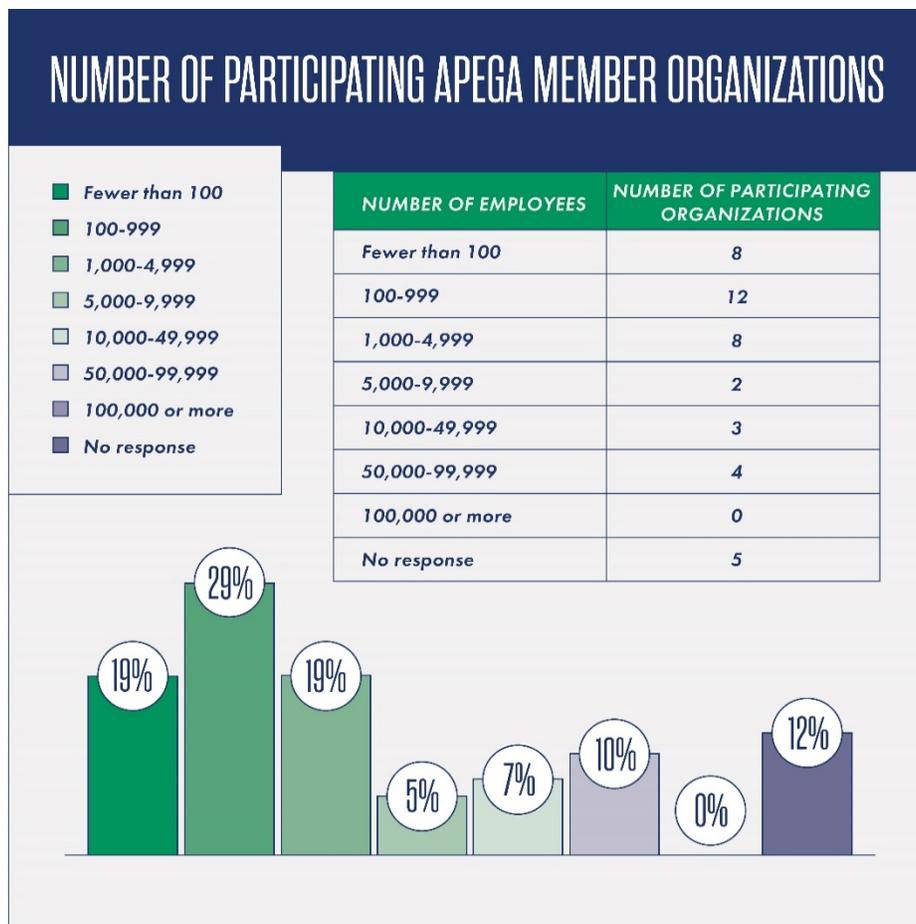


Figure 12. Size of organizations that participated in the *When Women Thrive* survey

This analysis identified slightly lower hiring rates for women at entry-level career stages. Women in early career stages (spanning from recent graduates to engineers or geoscientists specialized in complex applications such as research, design, or sales) had lower promotion rates (three per cent, compared to six per cent for males) and higher exit rates (12 per cent, compared to 10 per cent for males) than men.

The most drastic discrepancy in the labour-market map is in the exit rate for executive-level individuals: female executives are more than three times as likely as men to exit the engineering and geoscience labour market (14 per cent, compared to four per cent for males). Quantifying these trends for our industries is an invaluable first step towards removing the barriers women face when pursuing engineering and geoscience careers in Alberta (Figure 13).

