

Breaking barriers: valuing women in IT

Guide for
compagnies



Acknowledgements

Advancing diversity and gender equality in the technology sector is a collective mission, and your commitment to sharing this crucial knowledge reflects your support towards a more inclusive and equitable future.

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Finally, a big thank you to you, dear readers. Your commitment to inclusion and your desire to move our industry towards gender parity are the driving force behind this initiative.

Table of contents

Introduction	4
A few definitions	6
Portrait of women in Quebec's IT and digital sector	10
Possible solutions	18
The human resources department	20
Work-family balance	24
Corporate culture	27
Conclusion	31
Checklist	32
End notes	34

Introduction

The information technology (IT) and digital sectors represent a substantial part of the Quebec economy. This booming sector positions Quebec as **a leader on the world stage**. Despite the prosperity and importance of the IT and digital industry, the representation of women... needs a serious shake-up!

The gender gap is glaring, with only 24% of IT positions in Quebec filled by women in 2022.

This disparity manifests itself right from the school career: girls account for only a fraction of enrolments in technical college programs in electronics and computer science, and not even a quarter of enrolments in bachelor's degrees in computer science.

This under-representation of female talent is not only an equity issue, but also a disincentive to creativity and business performance.

This guide is intended to...

The aim of this guide is twofold: **to facilitate the integration of women into the IT and digital sector, and to strengthen their retention.**

To this end, the following pages will:

- provide an **understanding** of the unique situation faced by women in the IT and digital sector;
- present **testimonials that illustrate the needs** of women in this field;

- present proven **strategies and innovative practices** for the inclusion and retention of women in work teams.

This guide is the fruit of a collaborative approach. Based on an exhaustive review of current literature, it also incorporates the valuable insights gleaned from two meetings totalling over four hours of discussion with women from the professional and educational worlds.

These dialogues were essential in capturing women's experiences and, more importantly, in identifying concrete strategies that employers can adopt.

A few definitions

This section clarifies the key terms that will be used throughout the guide.

When we talk about the world of IT and digital... what exactly are we talking about?

The world of information technology, commonly referred to as IT, is a broad one! It encompasses all the activities and professions associated with creating, processing, managing, transmitting, and securing digital

information. This sector is ubiquitous and vital to almost all other areas of activity, such as finance, health, education, and many others, making IT skills highly sought-after.

The routes to IT careers are diverse, via university programs in computer science, engineering, or science, but also via specialized technical training, online courses, or certifications. Career opportunities in IT are many and varied, ranging from software development and data analysis to project management and technical support.

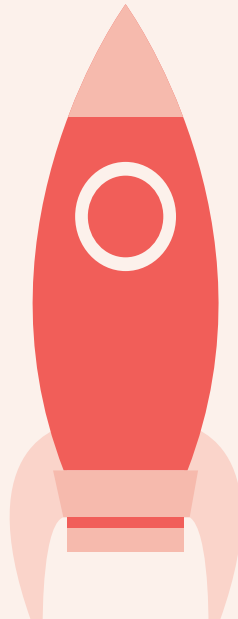
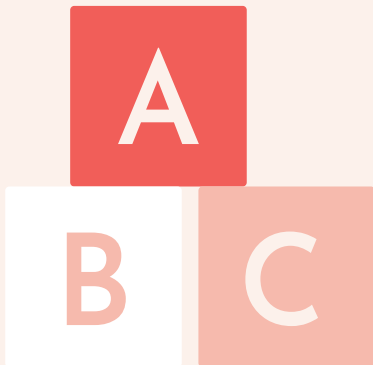
Gender stereotypes

Gender stereotypes are generalized beliefs about the attributes, differences and roles traditionally associated with men and women. They are **rooted in culture and often conveyed from an early age**.

A classic example of these stereotypes can be seen in the color of children's clothing and the types of toys they play with. Traditionally, pink is attributed to girls, accompanied by toys such as dolls and kitchenettes, while blue is reserved for boys, associated with toys such as tools and cars.

These choices are not insignificant; **they reflect and reinforce societal expectations of gender**, and unconsciously prepare children to adopt specific social roles.

In the workplace, gender stereotypes can influence expectations of job performance, career choices and team dynamics, often to the detriment of inclusion and professional equity for women and gender minorities.



