



3:30pm – 4:15pm

Harnessing diversity and inclusion to drive innovation in Canadian science and technology

*Panel Organizer: Wendy Cukier
Ryerson University*

AGENDA



CHALLENGES

- 75 % of employees in the STEM field are male.
- Men earn \$9,100 more on average than their female counterpart in STEM field.
- STEM women are also 6 % more likely to be underemployed or have a ‘skills mismatch’.
- 60 % of employees feel that their organizations fail to be truly diverse and inclusive.
- 77 % of women reported experiencing difficulty balancing work and family obligations.
- 93 % of highly qualified women who off-ramp their career to have children but only 74 % are able to re-enter employment.
- 9.5% of women (35 and 44 yrs) hold management positions in the STEM industry, vs. 14.5 % of men.
- Over 52 % of highly qualified females in STEM roles quit their jobs
- “Chilly” workplace – 30 years of effort, limited change

Skills gap paradox: diverse groups face barriers

 “Canadian advanced technology businesses believe - they face a skills shortage. - Globe and Mail, 1997


 “By 2019 Canada will need to fill 182,000 tech jobs or lose economically”. – ICTC, 2017

 30% of SMEs do not have the talent they say they need to grow

BUT

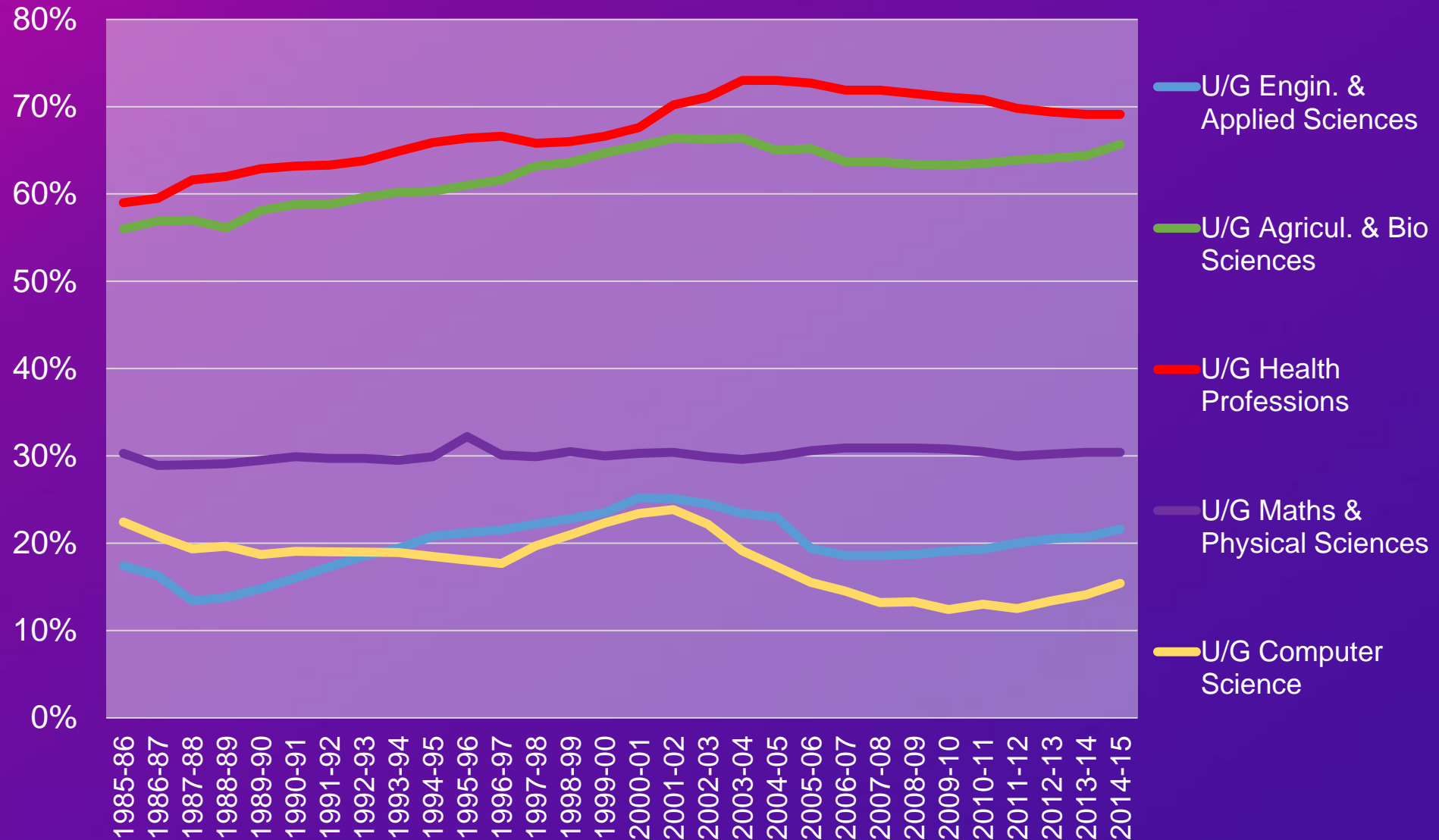
 Applicants with “foreign sounding” last names are 30% less likely to be called for an interview.

