

myself. This word used to be negative
with the help of others they have shown
me that challenges are an opportunity
not a road block.



WOMEN
INTECH
WORLD

Canada's Gender Equity Roadmap

A Study of Women in Tech



#love

For the thousands of Canadians in tech who courageously shared their voice.

The artifacts throughout the report were created by participants at each Community Conversation and represent ideas to support and advance women and girls within Canadian tech communities.



Publishing Information

No part of this study may be reproduced in any manner whatsoever without written permission, except in the case of brief passages quoted in critical articles and reviews with citation.

For more information, visit www.womenintechworld.com

Date of Issue

October 2018

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FOREWORD

Twenty-five per cent of Canada's technology sector is made up of women¹, and of that, only 13 per cent are sitting in executive level positions. Even fewer (five per cent) hold the title of CEO.² The numbers are unsettling – yet two key questions remain: who are the women behind the numbers, and what are their lived experiences?

Over the past year, we have endeavoured to help answer these questions, connecting with and learning from over 1,600 women and men about their experiences within Canada's tech industry. Our goal was to create a community-driven action plan to address the barriers faced by women. We visited over 30 communities nationwide in an effort to represent the diversity of this country; as far as we're aware, this is the first time that so many community members have come together to voice their stories to create actionable change.

We want to thank the thousands of people, over 100 community partners, and over 170 volunteers who shared their expertise, knowledge, and time to build this Gender Equity Roadmap. Creating societal change requires buy-in and action from all facets of the community. Here are a few ways you can help take action today:

- Mentor, sponsor, or champion a woman in your network
- Learn how you can host your own Driving WinTech Community Conversation
- Share this Roadmap with your network
- Become a partner

We recognize the limitations of focusing on women as a collective. There is critical need for deeply intersectional analysis of women's experiences in tech. While our work is certainly not done, this is the beginning of an important conversation. Our biggest takeaway is that there is hope for change, and we look forward to working with Canada's tech sector to create more diverse and inclusive communities for women and girls.

Sincerely,

Alicia Close
Founder & CEO,
Women in Tech World

Melanie Ewan
COO,
Women in Tech World

WHAT WE DISCOVERED

In 2017 and 2018, we facilitated **33 Community Conversations** with **733 community members** and heard from an additional **878 individuals online** from across **all provinces and Yukon**, with the goal of building a set of community-first and data-driven action plans to create more gender-diverse and inclusive tech communities across Canada.

We invited both women and men to join these conversations, or to complete a digital version of the activities, to help us learn more about the successes and barriers that women in tech are experiencing nationwide. But what was it that we really wanted to know?

1. **Who are Canada's women in tech?**
2. **What are the successes and challenges experienced by these women?**
3. **What are recommendations for creating more gender-diverse and inclusive technology communities across Canada?**

Here's what we found.

Who Are Women in Tech

First off, throughout the research, the term "women" includes all women-identified people. For the purpose of Driving WinTech, we invited participants who self-selected into one of the following groups: (a) woman

currently working in tech (technical or non-technical role), (b) woman who recently left the tech industry, (c) ally or advocate of women in tech, or (d) other stakeholder in the tech industry.

Based on the survey responses of **1,099 women currently working in the tech industry**, as well as **34 women who recently left the tech industry**, we've developed a snapshot of the collective that could be used as a basic illustration of "who are women in tech in Canada." It's important to recognize that this is just a snapshot that does not dive deep into the intersectionality of this group.

The Snapshot

Using our participants as a proxy for 'women in tech in Canada,' this collective is made up of women who:

- Come from **various educational backgrounds**, with bachelor's and master's degrees making up the majority.
- Have **learned their technical skills** by way of a two to four year university or college program (38 per cent), although 24 per cent are self-taught.
- **Defined their work** as being technical (41 per cent), marketing/communications (13 per cent), in business development/ sales (10 per cent), product management (eight per cent), human resources/operations (seven per cent), cross-

functional (six per cent), and customer support/customer success (four per cent). Another 12 per cent of women defined their roles as project management, compliance, finance/accounting, and other.

- Are **at all organizational levels**, with the majority being either entry-level (26 per cent), management (23 per cent), or owners/ founders (12 per cent).
- **Are employed** full-time (69 per cent), self-employed (15 per cent), students (seven per cent), unemployed (five per cent), or employed part-time (two per cent).

Unpacking the Experiences

After analyzing the stories and responses, we found that the barriers to women in Canada's tech communities could be summarized into five distinct categories:

- **Bias and Discrimination**, including condescending, racist, sexist, and "old school" attitudes towards women within the industry
- **Organizational Culture**, feelings of not belonging, isolation, and an overall "bro culture"

- **Personal Barriers**, acknowledging lack of confidence, intimidation, and fear, which are exacerbated by a sense of isolation in a male-dominated industry
- **Resources**, highlighting unawareness and lack of support systems or resources in their community and workplaces
- **Education**, speaking to the need to provide technical skills and diversity and inclusion training

But it really isn't all bad news. There were a number of support systems and resources mentioned currently in place to help women in the tech industry, including:

- **Women mentors and role models;**
- **Networking among women;**
- **Conversations around gender diversity and inclusion;**
- **Appropriate family/ parental policies in the workplace;**
- **Supportive communities for women at school and work;**
- **Accessible online education and self-learning programs;**
- **Tech programs, events, and workshops, and;**
- **Funding for women.**

While these supports vary greatly, and aren't found in every tech community, the list is extremely valuable.

Building Your Action Plan

Everyone has a role to play in creating more inclusive and gender-diverse tech communities, and building usable action plans is key. Informed by the ideas of 1,611 community members, here are 13 steps your community could focus on when building an action plan for women in tech:

Breaking Down Bias In Education

1. Provide unconscious bias training for teachers and guidance counsellors.

Tech Education Across Career Stages

2. Incorporate tech education in core curricula within the elementary and secondary school systems.
3. Provide technical training and professional skills development for women working in the tech industry.
4. Increase online access to education for women between the ages of 55-64.

Mentorship Programs

5. Promote informal mentorship focusing on advice for women starting their career.
6. Arrange formal mentorship and networking opportunities for women working in the tech industry.
7. Foster mentorship at a leadership level.

Support from Industry

8. Develop policies on workplace diversity.
9. Encourage diversity in hiring at tech companies.

Role Models

10. Champion visible and relatable women in tech role models.
11. Hire more women professors and teachers in science, technology, engineering, and mathematics (STEM) courses.

Events and Programs

12. Organize industry conferences.
13. Highlight women-specific programs.

A SNAPSHOT OF CANADA'S TECH SECTOR

THE BROOKFIELD INSTITUTE FOR INNOVATION AND ENTREPRENEURSHIP DEFINES

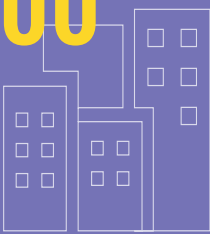
TECH SECTOR =

22
industries

responsible for
\$ 117,000,000,000
of Canada's GDP

71,000

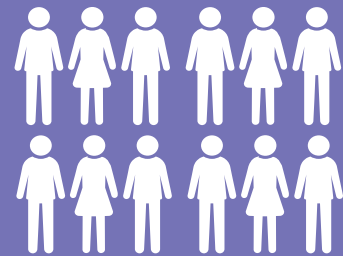
firms
across
Canada



+

864,000

EMPLOYEES



5.6% of CANADA'S EMPLOYMENT³

IN 2017 the World Economic Forum ranked

3



cities: **TORONTO, VANCOUVER, MONTREAL** in the

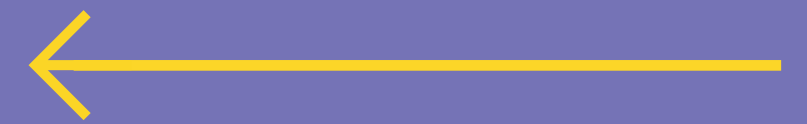
25 TOP HIGH TECH CITIES
in the world⁴

WOMEN IN CANADA'S TECH SECTOR

ICTC FOUND THE PARTICIPATION OF WOMEN IN ICT PROFESSIONS SAT AROUND **23-25%** FOR OVER **10** YEARS + **WOMEN**

in **MANAGEMENT** was consistently **LOW**

34% ENTRY LEVEL VS
18% EXECUTIVE LEVEL



WOMEN HOLD **60%** OF STEM DEGREES, ONLY

21% of grads work in ICT | even with STEM degrees, women are earning less than their male counterparts in the field.⁵

EDUCATION
SUPPORT
NO STEREOTYPES
STOP STEREOTYPES!

OUR APPROACH

If this word is positive or negative. Currently the challenges I am facing are pushing and inspiring me to grow and evolve and better myself. This word used to be negative but with the help of others they have shown me that challenges are an opportunity not a road block.

The numbers provide important context for the story of women in tech, but what about the people behind the numbers?

Driving WinTech is a community-based research initiative that brings together diverse stakeholders from the tech community in order to uncover the experiences and stories of women in tech. The initiative featured a series of research events called Community Conversations that included interactive research activities to engage participants in individual and group discussion.

In 2017 and 2018, we facilitated 33 Community Conversations in person and online with 1,611 community members, and conducted individual and small group panels and interviews with 72 key informants from across Canada.

We have collected: demographic surveys (n= 1,537), written accounts (n= 733), online qualitative surveys (n= 205), and audio recordings (n= >145 hours).

Community-based research takes a partnership approach to data discovery that engages community members as experts of their own experience and equitable stakeholders in the research process. All participants contribute ideas, insights, and resources to improve the knowledge base on a topic and combine this knowledge with innovative solutions for social change.

Primary Research Questions

- Who are women in the technology sector in Canada?
- What are the successes and barriers experienced by women in the technology sector in Canada?
- What are community-driven recommendations for creating more gender-diverse and inclusive technology communities across Canada?
- Woman working in the tech industry (technical or non-technical role)
- Woman who recently left the tech industry within the last five years*
- Advocate/ally for women in tech
- Stakeholder in the tech industry (e.g., government, non-profit, educational organizations, or service providers)

We created a set of three research activities to answer these questions:

1. Community Conversations with interactive research activities.
2. Online surveys with a mix of demographic and qualitative questions.
3. Panel discussions featuring local women in tech.