Canada's Equity, Diversity and Inclusion (EDI) policy

Canada's Equity, Diversity and Inclusion (EDI) policy reflects the country's commitment to promoting these principles in workplaces, educational institutions and government agencies.

Equity

Equity is the principle of justice that aims to **recognize each person according to their specific needs** and adjust treatment to balance differences.

Diversity

Diversity refers to the **presence of a wide range of human differences** within an organization or community. It manifests itself in the integration of people of diverse genders, ages, religions, ethnicities, sexual orientations, and life experiences.

Inclusion

Inclusion ensures that **people from diverse backgrounds feel welcomed**, respected, and valued for their unique contribution. It is the active creation of a work environment where diverse perspectives and talents are encouraged, and where everyone can participate fully in creating shared success.



In terms of EDI policy implementation, the Canadian government has taken several initiatives, such as the *Employment Equity Act*, aimed at improving access to and participation in the labour market. Today, many government agencies require that funded projects consider and integrate EDI principles into their research and practices.

In the workplace, EDI serves to create equal conditions so that everyone can access the same opportunities for development and promotion, regardless of gender, ethnic origin, or other discriminating factors.

Intersectionality and gender-based analysis plus (GBA+)

Intersectionality

Intersectionality is a theory rooted in evidence that asserts that individuals are affected by several aspects of their identity which, when added together, create unique modes of discrimination and privilege. For example, the reality of a woman of color is not comparable to that of

a white man or woman because of the potential discrimination linked to both her gender and her ethnic origin.

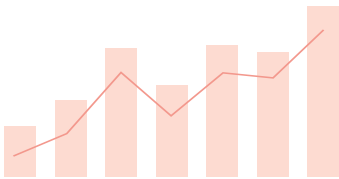
Gender-based analysis plus (GBA+)

Gender-based analysis plus (GBA+) is a policy analysis practice that builds on the principle of intersectionality but is specifically oriented towards policies and programs. GBA+ is used to ensure that policies and programs are designed to consider the potential impacts on different population groups, to promote greater equity.

Portrait of women in Quebec's IT and digital sector

The IT sector, an important part of our economy

The IT and digital sector is booming and occupies a major place in the Quebec economy. The sector alone accounts for over **3% of the job market and practically 5% of GDP¹**.



The information and communications technology (ICT) industry employs nearly 137,000 workers in Quebec, generates revenues of close to \$32.5 billion, and is the source of nearly \$1.7 billion in annual investments in research and development².

What's more, it positions Quebec **as a world leader in several digital fields**, including video games, artificial intelligence, and special effects.

The IT sector, the female under-representation

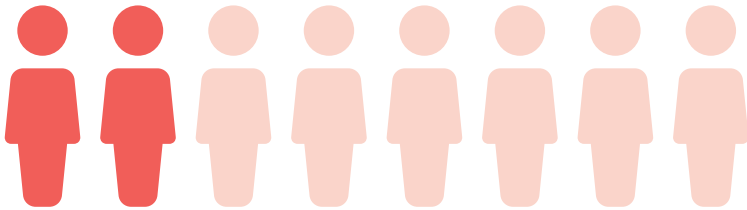
While the digital and technology sector is doing well in Quebec, it does have its dark side. Women are **significantly under-represented in the industry**.

Not only are they under-represented in the job market, but they are also under-represented in educational training associated with the technology and digital fields.

For example, in a study conducted by the Conseil supérieur de l'éducation (2020)³, we learned that women accounted for only 6% of college enrolments in electronics and computer technology in Quebec.

At the bachelor's level in computer science, the proportion of women was only 19% in Quebec, the lowest percentage for all pure and applied science fields combined.

**As a result,
by 2022, women
will account**



**for just 24% of the
ICT⁴ workforce.**

The under-representation of women in the technology and digital fields can be explained by two phenomena. The first concerns the way girls are socialized throughout their education, and the second concerns the way the job market welcomes women in the technology and digital fields.

Stereotypes that influence girls' school careers

Careful what we value

The environment in which children grow up influences their career choices and future aspirations⁵. From an early age, girls are confronted with numerous gender stereotypes that can discourage their interest and perseverance in certain fields, notably information technology (IT) and digital technology. This stigmatization begins in childhood and persists throughout their academic careers.