 University grads with a severe disability have same employment outcomes as HS drop-outs.

 Socio-economic status can also present a big barrier including lack of social capital.

 Indigenous youth are fastest growing segment of the population; worst education and work outcomes.

Women as a Percentage of STEM Discipline Enrolment (Ontario Universities) (1985-2015) its not about the math or science



Research support is gendered: eg ORF-RE (2006 - 2015)

Gender	Total	Women	% Women
Total ERA Awards: All Categories	823	260	31.6%
ERA: Engineering Only	112	26	23.2%
Total ORF-RE Awards: All Categories	145	18	12.4%
ORF-RE: Engineering Only	36	2	5.6%

The image features a central lightbulb inside a large, hand-drawn thought bubble. Below this main bubble are three smaller, hand-drawn circles of varying sizes, arranged in a descending staircase pattern from left to right. The entire graphic is rendered in a light purple color against a dark purple background. The text 'INCLUSIVE INNOVATION' is centered horizontally across the middle of the image, overlaid on the lightbulb and the thought bubble.

INCLUSIVE INNOVATION

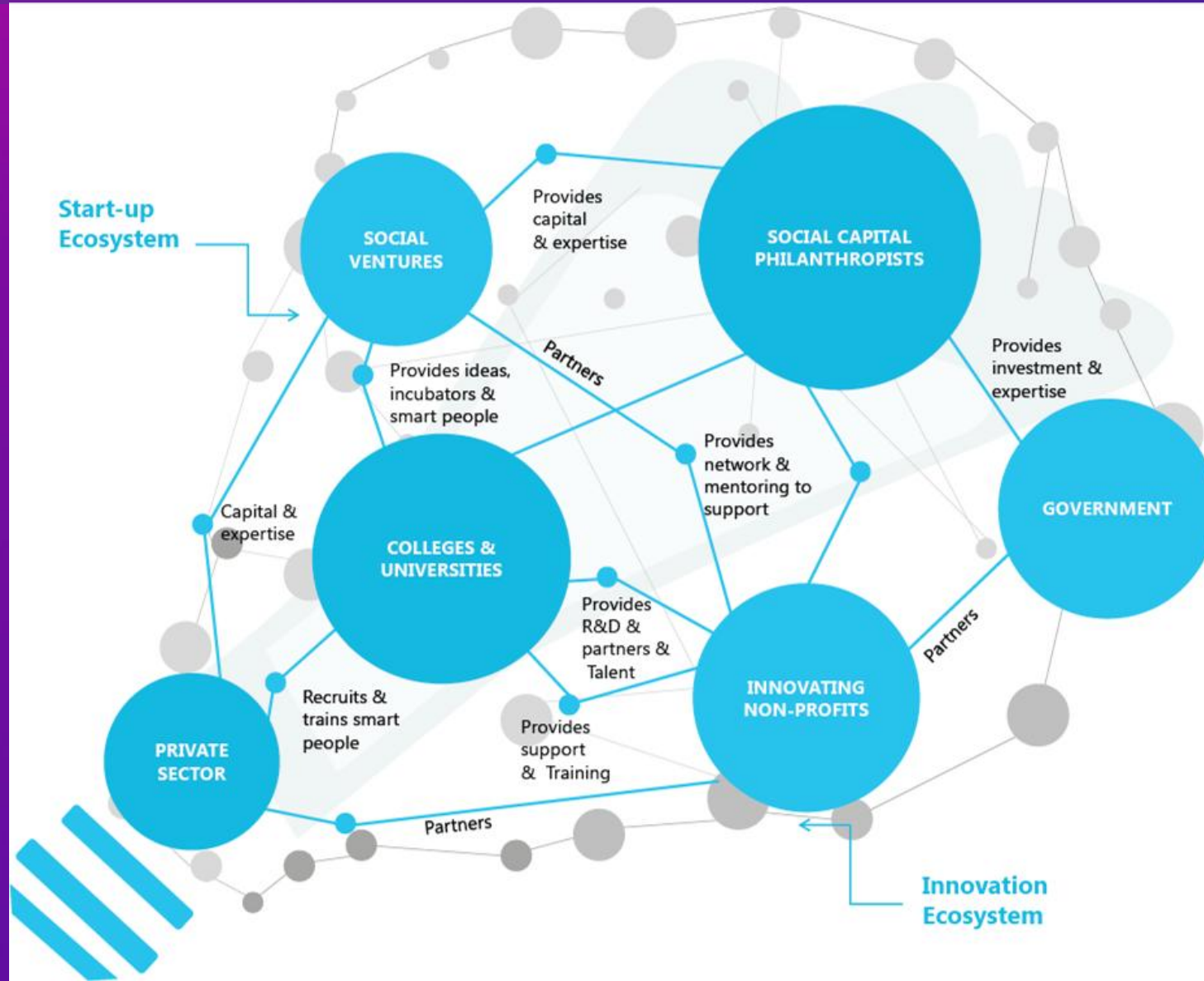
Innovation is not just about creating new technologies