While Community Conversations were open to all genders, participants were required to self-select into one of the following categories:

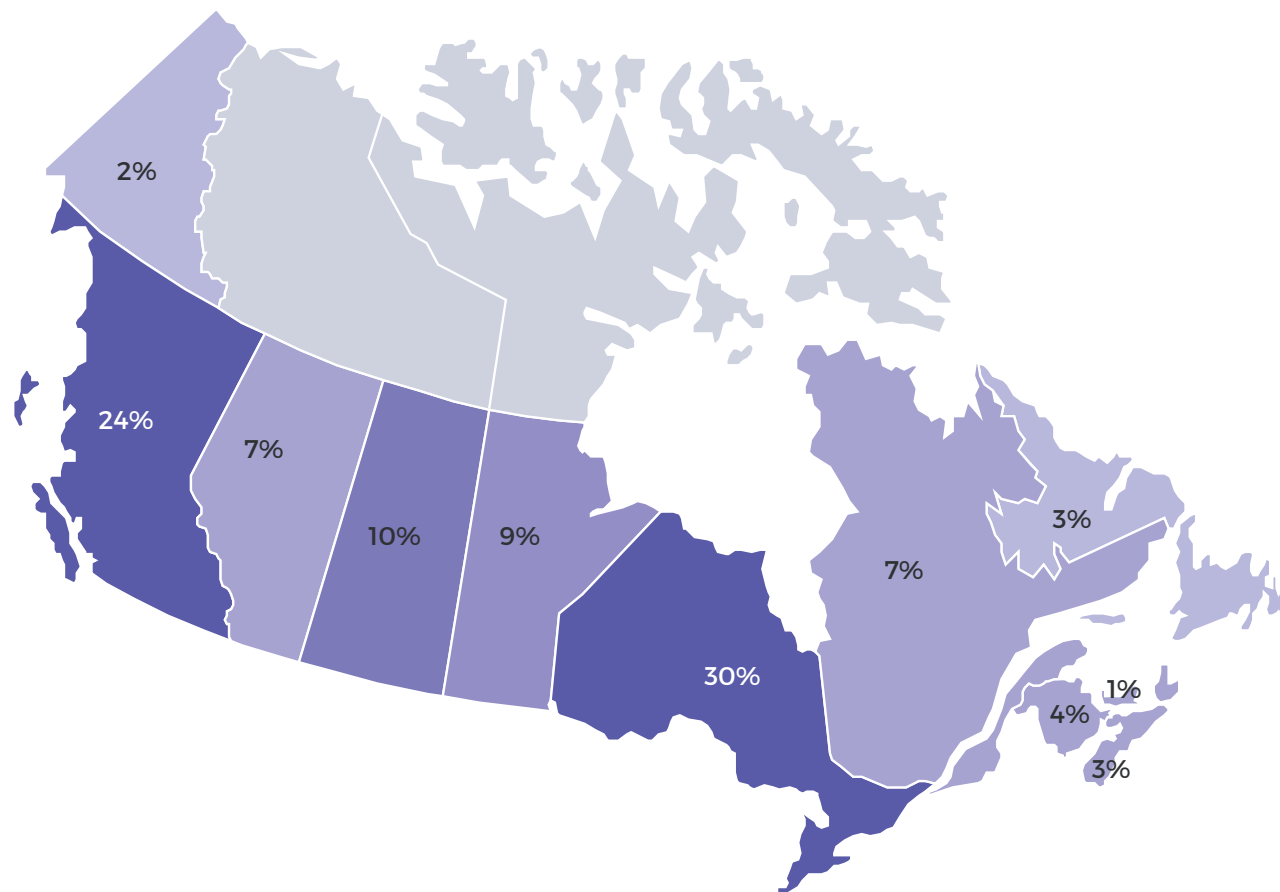
The intent of Driving WinTech was to better understand the successes and barriers experienced by women in the technology sector in Canada, with a goal of building community-first and data-driven action plans to create more gender-diverse and inclusive technology communities across Canada. The findings in this Roadmap reflect the views of Community Conversation participants. And while it gives us an important glimpse into each community, we recognize that this may not be reflective of all views.

***We included this group because 52% of highly qualified women working for science, engineering, and technology companies quit their jobs.⁶ It was vital for us to include this group, or we would be missing information about the tech industry, and the experiences of those women who left.**

VOICES FROM CANADIAN TECH COMMUNITIES: RESEARCH PARTICIPANTS



Our research participants are from over 30 tech communities, large and small, across Canada. The map below breaks down where our participants live by province or territory.



This snapshot of the Canadian tech community represents the demographics of 1,538 community members.

Our community-first approach allowed us to connect with not only the leaders and senior level women in tech, but also those in entry level and middle management positions.

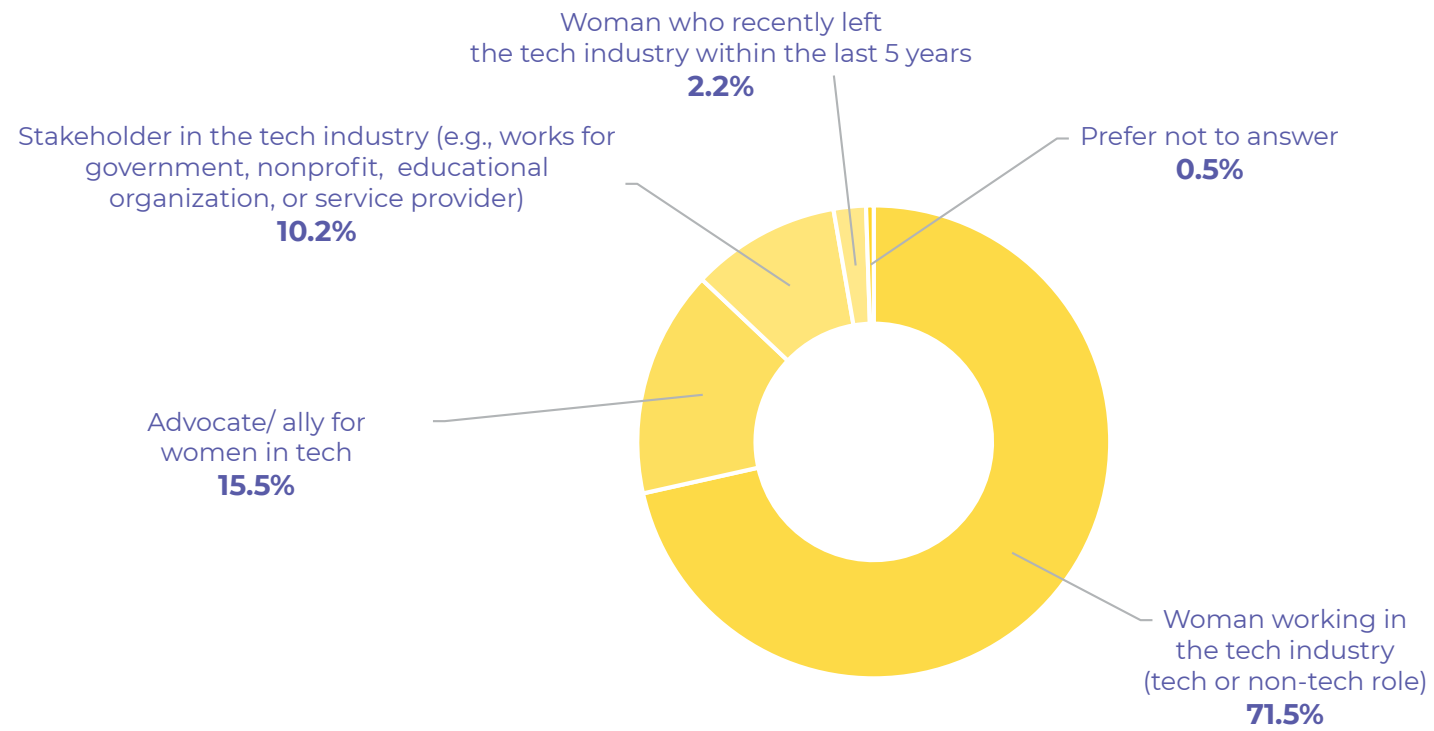
Participants are between the ages of 18-84¹, with the vast majority of participants (41 per cent) 25-34 years of age. This may speak to the strong age bias within the tech industry as a whole, suggesting a need for a more targeted strategy for people over the age of 35.

The majority of the participants self-selected as women in tech (72 per cent) with additional perspectives from women in tech advocates (16 per cent); stakeholders in the tech industry including government, nonprofits, educational institutions, and service providers (10 per cent); and women who left the tech industry within the last five years (two per cent).

¹Secondary students of undisclosed ages also participated.

Snapshot of The Research Participants

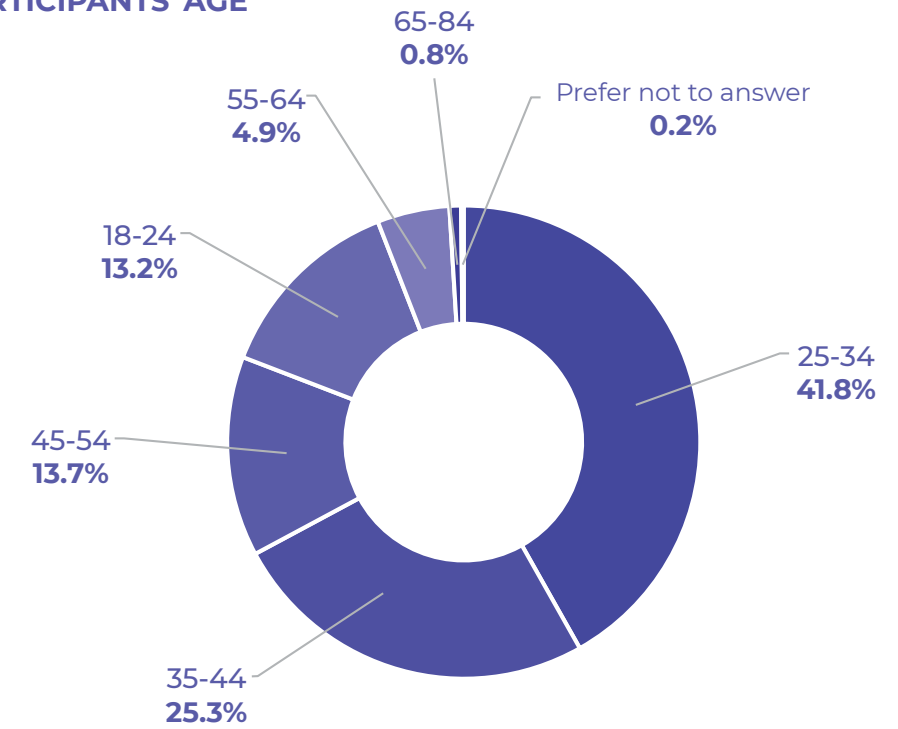
I IDENTIFY AS A/AN:



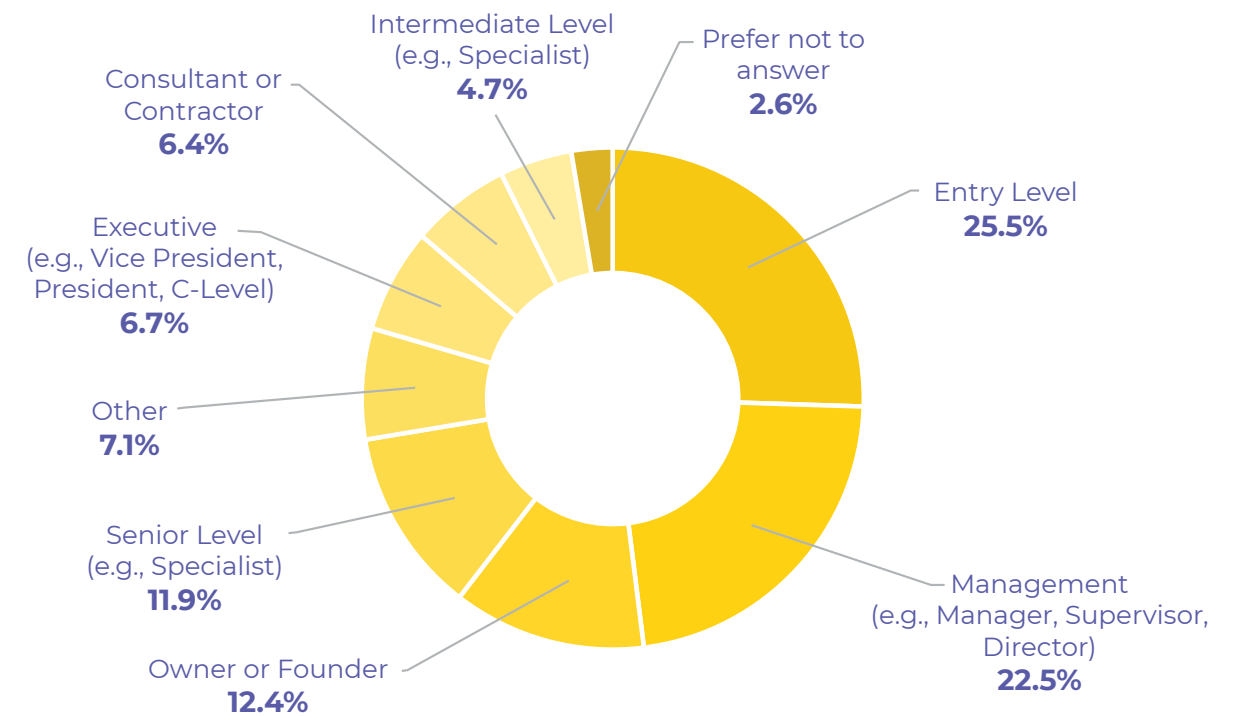
Handwritten notes in a circular diagram:

- Community + (online community)
- Education at young
- strong tech
- (the world)

PARTICIPANTS' AGE



PARTICIPANTS' LEVEL IN THEIR ORGANIZATION



WHO ARE WOMEN IN TECH



Given that there is no standard definition of the tech industry itself, and ongoing debates on how to define 'women in tech,' it was important to invite women to self-select into the research as being part of this community.

Our approach has allowed us to better understand who to include within the definition, and can serve as a resource for future research efforts, and to inform programming, organizations, and decision makers.

We connected with 1,133 people who self-identified as women in tech from across Canada to help us answer the question, who are women in tech?

BII+EBrookfield Institute for Innovation + Entrepreneurship defines the tech sector as the ICT (information and communication technology) sector as well as 22 industries across manufacturing, wholesale trade, information and cultural industries, professional, scientific, and technical services.⁷

Information & Communications Technology Council defines the tech sector as the "digital economy," broadly referring to markets based on digital technologies and including ICT workers employed in every sector of the economy as well as non-ICT workers employed in the ICT sector.⁸

Canadian Industry Statistics defines professional, scientific, and technical services as legal services; accounting and related services; architectural, engineering, and related services; surveying and mapping services; specialized design services; computer systems design and related services; management, scientific, and technical

consulting services, scientific research and development services; and advertising services.⁹

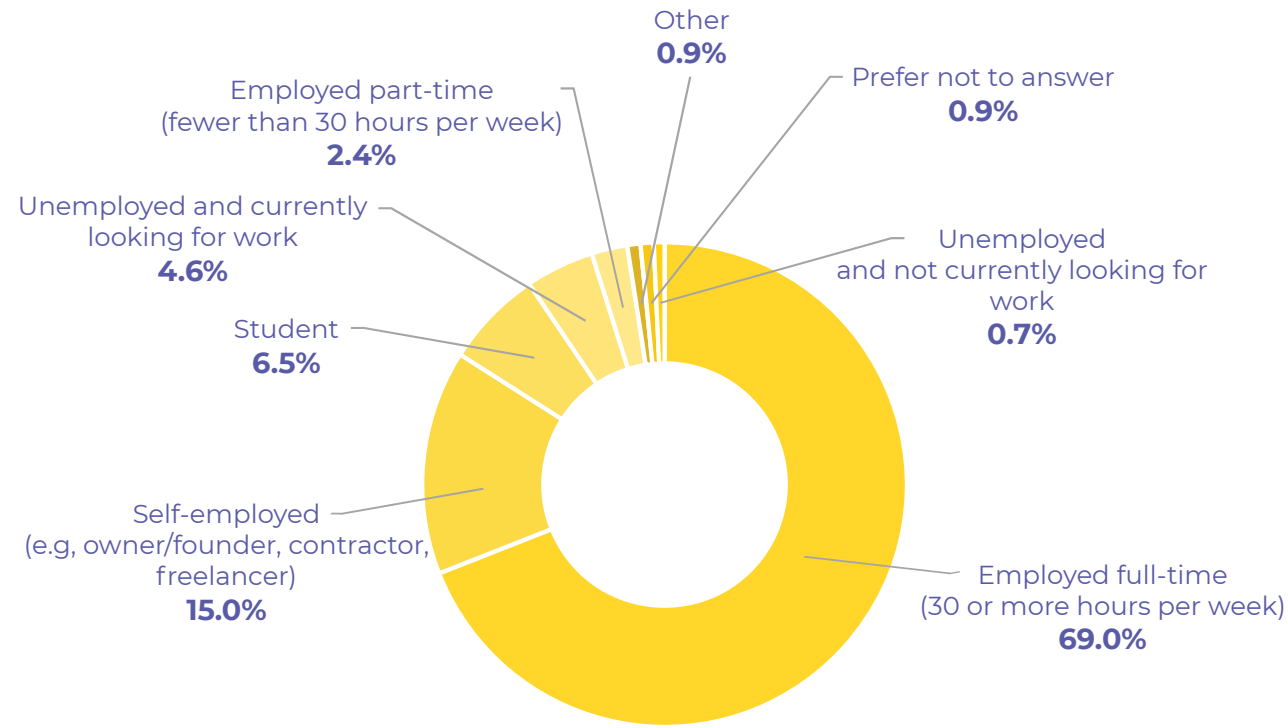
Innovation, Science, and Economic Development Canada defines technology industries as ICT, life science technologies, nanotechnologies, ocean technologies, hydrogen and fuel cells, and clean technologies.¹⁰

Organisation for Economic Co-operation and Development (OECD) defines the ICT sector as a "combination of manufacturing and services industries that capture, transmit and display data and information electronically."¹¹

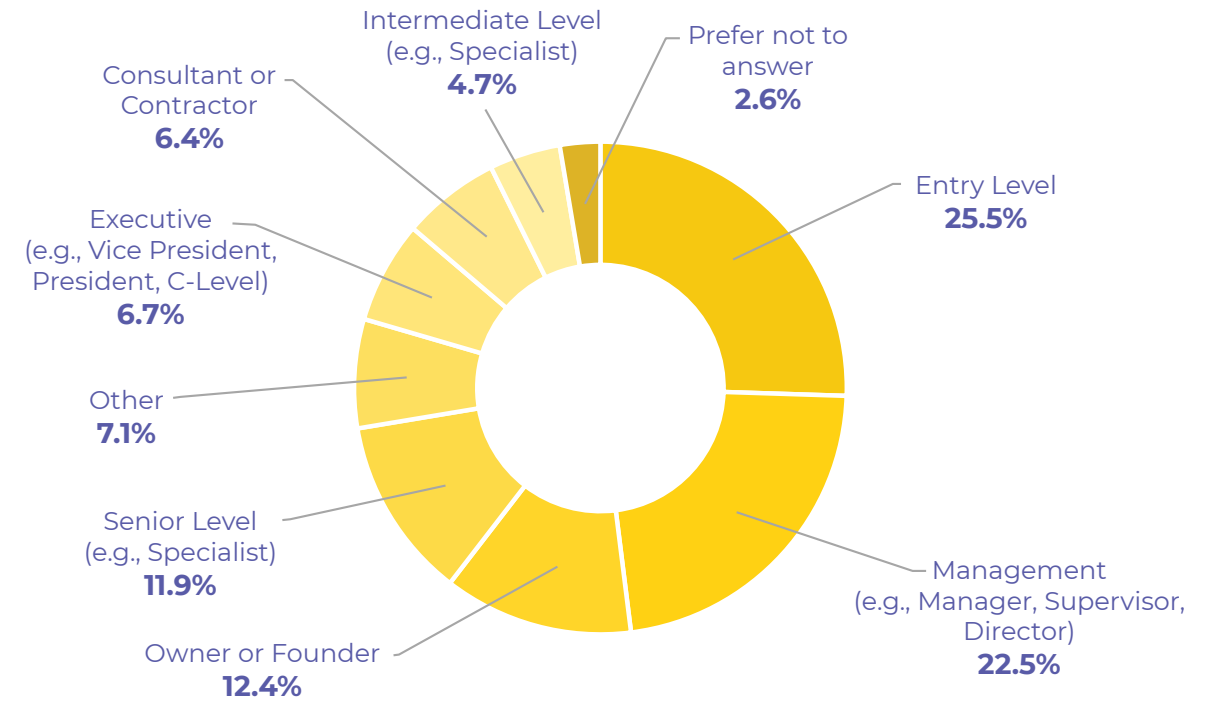
Statistics Canada defines STEM (science, technology, engineering, and mathematics) as a group of fields of study. The closest proxy used for occupations is, "natural and applied sciences and related occupations," but STEM graduates may work in other occupations.¹²