For example, girls may be discouraged from participating in programming clubs or exploring computer science courses, as these fields are often perceived and presented as predominantly male⁶.

Stereotypes shared despite our best efforts

Gender stereotypes also influence **the attitudes of male and female teachers**, who may unwittingly offer less support and resources to girls in these areas⁷.



Over time, these attitudes and prejudices continue to manifest themselves as girls progress in their education. They may be less inclined to choose IT subjects because of the perception that these fields are not suitable for women. As a result, they find themselves **under-represented in these programs** at university⁸.

Daily challenges on the job market

Once on the job market, the situation isn't much better... Because few women graduate in these professional fields, the companies that hire them **don't have the tools they need to welcome and retain⁹ them**. The under-representation of women is the result of a combination of factors.

One study on this subject was conducted by Professor Corinne Moss-Racusin of Yale University in 2012. This study showed that identical CVs were judged differently depending on whether the candidate's name was male or female, with a strong preference in favor of male candidates.

Valuing skills

Numerous studies have shown that there is a deep-rooted tendency to favor men's skills over those of women, even when the latter are equally qualified¹⁰. This unconscious bias has far-reaching consequences, **as women are less likely to be recruited or promoted**, even when they possess equivalent skills and qualifications.

For example, women account for only 15% of management roles in the entire IT and digital sector¹¹. As

a result, there are **fewer women in management positions**, and they are generally **paid less** than men.

This dynamic perpetuates gender inequalities in the sector and limits the potential for innovation and diversity within the IT industry, as well as discouraging women from persevering within certain companies.

The low presence of women also reduces the **number of role models and inspirational mentors** for the next generation.

A sexist environment

Inappropriate comments, misogynistic remarks, favoritism for male colleagues... the literature unfortunately identifies several issues of hostile climate for women in the IT and digital environment, but also more broadly in male-dominated¹² workplaces.

The results show that **women face a confidence deficit** from their male colleagues, and that they must make an extra effort to demonstrate their competence.

Pregnant women, for example, are discriminated against because of the possible accommodations they could receive. They are sometimes even stigmatized as weak or disabled because of their situation¹³.

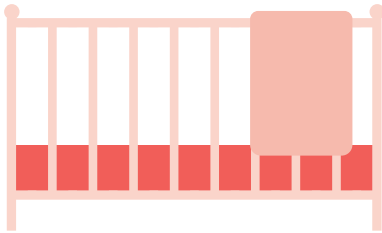
« **When I graduated, a man from a company came up to me and said: 'Be careful, because you're a woman, you risk being paid less than your colleagues, you need to know that.'** »

— *Female junior developer*



Work-family balance

Working after hours or on weekends, unpredictable work schedules, frequent out-of-town travel... certain positions or promotions in the IT and digital industries sometimes require **sacrifices that are difficult to reconcile with the burdens associated with family responsibilities.**



Work-life balance represents a significant challenge for many women, since it is well documented that women's careers are frequently characterized by interruptions and burdens linked to family obligations¹⁴. These work stoppages can have

repercussions on women's careers, as the IT field is characterized by rapid technological change.

For example, a career break for family reasons can result in a loss of skills and qualifications, requiring additional efforts to re-enter the sector.

Moreover, getting back into the workforce after a period of absence can be a daunting task, especially when women find that it has a negative impact on their remuneration.

These phenomena have a significant impact on diversity and inclusion in the IT and digital¹⁵ sector. Due to gender biases, girls are discouraged from entering these fields from an early age and are therefore less likely to pursue careers in these sectors. The current work environment also has a discouraging impact on women considering a career in IT, as opportunities for advancement are less attractive and barriers more numerous.

Possible solutions

Attracting more women and improving their retention in the IT and digital world is essential, as the benefits of a diverse workforce are undeniable!

Did you know?

In 2017, a study found that companies that promoted gender diversity were **21% more likely to achieve above-average profitability, compared to those that were less diverse!**

Studies show, for example, that inclusive and gender-diverse teams are **more innovative and successful.**

IBM is an eloquent example, having seen its revenues increase considerably after integrating diversity and inclusion into its corporate strategy¹⁶.

