

# Diversity, Equity and Inclusion Policies in Canadian Small-to-Medium Sized Enterprises within Science, Tech, Engineering and Skilled Trades

## A Literature Scan Prepared for the In Good Company (IGC) Collaborative

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# Table of Contents

<b>Acknowledgements .....</b>	<b>5</b>
<b>Small-to-Medium Enterprises (SMEs) in Canada: An Introduction .....</b>	<b>6</b>
Introduction.....	6
The Canadian SME Landscape .....	6
SMEs in Canada .....	6
Women in SMEs .....	7
The Impact of COVID-19 on Canadian Women.....	7
Diversity, Equity, and Inclusion in SMEs in Canada.....	7
Human Resources in Canadian SMEs.....	7
Women in Leadership and Entrepreneurship in Canadian SMEs .....	10
Women in Leadership in SMEs .....	10
Women’s Entrepreneurship in SMEs .....	11
References .....	14
<b>Women in Skilled Trades.....</b>	<b>18</b>
Introduction.....	18
Women in Skilled Trades.....	18
Trends, Especially Given the Impact of COVID-19 .....	19
Construction .....	19
Aerospace, Rail, Ship and Other .....	20
Fabricated Metal Products and Machinery .....	20
Utilities .....	20
Women in Leadership and Entrepreneurship in Skilled Trades .....	21
Construction .....	21
Aerospace, Rail, Ship and Other Transportation.....	21
Fabricated Metal Products and Machinery .....	21
Utilities .....	22
Barriers to the Retention of Women in Skilled Trades .....	22
Recruitment Barriers.....	22
Cultural Barriers .....	22

Barriers to Advancement.....	23
Systems Barriers.....	23
Strategies for the Retention and Promotion of Women in Skilled Trades .....	23
Senior Leadership Buy-I.....	23
Strengthen Formal Rules.....	24
Utilize Workplace Training.....	24
Designate Standards of Excellence.....	24
Organizations Need to Prepare to Have Women in Skilled Trades.....	24
Pay Equity .....	24
Encourage Women to Start their own Businesses .....	25
Make a Business Case for Organizations to Hire Women.....	25
Collaborative Approaches for Attracting and Retaining Women in Skilled Trades .....	25
(a) Women.....	25
(b) Girls .....	27
References.....	29
Appendix: Women in Skilled Trades .....	32
<b>Women in Technology and Engineering.....</b>	<b>34</b>
Introduction.....	34
Women in Technology and Engineering .....	34
Trends, Especially Given the Impact of COVID-19 .....	35
Women in Leadership and Entrepreneurship in Canadian SMEs .....	36
Women in Leadership in Technology and Engineering.....	36
Women’s Entrepreneurship in Technology and Engineering .....	36
Retaining and Advancing Women in Technology and Engineering .....	37
Barriers to the Retention of Women in Technology and Engineering .....	37
Strategies for the Retention and Promotion of Women in Technology and Engineering.....	38
Collaborative Approaches for Attracting and Retaining Women in Technology and Engineering.....	40
References.....	41
Appendix: Women in Technology and Engineering.....	45

**Women in the Transportation Industry ..... 46**

- Introduction..... 46
- Women in Transport..... 46
- Trends, Especially Given the Impact of COVID-19 ..... 46
- Women in Leadership and Entrepreneurship in Canadian SMEs ..... 47
  - Women in Leadership in Transport.....47
  - Women’s Entrepreneurship in Transport.....47
- Retaining and Advancing Women in Transport..... 48
  - Barriers to the Retention of Women in Transport.....48
  - Strategies for the Retention and Promotion of Women in Transport .....48
  - Collaborative Approaches for Attracting and Retaining Women in Transport .....49
- References ..... 50
- Appendix: Women in the Transportation Industry..... 53

**Literature Scan Recommendations ..... 54**

- Suggestions from the Research..... 54
  1. Work to Increase the Representation of Women Leaders and Mentors..... 54
  2. Help Improve the Culture of Existing Organizations .....54
  3. Support Consulting Services for SMEs .....54
- Broad Strokes Suggestions..... 54
  1. Partner with Existing Networks/Organizations in the Technology, Engineering, Transport, and Skilled Trades Space .....54
  2. Investigate Entrepreneurship in Skilled Trades .....55
  3. Create Standards of Excellence or Designations for Organizations.....55
  4. Do Not Underestimate the Future of Trucking.....55
  5. Consider the Context .....55

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# Small-to-Medium Enterprises (SMEs) in Canada: An Introduction

## Introduction

In Canada, businesses are defined based on their number of employees, whereby small-to-medium enterprises (SMEs) are business establishments with anywhere from 1 to 499 paid employees. Specifically, a small business has anywhere from 1 to 99 employees while a medium-sized business has anywhere from 100 through to 499 employees (Innovation, Science and Economic Development Canada, 2020a).

This scan functions to, first, describe the landscape of Canadian SMEs. Within that, issues of diversity, equity, and inclusion (DEI) are discussed, including both barriers to the implementation of DEI policies as well as promising initiatives and policies. Finally, this scan offers a contextualization of women in SMEs with respect to hiring, promotion, and entrepreneurship more generally.

This introduction sets the scene for the three more specific scans on women in SMEs [in the skilled trades, technology/engineering](#), and [transportation](#) that follow. Following the scan, we offer [recommendations](#) for the future of the IGC partnership.

## The Canadian SME Landscape

### SMEs in Canada

SMEs are integral to the Canadian economy. In fact, Euler Hermes, the world's largest trade credit insurance company assessed Canada as the best country for SMEs to operate in via their 2019 SME Business Climate Index (Newswire, 2019). In 2017, over 99% of private Canadian businesses were SMEs (Ravanera & Kaplan, 2019) and in 2019, 89% of employed individuals in the private sector worked for SMEs (Innovation, Science and Economic Development Canada, 2020a). While over half of Canada's small businesses are concentrated in Ontario and Quebec, as of 2019, small businesses employed 8.4 million individuals across Canada (i.e., 69% of the total private labour force; Innovation, Science and Economic Development Canada, 2020a). SMEs contribute greatly to Canada's net employment growth through the increase of jobs (i.e., 36% by small businesses and 25% by medium-sized businesses from 2014-2019) and gross domestic product (i.e., 51% in the goods-producing sector and 56% in the services-producing sector from 2012-2016; Innovation, Science and Economic Development Canada, 2020a).

There are other benefits to working in an SME. MaRS (2018) reported that individuals working for small businesses were less likely to report being subjected to bias on the basis of one or more aspects of their identity as opposed to those working in medium-sized or larger organizations. Despite the proficiency of SMEs in Canada, recent assessments have concluded there is room for improvement in the digital space. Few SMEs have taken the digital turn, with Bédard-Maltais (2021) estimating that only one in five Canadian businesses had achieved a high level of digital maturity. Increased digitalization of the global economy provides SMEs with

opportunities for internationalization and scaling, which is especially important in today's economy (Stallkamp & Schotter, 2019).

## **Women in SMEs**

Unfortunately, few SMEs in Canada are majority-owned by women. As of 2017, only about 16% of all SMEs in Canada were majority-owned by women (Ravanera & Kaplan 2019). Most (93%) of the majority women-owned SMEs and businesses are found in urban as opposed to rural areas and are in either Quebec or British Columbia (Women Entrepreneurship Knowledge Hub, 2020b). While there is an increasing proportion of businesses that are growing more than 10% over a three-year period, women's businesses are consistently less likely to be classified as high-growth (i.e., >20% as compared to the expected ~30% growth of non-woman-owned businesses over three years; Women Entrepreneurship Knowledge Hub, 2020b). While 13.5% to 16% of Canadian SMEs are owned by women, only 7.5% of them export their products or services (Decarie, 2018). Although not all SMEs are export-oriented, this is concerning given that the interest in exporting their business across Canada only exists for about 8% of women-owned businesses as opposed to over 11% of SMEs as a whole. However, Riding et al. (2018) found that across all sector categories, majority women-owned businesses were as likely as majority men-owned businesses to introduce organizational innovations, conceptualized as new methods in business practices, the workplace organization, and/or external relations (e.g., new technology). When discussing women in SMEs, it is important to highlight the high levels of physical and emotional violence against women in social and workplace settings, something that continues to be an issue in SMEs and other organizational contexts (e.g., Catalyst, 2020a).

## **The Impact of COVID-19 on Canadian Women**

The emergence of the COVID-19 pandemic in early 2020 had devastating impacts on the Canadian economy overall, and SMEs were no exception. By the end of January of 2021, Canada's economy had 858,000 fewer jobs than it did before the pandemic. Although the pandemic sweepingly affected Canadians, certain demographics were hit the hardest: mothers, visible minorities, young people, and new immigrants (Wheatley, 2021). Indeed, the economic burden of the pandemic has weighed heaviest on women, with more women reporting being laid off (11%) or losing work hours and/or pay (14%) as compared to men (6% and 12%, respectively; Pollara, 2020). Further, one-third of working Canadian women have considered quitting their jobs to take care of home responsibilities (e.g., children) during the pandemic. More recently, women in dual-income households have been more likely to suffer job loss as a result of the COVID-19 pandemic and have been less likely to recover them in early stimulus and re-hiring initiatives (Ryerson's Diversity Institute, 2020a).

## **Diversity, Equity, and Inclusion in SMEs in Canada**

### **Human Resources in Canadian SMEs**

Having a human resource department in any business is beneficial. For instance, Rothenburger (2020) found that, on average, 69% of employees are more likely to stay with a company for three years if they experienced great onboarding via human resources. In addition, organizations that have a structured onboarding process experience 50% percent greater productivity from new hires. Effective human resource management increases the likelihood of a company recruiting and retaining real assets that can push the company ahead and become even more vital during times of crisis (e.g., the COVID-19 pandemic; Ross, 2020). A lack of

human resource management practices continues to be a significant obstacle for small employers, specifically in rural areas of Canada as well as Northern Ontario (e.g., 90% of rural and Northern SMEs did not have dedicated on-site human resource support; Welsh, 2012). Not having a human resource role in an SME could result in bad hires, a toxic workplace culture, and/or high employee turnover (Rothenburger, 2020). It may also lead to issues with implementing and maintaining diversity, equity, and inclusion (DEI) policies in the workplace.

### **Barriers to Implementing DEI Policies**

Despite DEI emerging as an important consideration for businesses across Canada, many businesses still fall short in implementing robust DEI policies. For instance, many small business owners do not realize that they are not diverse, like in their hiring practices (e.g., not hiring diverse employees) or in choosing suppliers or other business partners (e.g., gravitating toward those who are 'like' them). This can occur because business owners do not realize they are vulnerable to unconscious biases that influence the way they see the world and result in them being drawn to others who are like them, thus reinforcing the status quo (e.g., Meyer, 2020).

There has been much dedication in both academic and non-academic outlets to exploring the barriers to DEI implementation. Ravanera and Kaplan (2019) identified the main barriers for SMEs regarding the achievement of DEI as (a) a lack of financial resources and time; (b) a lack of formal structure (e.g., a lack of sexual harassment policies, which only existed in 39% of 2000 small businesses surveyed by a CNBC study; Rodgers, 2018); (c) a lack of knowledge or guidance on how to implement DEI; and/or (d) a lack of data. To the last point, Ravanera and Kaplan (2019) highlighted that Statistics Canada publishes little data regarding diversity and inclusion in SMEs, despite regular surveys on SME growth and financing. Not knowing where shortcomings are result in the inability to successfully implement targeted interventions.

In addition to a lack of resources and knowledge, other factors can also influence whether SMEs implement DEI policies. Because SMEs have smaller teams, they may be resistant to taking up DEI practices and assume these practices do not apply to them. SMEs may also falsely assume that DEI only pertains to human resources as opposed to other areas of the organization, that DEI only matters when recruiting, that DEI does not impact business, and/or that DEI implementation is complex (European Commission, 2015). Some identified consequences to the lack of willingness to implement DEI policies include selective mentoring of junior staff by senior staff for acceleration through the hierarchy of the company, perceived underperformance of certain staff over others, inconsistent responses by management to employees' mistakes, problems with the integration of new hires, communication difficulties, cultural competence, readiness to provide an inclusive workplace, and/or level of strategic priority (Holder, 2017; Tardrew, 2020; Western Governors University, 2019).

There are further DEI considerations, namely considering the inclusion of diverse populations. For instance, employers may not hire, retain, and/or accommodate individuals with disabilities for a variety of reasons, including employers' and coworkers' (usually negative) attitudes, concerns around increased costs, performance issues, employers' lack of legal knowledge around disability legislature, fear of litigation, low comfort for those already working there, and/or bias/discrimination (Chabot, 2013). What is needed is a consideration for intersectionality, that is, focusing on and actively hiring people of differing genders, races, abilities, socioeconomic statuses, etc. as a way to ensure a variety of perspectives are being included and voices are being heard when organizational decisions are being made (e.g., IGLYO,



2014). Part of that includes capturing intersectional data, integrating multiple lenses into ambitions and targets, including an equity dimension, and fostering a diverse and respectful workplace culture (Business for Social Responsibility, 2020). Unfortunately, few workplaces adopt an intersectional lens and barriers to DEI implementation continue to be numerous and pervasive, particularly in SMEs.

### **Needs for Implementing DEI**

There are many needs with respect to implementing DEI practices and policies. One need is centered around the training or education of current leaders on the importance of DEI and DEI policies. Krentz et al. (2019) asserted that based on their data, most company leaders, who are primarily White, heterosexual men, still underestimate the challenges diverse employees face. It stands to reason that if they lack a clear understanding of the problem, they cannot design viable solutions. Further, many leaders believe that the recruiting phase presents the biggest obstacles with respect to DEI. Instead, it is much easier to hire diverse employees than it is to successfully address the deep-rooted cultural and organizational issues that those groups face in their day-to-day work experience (Krentz et al., 2019).

There is also a business case to improving women's equality. A recent report from The Power of Parity: Advancing Women's Equality in Canada, which presented data from 69 Canadian companies that represent over 500,000 employees nationwide, suggested that advancing women's equality in Canada has the potential to add \$150 billion to GDP by 2026. Broken down, this would result in a 0.6% percent increase each year for the next decade. This addition is the equivalent to adding a new financial services sector to the economy (Zubairi, 2017).

Accountability is key when implanting DEI policies. There need to be measures in place to foster diversity through the entire process of selecting and engaging with employees, suppliers, and business partner. This may involve active outreach to communities and expanding outside of one's usual networks. Doing so brings a variety of perspectives, which is valuable to businesses (Meyer, 2020). However, there remain multiple gaps with respect to the implementation of DEI policies and practices into workplaces.

One gap when considering DEI issues is the lack of disaggregated data that reflects the diverse landscape of companies, including SMEs, as well as the associated DEI issues (e.g., Ravanera & Kaplan, 2019). Tardrew (2020) suggests that the key components in developing a winning formula for diversity and inclusion are data collection, setting objectives, training, communication, and measurement of outcomes. Having data allows for context and helps guide goal-setting and areas of focus for DEI work. Indeed, insights gathered by looking at diversity data reveal areas in businesses processes and functions with the most significant room for improvement in terms of DEI work (Tardrew, 2020). A lack of data collection practices is not specific to industry. Statistics Canada collects only limited disaggregated data and even less data with an intersectional lens (Women Entrepreneurship Knowledge Hub, 2021). The Statistics Division of the United Nations Department of Economic and Social Affairs (2020) has identified the need for reliable, timely, and disaggregated data as something that is critically needed, especially now given the COVID-19 pandemic, to effectively measure progress in achieving gender equality.