THE OPPORTUNITY IS NEVER QUITE EQUAL

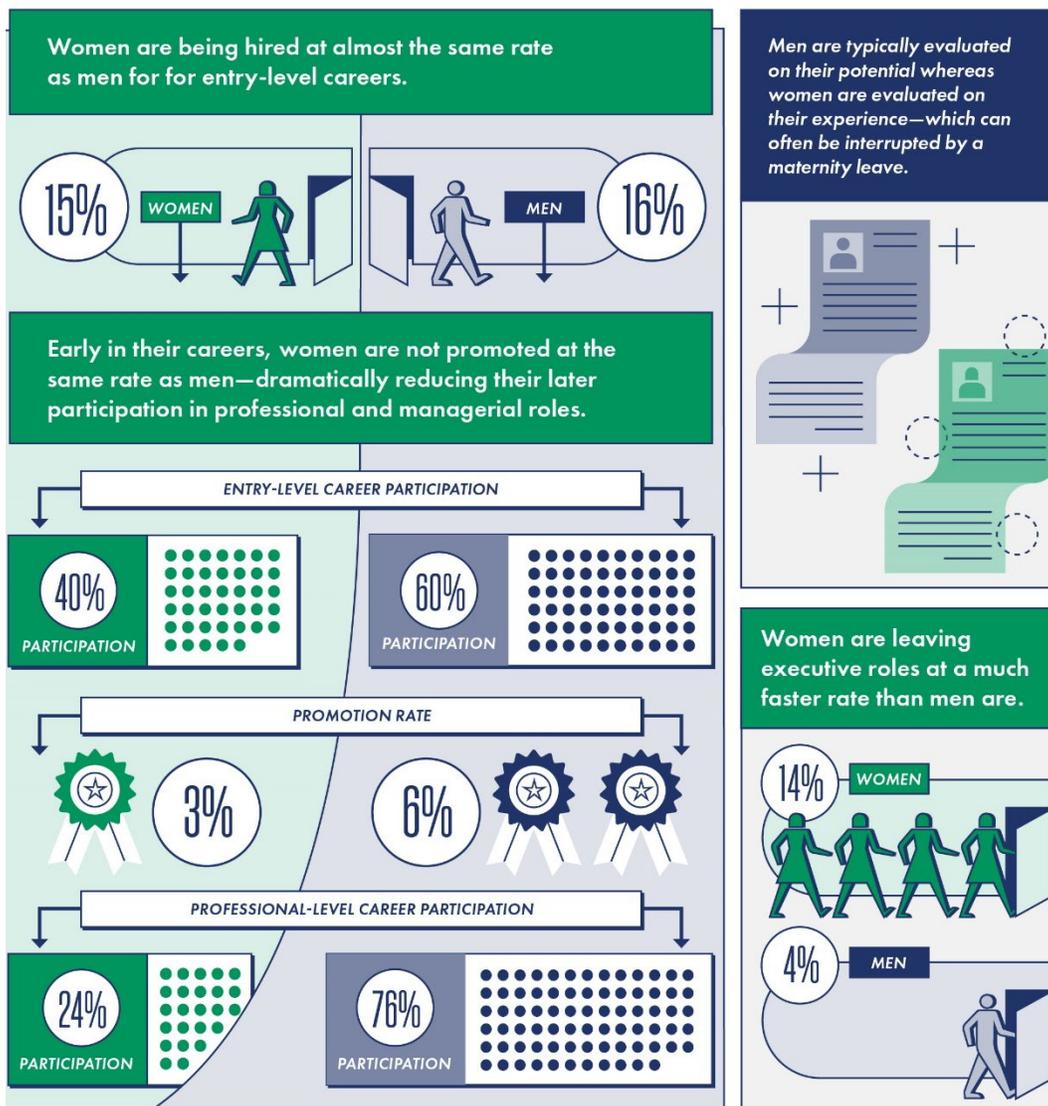


Figure 13. Labour-market trends of 2018 employer participant data

For all professional levels at or above member-in-training, the percentage of women in the professions is projected to rise to 26 per cent in five years and 28 per cent in 10 years if no actions are taken. If employers adjust hiring, promotion, and retention practices, the percentage of women is predicted to reach 30 per cent in five years and 35 per cent in 10 years. Furthermore, if employers focus on retaining women in executive positions, the prevalence of female executives is predicted to increase from 13 per cent to 37 per cent in five years and to 52 per cent in 10 years.