According to a survey of 1,800¹⁷ professionals, companies with diversified teams are 45% more likely to report an **increase in market share** over the previous year. Moreover, they are 70% more likely to report

that their company has succeeded in **conquering new markets.**

Besides, an estimated 61% of women consider gender diversity within management teams when choosing their workplace¹⁸ ... All these reasons demonstrate that it is vital to ensure diverse and equitable representation in the IT and digital world.

Fortunately, there are several ways in which this can be achieved!

The human resources department

HR can play a key role in promoting gender equity, diversity and inclusion within the company, helping to create a more equal and supportive working environment for women in the IT and digital sector. Here are a few effective suggestions that can make all the difference.

Clear pay scale

Establishing a transparent and fair pay scale.



The pay scale should consider experience, skills, and responsibilities, rather than being based on individual negotiations. This ensures fair pay for all employees, regardless of gender.

When it comes to promotions and increments, we must ensure that appraisals are objective, focused on skills and achievements, and consider each person's overall contribution to the company.

Promotion criteria and objectives



Developing clear promotion objectives and criteria rather than subjective factors.

For example, using terminology based on competencies rather than personality traits... because we have been socialized to associate certain personality traits with men and others with women!

Finally, we need to ensure that promotion opportunities are accessible to all, by eliminating gender bias in the selection process.

Transparency



Promoting transparency in HR policies and practices by standardizing procedures for all employees.

This includes open communication on compensation criteria, development opportunities, benefits, and work–family balance.

Consult employees

Asking for feedback on working conditions and climate.



EDI efforts are directly associated with the quality of life of the people employed. To check that these measures are being properly implemented, surveys can be carried out with the men and women of the organization to obtain feedback on working conditions and climate, as well as on the issues experienced daily.

At the same time, to better understand the gendered issues involved in retention, it is essential to ensure a meeting when a woman leaves the organization to understand the reasons and act accordingly.



Promotions are very much based on networking, so to access certain positions, you've been referred by a former colleague, a classmate. So, if there are only men around, they're the only ones who are going to reach certain positions of power. The boys' club phenomenon!

— Female developer





We're seeing this in big companies, a protocol for talking anonymously about your experiences, such as bullying or pressure of any kind. It doesn't have to be just for women, but for everyone!

— Female business development director



Diversity and inclusion training

Providing regular diversity and inclusion training to all staff members.



This training should be available to everyone, including HR managers and recruiters. It raises awareness of unconscious sexism and gender stereotypes. Training will also help create a more inclusive corporate culture.

To complement this, the effectiveness of HR policies and practices in terms of gender equity, diversity and inclusion can be periodically assessed.

A good way to do this is to collate employee feedback, compensation, and promotion data to identify and correct gender disparities.

To test for bias in hiring, experimenting with anonymized recruitment processes is also possible.

Work-family balance

It is well documented that women continue to bear a large share of the obligations associated with domestic responsibilities, household organization and dependent care within their families¹⁹.

Having work-family balance policies is therefore an indispensable tool not only for attracting women to your company... but also for keeping them!

Flexible work schedules



Offering the possibility of choosing flexible work schedules enables women to better manage their family responsibilities while maintaining their productivity at work.

This can include part-time schedules, compressed work schedules or variable work schedules.

Telecommuting



Telecommuting enables women to work from home, which can be particularly useful for mothers who want to reconcile their careers with family life.

It reduces commuting and offers greater flexibility for childcare.



I remember when a woman went on maternity leave, there was either a good chance that things would have changed drastically by the time she returned, or she no longer had a position... you didn't know if there was going to be restructuring!

— Female developer



Company daycare and/or parenting support services



Providing parenting support services, such as parenting assistance programs or childcare resources, can ease family responsibilities and enable women to focus on their careers.

By implementing these measures, companies can help create a more balanced and inclusive working environment, benefiting both female employees and the industry.

Flexible leave and paid days off



Granting flexible days off for family emergencies or paid days off for important family commitments can make it easier to manage work and personal life.

At the same time, men can be encouraged to take parental leave too, thereby helping to destigmatize gender roles within the organization.

Corporate culture

Working actively to make our corporate culture more inclusive and balanced will help women feel supported and encouraged to excel in the IT and digital sector. There are several ways to achieving this.

Setting up a mentoring system for women



Establishing a mentoring program to support and coach women employees in the organization.