- 💡 Without users and adoption there is no innovation
- 💡 Canadian consumers lead in mobile but companies lag
- 💡 **40%** of Ontario's SMEs do not have an internet presence
- 💡 **20%** of labour force is in the public sector
- 💡 **Its not just about STEM**

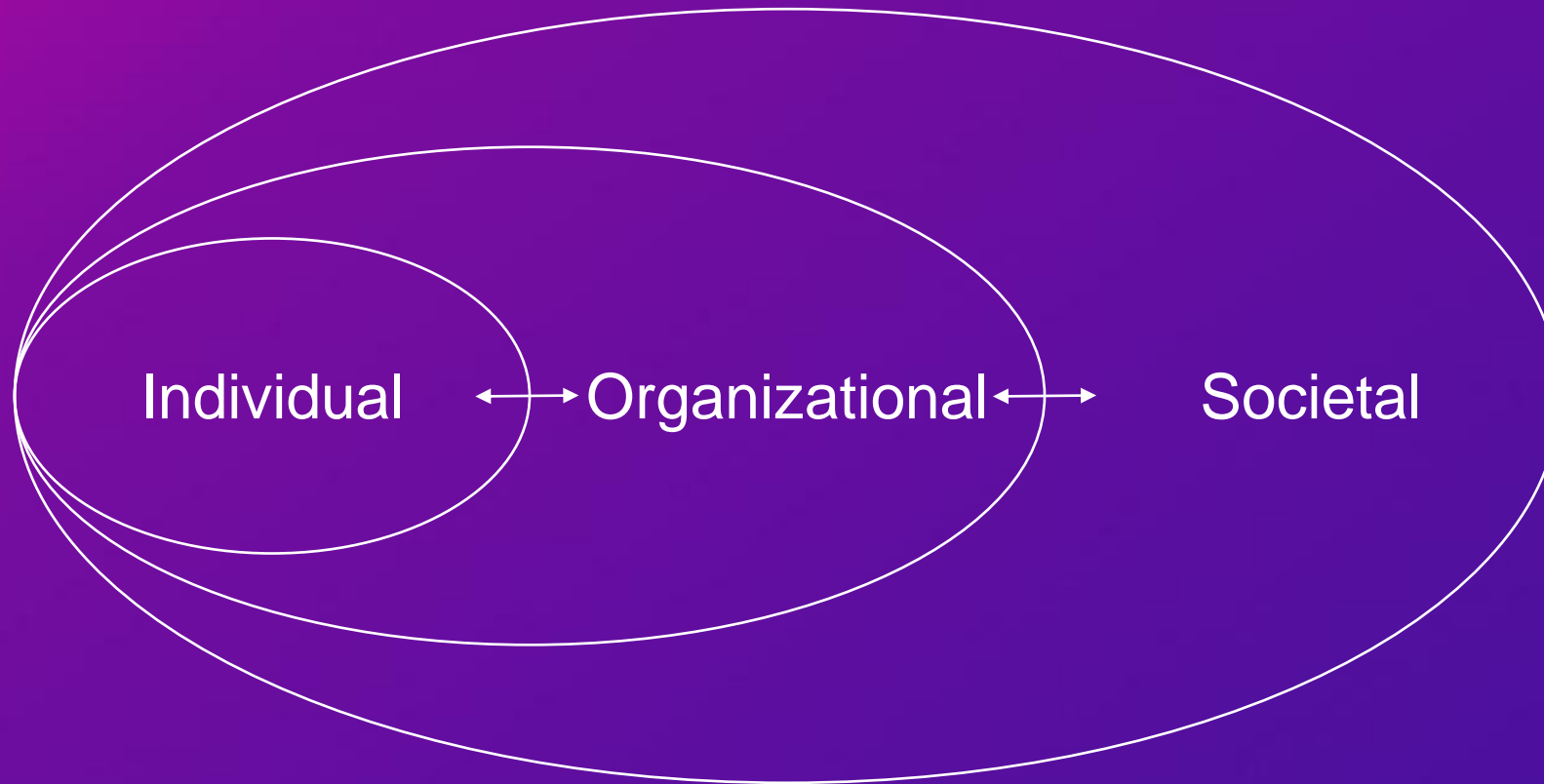
“Obstacles to the practical use of the computerized medical record exist, but we may expect these to vanish within a few years..” -Bradbury, 1990

*“Canadian businesses are moving ‘bad slow’ in adopting digital technology
-Sam Sebastian,
Google Canada*

Building the Innovation Ecosystem



Harness Innovation to Drive Inclusion : Diversity Institute's **Diversity Assessment Tool**



Barriers/Drivers and Interventions at each level and between levels

Societal Level

- Who we see: Think Entrepreneur. Think Male.
- What we value: STEM and economic priorities
- Competing gender versus entrepreneur stereotypes
- Definitions and framing: entrepreneurship versus changemaking
- Policies and processes which are exclusionary
- Media representation and discourses
- Access to infrastructure
- Access to funding
- Socialization of girls – compliance, confidence

Alternative Narratives and Pathways: only 4 of these Tech CEOs have STEM backgrounds



Canadian global brand: Unprecedented opportunity for “brain gain”



**WE DON'T CARE
WHAT'S ON
YOUR HEAD.**

WE CARE WHAT'S IN IT.