Snapshot of Women in Tech Research Participants

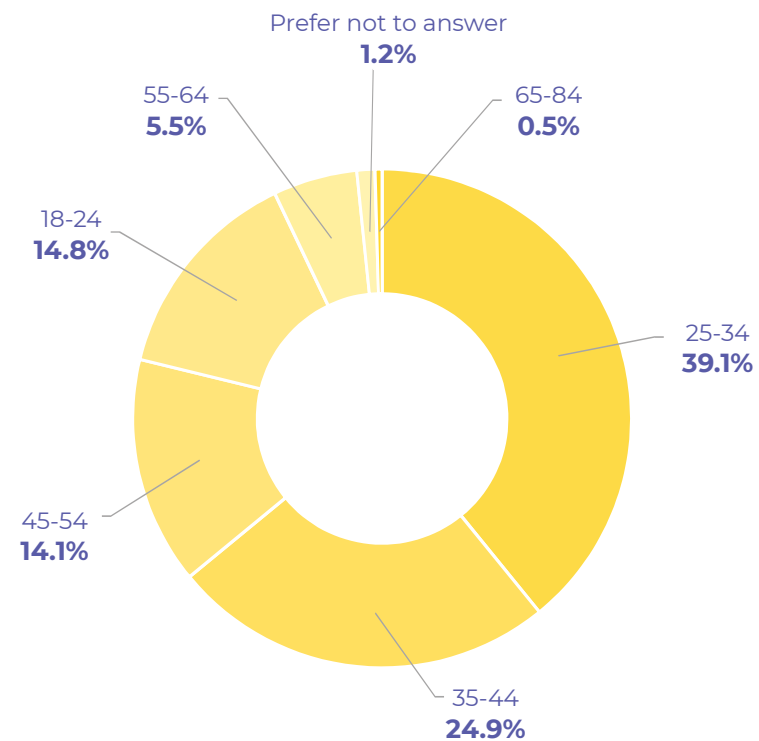
PARTICIPANTS' EMPLOYMENT STATUS



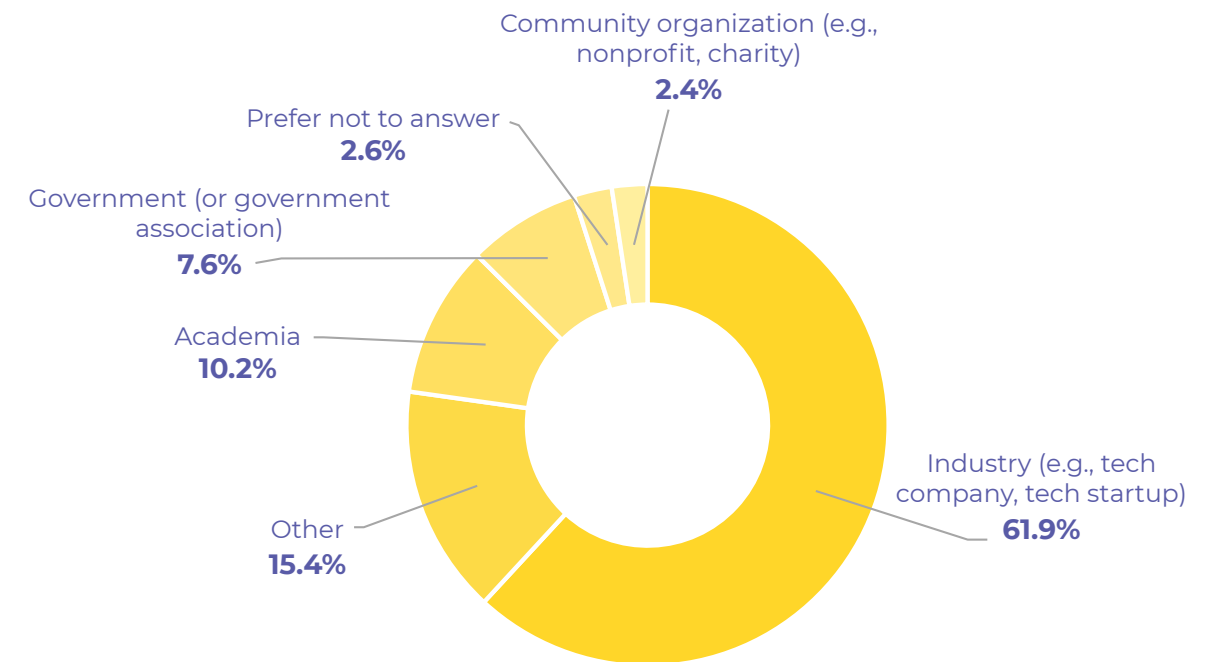
PARTICIPANTS' LEVEL IN THEIR ORGANIZATION



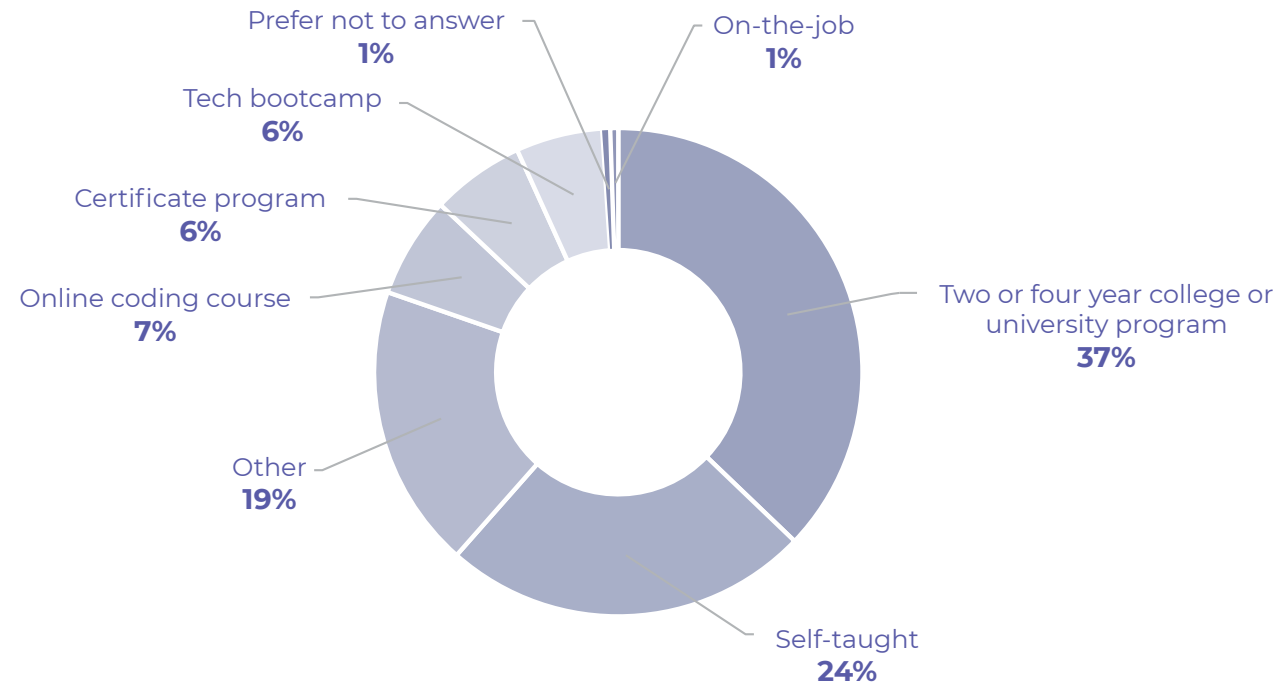
PARTICIPANTS' AGE



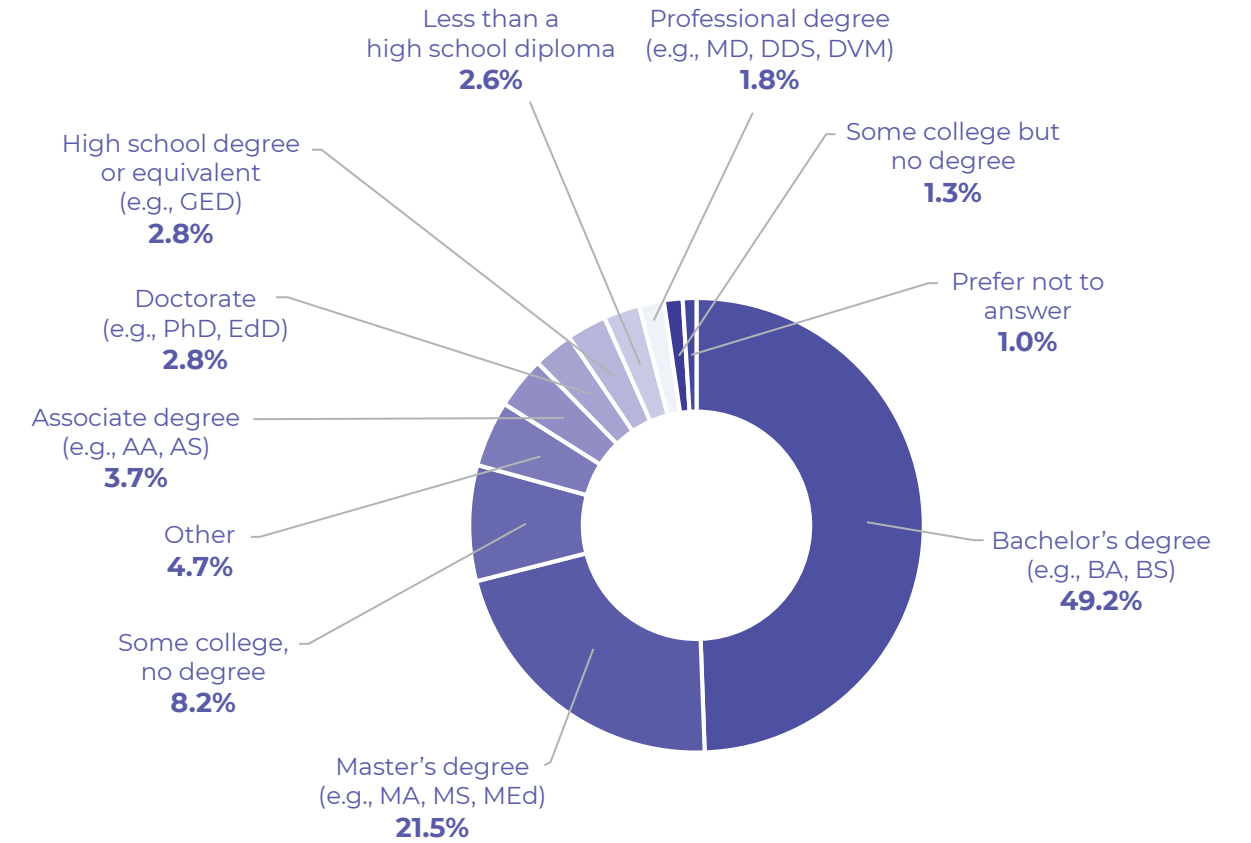
TYPE OF ORGANIZATION IN WHICH PARTICIPANTS WORK



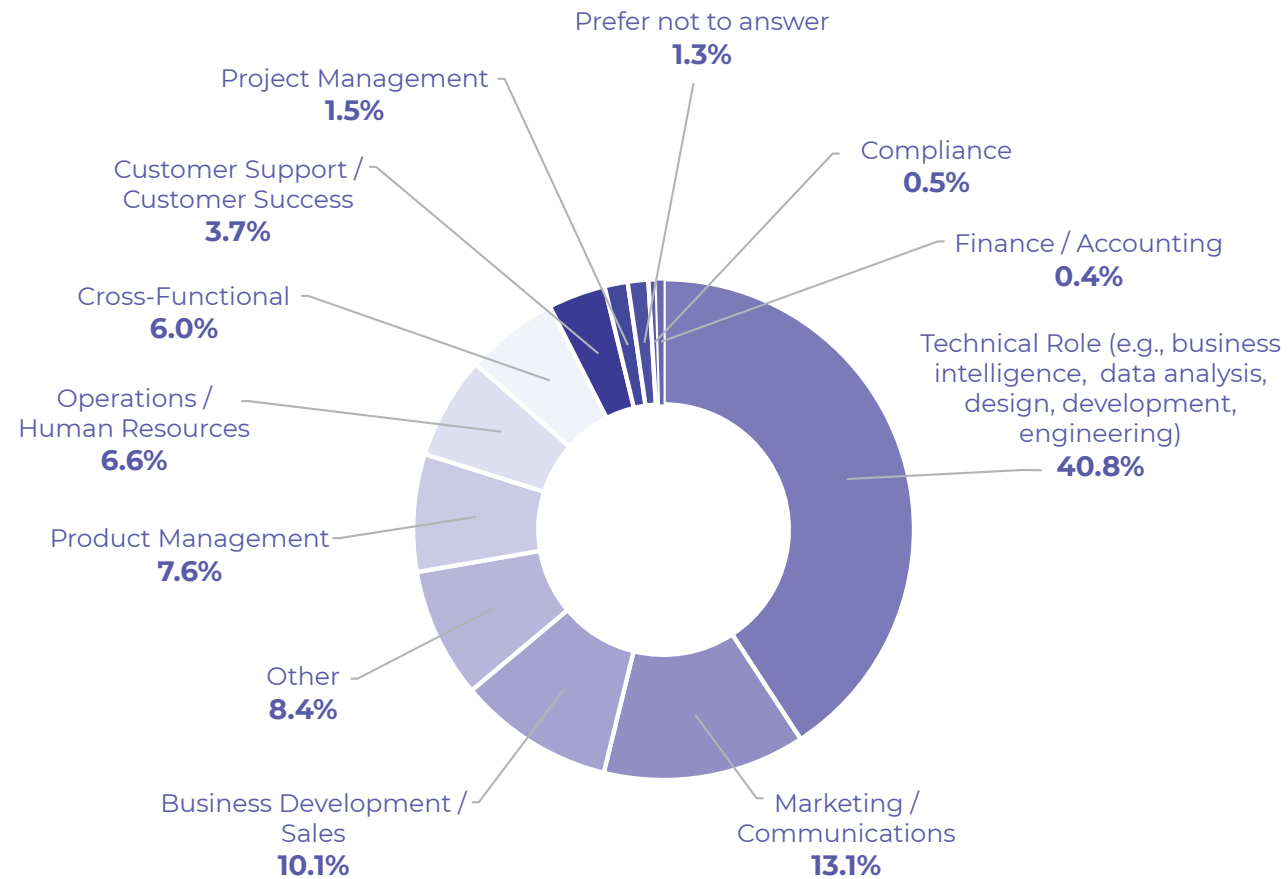
WHERE PARTICIPANTS GAINED THEIR TECHNICAL SKILLS



PARTICIPANTS' EDUCATIONAL BACKGROUND



PARTICIPANTS' POSITION (PRIMARY DOMAIN)



Word: Challenging

Why did you choose this word?