Mentors and mentees can provide advice, guidance, and professional development opportunities to help women progress in their careers.

Inclusive language



Adopting inclusive language in all internal and external company communications to promote an inclusive and respectful culture.

Ensuring that job descriptions, HR policies and manuals use gender-inclusive language is essential.

Including women in promotional activities



Highlighting the achievements and contributions of the company's women in external communications and promotional activities.

This helps to showcase inspiring female role models and change perceptions about gender roles within the organization.



I went to a Microsoft conference, and there were lots of female speakers. I know subconsciously it spoke to me... the fact that it's not just white men of a certain age coming up and telling us how they've changed the world and how they're geniuses

— Female junior developer



Promoting women leaders and executives



Highlighting women in leadership and senior management positions within the company.

This sends a strong message about commitment to diversity and inclusion, while showing that women have leadership opportunities within the organization.

Promote networks of women in IT



Supporting the creation of networks of women in IT within the company, where women can connect, share experiences, and support each other.

To promote women within an organization, it is possible, for example, to provide an annual review of women's progress and participation in a newsletter, thus highlighting their contribution.

Awareness-raising and training



Offering equity, diversity and inclusion training to all staff, focusing on the particular problems generated by a corporate culture where men have long been in the majority, and encouraging the adoption of more inclusive behaviors.

Accountability and incentives



Setting specific diversity and inclusion targets, including targets for women's representation at all levels of the company.

In line with these objectives, putting in place incentives to recognize and reward efforts to promote gender equity.

For example, it might be possible to set up an ongoing recognition program integrated into the company's culture, or to sponsor the participation of employees in high-profile diversity events.

Activities and inclusive social life



When organizing team activities, outings, and social events, ensuring that these are in line with the family responsibilities experienced by all employees.

For example, a Friday evening happy hour with colleagues is less compatible with daily parental obligations than a lunchtime dinner with colleagues...

Conclusion

This guide aims to raise awareness and inform workplace players about the importance of promoting the inclusion and advancement of women in the information and digital technology field.

It's essential to recognize that women face specific challenges that affect their careers in this sector, ranging from gender stereotypes to work-family balance and a sexist climate.

However, by adopting measures such as promoting diversity, eliminating gender bias, implementing work-family balance policies, and

creating an inclusive environment, it is possible to help break down the barriers that limit women's participation in IT and digital.

By promoting equal opportunities, we stimulate innovation, creativity, and industry success.

Together, we can create a future where women are fully represented, valued, and fulfilled in the ever-evolving world of digital and IT.

It's time to make equity and inclusion a reality for all women in this promising sector!



By making this kind of effort at work, it shows that women are considered, that they can exist in this environment. In the subconscious, it adds a lot of value for us!

— Project Manager



Checklist

<p>Under-valuing women's skills</p> <p><i>pay gap, lack of women in management positions</i></p>	<p>Training HR staff and management on sexism and inclusive practices.</p>
	<p>Implementing an EDI policy and requesting timely feedback from all employees.</p>
	<p>Abolishing all negotiation on salary <i>clear and transparent salary scale</i></p>
	<p>Adopting clear promotion criteria</p>
	<p>Targeting women with potential and equipping them to reach the top echelons</p>
<p>Problems balancing work and family</p>	<p>Flexible working hours</p>
	<p>Telecommuting</p>
	<p>Company daycare</p>
	<p>Flexible leave</p>

Men's culture / boys' club	Implementing a mentoring system for women
	Promoting inclusive language
	Introducing women in the promotion of the organization
	Promoting women leaders and executives
	Promoting networks of women in IT
Sexism and discrimination	Zero tolerance of harassment
	Possibility of anonymous notes to talk about one's experience at work
	Possibility of anonymous notes to talk about one's experience at work
	Developing and implementing anti-harassment policies
	Promoting inclusive social activities

Let's break down barriers together!