## **Promising DEI Initiatives**

There have been recently proposed initiatives aimed at filling some of those gaps in implementing DEI policies and in SMEs. In Canada, many SMEs are subject to equity legislation where they are required to comply with the recent Act to Establish a Proactive Pay Equity Regime within the Federal Public and Private Sectors. This Act is in place to achieve pay equity proactively by redressing systemic gender-based discrimination in employers' compensation practices (Pay Equity Act, 2018). In addition to that, in Ontario and Quebec, all private businesses with 10 or more employees are required to implement pay equity (Ravanera & Kaplan, 2019). There are other, more specific initiatives. For instance, the Federal Ministry of Status of Women has asked the Global Compact Network Canada to deliver a three-year project to promote gender equality by engaging the Canadian private sector as responsible accelerators who help companies define and build their DEI goals (Decarie, 2018). Another example is EDC, who is a participant in the Federal Government's broader Women's Entrepreneur Strategy. The focus of their participation is on helping women to drive company growth in the domestic market and expand into the global marketplace. EDC has contributed a \$250 million initiative to this strategy. This will be leveraged by EDC over the next three years and will be provided on commercial terms for women-owned and women-led firms that are either exporting or looking to start (Decarie, 2018; Galang, 2018). More recently, the Canadian government created their 50 – 30 Challenge. Their challenge is rooted in two aspirations over time: gender parity (i.e., 50% women identifying) and significant representation (i.e., 30%) of underrepresented groups (racialized persons, Indigenous peoples, persons with disabilities, and members of the LGBTQ2 community) on Canadian board(s) and senior management (Innovation, Science and Economic Development Canada, 2020b; Ryerson's Diversity Institute, 2020b). This challenge serves as a way of signaling an SMEs joining of the challenge, regardless of where they are on their diversity and inclusion journey.

# **Women in Leadership and Entrepreneurship in Canadian SMEs**

## **Women in Leadership in SMEs**

### **Barriers to the Promotion of Women into Leadership**

There are many barriers to the advancement of women in SMEs. Initially, many women choose to not join a company or industry if it is perceived as being male dominated and therefore unwelcoming to women. This results in fewer women in organizations and consequently less women leaders. Women sometimes may experience apprehension at the thought of the perceived demands of leadership, due to expectations of the 'anytime performance model' (i.e., requiring unfailing availability and long work hours) and the 'anywhere performance model' (i.e., requiring travel and geographic mobility). This apprehension may come from worries about also managing familial demands, and they may therefore self-select themselves out of contention for leadership roles. Women are also cognizant of the double burden syndrome (i.e., balance of work and domestic responsibilities), which can also act as a deterrent for the pursuit of leadership positions (McKinsey Global Institute, 2017; Value for Women, 2018). If they do stay, advancement tends to be very difficult. The top reasons why women are not advancing, according to the McKinsey Global Institute (2017), is the tendency of many women not to promote themselves sufficiently, the double burden syndrome, and the proclivity among many for gender bias. Indeed, in corporate Canada, there is vertical segregation such that women are

30% less likely to be promoted from entry-level to manager and 60% less likely to be promoted from director to vice president (McKinsey Global Institute, 2017; Value for Women, 2018).

There are additional barriers to the promotion of women into leadership that warrant mention. For instance, there is horizontal segregation (i.e., over-representation of one gender in an industry) of women-led businesses in highly competitive, low-profit sectors that limit women's access to high-value markets. Additionally, there are horizontal, vertical, and gender inequalities in educational attainment for young women and girls, where women are over-represented in certain fields over others and have limited opportunities, which then limits their ability to pursue careers that would lead to leadership roles. Similarly, there is the issue of income stratification (e.g., unequal pay by gender), which tends to be impacted by one or more of the aforementioned gender segregating factors (Value for Women, 2018).

### **Promoting Women in Leadership**

There are multiple trends in the workforce that suggest upcoming changes. Those include an ever-aging workforce; the rise of millennials, which is estimated to be 50% of the workforce by 2030; a more culturally diverse population, where close to 80% of population growth will be accounted for by immigrants by the year 2032; the continual rise of virtual marketplaces; and the rise of the data economy (Mire, 2019). With the changing nature of the workforce, now is an opportune time to work on getting women into the workforce and keeping them. In order to recruit, retain, and promote women, multiple steps need to be implemented. Successful recruitment includes actively creating a work culture where women feel welcome, analyzing and adjusting how recruitment is happening at all levels of an organization, re-evaluating the criteria you use to search, screen, and hire employees, and being open to candidates with different skills and experiences (Deloitte, 2021; Michelson, 2020). Offering flexible hours, visible opportunities for learning and development, and clear career progression are key ways for SMEs to make themselves appealing to women (Burley, 2019).

In addition to hiring more women, organizations must also focus on promoting women. Practices that could help the rates women are being promoted include: setting goals about where you want the organization to go with respect to gender representation, developing clear pathways to advancement, investigating how promotions are decided in organizations, explaining the advancement pathways to all employees, and having a group of people oversee the promotion process (Michelson, 2020). The Prosperity Project™ (2020) has an Annual Gender-Diversity Data Tracking Initiative which could act as a first step in the representation of women in leadership as well as decision-making roles. The initiative would track women in executive roles, senior management roles, and in the pipeline on the way to senior management roles within Canada's largest public, crown, and private companies. This initiative addresses concerns around the lack of DEI data and would identify places where companies of all sizes are falling short with respect to issues of women's representation.

### **Women's Entrepreneurship in SMEs**

According to the Women Entrepreneurship Knowledge Hub (2020b), Canada does not have a start-up problem but rather a scale-up problem, especially with respect to the entrepreneurial ecosystem (e.g., fragmentation between relevant stakeholders), and this is particularly true of self-employed women and majority women-owned SMEs. Women account for a disproportionately small share of all scale-up entrepreneurs, with between 18% and 32% of scale-ups being woman-owned depending on both the year of observation and growth metric

employed (Vu & Denney, 2021). According to Statistics Canada, women account for only 16% of SME majority owners, even though they make up 37% of self-employed Canadians.

Different groups of women are not equally represented when it comes to being a majority owner of an SME. Indigenous women are more likely to be majority owners of SMEs than other women but they, in turn, face more barriers (Women Entrepreneurship Knowledge Hub, 2020b). There are almost 23,000 Canadian Indigenous women-entrepreneurs and Indigenous women are starting up enterprises at twice the rate of non-Indigenous women (Women Entrepreneurship Knowledge Hub, 2021b). Indigenous women-entrepreneurs report marketing difficulties (38%) and poor economy/market (34%) as their main challenges. According to disaggregated data from the 2016 Canadian Census, about ~4% of the Black population of Canada are self-employed, and of those, 30% are women. This statistic is lower than the overall percentage of self-employed Canadian women (36%; Statistics Canada, 2016). Black entrepreneurs have been facing a larger burden on their businesses because of structural inequality, discrimination and lack of access to needed supports. This is especially true in light of the pandemic, where the effects on Black women-entrepreneurs have been compounded by the impacts of school and daycare closures in addition to the burden of unpaid work at home (Women Entrepreneurship Knowledge Hub, 2020a).

Women-entrepreneurs face many challenges that their male counterparts do not. It is common for women-entrepreneurs to be seen as risk-averse and untrustworthy (compared to men, for whom entrepreneurship is often seen as a masculine trait), be subjected to the 'bro culture', racism and gender/cultural bias, and stereotypes that women are not motivated to become entrepreneurs (Women Entrepreneurship Knowledge Hub, 2020a, b, 2021b, c). Research that was co-funded by BMO, the Government of Canada, Carleton University, and The Beacon Agency found that most policies and financial assistance programs equate innovation only with technological advances. As well, Vu and Denney (2021) found that firms with women ownership have a more difficult time translating innovative inputs, specifically intellectual property, into growth. All of these practices do not consider how women innovate more broadly. Many of the women entrepreneurs interviewed noted that they did not feel welcome or included in the focus of mainstream networks, incubators and accelerators (Decarie, 2018). There is also an underrepresentation of majority women-owned firms among SME suppliers in various sectors. Indeed, diverse (e.g., immigrant, Indigenous, and Black entrepreneurs) have less access to financing and other supports (Women Entrepreneurship Knowledge Hub, 2020a).

There are strategies that have been suggested to combat various difficulties experienced by women-entrepreneurs. For example, according to an issue paper from the International Centre for Trade and Sustainable Development, women-led firms that operate online achieve similar performances to men-led firms. Further, the findings from the paper suggest that women may perform better online than offline as business owners, possibly because the web is more gender-blind (Baur, 2019). In terms of supporting immigrant-owned businesses, strategies may include showcasing entrepreneurial immigrant role models and establishing mentoring programs that focus on increased access to business considerations (e.g., contract information) for those just starting out (Riding et al., 2018).

With respect to improving the fate of Indigenous women-entrepreneurs, enterprise support organizations can do a lot. The Women Entrepreneurship Knowledge Hub (2021b) compiled a list of recommendations, which includes appointing Indigenous women to Boards of Directors, ensuring senior leadership has Indigenous women representation, showcasing a range of

diverse successful Indigenous women-entrepreneurs through media campaigns, educating Indigenous women-entrepreneurs of their rights and of the financial landscape, creating more mentorship program opportunities, building childcare into organizations, incorporating flexibility into programs and policies, enabling access to cultural and traditional supports when needed, and developing meaningful relationships with Elders. Many of these strategies could be applied to other racialized groups. Another report by the Women Entrepreneurship Knowledge Hub (2021a) highlighted the importance of partnerships, roundtables, and meaningful collaborations in addition to sharing resources, building each other up, and strengthening solidarity to break the existing, internalized glass ceiling. Inherent in this is the importance of not reinventing the wheel, that is, supporting existing initiatives and uplifting current efforts by Black and other racialized women. Finally, the lack of diverse representation has created motivation for the consideration of sector-based targets, quotas, and/or set-asides for women-owned entrepreneurs and suppliers (Riding et al., 2018), which could be a promising practice moving forward.

# References

- Baur, A. A. B. (2019). *Women-owned exporting small and medium enterprises - Descriptive and comparative analysis*. Global Affairs Canada. [https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/women\\_owned-export-entreprises\\_femmes.aspx?lang=eng](https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/women_owned-export-entreprises_femmes.aspx?lang=eng)
- Bédard-Maltais, P.-O. (2021). *The Digital SME*. Business Development Bank of Canada. <https://www.bdc.ca/en/articles-tools/blog/digital-sme>
- Burley, H. (2019). *Stem women prefer smaller firms to large corporations*. The Scotsman. <https://www.scotsman.com/regions/stem-women-prefer-smaller-firms-large-corporations-1419954>
- Business for Social Responsibility. (2020). *Why Company Diversity, Equity, and Inclusion Programs Need Intersectional Approaches*. <https://www.bsr.org/en/our-insights/blog-view/company-diversity-equity-inclusion-programs-need-intersectional-approaches>
- Catalyst. (2020a). *Women in Male-Dominated Industries and Occupations: Quick Take*. <https://www.catalyst.org/research/women-in-male-dominated-industries-and-occupations/>
- Decarie, C. (2018). *Why women entrepreneurs are important to Canada and international trade*. EDC. <https://www.edc.ca/en/blog/women-entrepreneurs-international-trade.html>
- Deloitte. (2021). *2021 technology industry outlook*. <https://www2.deloitte.com/us/en/pages/technology-media-and-telecommunications/articles/technology-industry-outlook.html>
- European Commission. (2015). *Diversity within small and medium-sized enterprises - best practices and approaches for moving ahead*. [https://www.raznolikost.hr/admin/uploads/trainers/diversity\\_sme2015\\_en.pdf](https://www.raznolikost.hr/admin/uploads/trainers/diversity_sme2015_en.pdf)
- Galang, J. (2018). *#Budget2018 Includes Focus on Women Entrepreneurs, \$572.5 Million Towards Big Data Strategy*. Betakit. <https://betakit.com/budget2018-includes-focus-on-women-entrepreneurs-572-5-million-towards-big-data-strategy/>
- Holder, N. (2017). *The Top Five Barriers to Inclusion and Why You Should Avoid Them*. The Center for Association Leadership. [https://www.asaecenter.org/resources/articles/an\\_plus/2017/january/the-top-five-barriers-to-inclusion-and-why-you-should-avoid-them](https://www.asaecenter.org/resources/articles/an_plus/2017/january/the-top-five-barriers-to-inclusion-and-why-you-should-avoid-them)
- IGLYO. (2014). *Intersectionality toolkit*. [https://www.luthercollege.edu/public/images/Intersectionality\\_Toolkit\\_and\\_other\\_resources.pdf](https://www.luthercollege.edu/public/images/Intersectionality_Toolkit_and_other_resources.pdf)

- Innovation, Science and Economic Development Canada. (2020a). *Key Small Business Statistics – 2020*. Government of Canada.  
[http://www.ic.gc.ca/eic/site/061.nsf/eng/h\\_03126.html](http://www.ic.gc.ca/eic/site/061.nsf/eng/h_03126.html)
- Krentz, M., Dean, J., Garcia-Alonso, J., Tsusaka, M., & Vaughn, E. (2019). Fixing the Flawed Approach to Diversity. Boston Consulting Group. <https://www.bcg.com/en-ca/publications/2019/fixing-the-flawed-approach-to-diversity>
- MaRS. (2018). MaRS releases Tech for All: Breaking Barriers in Toronto's Innovation Community. <https://www.marsdd.com/media-centre/mars-releases-tech-for-all-breaking-barriers-in-torontos-innovation-community/>
- McKinsey Global Institute. (2017). The power of parity: Advancing women's equality in Canada. <https://conectadas.org/wp-content/uploads/2018/05/MGI-The-power-of-parity-Advancing-womens-equality-in-Canada-Full-report.pdf>
- Meyer, C. (2020). Leading Through Diversity and Inclusion. Canadian Small Business Women. <https://canadiansmallbusinesswomen.ca/leading-through-diversity-and-inclusion/>
- Michelson, J. (2020). Ways To Recruit And Promote Women In STEM – From The Cofounder Of The Grace Hopper Conference. Forbes. <https://www.forbes.com/sites/joanmichelson2/2020/02/12/9-ways-to-recruit-and-promote-women-in-stem--from-the-cofounder-of-the-grace-hopper-conference/?sh=2b0319fa2168>
- Mire, M. (2019). The Canadian Small Business Stats Everyone Should Know. Wagepoint. <https://blog.wagepoint.com/all-content/the-canadian-small-business-stats-everyone-should-know>
- Newswire. (2019). Canada is the best country for SMEs, according to Euler Hermes' new SME Business Climate Index (SMEB). <https://www.newswire.ca/news-releases/canada-is-the-best-country-for-smes-according-to-euler-hermes-new-sme-business-climate-index-smeb-880826323.html>
- Pay Equity Act. (S.C. 2018, c. 27, s. 416). <https://laws-lois.justice.gc.ca/eng/acts/P-4.2/page-1.html>
- Plager, J. (2020). 3 DEI challenges. Credit Union National Association. <https://news.cuna.org/articles/118618-dei-challenges>
- Pollara. (2020). Canadian women almost twice as likely as men to have lost job due to COVID-19. <https://www.pollara.com/canadian-women-almost-twice-as-likely-as-men-to-have-lost-job-due-to-covid-19/>
- Ravanera, C., & Kaplan, S. (2019). *Diversity and inclusion in small and medium enterprises*. Institute for Gender and the Economy. [https://cdn.gendereconomy.org/wp-content/uploads/2019/07/GATE\\_Diversity\\_Inclusion\\_SMEs2019.pdf](https://cdn.gendereconomy.org/wp-content/uploads/2019/07/GATE_Diversity_Inclusion_SMEs2019.pdf)