Where I am at in my current career if this word is positive or negative. Currently the challenges I am facing and inspiring me to grow and evolve myself. This word used to be with the help of others they help me that challenges are an opportunity not a road block.

WHAT IS WORKING: A NATIONAL PERSPECTIVE

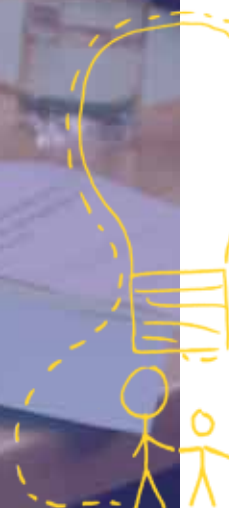


“
...THERE IS SEXISM, AND THERE IS PATRIARCHY, AND THERE ARE SYSTEMS THAT ARE IN PLACE THAT ARE PART OF OUR INDUSTRIAL MANAGEMENT, THE WAY WE THINK ABOUT COMPANIES. AND THOSE ARE JUST REALLY INGRAINED, AND IT'S LIKE YOU'RE ON AUTOMATIC.
”

What helps women succeed in the tech industry?

In speaking with women in technology across Canada, we heard that the following resources are the most important support systems currently helping women succeed in the tech industry:

- Supportive communities providing opportunities for women at school and work;
 - Accessible online education and self-learning programs;
 - Tech programs, events, and workshops, including women's learning groups, and;
 - Funding for women (scholarships and capital investment).
- Women mentors and role models in the tech industry, including strong leadership in the workplace;
 - Networking for women (peer-to-peer and across tech sectors/groups);
 - Appropriate family/parental policies in the workplace;



SUCCESS STORIES

I'VE RUN INTO VERY VERY VERY SUPPORTIVE PEOPLE IN THE INDUSTRY WHO JUST BELIEVE, 'OKAY, I TRUST YOU—YEP, WE'RE GOING TO DO THIS.' THEN OTHER VERY TRADITIONAL ROADBLOCKS: 'OH, YOU'RE JUST A GIRL, YOU DON'T KNOW WHAT YOU'RE DOING.' [...] FOR ME, YOU JUST KEEP GOING. YOU JUST KEEP GOING, KEEP GOING, KEEP GOING, KEEP GOING, RIGHT? THAT'S KIND OF MY EXPERIENCE IN THE INDUSTRY. I'VE TAKEN THE SUPPORT AND PUSHED THROUGH THE PUSHBACK, AND WE'VE COME UP WITH SOME REALLY COOL APPLICATIONS OF TECHNOLOGY THAT ARE STILL VERY UNIQUE IN OUR INDUSTRY. YEAH, IT'S EXCITING!



...the men in our industry...most of them would actually proudly identify as a feminist, which I think is very cool and really helpful. And they're willing to teach me and mentor me so that I can come up in the ranks

I went into electrical engineering in 1970. When I graduated in 75', there were not many girls in electrical engineering. Then I went into a career in [information technology], and I always kept looking and moving to bigger, more complex jobs. I kept pushing to have more opportunity to achieve. Finally, after working in the private sector, I went into government. I was [executive leadership], and I was an activist [...], pushing my entire government community to do better and work harder.



I was welcomed into the tech world by a strong woman [...] who believed strongly in helping me get back into the workforce after having children. The whole company helped me to get up to speed.

I came in to the tech sector after seven years in car rental management, so it was a completely different field and it was terrifying to go back to school after 10 years. I didn't think that I could do it. I didn't know anything about what I was doing. Then immediately off the bat I was succeeding, really really highly. It really solidified things I knew about myself, about my work ethic and about what I'm capable of. It's pushed me to work that much harder because now I've set a bar for myself, so I have to constantly beat it. I feel empowered to do it because I get something that I didn't think I could to begin with.



UNPACKING THE BARRIERS: A NATIONAL PERSPECTIVE



In talking to women in tech from across Canada, we realized that we can't just focus on women currently working in the industry, when the root of the problem starts so much earlier. That said, we need to take a holistic, life-cycle approach to tackling

the barriers that women and girls face when considering, entering, and working in the tech industry.

We used a career-stage approach to categorizing our findings, breaking them into three phases:

Women in Tech	Currently working in a field related to the tech industry.
Women in Career Transition	Changing industries, entering the tech community for the first time, or "starting something new."
Next Generation	Girls and women who have the potential to enter the tech industry; they may be in school (all ages) and/or are considering a career in the tech industry.

The Big Five

What are the key barriers or challenges that women in tech face within the industry? Across all career stages, we determined the top five barrier themes identified by women in tech:

	Characterized by:
Bias and Discrimination	Tech stereotypes, subtle and overt sexism, racism and bigotry, inappropriate behaviour, unwelcoming workplaces, harassment, prejudice, and perception that there isn't a problem; compounded by intersectional identities.
Organizational Culture	Feelings of not belonging, isolation, and an overall "bro culture."
Personal Barriers	Lack of confidence, intimidation, fear, imposter syndrome, self doubt, and risk.
Resources & Support Systems	Unawareness and/or lack of support systems or resources in community and workplaces.
Education	Systemic issues, including early as well as continued gender bias and lack of tech education in schools and workplaces.

Bias and Discrimination

Bias and discrimination was defined by participants as negative, condescending, sexist, racist, and old school attitudes towards women within the industry, from colleagues as well as those at the top, in society, and the media at large. Let's look at what participants said:

	What participants said about bias and discrimination:
Women in Tech	<ul style="list-style-type: none"> • Preferential treatment of male colleagues and gendered work • Social bias around women's role/place in society • Perception of women: operations vs. technical • Societal perception that male attributes are more valuable in a leader • Inappropriate talk about women on the team • Assumptions about having a family or that family will make a woman less committed to her work
Women in Career Transition	<ul style="list-style-type: none"> • Job postings discourage women to submit CVs • Hiring people who look like you
Next Generation	<ul style="list-style-type: none"> • Cultural perceptions and media • Family, parents, teachers, and guidance counsellors telling girls they are incapable • Discouraging young girls from pursuing technology

Build Your Plan: Ideas From The Road

- **Invite companies** to visit schools and talk to students; feature women tech founders and employees.
- **Broadcast the stories of women** in tech through video, audio interviews, podcasts, and graphics.
- **Make tech industry jobs** more family friendly and flexible.
- **Provide a transparent work culture** by opening your books, showing your salary scale, and making sure everything is equitable.
- **Host conversations** in the workplace to challenge stereotypes.

What participants said about bias and discrimination...

BIAS

“
[the] system has forgotten the 40 to 50 year old women out there that are incredibly capable.
”

“
...no matter where in the world I am [...] I'm constantly met with unnecessary barriers, non-work related put downs, [and] illegal sexual harassment [...]. It makes me feel wrongly unconfident, unappreciated, devalued and underestimated [...], such that even when I meet every expectation it isn't enough and the bar is moved yet again. It is so difficult to fight against this.
”

“
One of our friends was working for a company and she was getting married and said I need this weekend off. And they came back to her and told her they didn't think they'd be able to keep her on as they wouldn't be able to modify her future work when she got pregnant. And she hadn't even mentioned anything about pregnancy.
”

“
...during my coop, I was repeatedly brought in to my bosses office to talk about his sex life... and I was terrified to say anything because I was a student [...] my skin was crawling. I was so physically uncomfortable. And this went on for months [...]. There was another girl coming in and she [was] Iranian and he [...] would pull her in to talk about Iranian women and I just said, 'I can't, in good conscience leave her here to deal with this.' But it was still informal because [of] fear of being blackballed. You can't say anything to anyone. Everybody knows everyone.
”



Organizational Culture

Organizational culture was an additional barrier for women, described as feelings of not belonging, isolation, and an overall “bro culture.”

	What participants said about organizational culture:
Women in Tech	<ul style="list-style-type: none"> • Prevalent “brogrammer”/“bro” culture • Lack of sense of belonging • No one to relate to (isolating) • Focus on gaming and programming • Men keep with their own • Reported by women in smaller towns: Conservative, old school, traditional, not progressive, limited opportunities
Women in Career Transition	<ul style="list-style-type: none"> • Male cliques • Other women, in order to protect their jobs, hinder the progress of newcomers • Hard to ‘get in’ to the culture (cliquey) • Don’t take the jump into the tech industry because it is traditionally an industry with more men and therefore they don’t think they belong
Next Generation	None specific to this group

Build Your Plan: Ideas From The Road

- **Gain support from men** via He for She initiatives, championing men as part of the solution, conversations between genders in the industry, and engaging men in programs about feminism/equal rights.
- **Organize diversity and inclusion initiatives** spearheaded by management/ leadership.

What participants said about organizational structure...