While these projections are promising, it should be noted the dataset is likely skewed because only 42 of APEGA's approximately 4,500 permit-holding companies participated in the optional survey, and it is likely those companies are already focusing on equity, diversity, and inclusion. Nevertheless, these trends and suggested areas of improvement provide a clear roadmap for employers who wish to support women in the engineering and geoscience professions.

Pay Equity

Pay differences due to gender have been observed across industries and throughout the world (Pelletier, Patterson, and Moyser 2019; UN Women 2016). These pay disparities are an indicator of women's economic inequality and indirectly measure employment equity and organizational inclusion. Accordingly, Mercer conducted an independent analysis (*Draft Report Gender Pay Analysis 2014-18*) of APEGA's *Salary Survey* data collected over a five-year period (2014–2018) to identify and quantify any longer-term, gender-based trends within the professions.

NOTES ON METHODOLOGY

- Base salary was the most consistent indicator for comparing gender-based pay.
 - 83 per cent of incumbents (33,054 records) in the survey database had gender and base salary recorded.
- Some submissions and data points were excluded to allow for the most robust, aggregate longitudinal analysis.
- To help eliminate noise from changing participation patterns and to better understand trends in the data, 30 organizations that consistently filled out the *Salary Survey* were selected as a sub-sample, called the year-over-year sample, which provided a more consistent and comparable dataset.
- The data does not track individual members.
 - We are therefore unable to compare whether women reach certain career milestones within the same time frame as men do.

Using this robust dataset, Mercer confirmed statistically significant differences in pay for men and women are found across industries, disciplines, and organization sizes. Entry-level pay is not significantly differentiated by gender, likely due to standardized rates for new graduates, but the pay gap widens significantly with experience.

Women's pay was found to be on par (100 per cent) with men's pay at the one- to five-year experience level. Women with five to 10 years of experience earned, on average, 95 per cent of

what men with the same years of experience earned. Women with 20 to 25 years of experience had a base salary that was, on average, 88 per cent of the base salary of men with the same number of years of experience.

In the most recent survey data used in this analysis (2018), the average base salary for women across all experience levels was 86.7 per cent of the base salary for men (Figure 14).