- Riding, A., Orser, B., & Liao, D. (2018). *Benchmarking small and medium enterprises as suppliers to the Government of Canada: Inclusion, innovation and international trade*. Telfer School of Management & Public Services and Procurement Canada.  
[http://www.sice.oas.org/sme\\_ch/publications/uo\\_telfer\\_Benchmarking-SME-report\\_03\\_e.pdf](http://www.sice.oas.org/sme_ch/publications/uo_telfer_Benchmarking-SME-report_03_e.pdf)
- Rodgers, K. (2018). #MeToo on Main Street: Small businesses can't overlook workplace harassment. CNBC. <https://www.cnbc.com/2018/02/21/metoo-on-main-street-small-businesses-fire-suspend-employees.html>
- Ross, J. R. (2020). Top 14 HR Challenges for Small Businesses. Business News Daily.  
<https://www.businessnewsdaily.com/15910-top-hr-challenges-small-business.html>
- Rothenburger, S. (2020). Reduce Conflicts & Costs: Human Resource Tips for Start-Ups & Small Businesses. Mentor Works Ltd. <https://www.mentorworks.ca/blog/business-strategy/hr-tips-startups/>
- Ryerson's Diversity Institute. (2020a). *Economic equality in a changing world: Removing barriers to employment for women*. <https://www.ryerson.ca/diversity/reports/economic-equality-in-a-changing-world/>
- Ryerson's Diversity Institute. (2020b). The 50-30 Challenge: Your Diversity Advantage.  
<https://www.ryerson.ca/diversity/news-events/2020/11/the-50-30-challenge-your-diversity-advantage/>
- Stallkamp, M., & Schotter, A. P. J. (2019). Platforms without borders? The international strategies of digital platform firms. *Global Strategy Journal*, 11(1), 58-80.  
<https://doi.org/10.1002/gsj.1336>
- Statistics Canada. (2020). *Labour Force Survey: Public Use Microdata File*.  
<https://www150.statcan.gc.ca/n1/en/catalogue/71M0001X>
- Statistics Canada. (2016). *2016 Census Public Use Microdata File (PUMF), Hierarchical File*.  
<https://www150.statcan.gc.ca/n1/en/catalogue/98M0002X>
- Statistics Division of the United Nations Department of Economic and Social Affairs. (2020). *The world's women 2020: Trends and Statistics*. United Nations.  
<https://www.un.org/en/desa/world%E2%80%99s-women-2020>
- Tardrew, G. (2020). How SMEs Can Implement a Diversity and Inclusion Programme. Elliott Scott Personal HR Recruitment. <https://www.elliottscotthr.com/blog/2020/11/how-smes-can-implement-a-diversity-and-inclusion-programme>
- The Prosperity Project. (2020). Annual Gender Diversity Data Tracking.  
<https://canadianprosperityproject.ca/data-tracking>



- Value for Women. (2018). *Understanding structural barriers & hidden bias in access to credit for women-led businesses*. [https://s3.amazonaws.com/oxfam-us/www/static/media/files/REPORT\\_OXFAM\\_GUATEMALA\\_3-web\\_gMpm7nD.pdf](https://s3.amazonaws.com/oxfam-us/www/static/media/files/REPORT_OXFAM_GUATEMALA_3-web_gMpm7nD.pdf)
- Vu, V., & Denney, S. (2021). *Scale the gap: Exploring gender ownership and growth experiences for Canadian firms*. Women Entrepreneurship Knowledge Hub. <https://wekh.ca/wp-content/uploads/2021/03/Scale-the-Gap.pdf>
- Welsh, A. (2012). *HR north: An analysis of HR practices of SMEs in northeastern Ontario*. North Bay Newcomer Network. [http://www.hireimmigrants.ca/wp-content/uploads/HR-North-Final-Report\\_Welsh.pdf](http://www.hireimmigrants.ca/wp-content/uploads/HR-North-Final-Report_Welsh.pdf)
- Western Governors University. (2019). Barriers and benefits of diversity in the workplace. Western Governors University. <https://www.wgu.edu/blog/barriers-benefits-diversity-workplace1906.html>
- Wheatley, G. (2021). Pandemic job losses threaten to leave women behind permanently, RBC warns. CBC News. <https://www.cbc.ca/news/business/longterm-female-unemployment-1.5935882>
- Women Entrepreneurship Knowledge Hub. (2021a). *Building solidarity and collaboration to support African, Caribbean and Black women entrepreneurs during COVID-19*. [https://wekh.ca/wp-content/uploads/2021/03/Building\\_Solidarity\\_and\\_Collaboration\\_to\\_Support\\_African\\_Caribbean.pdf](https://wekh.ca/wp-content/uploads/2021/03/Building_Solidarity_and_Collaboration_to_Support_African_Caribbean.pdf)
- Women Entrepreneurship Knowledge Hub. (2021b). *Mikwam Makwa Ikwe (ice bear woman): A national needs analysis on Indigenous women's entrepreneurship*. [https://wekh.ca/wp-content/uploads/2021/01/Mikwam\\_Makwa\\_Ikwe-EN.pdf](https://wekh.ca/wp-content/uploads/2021/01/Mikwam_Makwa_Ikwe-EN.pdf)
- Women Entrepreneurship Knowledge Hub. (2021c). *The state of women's entrepreneurship: A focus on Black women entrepreneurs*. [https://wekh.ca/wp-content/uploads/2021/02/The\\_State\\_of\\_Womens\\_Entrepreneurship\\_Black\\_Entrepreneurs.pdf](https://wekh.ca/wp-content/uploads/2021/02/The_State_of_Womens_Entrepreneurship_Black_Entrepreneurs.pdf)
- Women Entrepreneurship Knowledge Hub. (2020a). *Canadian women entrepreneurs: Towards a diverse, inclusive and innovative ecosystem*. [https://wekh.ca/wp-content/uploads/2021/03/Canadian\\_Women\\_Entrepreneurs.pdf](https://wekh.ca/wp-content/uploads/2021/03/Canadian_Women_Entrepreneurs.pdf)
- WEKH\_State\_of\_Womens\_Entrepreneurship\_in\_Canada\_2020\_EN-Aug10v3.pdf
- Women Entrepreneurship Knowledge Hub. (2020b). *The state of women's entrepreneurship in Canada*. <https://wekh.ca/wp-content/uploads/2020/08/>
- Zubairi, A. (2017). Report: Supporting more women in STEM part of adding \$150 billion to Canada's GDP by 2026. <https://betakit.com/report-supporting-more-women-in-stem-part-of-adding-150-billion-to-canadas-gdp-by-2026/>

# Women in Skilled Trades

## Introduction

Skilled trades refer to professional occupations that require specialized training and hands-on work for employees (Build ON, 2017). Skilled trades are an important part of the Canadian economy and even with economic ebbs and flows, they can be counted on as profitable and reliable forms of employment in the coming decade (BuildForce Canada, 2019). However, not all demographic groups participate equally in the skilled trades, with women and immigrants standing out as being particularly underrepresented in the field (Stackhouse, 2019). In the face of an economic recession that is disproportionately impacting women, many are calling for a renewed effort to promote women into the skilled trades (Dessanti, 2020). This report details the efficacy and ethics of steering women into skilled trades, specifically analyzing outcomes in the trades for women, trends in the field, barriers to women's participation, practices to improve inclusivity, and collaboratives promoting women in the skilled trades. While the report generally refers to skilled trades as an umbrella term, particular attention is paid to ship building, Heating, Ventilation, and Air Conditioning (hereafter referred to as HVAC), construction, tiling, millwright and machining, and carpentry professions, where possible. Please see the appendix for more details on the specific trades mentioned, including job descriptions and education and experience requirements.

## Women in Skilled Trades

Women are vastly underrepresented in the skilled trades. In Canada, women currently make up 48% of the workforce, but they comprise only about 4% of the skilled trades (Smith, 2017; Stackhouse, 2019). While there are over 300 apprenticeship programs in Canada, most of the skilled trades jobs are in the 56 Red Seal trades. Red Seal trades have common occupation standards across Canada and can be broken down into six main categories: mechanical, electrical, metal, vehicle and related, architectural, construction, and 'other' (Finnie et al., 2021). In 2009, women represented just under 9% of all Red Seal trade certificate holders (Finnie et al., 2021). Further, women accounted for less than 2.5% of the workforce in mechanical, electrical, metal, vehicle and related, and architectural, and construction trade categories. Women do, however, comprise 67% of the 'other' trade category, which primarily consists of hairstylists, cooks, and bakers (Finnie et al., 2021).

The trades that individuals are employed in have implications for their career earnings. Unfortunately, the lowest earnings category of journeypersons, a designation that reflects a qualified and licensed professional, exists in the 'other' category, which tends to be predominantly populated by women. The earnings of someone in the 'other' category start at \$31,800 CAD in the first year of certification and grows to \$38,200 CAD (or 2.7% per year over eight years). Those certified in mechanical trades earn the most in their first year (\$76,500 CAD), followed closely by electrical trades (\$74,200 CAD; Finnie et al., 2021). In both instances, earnings grow to \$84,000 CAD and \$85,000 CAD eight years following certification, or 1.3 and 2.0% per year, respectively. Metal trades earn \$73,100 in the first year, followed by vehicle and related trades at \$66,900 CAD and architectural and construction trades at \$50,200 CAD. For these trades, earnings grow to \$84,100 CAD, \$80,800 CAD and \$56,900 CAD, respectively, in the eighth year (an average of 2.0%, 2.7% and 1.8% per year; Finnie et al., 2021). Taken together,

across all Red Seal trades, women with trade certificates earn only 47% of what men earn in the first year and 46% eight years out, reflecting both earnings differences within each trade category and women being overrepresented in the lower-earning trades (Finnie et al., 2021).

In addition to earning substantially less compensation, women in trades also report less favourable market outcomes. For instance, upon graduation, Canadian women apprentices are about 12% less likely to be employed than men in male dominated trades (e.g., mechanical, electrical, metal, vehicle and related, architectural, construction; Frank & Franette, 2019). Women are also substantially less likely than their male counterparts to report holding a job that was related to their trade of study (76% versus 56%) in male dominated trades. On average, compared to men, Canadian women work 3.8 fewer hours than their male counterparts in male dominated fields, are less likely to be in a union (43% versus 35%) and are less likely to have extended benefits (70% versus 60%; Frank & Franette, 2019). At the current state, outcomes for women in the trades are much worse than for their male counterparts.

## **Trends, Especially Given the Impact of COVID-19**

The COVID-19 pandemic had drastic, but not lasting effects on the skilled trades. About three million skilled trades jobs in Canada were lost between March and April of 2020 and employment among people in Red Seal trades fell by 30% in that timeframe (Press, 2021). During this time, those who were in skilled trade apprenticeships incurred cancelled work placements, disruptions to on-the-job learning, unanticipated shifts to online or hybrid training formats, and/or additional financial burdens (Bieler, 2021). Those in the residential sector were hit particularly hard and experienced a significant reduction of work (Sabharwal-Chomiuk, 2020). However, after the initial shutdowns in April and May of 2020, most provinces across Canada deemed skilled trades as essential services and skilled trades were permitted to operate as the pandemic progressed. The skilled trades recovered by the end of 2020 and employment in the Red Seal trades rebounded to two points above pre-pandemic levels (Press, 2021).

The demand for tradespeople is expected to remain strong, despite a slower outlook for the Canadian economy. The pace of the Canadian economic expansion slowed to just over 2% in 2018, after surpassing 3% in 2017 and averaging 2.4% since the recession of 2008/2009 (Prism Economics and Analysis, 2019). Looking ahead, the pace of growth is expected to slow to an average below 2% per year due to higher interest rates, a cooling real estate market, slowing rates of population growth, and weaker growth south of the border (Prism Economics and Analysis, 2019). The outlook for the areas of interest in this scan are detailed below:

### **Construction**

Over the period 2019 to 2028, real gross domestic product (GDP) growth in the construction industry is projected to weaken significantly relative to the previous decade, reflecting slower growth in both residential and non-residential investment. The resulting pace of growth in real GDP for the construction industry is projected to average 1.1% annually over the period of 2019 to 2028, down from 1.8% in the previous ten years (Government of Canada, 2017b).

## **Aerospace, Rail, Ship and Other**

On average, real GDP and employment in aerospace, rail, ship, and other transportation equipment are projected to grow at annual rates of 2% and 0.8% respectively over the period 2019 to 2028, a significant improvement relative to the past decade (Government of Canada, 2017a).

## **Fabricated Metal Products and Machinery**

The pace of growth in real GDP for fabricated metal products and machinery is projected to accelerate significantly over the period 2019 to 2028, averaging 2.1% annually, which is the strongest growth rate across all manufacturing industries. Faster growth in production is expected to lead to a notable rebound in employment, with job creation averaging 1% annually (Government of Canada, 2017d).

## **Utilities**

Similarly, real GDP growth in the utilities industry is projected to average 1.6% annually during the period 2019 to 2028, twice the pace observed in the previous ten years. Faster growth in output is expected to result in renewed growth in employment (Government of Canada, 2017c).

Although the pace of employment growth in many skilled trades is expected to slow compared to the rapid expansion over the last decade, the skilled trades workers will continue to be in demand. The retiring of the current workforce, combined with a declining population and a decline in the number of people registering for apprenticeship programs, has resulted in an increased demand for skilled trade workers. Indeed, between 2019 to 2028, about 700,000 skilled trades workers are expected to retire (Employment and Developmental Services Canada, 2021). From 2019 to 2023, an estimated 67,000 new journeypersons will be required to sustain workforce certification levels across the 10 largest Red Seal trades (i.e., auto service technician, carpenter, construction electrician, cook, hairstylist, heavy-duty equipment technician, millwright, plumber, steamfitter/pipefitter, and welders) in Canada, excluding Quebec and the Territories (Prism Economics and Analysis, 2019). Keeping pace with the demand for skills and workforce certification will require attracting 167,739 new apprentices over the next five years to the 10 largest Red Seal Trades (Prism Economics and Analysis, 2019). Of particular interest, new apprenticeship registrations in carpentry and millwrights have decreased 5% and 13% respectively. To keep up with demand, Red Seal is targeting 34,900 registrations in carpentry and 8,658 millwright registrations (Prism Economics and Analysis, 2019).

Canada's construction employment is also expected to resume an upward trend following the pandemic-induced declines experienced in most provinces in 2020. Overall, construction employment is expected to rise by 64,900 workers (up 6%) between 2020 and 2030 (BuildForce Canada, 2019). All provinces will continue to contend with an aging labour force and the need to replace almost 259,100 workers, or 22% of the current labour force, that are expected to retire over the next decade. In the absence of increased recruiting efforts, a deficit of 40,330 workers is expected to emerge by 2030 (BuildForce Canada, 2019).

Similarly, there will also be an increased demand for HVAC technicians. Over the period 2019 to 2028, new job openings (arising from expansion demand and replacement demand) are expected to total 8,400 (Job Bank, 2021). As job openings and job seekers are projected to be relatively similar over the 2019 to 2028 period, the labour shortage conditions seen in recent

years are expected to continue over the projection period. Employment growth and retirements are projected to account for most of the job openings over the projection period. Retirements will represent about 60% of job openings, a proportion comparable to the average for all occupations (Job Bank, 2021).