We're Lakeridge Health, a leading hospital in the Greater Toronto Area. Our focus is on safety and quality, and we're looking for people like you to join our team of health professionals. Check us out: www.lakeridgehealth.on.ca

FOLLOW US: [@LAKERIDGEHEALTH](https://twitter.com/LAKERIDGEHEALTH)
LIKE US: [FACEBOOK.COM/LAKERIDGEHEALTH](https://facebook.com/LAKERIDGEHEALTH)

Lakeridge Health

Organizational Level: Barriers to change

- Structures
- Autonomy of institutions and individuals
- Infrastructure and legacy systems
- Incentives and reward systems
- Limited competition and pay for performance
- Support systems – labour intensity
- Lack of horizontal and vertical coordination in government
- CULTURE

University Culture: town vs gown

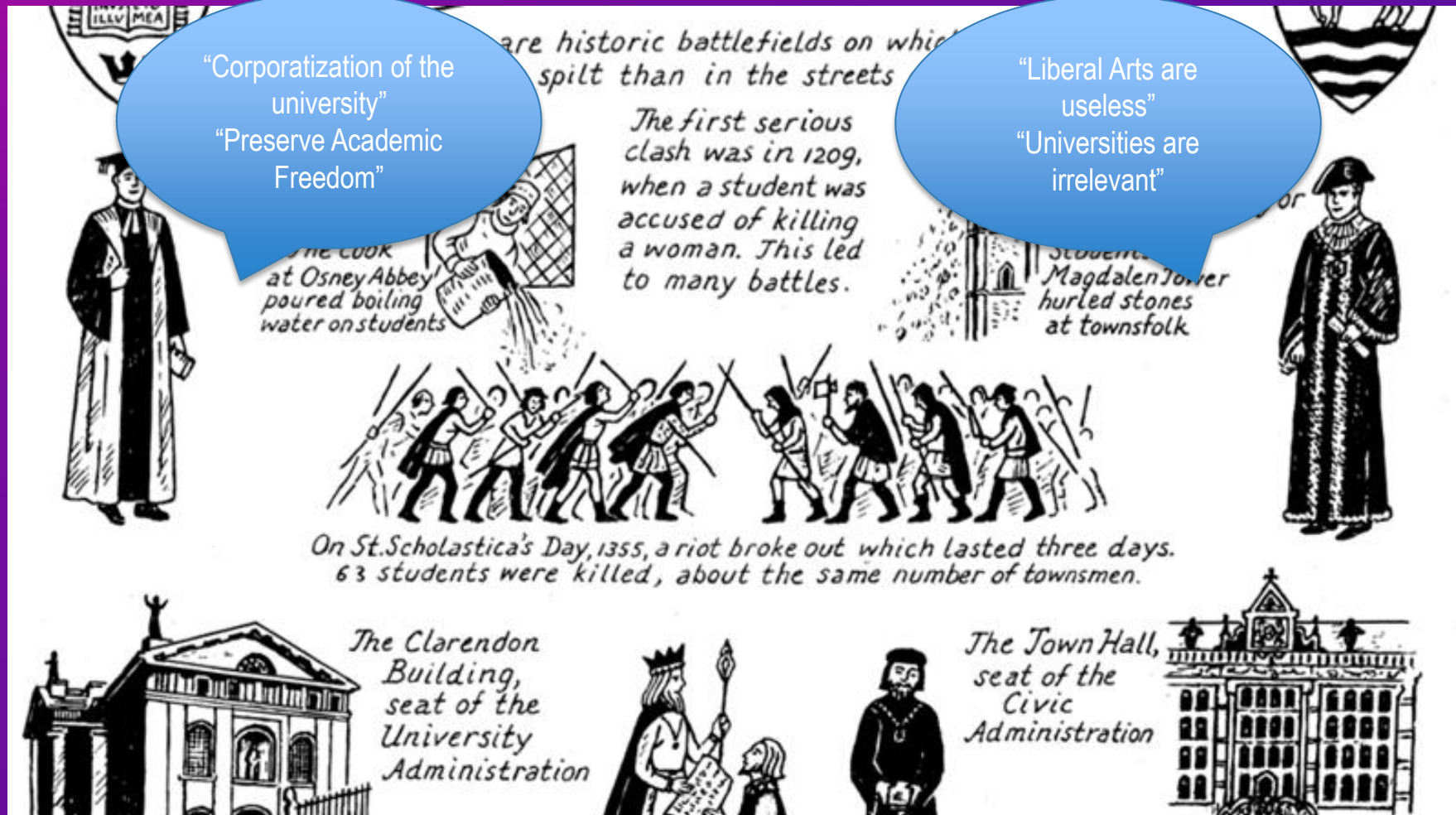
KNOWLEDGE

“Corporatization of the university”
“Preserve Academic Freedom”

VERSUS

THE ECONOMY

“Liberal Arts are useless”
“Universities are irrelevant”



Organizational Level



Leadership and Strategy

- Who is there/not there?
- Who makes decisions?
- Who is visible?
- What is the tone at the top?