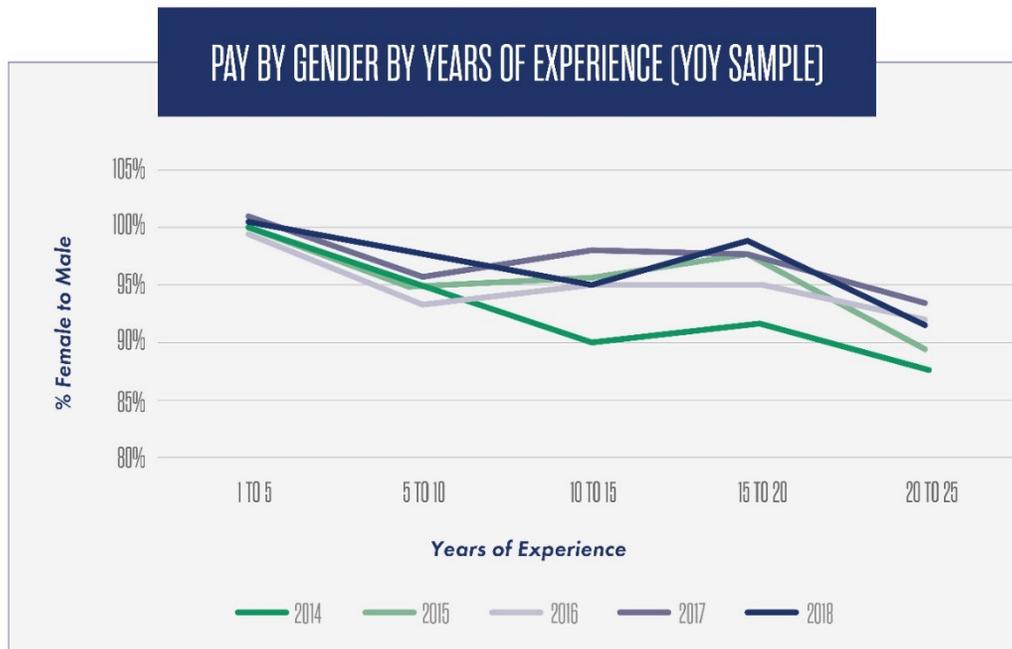


Figure 14. Pay by gender by years (Mercer 2020)

Analyses of pay equity and the labour market revealed the following ways employers could better support women in the professions.

- 1) Understand *where* and *why* women face constraints in their organization and develop a strategy to remedy them.
- 2) Engage leaders around the business imperative (why is inclusion critical for business?), their data, and the opportunity for action.
- 3) Understand the barriers to female advancement and retention in Level A and above, especially in critical roles (e.g., profit and loss roles).
- 4) Conduct pay-equity analyses using a robust, statistical approach and make adjustments regularly as needed. Be transparent: explicitly state pay-equity policies and publicly document a commitment to pay equity.

INCLUSION THROUGH LEADERSHIP

Ask your organization’s leaders what they are doing to hire, promote, and keep women in their workforce.

Implement competency-based pay. Evaluate pay and promotion structures based on years of service.

Build diverse teams and provide the women on your team with stretch assignments that aid in career progression.

- 5) Train managers to effectively support employees prior to, during, and after a leave.
- 6) Launch formal mentorship programs and high-potential acceleration programs.
- 7) Consider how to holistically support women’s careers, including their unique health and financial wellness needs.

7.3. Bias, Discrimination, and Harassment

When asked whether they have personally experienced gender-based discrimination, 59 per cent of female survey respondents said yes while only 12 per cent of male respondents did. Survey respondents across all genders most frequently cited supervisors, peers, and independent contractors or consultants as the initiators of discrimination.

Male respondents who said they have experienced considerable gender-based discrimination in their workplace referenced reverse discrimination (preferential hiring of women) 39 per cent of the time, and those who said they experienced moderate discrimination cited reverse discrimination 62 per cent of the time.

Female respondents who said they experienced considerable gender-based discrimination cited exclusion from things such as important roles, opportunities, and interesting projects 13 per cent of the time and bias against women 20 per cent of the time. Women who said they experienced moderate discrimination listed the top categories as bias (23 per cent), exclusion (21 per cent), microaggressions (13 per cent), and sexual harassment (10 per cent).



Figure 15. Survey respondents' reports of having faced gender-based discrimination

It is difficult to summarize the personal accounts of lived experiences shared for this project. There is a very real and urgent need for education around gender-based discrimination and harassment in professional engineering and geoscience workplaces. Comments such as “If you can’t handle engineering, then you don’t deserve to be there”—a direct quote from a male survey respondent and a sentiment shared by many project participants—communicate a belief that our professions are objective and merit-based. This belief contrasts with the heart-wrenching experiences shared by many female project participants, such as the three examples below, making it clear a gulf of experience and awareness exists in Alberta’s engineering and geoscience community.

ELIMINATE BIAS

Adopt and model a zero-tolerance policy for bias, discrimination, and harassment in your workplace interactions.

Participate in unconscious bias training and advocate for equity, diversity, and inclusion education in your organization.

“Multiple men would try and get into women’s hotel rooms. No one would ever say anything. Happened to multiple women and they would not speak about it.”

– Female consultation participant

“There was one company where co-op students were started as assistants on survey crews and the surveyors would have an annual competition to see who could have sex with their assistant first.”

– Female survey participant, senior engineer

“You tend to become objectified rather than seen as a member of the company. At events, it is like you ARE the entertainment for the evening.”