It is important to note that growth will not be even across the country. British Columbia, Alberta, and Ontario are expected to lead growth over the next five years, propelled by steady immigration-driven population growth, a recovering manufacturing sector, and major infrastructure and energy sector investments. Weaker growth is expected in Saskatchewan, Manitoba, and Atlantic Canada due to declining resource and utility sector investments (Prism Economics and Analysis, 2019). A decline is also expected in the residential sector, while growth is expected in commercial construction and health and infrastructure projects (BuildForce Canada, 2019).

## **Women in Leadership and Entrepreneurship in Skilled Trades**

The context of the skilled trades industry is important to note. The trades largely consist of micro and small businesses. Unfortunately, women who are in either male dominated or female dominated trades programs are much less likely to be self-employed than men (Frank & Frenette, 2019). Below, we provide sector-specific numbers and businesses sizes, though the exact numbers of women-leaders or entrepreneurs in the skilled trades is presently unknown.

### **Construction**

The construction industry employed 1.4 million workers in Canada in 2018 (Government of Canada, 2017b). In 2019, there were 380,060 construction businesses in Canada and 98.9% had less than 100 employees. The exact breakdown of number and size of businesses is as follows: micro (1 to 4 employees): 91,039 (61.5%), small (5 to 99 employees): 55,408 (37.4%), medium (100 to 499 employees): 1,479 (1%), and large (over 500 employees): 88 (0.1%; Government of Canada, 2021a).

### **Aerospace, Rail, Ship and Other Transportation**

The aerospace, rail, ship, and other Transportation industry employed 84,700 workers in 2018 (which comprised 4.9% of the total manufacturing employment), with 68% in aerospace, 15% in ships and boat building, 7% in railroad rolling stock, and 10% in other types of transportation devices. Employment has mostly been concentrated in Quebec (50%) and Ontario (27%), and there continues to be a low proportion of women (18%; Government of Canada, 2017a). In 2019, there were 598 ship and boat building businesses in Canada and 95.5% had less than 100 employees. Exact breakdown of number and size of businesses is as follows: micro: 121 (38.9%), small: 176 (56.6%), medium: 10 (3.2%), and large: 4 (1.3%; Government of Canada, 2021c).

### **Fabricated Metal Products and Machinery**

The fabricated metal products and machinery industry employed 269,700 workers in 2018 (15.6% of the total manufacturing employment), with 56% in metal fabrication and 44% in machinery. Employment has mostly been concentrated in Ontario (43%), Quebec (25%), and

Alberta (13%), and the workforce has a low proportion of women (16%; Government of Canada, 2021b). In 2019, the breakdown of employer establishments in this industry was as follows: 31.3% of them were considered micro; 64.5% were small establishments; and an additional 4% were medium-sized establishments. Lastly, large employers accounted for 0.2% of the total number of establishments (Government of Canada, 2021b).

## **Utilities**

The electric, gas, and water utilities sector employed 144,800 workers in 2018, with 77% in electric power generation, transmission and distribution, 10% in natural gas distribution, and 13% in water, sewage and other systems. Employment was mostly concentrated in Ontario (39%), Quebec (18%), Alberta (16%) and British Columbia (10%; Government of Canada, 2017c). In 2019, there were 25,595 plumbing, heating, and air-conditioning businesses in Canada and 98.8% had less than 100 employees. Exact breakdowns of the number and size of businesses are as follows: micro: 8,246 (55.4%), small: 6,453 (43.4%), medium: 181 (1.2%), and large: 5 (>1%; Government of Canada, 2017c).

## **Barriers to the Retention of Women in Skilled Trades**

The barriers to women in skilled trades are numerous and well-documented. Beginning at a young age, girls and young women combat biased societal attitudes and beliefs about gender roles and expectations related to the trades (Gyarmati et al., 2017). Biases and expectations result in barriers and difficulties for women throughout the course of their career, from recruitment all the way to the conclusion of their career. Barriers specific to each stage of women's careers as they relate to the skilled trades are specified below.

### **Recruitment Barriers**

Both gender bias and expectations and a lack of women specific recruiting strategies result in few women applying to and participating in the skilled trades. Gender biases, which typifies the skilled trades as masculine or male oriented, are ubiquitous. These biases translate into the systematic under-promotion of and under-exposure to trades for girls and young women. At an individual level, this results in women starting out with less hands-on experience and knowledge than their male peers and misconceptions and misinformation about the trades (Gyarmati et al., 2017). Further, recruitment strategies often fail to effectively target women. Skilled trades recruitment should include women-only information sessions and training days, such as job tasters for women (where role models and mentors are present; Jenkins et al. 2019; Simon & Clarke 2016).

### **Cultural Barriers**

Unfortunately, women who do pursue career skilled trades are often met with difficult work environments once they enter. The literature demonstrates that male dominated skilled trades cultures are hostile to women and minority groups (Bridges et al., 2021). In particular, the trades are described as unwelcoming to women, with bullying, discrimination, and exclusion as persistent occurrences (Gyarmati et al., 2017). The hegemonic masculine stereotype that exists in skilled trades requires tradespeople to be physically strong, White, heterosexual men. Bodies that conform are accepted. Those who do not conform – bodies that are female, homosexual, ethnic, differently abled, and/or considered weak – are resisted and excluded (Potter & Hill, 2009). This belief system and the associated values have been linked to social exclusion and

isolation, discrimination, harassment, and/or even violence for women (Kelly et al., 2015; Wright, 2016). Exclusionary practices also make it acceptable for dominant groups to subject minority groups to intensified scrutiny, resulting in normalized sexism, criticism, hostility and derisive and/or sexualized humour on the job site (Hunte, 2016). Often, women are not prepared for the realities of working in a male dominated industry, have a poor experience, and drop out or resign early as a result (Galea et al., 2015; Gyarmati et al., 2017).

## **Barriers to Advancement**

In addition to a hostile work environment, women are also at a disadvantage when they try to enter and advance in the skilled trades. The apprenticeship pathway traditionally relies upon social connections and word of mouth. Most social networks are formed by and consist of working-class White men and largely exclude women, making it difficult for them to obtain apprenticeship positions (Bridge et al., 2020). Relatedly, mentoring opportunities for women are difficult to access as it is challenging for women to develop social relationships with their male colleagues and superiors, in addition to having few women role models available to them. Thus, a lack of connections and social capital results in fewer women being advanced into leadership positions (Jenkins et al., 2019). Benevolent sexism is also prevalent, where women are given roles considered to be appropriate to their gender, including lighter duties or those deemed 'feminine.' Protective behaviours deny recipients the opportunities to learn and progress, so they appear incompetent and have their ability undermined (Hunte, 2016). Women often report they are less likely to be exposed to the full range of trade skills, because of gender-biased decisions made about what they can and cannot do (Gyarmati et al., 2017).

## **Systems Barriers**

Employment practices and policies in the skilled trades are traditionally informal, harder to identify and regulate, and thus represent a significant barrier to women entering the trades. Bullying, harassment, and discrimination are ever-present in the skilled trades and employers generally do not have the organizational capacity or practices to deal with them (Gyarmati et al., 2017). It is also common for skilled trades organizations to lack gender specific health and safety concerns, family friendly policies, and flexible workplace policies and practices (Bridge et al., 2020). Even if organizations do have formal policies to address workplace harassment, it is common for employers and supervisors to ignore formal policies (Bridges et al., 2021). Organizations in the skilled trades tend to utilize exclusionary selection criteria that work in the favour of male applicants and employees (Gyarmati et al., 2017). The clear majority of businesses in the skilled trades are headed by White men and they often do not wish to make the journey for women into the skilled trades easier.

## **Strategies for the Retention and Promotion of Women in Skilled Trades**

Fortunately, there are many documented strategies for improving the outcome of women in the skilled trades, and several of them are outlined below:

### **Senior Leadership Buy-In**

Some of the most significant strategies in the literature for improving career development and inclusion involve improvements at the top level of organizations. Senior leadership's appropriate

responses to breaches of policy as well as clear messaging, transparency and enforcement of discrimination and harassment policies have been found to be effective in ensuring gender equity in both recruitment and promotion (Galea et al. 2015). Additionally, a confrontation to the masculine culture would be to place women into more mentoring, role-modelling, and leadership roles (Taylor et al. 2015; Wright 2016).

## **Strengthen Formal Rules**

Formal practices are a significant barrier for women in the trades because they are often not implemented and/or monitored. The more robust the design of the formal rules, the more likely rules are to become embedded in the organization. Robustness is also achieved through a clear description of policies and procedures and consistent enforcement of the rules (Bridge et al., 2021).

## **Utilize Workplace Training**

Implementing workplace training interventions can help build respectful workplaces and help create supportive peer networks in the workplace (Gyarmati et al., 2017). A study with male tradespeople in Nova Scotia found that more women in the workplace can be a difficult adjustment for men. Men find it difficult to be a catalyst for change and for any one individual to stand out amongst their peers to support the change. Increased understanding of women's experience in the trades and the need for female tradespeople among male tradespeople must happen for change, both on an individual and collective level, to occur (YWCA, 2019).

## **Designate Standards of Excellence**

Governing bodies or collaborations can create and/or maintain a designation of excellence that lets it be known which organizations are safe and inclusive environments for women. By maintaining standards of excellence, codes of ethics, and consistent safety practices, organizations can create more positive working environments, which should result in more women going to those organizations and staying there (Gyarmati et al., 2017).

## **Organizations Need to Prepare to Have Women in Skilled Trades**

Women described multiple situations of being let go from jobs because employers "didn't know what to do with them" (Gyarmati et al., 2017). A lack of preparedness for female employees can include no access to women's washrooms, a lack of tools and resources for management to deal with bullying and harassment, and/or inadequate workplace policies to deal with gender-specific health and safety concerns. It is important to create the general conditions that allow women to succeed on the job (Gyarmati et al., 2017).

## **Pay Equity**

Given the fact that so few women enter the trades, it is difficult to assess their earnings differentials within specific trades. However, examining some of the broad categories of trades where comparisons are possible, women earn consistently less than men (Finnie et al., 2021). In the eighth year after certification in architectural and construction trades, women earn 78% of what men do (\$44,600 CAD versus \$57,100 CAD). In electrical trades, women earn 85% of what their male counterparts earn (\$72,500 CAD versus \$85,100 CAD). The smallest earnings gap is in mechanical trades, where women earn 89% of men (\$74,500 CAD versus \$84,100 CAD). The largest gender earnings difference, however, is observed in the 'other' trades category, where



despite women being substantially overrepresented, they earn just 54% of what men earn (\$29,500 CAD versus \$54,400 CAD; Finnie et al., 2021).

## **Encourage Women to Start their own Businesses**

Once the appropriate licence is gained, skilled tradeswomen can utilize contacts and referrals to freelance and build both a reputation and brand (Workwave, 2021). Oftentimes, skilled trades rely heavily on repeat business or referrals to get off the ground, so women are encouraged to utilize soft skills and connections to grow their businesses (Workwave, 2021).

## **Make a Business Case for Organizations to Hire Women**

Wage subsidies and incentives can be effective in encouraging employers to hire women (Gyarmati et al., 2017). Amidst push back and/or anti-diversity attitudes from managers or business owners, an ethical and moral argument for hiring women may not be effective. Government or collaborative incentives for companies to hire women may be more effective for getting women in the door, particularly for apprenticeship programs.

## **Collaborative Approaches for Attracting and Retaining Women in Skilled Trades**

In Canada, many collaboratives have been established to help promote women in the skilled trades. Below are some examples:

### **(a) Women**

#### **BC Centre for Women in the Trades (BCCWITT)**

[BCCWITT](#) is working to eliminate the barriers faced by women in the trades by building a network committed to creating a culture of equality and equal opportunity. Specifically, the program hopes to increase the retention and advancement of women in the trades through targeted supports and programs. This includes outreach and mentoring for women in the trades, the development of a central database for women in the trades in British Columbia, development and delivery of the 'Be More Than a Bystander' program for men in the industry, and outreach and support for employers, contractors, unions and non-union organizations to facilitate the retention and advancement of women, including leadership training.

#### **Build Together**

[Build Together](#), created by Canada's Building Trades Unions is a program focused on the recruitment and retention of workers from underrepresented portions of the population. Build Together is a workforce development program focused on the recruitment and retention of workers from underrepresented portions of the population.

#### **Canadian Construction Women**

Since 1981, [CCW](#) provided members with opportunities for support, mentoring, networking, community involvement, learning and development in the building industry. The organization exists to attract and retain women in the industry and is committed to increasing women's representation in the field.

## **Canadian Construction Women and the Canadian Association of Women in Construction**

[The Canadian Construction Women and the Canadian Association of Women in Construction](#) is a national organization that provides mentorship opportunities to advise, guide and assist women on industry challenges they may face.

## **emPOWER**

[emPOWER](#) is a no-cost government-funded training program, designed in partnership with Southern Alberta Institute of Technology, to help unemployed or marginally employed women with an interest in entering the trades sector. This program provides skills training and support for women to begin their careers and to secure entry-level employment in the trades industry.

## **Les Elles de la Construction**

[Les Elles de la Construction](#) promotes the role of women in the field of construction, at all levels: women entrepreneurs, women as project managers, and tradeswomen. They also provide training to members as needed.

## **New Boots**

[New Boots](#) is a provincial network in New Brunswick for tradeswomen, run by tradeswomen. They aim to promote, support, and mentor tradeswomen and their employers in non-traditional skilled trades.

## **Office to Advance Women Apprentices**

In six Canadian provinces (NL, NS, NB, PEI, SK and MB), there are dedicated [Offices to Advance Women Apprentices](#). These offices provide wraparound services that connect women with job opportunities, offer networking and mentorship, and guide employers and unions towards meaningful progress.

## **Skilled Trades Awareness and Readiness Program**

[This program](#) encourages all Canadians facing barriers, including women, to pursue careers in the skilled trades through career exploration, skills training, and work experience. More than 10,500 Canadians are expected to benefit.

## **The British Columbia Institute of Technology's Trades Discovery for Women Program**

[This program](#) allows women to gain hands-on experience in about 20 different trades, prepares them to successfully enter, and complete trades/technical training and/or to seek apprenticeship.

## **The Canadian Centre for Women in Science, Engineering, Trades and Technology (WinSETT)**

[WinSETT](#) is a national non-profit that works to recruit, retain, and advance women in science, engineering, trades, and technology. The WinSETT Centre advances women's leadership in the technically skilled workforce by delivering workshops, partnering on specific projects, and promoting and celebrating the leadership of women in the aforementioned organizations as role models and mentors.

## **Trade HERisons**

[Trade HERisons](#) is a career exploration and college preparation program with a focus on exposure to trades and technology careers, enhancing essential skills, career exploration, and personal development. Participants experience hands-on learning opportunities with Holland College, meet mentors, and tour with industry employers. The program enhances participants' life skills and focuses on labour market research, resumes, interviews, math, and team building.

## **Women Building Futures (WBF)**

[WBF](#) is a leader in trades training for women, with extensive experience in recruiting women into the heavy industrial workforce in Alberta. Women get to try a variety of trades before deciding which career they wish to pursue. WBF has an employment placement rate of 90%.

## **Women in Resource Development Corporation**

Situated in Newfoundland, [WRDC](#) offers a series of practical, hands-on career exploration programs, creates awareness of the opportunities in trades and STEM, and empowers women with information and self-confidence.

## **Women in Trades Training (WITT)**

[WITT](#) provides training, financial assistance, and support for women living in British Columbia who are thinking about a career in the skilled trades. They specifically service women that are unemployed or employed and low-skilled. WITT offers introductory trades training that allows women to experience a number of trades and improves their job readiness. They also work with employers to sponsor women for apprenticeship programs.