“ ... as much as it's true that women are still a minority in tech and there needs to be conscious efforts to improve the situation, not always having to be reminded that you're a woman in tech is also very helpful. I'm just a developer. ”

“ If you're the only woman in the organization or if you're the only person of color in your organization, you get kind of put in ... oh, you'll be the face of [diversity], and if something goes wrong then it's obviously your fault. ”

“ I THINK EVERYONE HAS TO CHANGE. YOU HAVE TO GET TO THE ROOT CAUSE. IF YOU GET WOMEN INTO THE ENVIRONMENT BUT THEY STILL FIND IT HOSTILE OR UNACCEPTING, THEY'RE GONNA LEAVE OR THEY'RE GONNA FEEL UNCOMFORTABLE. ”

“ In high school, I was the only girl in my Computer Science class. In university, I was the only girl in my graduating class. I've had four or five different jobs [...] as a programmer and I'm always the only girl or the only programmer. [...] Being the only girl all the time kind of gets lonely. ”

“ There just isn't really representation. I don't see anyone that ever looks like me that's in a decision making field, or a managing field. If it is someone who is classified under the same race, they're always a male. I find that entering the tech world—although I come with more years of experience than my [...] counterparts, and some of them, I've trained and developed—I'm still underpaid, under-respected, but when it comes to employer branding, I'm very much the face, and I think that's because it's their way of saying, 'look, we're diverse.' ”

“ ...[people] are almost obsessed or focused on getting more women into STEM but there's less of an emphasis on supporting the women that are already there, so giving them the tools to voice when something is going wrong and not have negative repercussions. ”

Personal Barriers

The women we talked to felt that women struggle with various personal barriers, such as lack of confidence, exacerbated by a sense of isolation in a male-dominated industry. Let's look at what participants said:

	What participants said about personal barriers:
Women in Tech	<ul style="list-style-type: none"> • Lack of confidence and support to pursue ideas • Problems asserting one's expertise • Fear of making a mistake or using the wrong tech word to describe what needs to be done • Fear of judgement (prioritization of family over career) • Fear of lacking the know-how to go after something or solve problems and challenges
Women in Career Transition	<ul style="list-style-type: none"> • Getting put into tough situations too soon and losing self-confidence • Feeling intimidated, not feeling intelligent enough for the industry • Imposter syndrome, not feeling like you're 'worthy' of joining the tech community
Next Generation	<ul style="list-style-type: none"> • Lack of self-confidence • Intimidating to work with older men as a young woman • You don't know where to start or who to talk to

Build Your Plan: Ideas From The Road

- **Include behavioural training** in school and at work, e.g., confidence building and assertiveness training.
- **Build confidence** by emphasizing that failure is part of the path to success.
- **Create a work culture where people have a voice.** Ask for the role, the support, the mentorship, and the money.

NO
FEAR

What participants said about personal barriers...

“
you can have
the talent but
if you don't have
the confidence
that really
hinders your
success
”

“
mentors and co-workers that you can
share your challenges with or hear
their stories and understand where
they're coming from [are important] ...
when you're isolated and you're in your
classroom all alone, it's all men, you have
these thoughts, like, 'I shouldn't be here,' ...
and then when you listen to other women
they had the exact same thoughts.
”

“
**LACK OF CONFIDENCE ISN'T JUST
A RESULT FROM AN INDIVIDUAL'S
DOUBT IN THEMSELVES, BUT MAY
BE THE PRODUCT OF BEHAVIOURS
AND HINTS FROM SOCIETY
(SCHOOL AND WORK) WHERE
WOMEN DON'T FEEL LIKE THEY
ARE GOOD ENOUGH.**
”

Resources & Support Systems

As a barrier, resources and support systems were described as unawareness and/or lack of support network in the community and workplace, as well as a lack of safe spaces to express ideas and discuss how to create change. Resources included events, funding, networks, role models, and formal mentorship opportunities. Let's look at what participants said:

	What the participants said about resources & support systems:
Women in Tech	<ul style="list-style-type: none"> • Lack of funding for different business models • Not knowing how or where to get support to move forward or up • Unsupportive management • Difficult to connect with like-minded individuals • A lack of discussions, spaces, and forums—online and otherwise—for women in tech to connect • Lack of women representation in executive and leadership positions
Women in Career Transition	<ul style="list-style-type: none"> • Not aware of funding/support for women to develop skills • Not enough mentors, support, guidance, wisdom sharing; young women feeling intimidated • Not enough support, leadership, or network; if there is, how does the public find it? • Not enough sharing of success stories • Lack of knowledge on areas in technology they can be involved with

	What the participants said about resources & support systems:
Next Generation	<ul style="list-style-type: none"> • Difficult to find a core group of relatable friends and support groups • Lack of parental support or encouragement • There is a lack of knowledge and experience in our primary and secondary education programs, in regards to technology and what it is • Lack of person power to teach computers for girls; lack of teachers who are math specialists • Lack of visible icons, heroes, and mentors • Mentorship; helping connect senior women in tech with the new generation coming in

Build Your Plan: Ideas From The Road

- **Provide mentorship programs** for women and girls, e.g., real world programs with job shadowing across career stages and fields.
- **Seek out role models**, specifically positive role models with different backgrounds.
- **Implement policy changes**, e.g., flexibility with parental leave throughout a career and pay transparency.
- **Arrange regular, consistent events** (e.g., tech meetups, contests).
- **Organize leadership programs** for young women in tech so they can move into leadership roles in their companies and be examples and mentors for future generations.

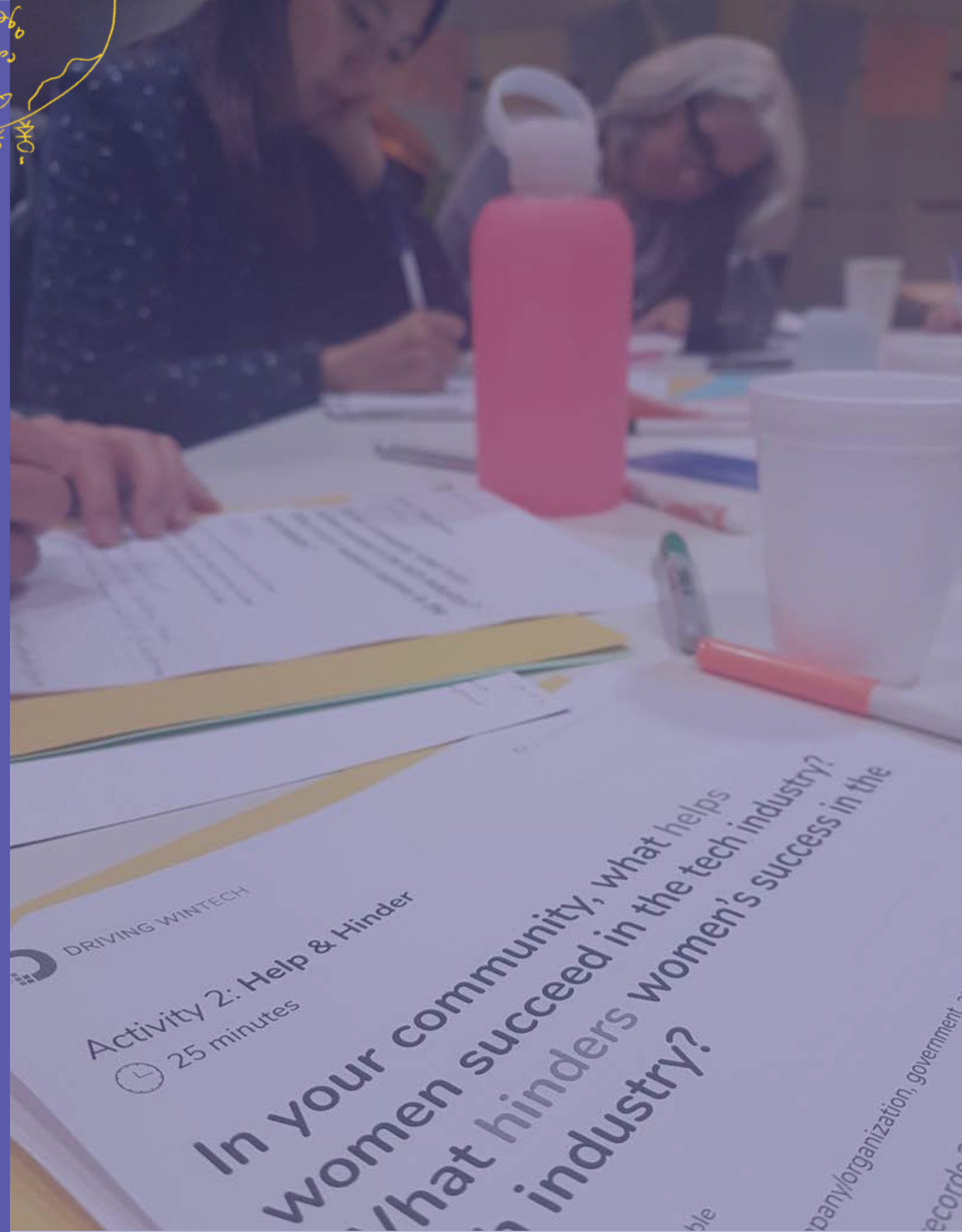
What participants said about resources and support systems...

I went to a conference for women in engineering and out of the 200 women in the room, 90 percent [raised their hand] when asked to, 'Raise your hand if your dad is an engineer, if your uncle's an engineer, if your grandpa's an engineer.' So that's like the one medium of women going into it, is if they're directly exposed to it and they see what an engineer actually does, and they're encouraged to do it.

My husband is a very involved father, but he made twice as much as I did when I was working in the industry even though we were the same age with similar experiences. So when it came time to take time off, who was going to take time off work, right? So, yeah, job parity, pay parity, childcare, and part-time work. That is honestly [it] at the end of the day. Two parents working full time with kids, that's really [...] hard.

...mature women who maybe have been downsized or underemployed [...], it's like there's zero resources again to help with many things. Everything's oriented towards youth.

UNTIL RECENTLY A LOT OF TECH ASSOCIATIONS IN THE PROVINCE HAVE ALL BEEN VOLUNTEER RUN AND LED SO IT MAKES IT HARD TO GET ANY MOMENTUM WITHOUT ANY FUNDING IN A COMMODITY RICH PROVINCE. AND AS A BYPRODUCT OF THAT I FIND THE COMMUNITY HERE IS LESS ACTIVE [...]. YEAH, SO THEN IT'S MORE ISOLATED AND IT'S HARDER TO FIND OUT ABOUT WHAT'S HAPPENING.



Education

Participants said that they would like to see diversity and inclusion incorporated into curricula, as well as ensure tech skills are taught in a way that moves beyond traditional methods. In addition, participants stated that women are “guided away” from tech education. Let’s look at what participants said:

	What participant said about education:
Women in Tech	<ul style="list-style-type: none"> • Lack of diversity and inclusion policies and bias training at the workplace • Resistance to recognizing systemic issues • Not enough time for training (lifelong learning) in rapidly evolving industries • Lack of opportunity and resources for programming for older women
Women in Career Transition	<ul style="list-style-type: none"> • Opportunities for continued education and personal development are lacking • Not able to take advantage of programs during the day due to work
Next Generation	<ul style="list-style-type: none"> • Gender biases from early education (toys, media) • Limited funding of post-secondary programs • Lack of education in rural areas for computer-related classes • Lack of tech introduction in elementary and middle school • Career counsellors who still imply to girls that science is hard • Not recognizing that technology should be a mandatory learning area • Narrow-minded focus of tech on gaming and programming

Build Your Plan: Ideas From The Road

- **Train the trainers.** Provide diversity and inclusion training for teachers and guidance counsellors.
- **Implement a comprehensive and mandatory technical curriculum** for grades K-12.
- **Organize free programming clubs or courses** to promote programming for fun, specific projects with goals.
- **Build communities.** Online, local or regional, to foster connections and discussions; e.g., Facebook groups, monthly gatherings.

Word: Challenging

Why did you choose this word?
 Where I am at in my current career will be if this word is positive or negative.
 Currently the challenges I am facing are and inspiring me to grow and evolve and myself. This word used to be negative with the help of others they have seen that challenges are an opportunity not a road block.

Why did you choose this word?
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What participants said about education...

“

We still have a problem with our career counsellors who discourage or imply to girls in high school that they can't, that it's not a good place for them. My daughter was told that and she was grade A student all the way through. When she suggested that she [was] interested in going into science she was told, 'that's really hard'.

”

“

... It comes down to societal expectations and how we start to condition young women at the elementary and even high school age that tech jobs, they're male jobs...