Culture and Values

- to what extent is diversity and inclusion baked in



Measurement and Accountability

- What is valued?
- Collect & publish diversity data?



Resource Allocation

– who gets funding and why



Strong and Transparent HR practices

- Representation
- Setting priorities, selection processes, results



• Assessing the Value Chain

- Procurement
- Operations
 - Policy
 - Programming
 - Service delivery (eg. curriculum, supports)
 - Research and evaluation (DAT or G+)
- Marketing and Communications
- Government relations



• Developing the Pipeline

New tools and approaches

coursera

Knack

ADaPT-ICTS
Advanced Digital and Professional Training

Magnet

Summer Company

Have an idea for a company?
Get \$3000 to turn it into a business!

ryerson.ca/research/summercompany

Register early!
Limited space available.


Ontario
RYERSON UNIVERSITY
Everyone Makes a Mark.

npower

SCCC
Scadding Court Community Centre

Scadding Court Community Centre's

Business out of the Box Toolkit



CANADA LEARNING CODE



10KCOFFEES



RECODE

Fuelling Social Innovation and Entrepreneurship in Higher Education

Individual Agency

A person is seen from behind, looking at a wall covered in various diagrams and charts. The person is wearing a striped shirt. The background is a wall with several diagrams, including flowcharts and organizational charts, some with handwritten notes. The overall scene is dimly lit, with a blueish-purple tint.

- Build your skills
- Use evidence (not the paralysis of analysis)
- Attitudes: be bold, fearless, optimistic, resilient
- Make time to dream and think but focus on doing
- Mentor and sponsor others
- Less is more – adapt communication styles
- Span of control – whom can you influence?
- Be accountable

The background features a close-up, slightly out-of-focus image of a fishing net. The net is composed of thick, dark ropes knotted together in a diamond pattern. A semi-transparent color gradient is overlaid on the image, transitioning from a warm orange on the left to a deep magenta on the right. The text 'Inclusive Entrepreneurship' is centered in a clean, white, sans-serif font.

Inclusive Entrepreneurship

INCLUSIVE ENTREPRENEURSHIP

- Who is an entrepreneur?
 - Someone who carries out new combinations (Schumpeter, 1934).
- Pursues “opportunity without regard to the resources currently controlled” (Stevenson, 1983).
- Searches for change, responds to it and exploits it as an opportunity (Drucker, 1985).
- Should include more than tech! Services. Social entrepreneurs. Artists.

Entrepreneurship is an important pathway to economic inclusion

Key driver of growth: 13.3% of Cdn women were entrepreneurs in 2016, up from 10% in 2014 (Hughes, 2017); more likely to focus on retail, services and accommodation sectors.

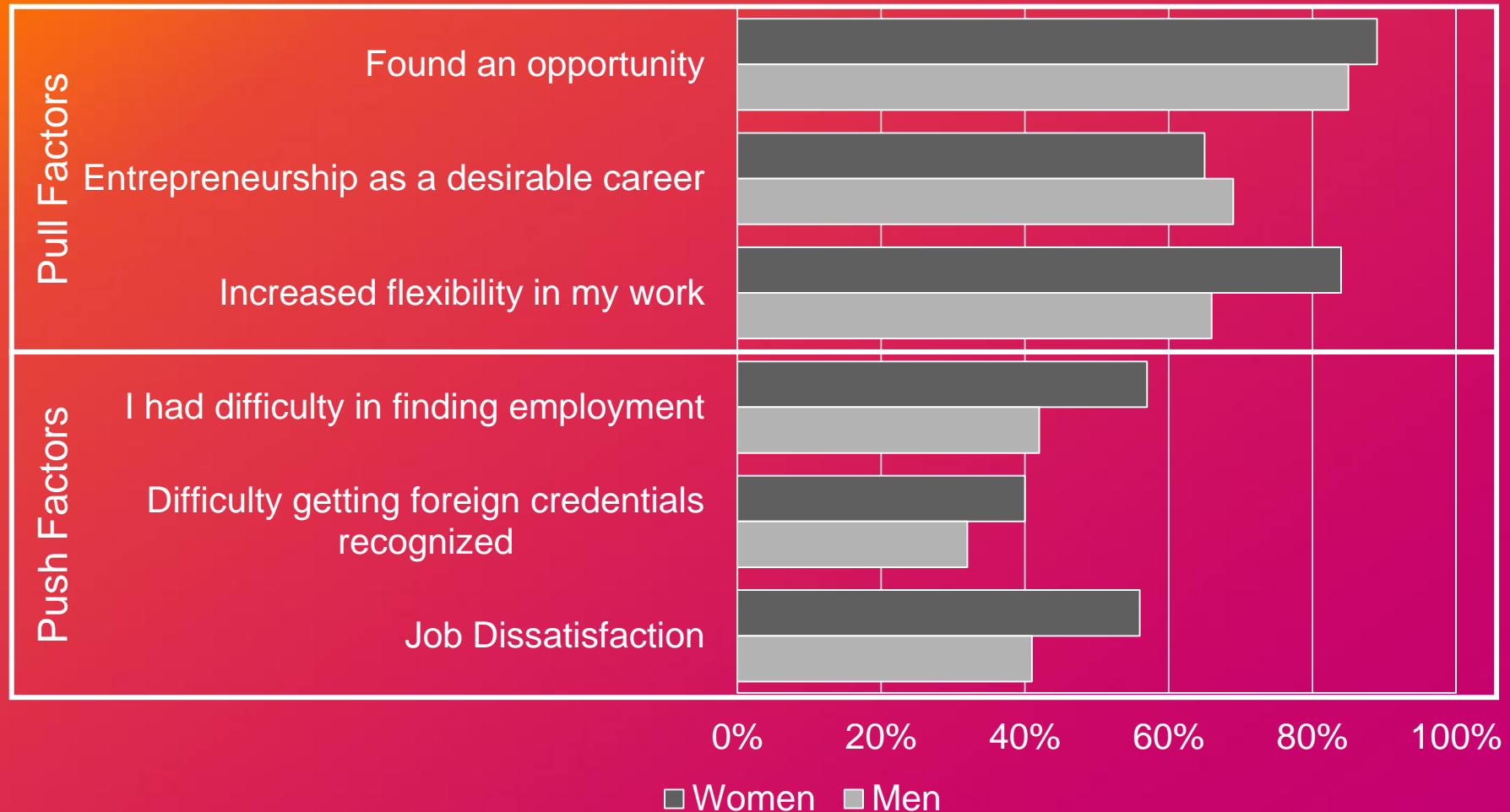
Women-led businesses more likely to be smaller, less likely to grow, less likely to export