## **Women in Trades and Technology (WITT)**

[Women in Trades and Technology \(WITT\)](#) supports women interested in trades or technology at Sask Polytech. They also provide access to education for those looking to enter a trades or technology field and career support. WITT supports include but are not limited to award and scholarship information, program specific tutors, mentorship opportunities, drop in consultations, networking opportunities, and campus tours.

## **Women Unlimited**

[The Women Unlimited Association](#) programs are designed to help diverse, underemployed, and unemployed women find, prepare for, get, and maintain jobs in trades and technology fields. They offer a continuum of services from career exploration, training support, transitional, and retention services.

## **(b) Girls**

### **Build a Dream**

[Build a Dream](#) works closely with industry and education to empower young women in grades 7 to 12 to pursue careers in fields where women are currently underrepresented, such as the skilled trades.

### **Girls Exploring Trades and Technology**

[This program](#) introduces girls in grades six to eight to possible future careers in trades and technology in Manitoba and Saskatchewan. Girls attend a week-long summer camp that allows

them to become familiar with tools and technology, build awareness and confidence, and see past societal norms.

### **GUSTO!**

[Gusto!](#) is a free workshop for high school girls across Newfoundland and Labrador who are interested in gaining hands-on experience in the carpentry and electrical trades.

### **Skills Ontario Summer Camp**

[Skills Ontario Summer Camp](#) is a week-long day program for kids entering grades seven and eight that allows students to explore careers in skilled trades. There are multiple camp locations across Ontario, including specialized camps for girls only.

### **Techsploration**

[Techsploration](#) is a program in Nova Scotia and Newfoundland and Labrador that empowers young women in grades 9 through 12 to explore careers in science, trades, and technology. This program provides girls and young women the opportunity to meet role models and partake in interactive presentations and workshops.

### **Young Women's Initiatives, Skills Ontario**

[Young Women's Initiatives, Skills Ontario](#) is a collection of engaging and hands-on events and programs that provide skill development and mentorship opportunities to young women in grades 7 to 12 in Ontario. Skills Ontario hosts Career Exploration Events across Ontario from October to April, as well Canada's largest young women's conference at the Skills Ontario Competition each year.

# References

- Bridges, D., Wulff, E., Bamberry, L., Krivokapic-Skoko, B., & Jenkins, S. (2020). Negotiating gender in the male-dominated skilled trades: A systematic literature review. *Construction Management and Economics*, 38(10), 894-916.  
<https://doi.org/10.1080/01446193.2020.1762906>
- BuildForce Canada. (2019). *Construction and Maintenance Looking Forward: Ontario National Highlights, 2019-2028*.  
[https://www.constructionforecasts.ca/sites/forecast/files/highlights/2019/2019\\_ON\\_Constr\\_Maint\\_Looking\\_Forward.pdf](https://www.constructionforecasts.ca/sites/forecast/files/highlights/2019/2019_ON_Constr_Maint_Looking_Forward.pdf)
- Build ON. (2017). Skilled trades Sector. <https://www.buildonbatit.com/en/Skilled-Trades-in-Ontario/Skilled-Trade-Sectors>
- Careers in Construction. (2021). How to Get Started.  
<https://www.careersinconstruction.ca/en/careers/getting-started>
- Dessanti, C. (2020). *The she-covery project: Confronting the gendered economic impacts of COVID-19 in Ontario*. Ontario Chamber of Commerce. <https://occ.ca/wp-content/uploads/OCC-shecovery-final.pdf>
- Employment and Developmental Services, Canada. (2021). *Government of Canada invests in training to help Canadians become certified in the skilled trades*. Newswire.  
<https://www.newswire.ca/news-releases/government-of-canada-invests-in-training-to-help-canadians-become-certified-in-the-skilled-trades-817896194.html#:~:text=Between%202019%20and%202028%2C%20about,career%20in%20the%20skilled%20trades.>
- Fielden, S., Davidson, M. J., Gale, A. W., & Davey, C. L. (2000). Women in construction: The untapped resource. *Construction Management and Economics*, 18(1), 113-121.  
<https://doi.org/10.1080/014461900371004>
- Finnie, R., Dubois, M., & Miyairi, M. (2021). *How much do they make? New evidence on the early career earnings of trade certificate holders*. Education Policy Research Initiative and Labour Market Information Council. <https://lmic-cimt.ca/trade-earnings-report/>
- Frank, K. & Frenette, M. (2019). *How do women in Male-Dominated Apprenticeships Fare in the Labour Market?* Statistics Canada Analytical Studies Branch Research Paper Series 11F0019M No. 420.  
<https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2019008-eng.htm#a8>
- Government of Canada. (2021a). *Canadian Industry Statistics – Construction*.  
<https://www.ic.gc.ca/app/scr/app/cis/summary-sommaire/23>
- Government of Canada. (2021b). *Canadian Industry Statistics – Fabricated Metal Products and Machinery*. <https://www.ic.gc.ca/app/scr/app/cis/businesses-entreprises/332>

- Government of Canada. (2021c). *Canadian Industry Statistics – Ship and Boat Building*. <https://www.ic.gc.ca/app/scr/app/cis/summary-sommaire/3366>
- Government of Canada. (2021d). *Canadian Industry Statistics - Utilities*. <https://www.ic.gc.ca/app/scr/app/cis/summary-sommaire/22>
- Government of Canada. (2017a). *Canadian Occupational Projection System (COPS) – Aerospace, Rail, Ship and Other Transportation Equipment*. <http://occupations.esdc.gc.ca/sppc-cops/l.3bd.2t.1ils@-eng.jsp?lid=43>
- Government of Canada. (2017b). *Canadian Occupational Projection System (COPS) – Construction*. <http://occupations.esdc.gc.ca/sppc-cops/l.3bd.2t.1ils@-eng.jsp?lid=23>
- Government of Canada. (2017c). *Canadian Occupational Projection System (COPS) – Electric, Gas and Water Utilities*. <http://occupations.esdc.gc.ca/sppc-cops/l.3bd.2t.1ils@-eng.jsp?lid=78>
- Government of Canada. (2017d). *Canadian Occupational Projection System (COPS) – Fabricated Metal Product Manufacturing*. <https://www.ic.gc.ca/app/scr/app/cis/summary-sommaire/332>
- Government of Canada Job Bank. (2021). Job Bank. <https://www.jobbank.gc.ca/trend-analysis>
- Gyarmati, D., Pakula, B., Nguyen, C., & Leonard, D. 2017. *Enhancing the retention and advancement of women in trades in British Columbia: Final report*. The Social Research and Demonstration Corporation. [https://www.workbc.ca/getmedia/08872319-a2db-45bc-935e-a4d44f8a3ac0/Construction\\_Retention\\_and\\_Advancement\\_of\\_Women\\_in\\_Trades\\_Feb-2017.pdf.aspx](https://www.workbc.ca/getmedia/08872319-a2db-45bc-935e-a4d44f8a3ac0/Construction_Retention_and_Advancement_of_Women_in_Trades_Feb-2017.pdf.aspx)
- Hunte, R. (2016). Black women and race and gender tensions in the trades. *Peace Review*, 28(4), 436-443. <https://doi.org/10.1080/10402659.2016.1237087>
- Jenkins, S., Bamberry, L., Bridges, D., & Krivokapic-Skoko, B. (2019). Skills for women tradies in regional Australia: A global future. *International Journal of Training Research*, 16(3), 278-285. <https://doi.org/10.1080/14480220.2018.1576329>
- Job Bank. (2021). *HVAC (Heating, Ventilation and Air Conditioning) Technologist in Canada*. Government of Canada. <https://www.jobbank.gc.ca/marketreport/summary-occupation/3229/ca>
- Kelly, M., Wilkinson, L., Pisciotta, M., & Williams, L. S. (2015). When working hard is not enough for female and racial/ethnic minority apprentices in the Highway Trades. *Sociological Forum*, 30(2), 415-438. <https://doi.org/10.1111/socf.12169>
- Potter, M., & Hill, M. (2009). Women into non-traditional sectors: Addressing gender segregation in the Northern Ireland workplace. *Journal of Vocational Education & Training*, 61(2), 133-150. <https://doi.org/10.1080/13636820902933239>

- Press, J. (2021). *Women in skilled trades earn less than men: Report*. CTV News. <https://www.ctvnews.ca/business/women-in-skilled-trades-earn-less-than-men-report-1.5348699>
- Prism Economics and Analysis. (2019). *The apprentice demand in the top ten red seal trades: A 2019 national labour market information report*. Canadian Apprenticeship Forum. <https://caf-fca.org/wp-content/uploads/2019/05/2019-National-LMI-Report.pdf>
- Simon, L., & Clarke, K. (2016). Apprenticeships should work for women too! *Education + Training*, 58(6), 578-596. <https://doi.org/10.1108/ET-02-2016-0022>
- Smith, J. (2017). *Women account for just 4.5% of skilled trade workers in Canada: Report*. Global News. <https://globalnews.ca/news/3823621/women-skilled-trades-manufacturing>
- Stackhouse, J. (2019). *How the Skilled Trades are Winning Over Women*. RBC. <https://thoughtleadership.rbc.com/how-the-skilled-trades-are-winning-over-women/>
- Taylor, A., Hamm, Z., & Raykov, M. (2015). The experiences of female youth apprentices in Canada: Just passing through? *Journal of Vocational Education & Training*, 67(1), 93-108. <https://doi.org/10.1080/13636820.2014.896404>
- YWCA. (2019). *Shift change gender-based needs assessment: Scoping the landscape and exploring interventions*. YWCA Canada.
- Wright, T. (2016). Women's experience of workplace interactions in male-dominated work: The intersections of gender, sexuality and occupational group. *Gender, Work & Organization*, 23(3), 348-362. <https://doi.org/10.1111/gwao.12074>

## Appendix: Women in Skilled Trades

Trade	Description	Pathways
<b>Carpentry</b>	Carpenters construct, erect, install, maintain and repair structures and components of structures made of wood, wood substitutes, lightweight steel and other materials.	Completion of secondary school is usually required. Completion of a three- to four-year apprenticeship program or a combination of over four years of work experience in the trade and some high school, college or industry courses in carpentry is usually required to be eligible for trade certification. Red Seal endorsement is also available.
<b>Construction</b>	Construction trades helpers and labourers assist skilled tradespersons and perform labouring activities at construction sites, in quarries and in surface mines.	<ol style="list-style-type: none"> <li>1. Register as an apprentice and combine on-the-job training with in-class learning.</li> <li>2. Enroll for post-secondary training at a university, community college or technical institute and study for the construction career of your choice.</li> <li>3. Find a job as an entry-level construction worker and learn the skills you need on the job.</li> </ol>
<b>HVAC Technician</b>	Mechanical engineering technologists and technicians provide technical support and services or may work independently in mechanical engineering fields such as the design, development, maintenance and testing of machines, components, tools, heating and ventilating systems, geothermal power plants, power generation and power conversion plants, manufacturing plants and equipment.	Completion of a one- or two-year college program in mechanical engineering technology is usually required for mechanical engineering technicians. Certification in mechanical engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions. A period of supervised work experience, usually two years, is required before certification.



Trade	Description	Pathways
<b>Millwright</b>	Construction millwrights and industrial mechanics install, maintain, troubleshoot, overhaul and repair stationary industrial machinery and mechanical equipment.	Completion of secondary school is usually required. Completion of a three- to four-year apprenticeship program or a combination of over five years of work experience in the trade and some high school, college or industry courses in industrial machinery repair or millwrighting is usually required to be eligible for trade certification. Red Seal endorsement is also available.
<b>Shipfitter</b>	Structural metal and platework fabricators and fitters fabricate, assemble, fit and install steel or other metal components for buildings, bridges, tanks, towers, boilers, pressure vessels and other similar structures and products.	Completion of secondary school is usually required. Completion of a three- to four-year apprenticeship program or a combination of over four years of work experience in the trade and some college or industry courses in structural steel and platework fabrication is usually required to be eligible for trade certification.
<b>Tilesetter</b>	Tilesetters cover interior and exterior walls, floors and ceilings with ceramic, marble and quarry tile, mosaics or terrazzo.	Completion of secondary school is usually required. Completion of a three- or four-year apprenticeship program or a combination of over three years of work experience in the trade and some high school, college or industry courses in tilesetting is usually required to be eligible for trade certification. Red Seal endorsement is also available to qualified tilesetters upon successful completion of the interprovincial Red Seal examination.

(Government of Canada Job Bank, 2021)

# Women in Technology and Engineering

## Introduction

The technology and engineering fields are typically referred to in conjunction with science and mathematics, thus comprising the popularized acronym STEM. It is important to note that for this scan, we have narrowed our focus on technology and engineering to align with the work of the In Good Company partners and their networks. However, many of the sources we reference tend to discuss STEM as a whole, so the ideas and strategies could be applied more broadly to science and mathematics.

The field of engineering is traditionally divided into four main categories: chemical, civil, electrical, and mechanical. According to Engineers Canada (2019), the accreditation and overseeing body for engineers in Canada, as of December 31st, 2018, there were almost 303,000 members (excluding students), which was just over a 2% increase from 2017. The most number of engineers by location are in Ontario, followed by Quebec and British Columbia. The technology sector is much broader and includes a combination of both service and manufacturing industries that use creativity, talent, and digital skills for conveying information electronically (Government of Canada, 2020). A recent report by CyberprovincesTM highlighted that net employment in the technology sector has increased by nearly 60,000 positions in the year 2019 (CompTIA, 2020). This is a growth rate of almost 4% since the year prior and totals about 1.72 million workers. As well, Canada's technology sector accounted for almost 5% of the total Canadian economy in 2019, with the largest increases in new technology employment happening in Ontario, followed by Quebec and British Columbia (CompTIA, 2020). Please see the appendix on the steps needed in order to become both an engineer and pursue a career in technology.

## Women in Technology and Engineering

Most women in STEM positions work in either majority-female workplaces (55%) or in workplaces that have an equal mix of genders (25%). For that minority who do work in majority-male spaces (19%), their gender does have an effect on their outcomes at work. From the Pew Research Center, Funk and Parker (2018) reported that about half (48%) of women in STEM occupations that are majority male say that their gender has made it harder for them to succeed on the job, compared to about 14% of other women in STEM. Ryerson's Diversity Institute (2020) reported that regardless of higher education, Canada continues to have one of the highest gender wage gaps among the Organisation for Economic Co-Operation and Development countries (which is an intergovernmental economic group with 37 member countries, founded to stimulate economic progress and world trade). Indeed, according to Statistics Canada (2017), women in 'computer and information sciences' and 'biological sciences' both earned about 93% of what men earned, although women represented a small proportion of young 'computer and information sciences' graduates (perhaps because it is difficult to get a read on how much money they are making). Women in 'engineering' earned approximately 96% of what men earned (up 4% since 2006); however, similar to the problem with the computing and biology programs, women represented a small proportion of young 'engineering' graduates (Statistics Canada, 2017). And despite the fact that women comprise more than half of the college-educated workforce, in the United States in 2017, they made up

only 29% of those employed in science and engineering jobs (National Science Foundation, 2020).

One area that has not seen growth among women's representation is computing (e.g., computer science, systems analysis, software development). Indeed, their representation has decreased by 7% from 1990 (when it was 32% women) to 2018 (when it was 25%; Funk & Parker, 2018). In software, for instance, women are more likely to work in quality assurance than in more technical positions (Campero 2020). In fact, Canadian women are less likely to pursue higher-paying STEM fields like computer science or engineering (Catalyst, 2020; Ryerson's Diversity Institute, 2020). According to the most recent membership data from Engineers Canada (2019), 13.5% of their members, excluding students, were women, which was a 5.5% national increase from the previous year. While women continue to be underrepresented in STEM, it does appear that women's participation in technology and engineering is increasing.