– Female consultation participant

Many consultation participants said mechanisms for reporting or confronting discrimination in the workplace are inadequate or lacking entirely (seven per cent of the comments related to bias, discrimination, and harassment). Without an appropriate structure, those who experience discrimination or harassment do not know how to report inappropriate behaviour. In some cases, even when there is a reporting structure, deep mistrust of the mechanism undermines its effectiveness.

SPEAK UP

If you see something, say something. Raise awareness by saying something to your leaders and human resources representatives.

Some respondents commented they could not report inappropriate conduct because their companies were too small, they feared reprisal or retaliation, or they believed nothing would be done (eight per cent of comments in the bias, discrimination, and harassment category compared to one per cent in the same category who stated there is an adequate reporting structure in place).

The *Engineering and Geoscience Professions Act* gives APEGA the authority to investigate complaints of inappropriate behaviour. However, these investigations are limited to people practising engineering or geoscience in Alberta and the process does not conceal the identity of the complainant. If the harassment or discrimination is at the hands of a co-worker who is not an APEGA member, APEGA does not have the authority to assign corrective action. An effective, external mechanism for reporting wrongdoing was identified as a way to better support those who are harassed or discriminated against in the workplace.

7.4. Maternity or Parental Leave

The most frequently voiced concern about maternity leave was that a hiatus from work of a year or more would limit a mother's career trajectory, compared to colleagues who did not have gaps in their work history. Respondents reported being asked directly and indirectly if they intended to have children and believed companies were not hiring women for fear they would go on maternity leave.

RESOURCE: MANAGING TRANSITIONS

Use the [Managing Transitions](#) document to guide employees through a leave and facilitate a smooth return.

Some women who went on maternity leave reported they were blamed for the resultant staffing and workload problems at their companies. Even after returning from maternity leave, women encountered situations in which assumptions were made about them simply because they were mothers (e.g., being unable to work in the field, travel nationally and internationally, or work evening hours for a complex project).

“When I announced I was pregnant, my boss proceeded to leave a magazine article on my desk that addressed why your boss hates your maternity leave.”
 – Female survey participant, senior engineer

Although both men and women are legally entitled to parental leave, men in five of our consultations reported being discouraged from taking leave and expressed the opinion that taking parental leave is “career suicide” for men.

Many consultation participants (11 per cent of the total comments related to maternity and parental leave) strongly believed the issues women face pertaining to leave (i.e., inability to return to the same role, losing project leadership opportunities prior to leave, not being granted interesting work and projects after a leave, career progression and performance management implications, and difficulty transitioning back to work) would be remedied if organizations encouraged all new parents to take parental leave. They stated once organizational culture accepts parental leave as a valuable experience—and acknowledges the skill development and personal growth that occur while one is on leave—the challenges currently faced by parents would significantly decrease.

“At a prior company, I took eight months paternity leave. This is rare for a man. Before paternity leave, I had eight employees, an office, assigned parking, and managed the company’s largest projects. When I returned, I had no employees, a cubicle, no parking, and low-visibility work.”

– Male survey participant, senior engineer

EQUAL-OPPORTUNITY LEAVE

Be accepting and encouraging of men taking parental leave. Normalizing male parental roles encourages equity for parents.

Ensure your organization’s maternity or parental leave policy equally extends benefits to those taking paternal leave.

Finally, consultation participants said flexible work arrangements, such as part-time work and work-from-home options, would greatly improve women’s chances of successfully returning to the engineering and geoscience workplace after taking a leave.

7.5. Work-Life Balance

Consultation participants frequently cited work-life balance issues as barriers to women’s participation and success in engineering and geoscience industries. These comments fall into two categories: those related to flexible work options and those related to care duties that disproportionately fall on women.

Participants frequently mentioned women are often expected to carry a greater proportion of the workload at home—caring for children and the elderly, and doing household tasks. There is also a perception that men have a female partner at home doing these tasks to support them, while women do not. Participants commented on the scarcity of affordable and flexible childcare options (especially for those working nighttime hours) and said travel can be difficult with young children at home. These expectations create a lot of stress and burnout for female engineers and geoscientists, which male professionals do not experience to the same degree.