Immigrants are more likely to pursue entrepreneurship than Canadian born. Both push and pull factors.

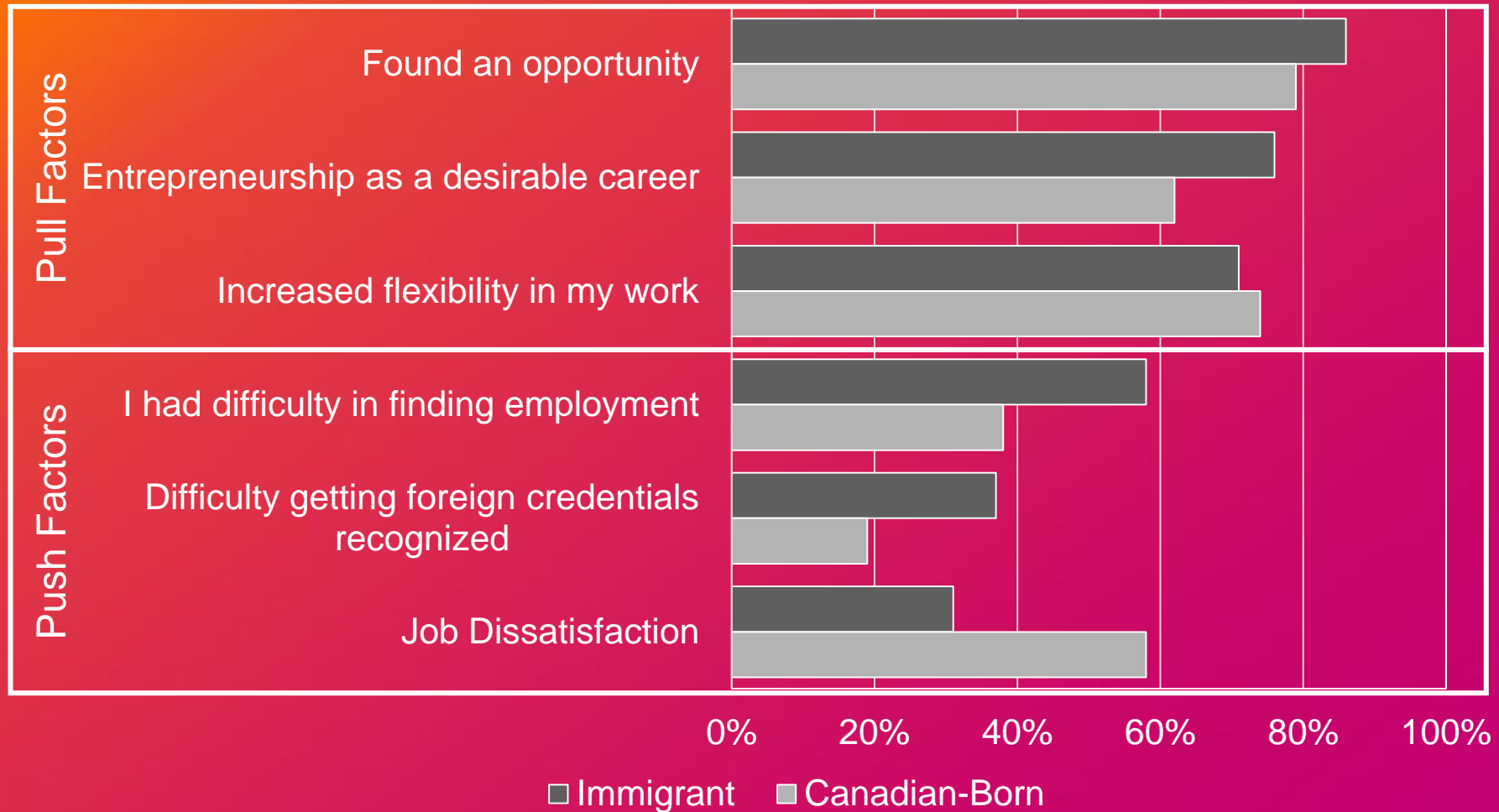
Extensive research shows women and other groups face barriers (Cukier et al., 2017).