## **Trends, Especially Given the Impact of COVID-19**

The COVID-19 pandemic showcased the crucial role of engineers given their importance in supporting frontline workers and communities across Canada. Engineers possess the skillset for innovative solutions required for countries to flourish in complex global situations (e.g., designing personal protective equipment, developing diagnostic tools to effectively screen large populations; Engineers Canada, 2020). Engineers Canada forecasts the undoubtedly important role that engineers will continue to play along Canada's economic recovery journey. Indeed, a labour market report from Engineers Canada (2015) projected 2500 job openings annually over the next five years for civil engineers, 2100 for mechanical engineers, 1800 for electric, and 1300 for chemical. In addition 1500 would be related to replacing retired workers in civil engineering, 1270 for mechanical, and 1200 for electrical. Although there are no projections as of 2021, it seems the engineering industry will continue to face a shortage of workers and be an industry that is in need of women.

There is common agreement among top business leaders that even if an organization is ahead with their digital transformation, they have to be continually prepared to change and adapt as technology advances. Further, unforeseen events, such as the pandemic can occur and test the capacity of organizations. In order to prevent their business from getting disrupted, companies must be ready to take calculated risks. Thus, accelerating digital transformation journeys as a top priority for many companies would be a way to ensure business continuity, improve productivity, and launch new business models in an effort to remain competitive (Parakala, 2020).

Deloitte (2020) also reported that software is a catalyst for growth in organizations and those companies with remote-working technologies have already been seeing increased demand. Indeed, they project that security software will see third-order benefits from a growing remote workforce, and hardware companies will likely see major demand, especially from enterprises placing large orders to support their need to pivot and have employees work from home. Also because of increased remote work scenarios, information technology departments will play a larger role in future business continuity plans. Information technology (IT) service providers will be especially important when it comes to procuring devices, setting up a resilient flexible and secure network and IT security (Deloitte, 2020). Also, Deloitte anticipates increased demand for communications equipment and telecom services. Although the IT sector is still one of the

biggest recruiters of employees and will remain one post-COVID-19, the jobs coming into this sector will likely be re-engineered to suit the current changes. Automation is going to be important, as it is both cost-effective and is not affected in a negative way by employees working from home (India Today, 2020).

## **Women in Leadership and Entrepreneurship in Canadian SMEs**

### **Women in Leadership in Technology and Engineering**

There are continual trends of poor representation of women in senior and professional-level positions in STEM as well as high levels of women suffering from mid-career exhaustion/burnout (Hansen, 2020). A commonly used metaphor is the idea of the 'leaky pipeline,' where there are 'leaks' or various points where women are lost, either by opting out or by getting pushed out in various stages of their career development (Kuschel et al., 2020; Wall, 2019). Women held 28% of managerial positions in technology organizations globally in 2019. On the surface, this appears promising. However, this proportion is almost the same as it was in 1995. Further, only 18% of the enterprises surveyed had a female Chief Executive Officer in the year 2020. More concerningly, among Fortune 500 companies, only 37 Chief Executive Officers (i.e., ~7%) were women (Statistics Division of the United Nations Department of Economic and Social Affairs, 2020). In an analysis of the top 1000 United States firms by revenue, women made up only 18% of Chief Information Officers or Chief Technology Officers (averaged across industry). The analysis also found that across all C-suite positions (i.e., Chief Executive Officer, Chief Financial Officer, Chief Operating Officer, and Chief Information Officer), the most senior posts are held by the smallest number of women: 6% serving as Chief Executive Officers and 12% serving as Chief Financial Officers across industries. Finally, the study reported that 23% of C-suite members in the industrial, technology and energy industries were women (Korn Ferry, 2019). Ryerson's Diversity Institute (2020) corroborates data from the United States by highlighting the absence of women in STEM in managerial roles.

### **Women's Entrepreneurship in Technology and Engineering**

There continues to be an issue around women's slow access to entrepreneurship and business ownership in STEM (Ryerson's Diversity Institute, 2020a). Many have identified the lack of women in STEM as a possible pipeline issue that also impacts the number of diverse women-entrepreneurs, especially in technology (for more on the 'leaky' pipeline metaphor, see Blickenstaff, 2005; Makarova et al., 2016). However, with the numbers of women in STEM increasing, women-entrepreneurs in technology have continued to struggle and the number of women entrepreneurs have remained low (Cukier et. al., 2020; Women Entrepreneurship Knowledge Hub, 2020). In general, Canada has significantly fewer female than male entrepreneurs. This may be due to female entrepreneurs' relative lack of experience and/or confidence in their abilities, often coupled with difficulties gaining access to funding (Zubairi, 2017). Indeed, the McKinsey Global Institute cites entrepreneurship as the indicator that registers the highest gender inequality, where men are four times more likely as women to have majority ownership of a SME. This is especially so in STEM, which is the second highest, where there are three women for every 10 men. In the information technology industry, for instance, women account for only approximately 16% of managers, and in the C-suite, only 3% of women are Chief Executive Officers and only 20% are Chief Financial Officers (Catalyst, 2020; Credit Suisse, 2019).

There is ample evidence that a lot of the resources were unevenly distributed by sector, favouring technology. Women-owned businesses are half as likely to be in the information and communication technology sector (5% compared to 11% for men-owned businesses). In high-exporting, and thus high-earning sectors (e.g., technology, IT, software products), men-owned businesses were two or three times more common (Women Entrepreneurship Knowledge Hub, 2020). In the sectors of professional, scientific and technical services, majority women-owned businesses were significantly less likely than majority men-owned enterprises to introduce either product, process, marketing, and/or organizational innovations. The findings from Riding et al. (2018) lend support to the need to develop initiatives that increase the capacity of underrepresented groups and to support women's entrepreneurships.

With respect to immigrant-owned businesses, a recent review found that they were about 9% more likely to implement a product innovation (i.e., goods and services) and 20% more likely to implement a process innovation (i.e., production processes or methods). The study offered some possible explanations for the linkage to product and process innovations among these businesses. For instance, Canadian immigrants are more likely than Canadian-born individuals to have a university education, and those university-educated immigrants are two times as likely as Canadian-born university-educated individuals to have received their education in STEM fields (Statistics Canada, 2020).

## **Retaining and Advancing Women in Technology and Engineering**

### **Barriers to the Retention of Women in Technology and Engineering**

Many of the barriers that hinder women in technology and engineering can be applied to other sectors. For instance, women are more likely than men to be the primary caregiver for their children and for their ill or aging family members (Hansen, 2020). Indeed, although on average, 20% of SMEs are majority-owned by women, women do about 64% of the unpaid work at home (e.g., care, homework; McKinsey Global Institute, 2017). Corbell and Hill (2015) highlighted that women who end up leaving engineering are very similar to women who end up staying in the field. The differences the researchers found were not in the women themselves but in their workplace environments, where those who left were less likely to have training and development opportunities, support from supervisors and/or co-workers, and support when balancing work and nonwork roles than were women who stayed in engineering.

There is a wealth of research linking school-related efforts to young women's pursuit of STEM and this scan will not repeat that (see Reinking & Martin, 2018). It is important to note, however, that one of the most common reasons that women do not persist in STEM after high school, according to Wall (2019) is a loss of interest in the STEM curriculum. This has been linked to women not self-identifying as scientists and/or feeling isolated or out of place in their courses (e.g., due to being greatly outnumbered by men, unequal treatment). As well, many attribute the limited diversity of the STEM workforce to a lack of encouragement for girls, but especially Blacks and Hispanic girls, to pursue STEM from an early age (Funk & Parker, 2018).

There continue to be stereotypes or common biases encountered by women in STEM, like, for instance, that men are better in STEM fields than women and that successful women (need to) behave in masculine ways (Hansen, 2020). A recent report found that just 38% of Senior Human

Resource Officers identify building a more inclusive culture as an effective way to retain and advance women in technology roles (Girls Who Code, 2020). There also exist gender biases with respect to hiring and the job application process, as well as with advancement and promotions and pay (given that women are paid less; Catalyst, 2020; Hansen, 2020). Indeed, according to Funk and Parker (2018), about half of women in STEM jobs (48%) say gender discrimination in the recruitment, hiring, and promotion/advancement process is a primary reason there are not more women in STEM jobs. Women in STEM also face much higher rates of discrimination and sexual harassment and report having their contributions ignored as well as feeling isolated. The latter is often caused by a lack of access to women-peers, role models, and/or mentors (Catalyst, 2020; Funk & Parker, 2018; Madgavkar et al., 2019).

## **Strategies for the Retention and Promotion of Women in Technology and Engineering**

The expansion of women's representation in engineering and computing will require concerted effort by employers, educational institutions, policy makers, and individuals to improve women's representation in technology and engineering. Fortunately, there are strategies that have proved useful in this effort. For instance, Harvey Mudd College in Clairmont, California has demonstrated how changing structures and environments can result in a dramatic increase in women's representation in technology. First, Harvey Mudd revised the introductory computing course and split it into two levels that were divided by experience. Second, they provided research opportunities for undergraduates after their first year. Finally, they also took women students to the Grace Hopper Celebration of Women in Computing conference, the world's largest gathering of women in computing. As a result, Harvey Mudd increased the percentage of women who were graduating from the computing program by 28% in five years (12% to 40%; Corbett & Hill, 2015). These changes, according to Corbett and Hill (2015), can be modified and applied at other institutions to garner interest and retention among women.

There are other things that can be done to increase women's participation in representation in technology and engineering. One strategy that is fundamental for the development and retention of women in STEM is cultivating mentorship (Mayer, 2019; Rupert et al., 2020). Companies should also actively promote diversity. Attracting diversity, in terms of gender, position, and racial/ethnic background (to name a few) is critical for the success of organizations and a variety of viewpoints and perspectives only benefits companies. As well, it is recommended for organizations to collaborate with specific diversity advocacy groups to address issues that are common for racial and gender minorities within STEM (i.e., intersectionality; Rupert et al., 2020). Sarah Laszlo, a Senior Neuroscientist at X the Moonshot Factor, also suggested having a long-term view of recruitment, which also involves the cultivation of talent. Cultivating employees when they are at a more junior level allows them to develop the tools needed to succeed in their field and allow them to progress through the metaphorical pipeline Kenworthy (2020).

In addition to having several, established strategies to increase women's representation in tech and engineering, factors unique to SMEs also put SMEs in a strong position to recruit, hire, and retain women. In fact, SMEs may actually be better equipped to achieve gender equality in STEM professions than their larger rivals. In a recent study released by Purpose HR, 55% of women surveyed said they would be more likely to choose a small firm where they perceive their work as having an impact. Top priorities when seeking employment, for women, were career progression (35%), company reputation (32%), and learning opportunities (29%). It is

recommended that SMEs lean into these priorities by providing developmental opportunities and creating clear pathways for women to advance and grow (Burley, 2019).

Regardless of the strategies companies choose to implement to improve diversity in STEM fields, changes need to occur from the bottom up. According to Georgia Gkioxari, a research scientist for Facebook Artificial Intelligence Research, gender biases need to be uprooted from society and economic inequalities need to be combatted early. While recognizing the changes needed involve major sociopolitical upheaval, Georgia said that “top down efforts like pressure for female presence in executive roles, workshops and gatherings which promote underrepresented groups... are helpful and encouraging but [she] fear[s] not powerful enough to establish the change we are looking for in the long run” (Kenworthy, 2020). Instead, change needs to come early by uprooting gender bias that affects girls and young women at an early age and by promoting equal opportunities as women are planning their futures.

In terms of supporting women-entrepreneurs, initiatives that focus on providing targeted support in various areas of importance (e.g., amount of funding received by women-entrepreneurs) could increase the number of successful majority-woman-owned SMEs (Zubairi, 2017). The Startup Canada Women Founders Fund, for instance, was established as a support for women-entrepreneurs in STEM businesses through the provision of both microgrants and diverse supports in an effort to address the challenges faced by women-entrepreneurs. BDC Capital’s Women in Technology Venture Fund is also important, being that it is one of the largest venture capital funds in the world dedicated to investing and funding women-owned technological companies through (in)direct investment and ecosystem development (Women Entrepreneurship Knowledge Hub, 2020).

There are also several coalitions and organizations that have implemented programs to attract and retain women in STEM. SCWIST, the Society for Canadian Women in Science & Technology, has implemented MakePossible and Make DIVERSITY Possible. The former is an online platform based on skill-sharing and 360-degree mentoring. It creates the option for face-to-face meetings and creates opportunities via workshops and networking events (Society for Canadian Women in Science & Technology, 2021b). The latter, funded by WAGE, involved SCWIST working with STEM companies to both create diversity tools and build inclusive workplace cultures (Society for Canadian Women in Science & Technology, 2021a). Thus, the former targets the women themselves while the latter works to build inclusive cultures for the women once they get into the workforce. As well the Canadian Women in Communications and Technology (2021) offers a variety of services:

- the Jeanne Sauvé Career Development Program, which offers a ‘backstage pass’ to the private and public sectors of the communications and technology industry
- the Dr. Roberta Bondar STEM Career Development Program, which is a great opportunity for women as well as nonbinary and gender diverse folks working in STEM to network with industry leaders and peers and receive a behind-the-scenes look at those industries in Canada
- a mentorship program, that matches Women in Communications and Technology members with peer or senior mentors for the period of one year, where they receive counsel, leadership, and professional development
- the Her Words, Our Wisdom video initiative, a way to amplify individual and collective strengths in order to empower women, share wisdom, and create change, all by starting with ‘her’

- other resources, including free (to members) webinars featuring inspiring leaders from around the world

## **Collaborative Approaches for Attracting and Retaining Women in Technology and Engineering**

Collaborations and partnerships are beneficial in that they provide more resources and efforts toward initiatives aimed at attracting and retaining women in STEM, namely in technology and engineering. Two North American ones include the Girls Who Code/Accenture and the Communitech's Women in Tech/TD Lab/NetSuite collaborations. Girls Who Code (2020), which is the international non-profit organization currently leading efforts to close the gender gap in technology, has partnered with Accenture, a global services and consulting company. They have said that creating an inclusive culture is the key to unlocking opportunities for women who are studying and working (or aiming to work) in technology. Communitech's Women in Tech, which is supported by TD Lab (an innovation team within TD Bank Group) and NetSuite (an American cloud computing company), brings young women in technology with experienced professionals in the technology sector. Those professionals can then share their successful strategies as well as mistakes and lessons they have learned to help emerging young women who plan to enter the technology field (Froklage, 2017; McKinsey Global Institute, 2017).

There are other global collaborations that warrant mention. The United Kingdom's Women in Engineering partnered with Jaguar LandRover for the WISE campaign for gender balance in science, technology, and engineering. The partnership offers sponsorship and outreach opportunities for young women in those fields (McKinsey Global Institute, 2017; Weaver, 2013). The German chancellor brought together government and business leaders (e.g., McKinsey & Company, the media) in an effort to advocate for more gender balance in top management positions. They titled the initiative "Chefsache. Drive the Change – For Men and Women" Initiative, whereby Chefsache means "CEO priority." The initiative was a way of giving new impetus for cultural change in Germany's top tier by working with business executives, leaders from scientific institutions, academia, social services, the media, and the public sector (Chefsache, 2021; McKinsey Global Institute, 2017).