”

“

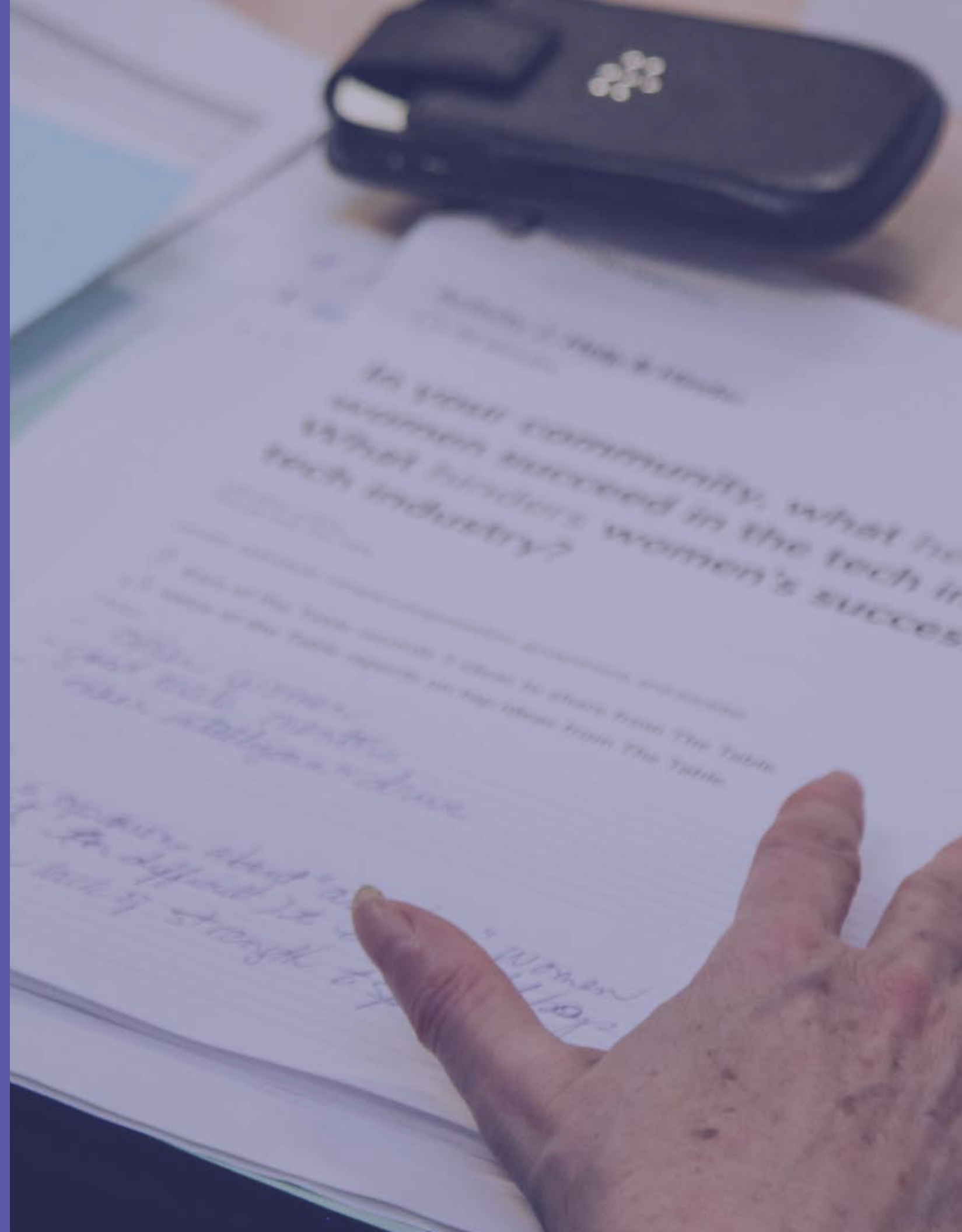
I ended up taking a semi coding, business related course. There were probably five girls out of a class of 20. The teacher kept coming over to the girls section asking if we needed help, 'are you guys okay?' Yes, actually, I think we're working harder than half the guys in this class. I think we're paying attention. We're actually learning this, and putting more effort into it. You constantly keep trying to underestimate, that we're not up to par to our male counterparts. So especially for an educator, an instructor, [...] don't [assume] that [our] skills are going to be less than that of the their male counterparts.

”

“

THERE'S LESS OPPORTUNITY IN RURAL COMMUNITIES TO LEARN TECH. LIKE, I WENT TO [NAME OF SCHOOL] AND I BARELY TOUCHED A COMPUTER UNTIL THE 10TH GRADE.

”



THE GEOGRAPHIC CONTEXT

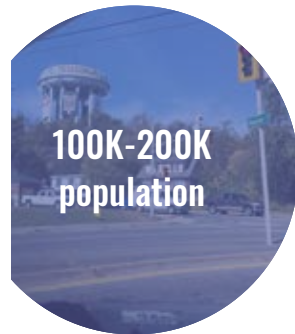


WHAT PARTICIPANTS SAID HELPS WOMEN BY COMMUNITY POPULATION SIZE

- online education
- family support
- college programs
- industry mentors
- peer networking
- community support



- access to mentorship in the community
- motivation through networking
- innovation in college education
- skill-based training



- increased awareness and opportunity
- introducing industry programs in schools
- open support for women in education
- funding the women's network
- groups for women to learn to code



- mentorship events organized by companies
- companies taking up the gender conversation
- networking and mentorship support from the community
- creating equal opportunities
- code groups for women



WHAT PARTICIPANTS SAID HINDERS WOMEN BY COMMUNITY POPULATION SIZE



- boys' club culture in companies
- subconscious bias, stereotypes, and sexism
- lack of women executives
- male-dominated industry



- schools lack women career programs
- gender bias and stereotypes
- male-dominated industry
- no women's perspective in leadership
- companies preferring experienced men over women



- lack of encouragement
- no local industry
- stereotypes against women
- stigma associated with women giving up families for career



- lack of jobs
- lack of opportunity to connect
- lack of role models in schools
- confidence issues
- lack of industry in the region
- no awareness of tech careers

PROGRAMS FROM THE ROAD

Driving WinTech participants brought up a number of interesting programs that are available across Canada:

SAME MESSAGING
EMPOWERING BOTH GENDERS
EQUALLY !!



Vancouver, BC

UBC runs an engineering summer camp and has a week just for girls. Often in STEM there are less women in the room so having a time just for girls to see others with similar interests is an awesome idea

Fort McMurray, AB

Computer science, not straight up math, but when it is collaborative with other things in the world. We did this project ... where we use 3D printing and computer design to build a windmill to make energy so that [we] can help the environment and use the energy. It is great to have these opportunities at my [high] school for me to do this.

Sault Ste. Marie, ON

SINCE THE [COMMUNITY CONVERSATION] EVENT IN THE SAULT, THE [ATTENDEES] STARTED UP A STEM GROUP OF VOLUNTEERS AND [SAULT STE. MARIE INNOVATION CENTRE] HAVE BEEN WORKING WITH THEM ON SOME DIGITAL LITERACY PILOTS IN OUR SCHOOL BOARD.

DISRUPT





BUILDING YOUR ACTION PLAN

Word: Challenging

Why did you choose this word?

Where I am at in my current
 if this word is positive or
 Currently the challenges I
 and inspiring me to grow a
 myself. This word used
 with the help of others
 me that challenges are
 not a road block.

Building awareness was one of the key recommendations that came forward for improving the experience of women in tech, as participants believed that increasing awareness of the barriers women in tech face would elicit support for systemic change.

Participants from across Canada identified these themes as the most important to consider when building an action plan for women in tech:

	What participants said to consider:
Education	<ul style="list-style-type: none"> • Provide diversity and inclusion training; initiatives within public school system to educate teachers and guidance counsellors on how to encourage girls in math and coding early • Ensure more representation of women teachers and professors • Develop gender-neutral technical curricula in elementary and secondary school • Increase the capacity of post-secondary programs (e.g., number of seats for enrolment) that currently exist for students to pursue tech education
Awareness	<ul style="list-style-type: none"> • Acknowledge the barriers women in tech face to elicit support and systemic changes • Showcase the career opportunities in tech • Change the typical view of the tech industry (not only for hard code “techies” or men)

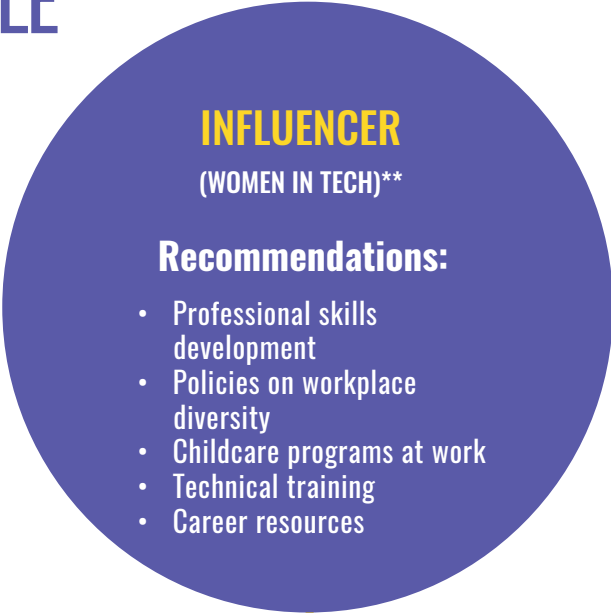
	What participants said to consider:
Resources	<ul style="list-style-type: none"> • Supply a platform or forum to foster connections in the tech industry and provide a safe space for discussions to learn and problem solve (online and offline) • Create accessible programming courses, workshops, and bootcamps on a regular basis • Secure financial support through business subsidies, scholarships, and grants
Mentorship	<ul style="list-style-type: none"> • Create affordable and accessible opportunities for women mentorship at all stages of career paths • Have women shadow local women in a position of senior leadership in various tech industries and fields
Events	<ul style="list-style-type: none"> • Organize consistent and accessible meetups, workshops, and conferences that recognize gender-diversity in representation and topics
Diversity and inclusion	<ul style="list-style-type: none"> • Start having more conversations to challenge stereotypes • Explore gender biases and fix them • Foster accessibility in the broadest sense of the word. Ensure acceptance of women with disabilities, but also supports for parents, women of different backgrounds, ethnicity, sexual orientation, etc.
Role models	<ul style="list-style-type: none"> • Showcase important and relatable women figures and their success in the tech industry • Enlist role models; ensure more platforms are visible in communities and provide more venues to speak up in

Support from industry	<ul style="list-style-type: none"> • Implement management training on diversity and inclusion practices; change current hiring practices and provide comprehensive parental or care support to allow smooth transitions at different times in women's careers. • Companies need to bridge gap between school-to-work. Offer scholarships or foster partnerships between academia and industry.
Policy	<ul style="list-style-type: none"> • Adopting a gender perspective as the starting point for deliberate courses of action by government and companies. For example: <ul style="list-style-type: none"> • Require transparency in pay to achieve gender parity of equal pay for equal work • Better family support policies such as parental leave, childcare subsidies, and breastfeeding breaks and rooms
Behavioural	<ul style="list-style-type: none"> • Develop soft skills training in areas of confidence building, assertiveness, and negotiation • Learn to advocate for yourself and your unique talents • Teach that failure is part of the path to success
Support from men	<ul style="list-style-type: none"> • Bring men into the gender-diversity conversation to create a more balanced community in the future • Demonstrate how men support women by attending events and championing women in technical roles at their workplace

We've built a career-stage timeline based on the barriers and recommendations identified to bring awareness to the need for building different types of activities into your plan, based on which career stage you are focusing on.