Participants also said there is a lack of flexible work options available in engineering and geoscience, with workers often expected to work long hours in the office and be on call 24-7. Many people, male and female, expressed a desire for greater flexibility in the ways we work, including shifted hours, work-from-home and job-sharing options, part-time work, compressed work weeks, and performance-based rather than hours-based evaluation.

DISCUSS FLEXIBILITY

Engage your leaders in a conversation about how flexible work options could look at your organization.

7.6. Perceived Characteristics of Women and Societal Issues

The barriers mentioned in this category can be described as subjective perceptions and beliefs rather than objective, data-backed claims. The comments raised reflect commonly held beliefs and perceptions frequently encountered in our contemporary society. Our purpose in recording and reporting them here is not to validate the veracity of the claims, but rather to highlight that people believe these things and have reflected them in their survey responses. That these beliefs exist means they can influence people's decisions about the workplace. These perceptions are complex, and they are influenced by our upbringing, education, family of origin, ideological beliefs, and cultural affiliations.

The claims we heard most frequently about the characteristics of women included perceptions that “women lack confidence,” “women do not negotiate or advocate for themselves,” “they are overly emotional or sensitive,” “they are naturally more people-oriented than technical-minded,” “women are not mathematically or scientifically inclined the way men are,” and “women belong at home fulfilling domestic or care roles.” These generalizations are stereotypes and misconceptions that can be applied to all people, regardless of gender. Instead of being caused by gender, they are better attributed to differences in personality, culture, and upbringing, among other factors.

Nevertheless, the perception that women have inherent characteristics due to their gender identity is a barrier to women's participation in engineering and geoscience workplaces.

The societal issues described as barriers include a lack of understanding among the general public, parents, teachers, and guidance counsellors of what engineering and geoscience actually are and what people skills are necessary to succeed in those professions. We frequently heard high school girls are not encouraged to go into engineering or geoscience and are more often pointed towards more traditionally female-dominated careers.

An additional societal barrier is the perception that men are uncomfortable working with women and do not welcome women into male-dominated spaces and places.

EARLY DEVELOPMENT

Advocate for all early career professionals to take part in career development, leadership training, and programs on technical and soft skills.

Volunteer to share with K-12 students what the engineering and geoscience professions are and why they are great career choices for women and men.

8. Recommendations and Actions

When we asked consultation participants to identify policies and practices that would address the barriers women face throughout their engineering and geoscience careers, the most frequently mentioned recommendations pertained to pay and promotion. Many policy recommendations focused on procedures typically managed by human resources departments (25 per cent of the total comments on policy recommendations).

A common suggestion was to make sure each organization had a human resources department, either in-house or externally contracted. Consultation participants illuminated the challenge that many small companies do not have a human resources department and thus do not have professionals trained in legal responsibilities, hiring or management best practices, or formalizing grievance reporting and mediation. Similarly, participants suggested implementing policies around fair promotion and performance reviews and valuing technical and project management work in comparable or similar ways.

Many participants mentioned an interest in implementing policies that reduce bias in the hiring process, such as removing personally identifying information (including name, photo, and gender and sex demographics) from job applications in a method commonly referred to as a blind review. Another suggestion (47 per cent of all comments in the human resource recommendations category) was replacing standard resumes, which can unintentionally bias reviewers if there is a gap of employment, with competency-based assessments as an effective way to combat hiring biases.

In addition, participants identified mentorship and sponsorship programs as promising ways to support women (14 per cent of all policy-recommendation comments). Of the comments related to mentoring, 20 per cent were requests for a gender-balanced senior leadership team so high-powered men and women mentor junior employees.