# References

- Blickenstaff, J. C. (2005). Women and science careers: Leaky pipeline or gender filter? *Gender and Education*, 17(4), 369-386. <https://doi.org/10.1080/09540250500145072>
- Burley, H. (2019). Stem women prefer smaller firms to large corporations. *The Scotsman*. <https://www.scotsman.com/regions/stem-women-prefer-smaller-firms-large-corporations-1419954>
- Campero, S. (2020, in press). Hiring and intra-occupational gender segregation in software engineering. *American Sociological Review*. <https://journals.sagepub.com/doi/full/10.1177/0003122420971805>
- Canadian Women in Communications and Technology. (2021). Programs. <https://www.wct-fct.com/en/programs>
- Catalyst. (2020). Women in Science, Technology, Engineering, and Mathematics (STEM): Quick Take. <https://www.catalyst.org/research/women-in-science-technology-engineering-and-mathematics-stem/>
- Chefsache. (2021). The 'Chefsache' Initiative. <https://initiative-chefsache.de/en/initiative-chefsache/>
- Comptia. (2020). Canada's Technology Industry Continues on Growth Path, CompTIA Cyberprovinces™ 2020 Report Reveals. <https://www.comptia.org/newsroom/2020/09/09/59anada-s-technology-industry-continues-on-growth-path-comptia-cyberprovinces-2020-report-reveals>
- Corbett, C., & Hill, C. (2015). *Solving the equation: The variables for women's success in engineering and computing*. AAUW. <https://www.aauw.org/app/uploads/2020/03/Solving-the-Equation-report-nsa.pdf>
- Credit Suisse. (2019). Gender diversity is good for business. <https://www.credit-canada.com/about-us-news/en/articles/news-and-expertise/cs-gender-3000-report-2019-201910.html>
- Cukier, W. (2020). COVID-19 may turn back the clock on women's entrepreneurship. *The Conversation*. <https://theconversation.com/covid-19-may-turn-back-the-clock-on-womens-entrepreneurship-139961>
- Deloitte. (2020). Understanding the sector impact of COVID-19: Technology sector. <https://www2.deloitte.com/global/en/pages/about-deloitte/articles/covid-19/understanding-covid-19-s-impact-on-the-technology-sector-.html>
- Engineers Canada. (2021). Overview of the Licensing Process. <https://engineerscanada.ca/become-an-engineer/overview-of-licensing-process>

- Engineers Canada. (2020). *Engineers' role in Canada's long-term economic recovery post-COVID-19*. <https://engineerscanada.ca/public-policy/issue-statements/engineers-role-in-canadas-long-term-economic-recovery-post-covid-19>
- Engineers Canada. (2019). 2019 National Membership Information. <https://engineerscanada.ca/2019-national-membership-information>
- Engineers Canada. (2015). *Engineering labour market in Canada: Projections to 2025*. <https://engineerscanada.ca/sites/default/files/Labour-Market-2015-e.pdf>
- Froklage, P. (2017). Mentorship making a difference for women in tech. *Communitech News*. <https://news.communitech.ca/mentorship-making-a-difference-for-women-in-tech/>
- Funk, C., & Parker, K. (2018). *Women and Men in STEM Often at Odds Over Workplace Equity*. Pew Research Center. <https://www.pewresearch.org/social-trends/2018/01/09/women-and-men-in-stem-often-at-odds-over-workplace-equity/>
- Girls Who Code. (2020). Groundbreaking Research From Girls Who Code and Accenture Outlines Steps to Double Women in Tech in 10 Years. <https://girlswhocode.com/news/groundbreaking-research-from-girls-who-code-and-accenture-outlines-steps-to-double-women-in-tech-in-10-years>
- Government of Canada. (2020). Digital Technologies/ICT. <https://www.ic.gc.ca/eic/site/ict-tic.nsf/eng/home>
- Hansen, D. S. (2020). Identifying barriers to career progression for women in science: Is COVID-19 creating new challenges. *Science & Society*, 36(10), 799-802. <https://doi.org/10.1016/j.pt.2020.07.016>
- India Today. (2020). Impact of Covid-19 on engineers: Skills to build and career path to follow. <https://www.indiatoday.in/education-today/featurephilia/story/impact-of-covid-19-on-engineers-skills-to-build-and-career-path-to-follow-1722119-2020-09-15>
- Kenworthy, L. (2020). The Diversity Diaries: How Can We Promote Diversity in STEM? RE-WORK. <https://blog.re-work.co/how-to-promote-diversity-in-stem/>
- Korn Ferry. (2019). Korn Ferry Analysis of Largest U.S. Companies Shows Percentage of Women in C-Suite Roles Inches Up From Previous Year. [https://www.kornferry.com/about-us/press/korn-ferry-analysis-of-largest-us-companies-shows-percentage-of-women-in-c-suite-roles-inches-up-from-previous-year?mod=article\\_inline](https://www.kornferry.com/about-us/press/korn-ferry-analysis-of-largest-us-companies-shows-percentage-of-women-in-c-suite-roles-inches-up-from-previous-year?mod=article_inline)
- Kuschel, K., Ettl, K., Díaz-García, C., & Alsos, G. A. (2020). Stemming the gender gap in STEM entrepreneurship – insights into women's entrepreneurship in science, technology, engineering and mathematics. *International Entrepreneurship and Management Journal*, 16, 1-15. <https://doi.org/10.1007/s11365-020-00642-5>

- Madgavkar, A., Manyika, J., Krishnan, M., Ellingrud, K., Yee, L., Wortzel, J., Chiu, M., Hunt, V., & Balakrishnan, S. (2019). The future of women at work: Transitions in the age of automation. McKinsey & Company. <https://www.mckinsey.com/featured-insights/gender-equality/the-future-of-women-at-work-transitions-in-the-age-of-automation>
- Makarova, E., Aeschlimann, B., & Herzog, W. (2016). Why is the pipeline leaking? Experiences of young women in STEM vocational education and training and their adjustment strategies. *Empirical Research in Vocational Training and Education*, 8, 2. <https://doi.org/10.1186/s40461-016-0027-y>
- Mayer, M. (2019). The rise of women in supply chain & logistics. Refrigerated & Frozen Foods. <https://www.refrigeratedfrozenfood.com/articles/97702-the-rise-of-women-in-supply-chain-logistics>
- McKinsey Global Institute. (2017). *The power of parity: Advancing women's equality in Canada*. <https://conectadas.org/wp-content/uploads/2018/05/MGI-The-power-of-parity-Advancing-womens-equality-in-Canada-Full-report.pdf>
- National Science Foundation. (2020). The State of U.S. Science and Engineering 2020. <https://nces.nsf.gov/pubs/nsb20201/u-s-s-e-workforce>
- Parakala, K. (2020). Ten emerging trends shaping our new future. GDH. <https://www.ghd.com/en/perspectives/ten-emerging-trends-shaping-our-new-future.aspx>
- Rao, A. (2020). Tech Upskilling - The why and how. People Matters. <https://www.peoplemattersglobal.com/article/hr-technology/tech-upskilling-the-why-and-how-24899>
- Reinking, A., & Martin, B. (2018). The gender gap in STEM fields: Theories, movements, and ideas to engage girls in STEM. *Journal of New Approaches in Educational Research*, 7(2), 148-153. <https://doi.org/10.7821/naer.2018.7.271>
- Riding, A., Orser, B., & Liao, D. (2018). *Benchmarking small and medium enterprises as suppliers to the Government of Canada: Inclusion, innovation and international trade*. Telfer School of Management & Public Services and Procurement Canada. [http://www.sice.oas.org/sme\\_ch/publications/uo\\_telfer\\_Benchmarking-SME-report\\_03\\_e.pdf](http://www.sice.oas.org/sme_ch/publications/uo_telfer_Benchmarking-SME-report_03_e.pdf)
- Rupert, D. D., Nowlan, A. C., Tam, O. H., & Hammell, M. G. (2020). Ten simple rules for running a successful women-in-STEM organization on an academic campus. *PloS Computational Biology*. <https://doi.org/10.1371/journal.pcbi.1007754>
- Ryerson's Diversity Institute. (2020). *Economic equality in a changing world: Removing barriers to employment for women*. <https://www.ryerson.ca/diversity/reports/economic-equality-in-a-changing-world/>

- Society for Canadian Women in Science & Technology. (2021a). Make Diversity Possible. <https://scwist.ca/programs/make-possible/>
- Society for Canadian Women in Science & Technology. (2021b). Make Possible. <https://scwist.ca/programs/make-possible/>
- Statistics Canada. (2020). *Study: Innovation in immigrant-owned firms in Canada*. <https://www150.statcan.gc.ca/n1/daily-quotidien/200609/dq200609e-eng.htm>
- Statistics Canada. (2017). *Census in Brief: Is field of study a factor in the earnings of young bachelor's degree holders?* <https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016023/98-200-x2016023-eng.cfm>
- Statistics Division of the United Nations Department of Economic and Social Affairs. (2020). *The world's women 2020: Trends and statistics*. United Nations. <https://www.un.org/en/desa/world%E2%80%99s-women-2020>
- Wall, K. (2019). *Persistence and representation of women in STEM programs*. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/75-006-x/2019001/article/00006-eng.htm>
- Weaver, T. (2013). A WISE move to get more young women into engineering. Develop 3D. <https://develop3d.com/develop3d-blog/a-wise-move-to-get-more-young-women-into-engineering/>
- Women Entrepreneurship Knowledge Hub. (2020). The state of women's entrepreneurship in Canada. [https://wekh.ca/wp-content/uploads/2020/08/WEKH\\_State\\_of\\_Womens\\_Entrepreneurship\\_in\\_Canada\\_2020\\_EN-Aug10v3.pdf](https://wekh.ca/wp-content/uploads/2020/08/WEKH_State_of_Womens_Entrepreneurship_in_Canada_2020_EN-Aug10v3.pdf)
- Zubairi, A. (2017). Report: Supporting more women in STEM part of adding \$150 billion to Canada's GDP by 2026. <https://betakit.com/report-supporting-more-women-in-stem-part-of-adding-150-billion-to-canadas-gdp-by-2026/>

## Appendix: Women in Technology and Engineering

Sector	Degree Requirements	Other Requirements
<b>Engineering</b>	Four-year Bachelor of Engineering	<p>To be licensed as an engineer in Canada, one needs to hold and maintain the licence through a Canadian regulator (each province and territory has one). Criteria to obtain a licence (Engineers Canada, 2021):</p> <ul style="list-style-type: none"> <li>• hold an engineering degree from a Canadian Engineering Accreditation Board-accredited undergraduate program</li> <li>• fulfill engineering work experience required by the appropriate province or territory</li> <li>• pass the Professional Practice Exam, which tests knowledge on laws affecting the profession, ethical and professional standards, etc.</li> <li>• good character</li> <li>• ability to work in either English or French</li> </ul>
<b>Technology</b>	<p>Three or four-year Bachelor's Degree in Engineering, Computer Science, Data Science, or a related degree</p> <p>Many jobs require a Master's degree, which is usually a two-year program.</p>	<p>Upskilling is very important in the technology sector, especially since technology is ever-evolving. There are many new jobs consistently being created in the technology sector and staying abreast to current trends, software, programs, etc. is vital (Rao, 2020).</p>

# Women in the Transportation Industry

## Introduction

The transportation sector is a type of skilled trade that involves both engaging in the transportation and warehousing as well as providing logistic services (Statistics Canada, 2013). While transportation focuses on the movement of goods from one place to the other, the logistics industry refers to the whole 'flow' management, including the transportation and delivery of goods, but also the storage, handling, inventory, packaging and various other aspects (Sabell, 2021). The latest data from Statistics Canada suggests that in 2011, truck transportation was the largest component of the transportation gross domestic product in Canada (Statistics Canada, 2016). It is important to note that while transport covers trucking, rail, air, and marine, much of the data and information concerned trucking and logistics. Please see the appendix for more details on the various professions in the transport sector, including a description of professions and education and experience requirements. This report summarizes the state of transportation in Canada for women, specifically focusing on the trucking industry, trends in the field, barriers to women's participation, practices to improve inclusivity, women leaders and entrepreneurs and collaboratives promoting women.

## Women in Transport

Across Canada, women are very much underrepresented in the transport industry. Only about 3% of Canada's over 300,000 truck drivers are women, despite the fact that women account for about 47% of the Canadian workforce (Smith, 2021). As of 2019, in Ontario specifically, about 2.5% of the Class A, which is the commercial truck driver standard, drivers were women (Sherman, 2019). Similarly, there has been slow movement with respect to employing, mobilizing, and leveraging women in aviation industry. For instance, from 1980 to 2010, the total number of women with any type of aviation license increased by just over 2% (Allin, 2020). Part of the reason for the relatively small gain in females with aviation licences is that women do not seem to fare well in aviation school. At the beginning of aviation school, 12% of student pilots are women, but only 5% become commercially licensed. Among those women who have spent thousands of dollars and flown at least 200 hours to achieve a commercial licence, few of those 5% of seek or retain employment (Allin, 2020).

## Trends, Especially Given the Impact of COVID-19

Compared to other sectors, the transport industry was not dramatically impacted by the COVID-19 pandemic. Canadian truck drivers remained an essential service throughout the pandemic and were required to provide vital supplies, food and other products to keep the economy running (Ontario Trucking Association, 2020). During this time, only about 3% of those in the transportation sector were able to telecommute and as such, the majority of workers in the industry have remained in the field during the pandemic. At the height of the pandemic, researchers at the Center for Economic and Policy Research (Rho et al., 2020) put together a profile of workers in front line industries. Of all the workers, 12% worked in trucking (38% of whom were non-White) and 31% in warehousing/storage (59% of whom were non-White).

There is some debate on the future of the Canadian Transport Industry. Prior to the pandemic, in 2019, the McKinsey Global Institute estimated that the transportation and warehousing industry had the third-highest automation potential of any sector (Dekhne et al., 2019). There have been projections that autonomous trucks would result in about two or three million jobs lost for truck drivers in the United States alone, with similar projections across North America. However, many have more recently argued that projected job losses to automation are overstated (Gittleman and Monaco, 2020). Truck drivers do more than just drive trucks (e.g., the provision of customer service, securing cargo), which cannot be replaced by automation. The requirements of technology combined with complex regulations of how trucks can operate also implies that certain segments of trucking may be easier to automate than others and many trucking jobs may not be able to be replaced with automation. Thus, despite a growing capacity for automation, Canada's transport industry is still forecasted to see a 31% increase in labour demand between 2010 and 2030. The Canadian truck transportation sector alone has been projected to employ approximately 369,000 people by the end of 2021. The current rate of vacancies coupled with the retirement projections of the ever-aging workforce suggest labour shortages to the tune of over 26,000 full time jobs by 2030 (THRSC Atlantic, 2020).

## **Women in Leadership and Entrepreneurship in Canadian SMEs**

### **Women in Leadership in Transport**

Overall, little is known about women's leadership in transport. We do know, however, that women comprised 23% of management in trucking in 2017 (Ontario Trucking Association, 2018). Thomasnet (2019), however, has reported low female representation in organizational leadership roles (e.g., managers, supervisors), but an increase in women in C-suite roles (i.e., Chief Executive Officer, Chief Financial Officer, Chief Operating Officer, and Chief Information Officer) from 7% in 2016 to 14% in 2018. More work needs to be completed to get an accurate sense of women's representation in leadership positions in the transport industry.