End notes

- 1** The tech industry in Quebec, Numana
Online : <https://numana.tech/en/industry/>
- 2** Overview of the information technology industry, Statistics Canada, Institut de la statistique du Québec and Bilan capital de risque, Ministère de l'Économie, de l'Innovation et de l'Énergie (based on data from Refinitiv)
- 3** Rapport : Le numérique: une culture genrée (Report : Digital: a gendered culture) (2020), Conseil supérieur de l'éducation. Online: <https://www.cse.gouv.qc.ca/wp-content/uploads/2020/10/50-2111-ER-Numerique-culture-genree.pdf>
- 4** Vue d'ensemble du marché du travail en TIC au Québec (Overview of Quebec's ICT job market) (2017), Technocompétences. Online : <https://www.technocompetences.qc.ca/information/etudes-sur-la-main-doeuvre-en-ti-au-quebec/donnees-statistiques-industrie-tic/>
- 5** Stevanovic, B., & Mosconi, N. (2007). Les représentations des métiers des adolescent (es) scolarisé (es) dans l'enseignement secondaire. (How are careers and jobs viewed by teenage high-school students?) *Revue française de pédagogie. Recherches en éducation*, (161), 53-68.
- 6** Beede, D. N., Julian, T. A., Langdon, D., McKittrick, G., Khan, B., & Doms, M. E. (2011). Women in STEM: A gender gap to innovation. *Economics and Statistics Administration Issue Brief*, (04-11).
- 7** Sadker, D., & Zittleman, K. R. (2009). Still failing at fairness: How gender bias cheats girls and boys in school and what we can do about it. *Simon and Schuster*.
- 8** Rissler, L. J., Hale, K. L., Joffe, N. R., & Caruso, N. M. (2020). Gender differences in grant submissions across science and engineering fields at the NSF. *Bioscience*, 70(9), 814-820.
- 9** Gutierrez, Félix Blain. Comment les nouvelles pratiques de gestion mises en place pour faire face à la pénurie de main-d'œuvre dans le secteur des technologies de l'information et des communications contribuent à la transformation de la culture organisationnelle d'une firme conseil en TIC?. (How are new management practices introduced to deal with labor shortages in the information and communications technology sector helping to transform the organizational culture of an ICT consulting firm?) 2020. Doctorate dissertation. HEC Montreal.
- 10** Vue d'ensemble du marché du travail en TIC au Québec (Overview of Quebec's ICT job market) (2017). Technocompétences. Online : <https://www.technocompetences.qc.ca/information/etudes-sur-la-main-doeuvre-en-ti-au-quebec/donnees-statistiques-industrie-tic/>
- 11** Women in STEM careers – where we are in 2023 RANDSTAT. Online: <https://www.randstad.ca/employers/workplace-insights/women-in-the-workplace/women-in-stem-where-we-are-now/>
- 12** Lafortune, L., Groleau, A., & Deschênes, C. (2022). *Manifeste à propos des femmes en STIM: 50 textes positifs et percutants*. Editions JFD.
- 13** Vue d'ensemble du marché du travail en TIC au Québec (Overview of Quebec's ICT job market) (2017), Technocompétences. Online: <https://www.technocompetences.qc.ca/information/etudes-sur-la-main-doeuvre-en-ti-au-quebec/donnees-statistiques-industrie-tic/>
- 14** Bandias, S., & Warne, L. (2009). Women in ICT—Retain and Sustain: An overview of the ACS-W Survey.
- 15** Cohoon, J. M., & Aspray, W. (2006). Women and information technology: Research on underrepresentation. The MIT Press.
- 16** Cohoon, J. M., & Aspray, W. (2006). Women and information technology: Research on underrepresentation. The MIT Press.
- 17** Sylvia Ann Hewlett, Melinda Marshall and Laura Sherbin (2013). *How Diversity Can Drive Innovation*. Harvard Business Review
- 18** PricewaterhouseCoopers (2017). *Winning the fight for female talent How to gain the diversity edge through inclusive recruitment*. Online: <https://www.pwc.com/gx/en/about/diversity/iwd/iwd-female-talent-report-web.pdf>
- 19** Shockley, K. M., Shen, W., DeNunzio, M. M., Arvan, M. L., & Knudsen, E. A. (2017). Disentangling the relationship between gender and work-family conflict: An integration of theoretical perspectives using meta-analytic methods. *Journal of Applied Psychology*, 102(12), 1601.

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**Once again, thanks to
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Breaking barriers: valuing women in IT

Guide for
companies

Research & writing

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Observatoire québécois des inégalités

Le code des filles
www.lcdf.ca

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Women and Gender
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