One of the issues raised most frequently in this category (52 per cent of recommendations) was advancement opportunities are seen to be granted unfairly and with bias. People would like to know the pathway to career advancement, who will champion them in those important conversations, and how they can position themselves competitively for advancement opportunities. Some mentioned a desire for a formal mentorship program at work, while others preferred a more fluid, open model for finding mentors. Underlying all the suggestions in this area was a desire for transparency in promotion and career advancement.

8.1. Take Action

As an individual

- Pay attention to the jokes and language used, and speak up if something is misogynistic or derogatory.
- Practice microaffirmations to combat microaggressions.
- Challenge participation assumptions and practice conscious inclusion. If someone says no once or twice, it does not mean they will never want to be included.
- Remember that your experiences and perspectives are your own, and others in the workplace may have very different experiences and perspectives. You do not need to accept them as your own, but you must respect them.
- Be open to new perspectives and listen to understand, not just to respond.
- Ask your organization's leaders what they are doing to hire, promote, and retain women in their workforce.
- Volunteer to share with K-12 students what the engineering and geoscience professions are and why they are great career choices for women and men.

As a leader

- Build diverse teams and provide the women on your team with stretch assignments that aid in career progression.
- Participate in unconscious bias training and advocate for equity, diversity, and inclusion education in your organization.
- Accept and encourage men to take parental leave. Normalizing male parental roles encourages equity for parents.
- Advocate for all early career professionals to take part in career development, leadership training, and programs on technical and soft skills.
- Use the [Managing Transitions](#) document to guide employees through leave and facilitate a smooth return.
- Engage your leaders in a conversation about how flexible work options could look at your organization.
- Use human resources professionals, either in-house or external, to provide confidential reporting mechanisms for employees.

As an organization

- Evaluate whether your company’s social events are truly social—keep work talk at the office or worksite.
- Try to host company events during core business hours.
- Implement competency-based pay. Evaluate pay and promotion structures based on years of service.
- Adopt and model a zero-tolerance policy for bias, discrimination, and harassment in your workplace interactions.
- If you see something, say something. Raise awareness by saying something to your leaders and human resources representatives.
- Ensure your organization’s maternity or parental leave policy extends benefits to those taking leave.
- Include equity, diversity, and inclusion metrics as a formal part of organizational leaders’ PMP reviews.
- Formalize mentorship and sponsorship programs to encourage employee development and advancement.
- Evaluate recruitment mechanisms and interview processes to create a diverse candidate pool and hiring panel.
- Implement a structured performance management process (PMP) that explicitly outlines role expectations, objectively defines and measures technical and interpersonal job requirements, and follows a specific, annual timeline for all employees.



9. Future Work

We hope the robust data presented here serves as the foundation for or encourages continued work towards creating an inclusive workplace culture at Alberta engineering and geoscience companies. By forging this pathway towards inclusivity for women, we hope others who face the same barriers to full participation in our industries may also benefit and this work may serve as a template for a barrier-free future for all.

Having identified these systemic barriers facing women in the engineering and geoscience professions, they must now be addressed at the individual, leader, and organization levels. The findings detailed in this report provide direction for this future work.

One area of focus is recruitment to increase the representation of women in the professions. Examining current practices in the recruitment process and how implicit bias plays a role in hiring can be a starting point. The evaluation of the efficacy of structured interviews and competency-based assessments can add valuable input to this focus area.

Another area of focus is reviewing current leave practices and how an effective transitions program could retain talent and reduce exit and turnover rates. Supervisors and human resources departments can benefit from guidelines and practices that are easy to implement and point out what should be done before, during, and after a leave.

In addition, flexible work arrangements should be explored in future work and can help to increase retention. This may require a detailed investigation of the impact of COVID-19 on the retention of women in the workplace and what flexible work arrangements will look like in the next normal.

Finally, we would again like to express our gratitude to the Department of Women and Gender Equality for sponsoring this work. We are very excited to share the learnings with our members, our permit-holding companies, our project partners, our connections across the country who work in this space, and the public.



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