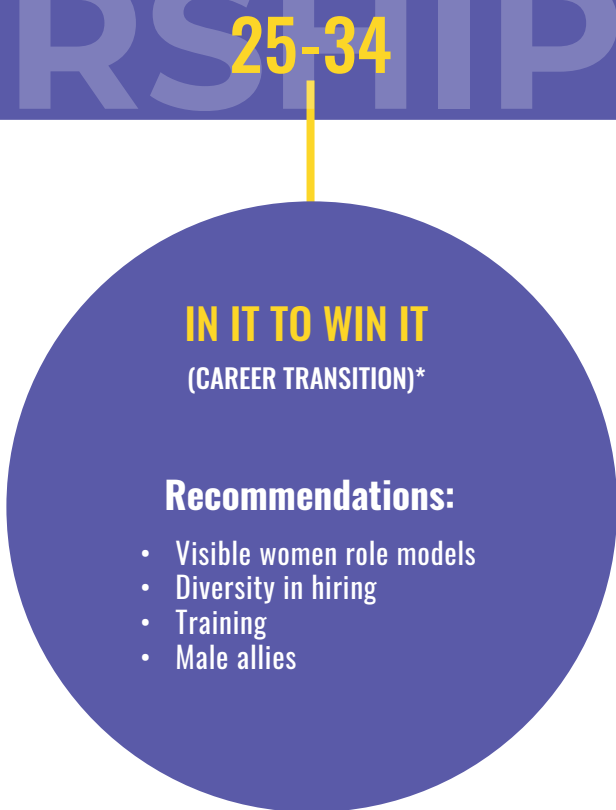
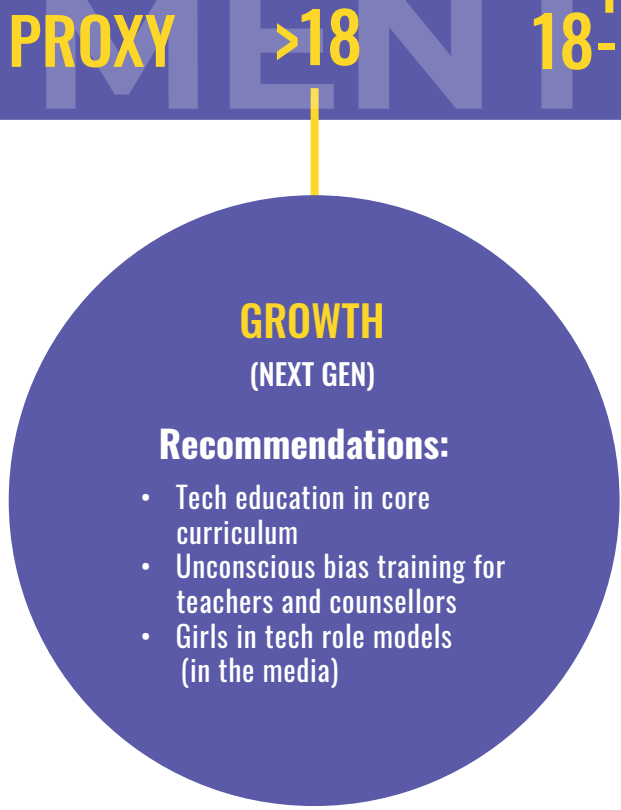
For instance, if you work with girls aged 10–14, you may want to look at projects that focus on Growth and Exploration, whereas if you're developing a program for women in your tech company, you might want to look at Influencer and Maven.

CAREER LIFE CYCLE



REVITALIZED GROWTH AND EXPLORATION PHASE
At this phase some women go back to exploration phase.

MENTORSHIP AT ALL STAGES



*Women's Groups for entire length of both considering/chose groups
**Flexible and Supportive Work Culture for entire length of "entered and in the industry"

Now that we've had an overview, let's take a deeper dive.

We've combined the ideas from our research participants with current and cutting-edge research to create actionable steps to take to support women in tech in your community.

Breaking Down Bias in Education

IDEA 1: Provide unconscious bias training for teachers and guidance counsellors.

The Oxford dictionary defines bias as an “inclination or prejudice for or against one person or group, especially in a way considered to be unfair.”¹³ While bias exists and negatively impacts women at all career stages and in varying capacities depending on compounding factors, recent studies show that teacher and parental bias against girls in math and sciences is particularly detrimental to their long-term choices in school and occupation.¹⁴

EXAMPLES:

Here are examples of ways to break down bias in education:

- Remove names and any demographic information from tests in school. “Researchers found that girls often score higher than boys on name-blind math tests, but once presented with recognizable

boy and girl names on the same tests, teachers award higher scores to boys. The long-term effects are amplified by socioeconomic factors and family structure.”¹⁵

- Show counter-stereotypical images in media as well as within internal and external company and educational campaigns and materials to help with implicit bias.¹⁶
- Provide unconscious bias training within the education system (for students, teachers, and guidance counsellors) and within companies in order to raise awareness about not only gender bias, but all intersections within the ‘women in tech’ community.
- Review company websites and make updates to depict a culture that is inclusive and welcoming to all employees. Some best practices include photos of employees from different backgrounds, highlighting inclusive perks and benefits, and explicitly referencing that the company values a diverse and inclusive culture.

Tech Education Across Career Stages

The need for formal tech education starting in elementary school all the way throughout their career was vital to combat the various barriers that women face across their career stages in tech.

IDEA 2: Incorporate tech education in core curricula within the elementary and secondary school systems.

IDEA 3: Provide technical training and professional skills development for women working in the tech industry.

IDEA 4: Increase online access to education for women between the ages of 55-64.

EXAMPLE:

Ensure that schools are safe and supportive learning environments for all. In 2016, the Department of Education in England found that when implementing ‘train the trainer’ programs, “we want classrooms that are full of trust, open discussion, and mutual support. We also need the same in staff rooms. Teachers, like students, react badly to fear of humiliation, so we need to make sure that every team works actively to create a culture where learning is encouraged.”¹⁷

Mentorship Programs

Access to mentorship opportunities and programs, both informal and formal, comes up across all career stages; however, the type of mentorship needs to change throughout their careers.

IDEA 5: Promote informal mentorship focusing on advice for women starting their careers.

IDEA 6: Arrange formal mentorship and networking opportunities with other women working in the tech industry.

IDEA 7: Foster mentorship at the leadership level.

EXAMPLE:

Invest in formal women-to-women mentorship programs. While participants thought that having both women and men as mentors would be equally beneficial, studies show that having women-to-women mentors is the most effective in keeping women in STEM programs. This may be because they see the mentor as a role model—and can envision themselves

As of 2017, three out of ten provinces have incorporated mandatory coding classes into their public school curricula in Canada: Nova Scotia, New Brunswick and British Columbia.

- Global News

Participants from the Community Conversations suggested increasing capacity of post-secondary programs for computer science that currently exist for students to pursue tech education. It was noted there are long waits at [top Canadian universities]. Even students admitted into post-secondary computer science programs are waitlisted for certain high-demand courses for several semesters. It seems they don't have enough professors to open more sections.

being successful in STEM. In addition, mentors can be helpful in building confidence and working through difficult times.¹⁸¹⁹

Support from Industry

Support from industry is particularly important once women are working in the tech industry, including workplace policies that support a diverse, safe, and inclusive environment, regardless of gender, age, race, religion, or ethnic background. This is an end-to-end process that involves creating well-thought-out and constructive recruitment and retention strategies with input from team and community members at all levels.

IDEA 8: Develop policies on workplace diversity.

IDEA 9: Encourage diversity in hiring at tech companies.

EXAMPLES:

Here are some tips when developing your next recruitment and retention strategy:

- Invite women in your network or company to review job and program descriptions and use software to help identify gender-neutral terms and tone.
- Review job descriptions for problematic language. Reviewing

job descriptions and creating guidelines for future descriptions is a key strategy for attracting a range of applicants. For instance, research suggests that for some women, but not all, including language around 'collaboration and helping others' is beneficial in your postings.²⁰

- Remove names from resumes to reduce gender and other bias; research has found there is a preference for male applicants.²¹
- Engage in active sourcing to find candidates outside of the company's referral network. Given that referral candidates are very rarely diverse, companies should minimize the extent to which they prioritize referrals over other candidates.
- Support the careers of employees from underrepresented backgrounds. Consciously and actively supporting the careers of employees from underrepresented backgrounds will send a message to potential applicants that yours is a company where everyone is included and has the opportunity to succeed.

Role Models

Role models influence goals and motivation by: acting as behavioural models, representing the possible, and being inspirational.²² During our Community Conversations, participants emphasized the importance of role models who 'represent what's possible,' mentioning the need for more visible and relatable role models for women in tech of all ages, abilities, and ethnicities.

IDEA 10: Champion visible and relatable women in tech role models.

IDEA 11: Hire more women professors and teachers in STEM courses.

EXAMPLES:

Participants from the Community Conversations came up with the following ideas for improving visibility and access to role models:

- Demystify stereotypes about IT, almost like Mythbusters. Ask 'why not?' and then disprove the disbeliefs either with data or role models or examples.

- A campaign like the Heritage Minute to showcase the diverse contributions of women in tech.
- Share success stories of women working in tech at all career levels and positions (technical and non-technical roles) to show why tech is a fun and rewarding career to explore. Provide stories from diverse groups that girls and women can identify with as they are choosing their career.

It's important to consistently involve men in the conversation. Participants expressed hope that if men were included and engaged in the topic, we might see a positive shift in society.

According to Kimmel, "After decades of accepting sexual harassment as the status quo, we have to take some of the weight off women's shoulders. It's simply not their responsibility alone to talk about and enforce workplace equality. We must call out the sexist behaviors of other men because it's wrong and because it undermines women's confidence and effectiveness in the workplace."²³



Events and Programs

The value of women-specific programs and industry conferences was brought up in tech communities across Canada as a way to provide safe spaces for women to learn and connect. It suggests the importance of social capital and having networks with a shared sense of identity, a shared understanding, shared norms, and shared values, which warrants further research.

IDEA 12: Organize industry conferences.

IDEA 13: Highlight women-specific programs.

EXAMPLES:

- Participants from the Community Conversations suggested universities or companies organize big (national) events where tech is being promoted and made accessible to anyone with an interest in tech and our future.
- Promote returnships,²⁴ which offer women a formal pathway and support system back into the workplace after parental leave.

- Host tech events for women: Hosting events was recommended by participants as they felt that they wanted to connect with other local and relatable women in the industry, while continually developing their skills throughout their career. Research has shown that women attending a women's conference were more likely to receive a promotion or pay raise the following year, and that most women attendees felt that they were more connected with others after attending the conference.²⁵

Women in the age group 55–64 expressed interest in having more women-focused events, including those focused on entrepreneurship, retraining, innovation, and intrapreneurship. Research shows that women in their 40s and 50s often experience a renewed exploration period after facing numerous challenges in their career and/or following time spent as a caregiver.²⁶



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