### **Women's Entrepreneurship in Transport**

In Canada, the gender gap in entrepreneurship in transport continues to be large. Among all SMEs, men own 64% of enterprises, which is four times as large as the share of women-owned SMEs (15%; Sekkel, 2020). In Canada, as of 2017, the number of women-owned export SMEs were small in the transportation and warehousing sector (7% of total enterprises). Women-owned exporter SMEs continue to be disproportionately concentrated (64%) among micro-enterprises (i.e., between one and four employees), compared to men-owned or equally-owned (43%; Sekkel, 2020). The difficulties for women-entrepreneurs discussed in the introductory document of this scan apply to the transport industry, including the technical, legal, financial, and business challenges inherent in entrepreneurship (Women's Transportation Seminar, 2020a)

# Retaining and Advancing Women in Transport

## Barriers to the Retention of Women in Transport

There are multiple barriers that deter women from pursuing a career in the transport industry. Despite new technologies like artificial intelligence and robotics, which have automated many manual roles, perceptions and stereotypes suggesting all transport jobs involve grueling manual labour in dirty, dangerous conditions are persistent and continue to act as a barrier to women's participation (Thomasnet, 2019). The trucking industry is also perceived as dangerous, stressful, and unhealthy (e.g., sitting for long periods of time), and thus not appealing, especially to women (Wade, 2020). There are also stereotypes about what a successful owner looks like in trucking and women do not necessarily see themselves in that role (Women's Transportation Seminar, 2020a). The same is true for aviation, where there are misconceptions that pilots are brilliant scientists or mathematicians. Thus, women often do not consider aviation as a viable career nor do they see themselves fitting in that industry (Allin, 2020).

In addition to misconceptions and stereotypes, demand-side constraints also affect the gender composition of an occupation. Demand-side constraints include (a lack of) training opportunities, role models, social isolation, and discrimination, which all contribute to fewer women in male-dominated fields such as transport (Scott & Davis-Sramek, 2021). In SMEs in particular, Baur (2019) identified a lack of female mentors, potential investors and inclusiveness in mainstream networks, incubators and accelerators; and the experiences of sexism (e.g., comments concerning women's knowledge and expertise, women having to compensate for their gender by working to appear more credible) and business discrimination as key barriers to women in the transport industry.

## Strategies for the Retention and Promotion of Women in Transport

In addition to the more general strategies discussed in the introductory scan, there are transport-specific practices that can be implemented to retain and/or advance women in transport. Wade (2020) identified more formalized outreach programs, coaching programs, women-trainers and mentorship programs as key undertakings to help women enter the transport industry. The Women's Transportation Seminar, an international organization comprising over 4000 transportation professionals with 45 chapters across the United States, Canada, and Great Britain has been one avenue through which this work has been done. Their aim is to transform the transport industry through the advancement of women. Doing so, for them, means offering programs that include:

- **Mentoring:** their mentoring program allows for the sharing of career success stories by women in the field with future women-leaders, which allows emerging women to gain knowledge and wisdom and learn from the trailblazers before them
- **Professional development:** this includes career development seminars, roundtable discussions, and legislative forums aimed at providing comprehensive career-focused preparation and guidance
- **Leadership training program:** creates room for interactions with industry-leading professionals in the transport field
- **Women business owner roundtables:** women learn about topics like improving profitability, attracting and retaining staff, and corporate value and ownership success, centered on SME-specific challenges (Women's Transportation Seminar, 2020a, b, c).



There are other important considerations when working to advance and retain women in the transportation industry. One is improving the on-the-job environment for women. The Women's Transportation Seminar (2020b) highlighted that workplaces with family-friendly policies, professional development opportunities, and leadership training are all key factors that lead to higher retention and promotion of women (Women's Transportation Seminar, 2020b). As well, utilizing social media to spread a different message about the trucking industry may also be an effective tactic to change women's perceptions of trucking. Indeed, Wade (2020) reported that 38% of the 18- to 26-year-olds surveyed said that social media had shaped their view of the trucking profession. As such, social media may be a useful leverage point for attracting women into the transport industry.

## **Collaborative Approaches for Attracting and Retaining Women in Transport**

There are some notable collaborations and partnerships aimed at attracting and retaining women in transport. In 2018, the Women in Trucking Association, which is a non-profit association established to encourage the employment of women in trucking and minimize their obstacles once in the industry, and Expediter Services, a leader in capacity solutions and ownership opportunities within the trucking industry, announced a collaboration to create 150 women-owned businesses in transportation. By leveraging and using the infrastructure developed through Expediter Services, women who wish to learn more about how they can start and grow a trucking operation are able to launch their own small businesses as owner-operators and fleet owners. Women who participate in the 150 Business Challenge are able to access competitive market-rate truck financing, a broad range of new equipment choices, and fuel discounts (Women in Trucking Staff, 2018).

As well, Women in Rail, a coalition aimed at providing networking and support for young women interested in pursuing a career in rail, have a sustainable, scalable and transferrable cross-industry Mentoring Program. The program is delivered by Women in Rail in collaboration with Moving Ahead, a specialist company that supports the matching of mentors and mentees. This is a pioneering program designed to help participants progress in their career while also improving gender balance, diversity, and inclusion. This program, set in the United Kingdom, gives women mentees priority in terms of their matching preferences, including the gender of whom they want to be matched with. Mentees are then able to develop skills, knowledge, relationships and confidence, while being supported in taking control of their careers. The program helps give them inspiration and support and they are exposed to a global community of like-minded individuals, thus expanding their network while developing their networking skills in tandem (Women in Rail, 2021).

# References

- Allin, L. R. (2020). Women in aviation: The hard facts. Skies.  
<https://skiesmag.com/news/women-in-aviation-the-hard-facts/>
- Baur, A. A. B. (2019). Women-owned exporting small and medium enterprises - Descriptive and comparative analysis. Global Affairs Canada. [https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/women\\_owned-export-entreprises\\_femmes.aspx?lang=eng](https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/women_owned-export-entreprises_femmes.aspx?lang=eng)
- Dekhne, A., Hastings, G., Murane, J., & Neuhaus, F. (2019). Automation in logistics: Big opportunity, bigger uncertainty. McKinsey & Company.  
<https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/automation-in-logistics-big-opportunity-bigger-uncertainty#>
- Gittleman, M., & Monaco, K. (2020). Truck-driving jobs: Are they headed for rapid elimination. *ILR Review*, 73(1), 3-24. <https://doi.org/10.1177/0019793919858079>
- Madgavkar, A., Manyika, J., Krishnan, M., Ellingrud, K., Yee, L., Wortzel, J., Chiu, M., Hunt, V., & Balakrishnan, S. (2019). The future of women at work: Transitions in the age of automation. McKinsey & Company. <https://www.mckinsey.com/featured-insights/gender-equality/the-future-of-women-at-work-transitions-in-the-age-of-automation>
- Ministry of Transportation. (2017). III. A and D licence classes and requirements.  
<http://www.mto.gov.on.ca/english/trucks/handbook/section1-3-0.shtml#:~:text=The%20class%20A%20driver's%20licence,a%20motorcycle%20or%20a%20moped.>
- Ontario Trucking Association. (2018). Survey: Number of Women in trucking Rising.  
<https://ontruck.org/survey-number-of-women-in-trucking-rising/>
- Ontario Trucking Association. (2020). Trucking Remains an Essential Service as Canada-U.S. Close Borders to Non-essential Traffic. <https://ontruck.org/trucking-remains-an-essential-service-as-canada-u-s-close-borders-to-non-essential-traffic/#:~:text=The%20government%20once%20again%20stressed,economy%20running%20and%20Canadians%20safe.>
- Rho, H. J., Brown, H., & Fremstad, S. (2020). A basic demographic profile of workers in frontline industries. Center for Economic and Policy Research. <https://axelkra.us/wp-content/uploads/2020/12/2020-04-Frontline-Workers.pdf>
- Sabell, H. (2021). What is the Difference Between the Logistics Industry and Transportation? The College for Adult Learning. <https://collegeforadultlearning.edu.au/logistics-industry-and-transportation/>
- Scott, A., & Davis-Sramek, B. (2021). Driving in a man's world: Intra-occupational gender segregation in the trucking industry.

[https://www.researchgate.net/publication/349104605\\_Driving\\_in\\_a\\_Man's\\_World\\_Intra-occupational\\_Gender\\_Segregation\\_in\\_the\\_Trucking\\_Industry](https://www.researchgate.net/publication/349104605_Driving_in_a_Man's_World_Intra-occupational_Gender_Segregation_in_the_Trucking_Industry)

- Sekkel, J. V. (2020). Women-Owned SMEs and Trade Barriers. Global Affairs Canada. [https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/women\\_owned\\_smes\\_trade-pme\\_commerce\\_appartenant\\_femmes.aspx?lang=eng](https://www.international.gc.ca/trade-commerce/economist-economiste/analysis-analyse/women_owned_smes_trade-pme_commerce_appartenant_femmes.aspx?lang=eng)
- Sherman, J. (2019). In it for the long haul: Getting more Ontarian women involved in trucking. TVO. <https://www.tvo.org/article/in-it-for-the-long-haul-getting-more-ontarian-women-involved-in-trucking>
- Smith, J. G. (2020). Canada's truck drivers to require 103.5 hours of training. Truck News. <https://www.trucknews.com/transportation/canadas-truck-drivers-to-require-103-5-hours-of-training/1003136596/#:~:text=TORONTO%2C%20Ont.,transportation%20and%20highway%20safety%20ministers.>
- Smith, J. G. (2021). Women of trucking are still a rarity in Canada. Truck News. <https://www.trucknews.com/features/women-of-trucking-are-still-a-rarity-in-canada/#:~:text=Barely%203.5%25%20of%20Canada's%20300%2C000,data%20from%20Trucking%20HR%20Canada.&text=Either%20number%20is%20downright%20anemic,for%2047%25%20of%20Canada's%20workforce.>
- Statistics Canada. (2018). Trucking makes big gains. <https://www150.statcan.gc.ca/n1/pub/11-402-x/2012000/chap/trans/trans01-eng.htm>
- Statistics Canada. (2013). Industry profile. [https://www.ic.gc.ca/eic/site/dsib-logi.nsf/eng/h\\_pj00541.html](https://www.ic.gc.ca/eic/site/dsib-logi.nsf/eng/h_pj00541.html)
- Thomasnet. (2019). How Can Industry Encourage Women to Pursue Supply Chain and Logistics Careers? <https://www.thomasnet.com/insights/women-in-supply-chain-and-logistics-closing-the-gender-gap/>
- THRSC Atlantic. (2020). Making the Case. <https://thrsc.com/advancing-women-in-the-trucking-industry/making-the-case/>
- Wade, M. (2020). Top Strategies for Attracting and Retaining Qualified Drivers. Women in Trucking. <https://www.womenintrucking.org/blog/top-strategies-for-attracting-and-retaining-qualified-drivers>
- Women in Rail. (2021). Women in Rail's Mentoring Programme. <https://womeninrail.org/mentoring/>
- Women in Trucking Staff. (2018). 150 Women-Owned Business Challenge Reaches Mile Marker 50 With New Trucking Start-Ups. Women in Trucking. <https://www.womenintrucking.org/press-releases/150-women-owned-business-challenge-reaches-mile-marker-50-with-new-trucking-start-ups>

Women's Transportation Seminar. (2020a). Entrepreneurial Program.  
<https://www.wtsinternational.org/initiatives/entrepreneurial-program>

Women's Transportation Seminar. (2020b). Mineta Transportation Report.  
<https://www.wtsinternational.org/initiatives/mineta-transportation-report>

Women's Transportation Seminar. (2020c). Overview.  
<https://www.wtsinternational.org/mission>

## Appendix: Women in the Transportation Industry

Profession	Description	Details
<b>Truck Driver (Class A)</b>	The class A driver's licence allows you to drive a motor vehicle and towed vehicles where the towed vehicles exceed a total gross weight of 4,600 kilograms (10,000 lb) and vehicles included in classes D and G (Ministry of Transportation, 2017).	Individual provinces and territories still have various requirements in their respective jurisdictions. However, mandatory training has been introduced and consists of 103.5 hours of Class 1 training: 36.5 hours in the classroom, 17 hours in yard, and 50 hours behind the wheel. The air brake training will involve 6.5 hours in the classroom and two hours in yard (Smith, 2020).

# Literature Scan Recommendations

This final section represents a reflection of the learning from the literature scan on women in SMEs in Canada. The learnings are represented in two parts. The first are recommendations or future directions for the IGC partners based on the findings from the literature scan. The second are a synthesis of the learnings from Molly Contini and Tanja Samardzic, who conducted the literature scan. Taken together, the learnings provide possible next steps to further the IGC partners' collaborative efforts.

## Suggestions from the Research

### 1. Work to Increase the Representation of Women Leaders and Mentors

Increasing the visibility of successful women leaders as role models is one of the most important things companies can do to impact recruitment and retention as well as advancement of women to senior levels (Mayer, 2019). This is especially true in more informal sectors, such as the skilled trades, where social capital and social networks are often required to obtain and complete apprenticeships.

### 2. Help Improve the Culture of Existing Organizations

This could include unconscious bias training, diversity and inclusion training, improving strategies to recruit and retain female scientists, implementing policies to foster an inclusive workplace, implement transparent promotion procedures, help organizations set external goals and targets to increase diversity (Girls Who Code, 2020; Hansen, 2020).

### 3. Support Consulting Services for SMEs

IGC could support or provide human resources consulting services, assisting SMEs that may lack human resources knowledge, training, and/or capacity. IGC could help SMEs identify best human resource practices to increase diversity and inclusion (Ravanera & Kaplan, 2019; Rothenburger, 2020).

## Broad Strokes Suggestions

### 1. Partner with Existing Networks/Organizations in the Technology, Engineering, Transport, and Skilled Trades Space

There are numerous formal networks to help women decide on their career paths, obtain employment, navigate promotions, and act as continual support systems. Formal sponsorship by female mentors in existing organizations seems like a promising way to reduce women's feelings of exclusion and isolation, help women become prepared for the realities of the work, and should aid women with obtaining employment. Partnering with those organizations and providing them with additional resources and supports will enable them to continue doing the important work they do and will allow IGC to leverage existing foundations when engaging with this work.

## **2. Investigate Entrepreneurship in Skilled Trades**

Given the quantity and severity of barriers women face in skilled trades, in combination with the prevalence of micro- and small businesses, women-owned and operated skilled trades businesses might be considered a promising alternative. However, there seems to be a lack of information on women-led skilled trades businesses. An investigation into women's entrepreneurs in the skilled trades could be an important avenue to pursue.

## **3. Create Standards of Excellence or Designations for Organizations**

This was mentioned briefly in BC's Advancing Women in Skilled Trades report. By creating standards around gender equity and coming up with a designation for organizations who meet these standards, women are more likely to end up in organizations who will support them and their need. This, hopefully, will result in more women staying in their respective fields. Further, it is plausible that, at some point, a gender equity designation will end up being a competitive advantage and might spark change in the field.

## **4. Do Not Underestimate the Future of Trucking**

Although automation is a reality in many fields, transport included, our findings lead us to believe that trucking is a promising career path for women looking to enter male dominated fields. Given the aging workforce, the supports in place to make women's transitions into trucking easier, and the low time burden with respect to obtaining licensure (as compared to some of the other male-dominated areas we have reviewed), supporting women in trucking may be a promising avenue.

## **5. Consider the Context**

Is this project in direct response to the she-cession? Is the goal to get women immediately back into employment? Are you wanting to have longer-term implications? This will impact the area that you enter and work in. For example, getting women into technology might require a lot of women to take four years of post-secondary schooling. However, the time it takes women to become a licensed truck driver or a construction worker is less of a time burden. Thus, the questions of (a) Who are you serving? and (b) What is your time frame? are likely key contextual pieces that will point you in a certain direction and help guide your collaborative efforts together.