Need to understand barriers and address them.

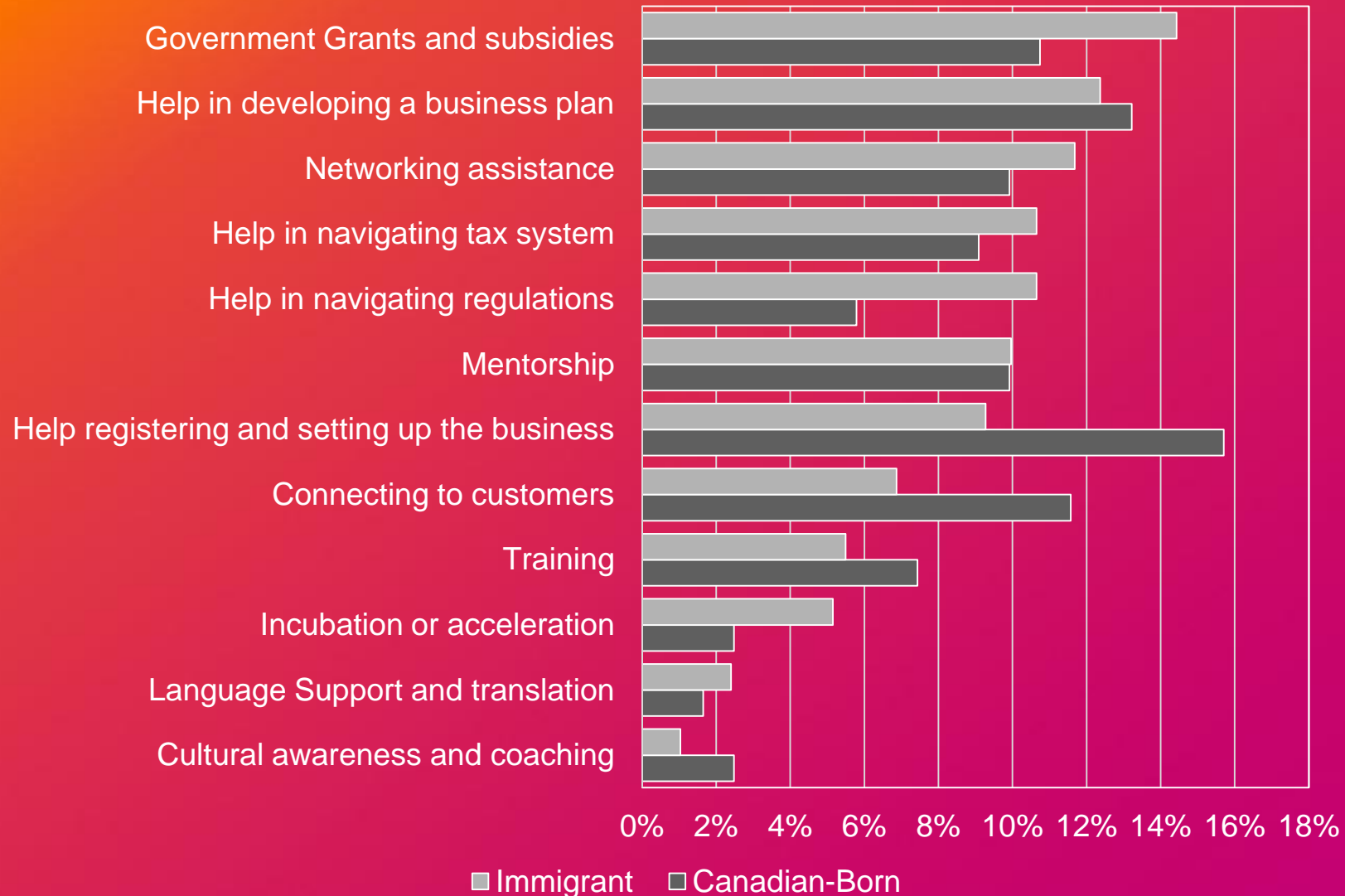
Factors influencing entrepreneurship - Women



Factors influencing entrepreneurship - Immigrants



Top Ranking Support Services



Gendered barriers to entrepreneurial success

- Personal preferences shaped by social forces
- Lack of encouragement
- Lack of female friendly pedagogy
- Absence of role models
- Lack of mentoring and sponsorship
- Exclusionary practices in accessing funding and services
 - USA: Female founders received 2% of venture capital in 2017 - \$1.9 B of \$85 B (Zarya, 2018)
- Culture of incubators and accelerators
- “Bro Culture” especially in tech
- Overt and unconscious bias w/ suppliers, funders, customers

Previous Recommendations

- Increase access to SME financing
- Gender-specific SME training and development support services
- One-stop access to hub for information
- Increase access to federal procurement
- Internationalization support
- Female Trade Missions
- Promote entrepreneurship as career option
- Increased networking, mentoring, advisory and sponsorship opportunities
- Program evaluation using disaggregated data
- Better coordination support/information services
- Female-friendly curriculum
- Income protection and wrap around support

YET:

- Studies of incubators and accelerators show **gender is not considered** in innovation (e.g., Cukier et al., 2013)
- Women in Entrepreneurship programs typically seen as ‘add-ons’; do not address systemic barriers
- \$\$\$ invested in women’s advancement is fraction of overall funding

**A SYSTEMS APPROACH
IS NEEDED**

Most incubator and accelerator programs are gendered

- Most incubators and accelerators focus on STEM replicate systemic biases.
- Most are led by men.
- Advisors and coaches are men.
- Systems reinforce bro-culture.
- Absence of mentors and sponsorship.
- Processes – hyper competitive – “Dragon’s Den” concerning introduced biases (Balachandra et al., 2013; Huang et al., 2013).
- Access to funding is biased.
- Access to profile and support for women is limited.



Intermediaries

Government Agencies

- STEM focused priorities
- Waterloo-Toronto Corridor
- Male dominated

Culture: Think entrepreneur, think male

- Reinforces STEM male bias
- Role models are men
- Images are men
- Focus on economic outcomes and technology



MaRS Innovation

Board of Directors

Service Improvement

- Most settlement agencies and support organizations focus on language training and traditional employment pathways
- Organizations designed to support entrepreneurs had limited understanding of the challenges that newcomers or women face
- Some focused on the need for newcomers to learn language and culture, while others stressed the importance of service providers becoming more inclusive

Recommendations

- Support networking, mentoring and sponsorship of immigrant entrepreneurs and women by Recognize that entrepreneurial opportunities and businesses are diverse and extend beyond technology
- Provide better integration of services, including “concierge” approaches to providing information about the full range of programs supporting startups, talent, financing, research and development

A conceptual illustration featuring a glowing lightbulb centered within a large, hand-drawn thought bubble. Below this main bubble are three smaller, hand-drawn circles of varying sizes, arranged in a descending staircase pattern from left to right. The entire scene is set against a dark blue background with a subtle grid pattern.

Inclusive Online Environments

Academics' (Happy) Use of Social Media



- Networking
- Sharing research
- Connecting with students
- Activism and advocacy
- Promoting events
- Staying in touch with family/friends
- Public scholarship
- Live tweeting conferences

#CSPC2018

The Darker Side of Social Media



Our research: the hostile online environment

- How do women scholars cope with online harassment?
- What is the toll exacted by negative experiences online?
- What can be done to prevent or mitigate these experiences?

Gendered Online Abuse

- 40% of Internet users report experiences of harassment, but women and other marginalized groups face more severe and sustained forms of abuse (Duggan 2014, 2017)
- Qualitatively different abuse: insults/abuse based on physical appearance
- Women more than twice as likely to be sexually harassed online (Angus Reid 2016)

Findings: Coping Themes

Theme	Description	Examples
Self-protection	A cluster of behaviours that took place before, during, and after harassment occurred. Its aim was to reduce exposure to, and impact of ongoing harassment, to reduce the vulnerability to potential harassment, and to eliminate harassment altogether.	increased security settings, avoiding certain social media platforms, outsourcing readings of comments to others, self-censorship
Resistance	Scholars' refusal to accept or remain silent or passive in response to harassment.	speaking out, trolling back, refusing to remain silent
Acceptance	Recognition that the problem of harassment was unlikely to disappear any time soon, and thus coping strategies were reactive in nature and focused on emotional responses to harassment.	avoiding social media, feeling unsurprised by harassment
Self-blame	Participants feeling that they needed to compromise their own values, apologize and monitor their own behavior, and minimize their experiences of harassment.	comparing harassment to others' experiences, blaming one's own naiveté, feeling stupid

Institutional Awareness & Support

- Knowledge of risks
- Expectations around SM use
- Training
- Support networks



3. Self-protection isn't enough



- Self-protection as emotional labour
- Emotional labour & burnout
- Include women and other targeted groups in policy-development

Resistance & strength are part of the story too



thank you



International Innovation & Inclusion Network

CONTACT

Diversity Institute

Ted Rogers School of Management
Ryerson University

<http://www.ryerson.ca/diversity>
diversityinstitute@ryerson.ca
416-979-5000 ext. 7268

DiVERSITY
iNSTITUTE