Fragmentation in the future of work
Exploring the impact of the changing nature of work on vulnerable workers

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Research funding

Tri-Agency Program Secretariat

- CIHR
- SSHRC
- NSERC

- To support high risk, high reward and interdisciplinary research
- To inspire projects that bring disciplines together
- Research that might fail, but has the potential for significant impact
# Investigator team

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*Open access pre-print available*
Take home messages

9 medium-to-long term trends that characterize the future of work

Impact of the future of work will be unequal

Opportunities exist in the future of work
What is the future of work (FoW)?

- Large-scale and rapid digitization and automation of diverse domains of working life
- Coupled with social, demographic, political and environmental changes
- Reflects a dramatic change to every industry and transformation of all aspects of work
- Superimposed on top of ongoing industrial shifts, offshoring of work, growth in non-standard work arrangements
Knowledge gaps in FoW research

Significant amount of research which has sought to project changes to the working world

What’s missing?

Experiences of diverse groups of workers within the FoW

Public health implications of the FoW
Who are vulnerable workers?

- Exposed to adverse and unsafe work conditions
- Lack access to employment legislation or statutory benefits
- Lack opportunities to improve working conditions
- Earn low wages or experience employment instability

$\approx \frac{1}{3}$ of Canadian workers experience vulnerability

Women, visible minorities, immigrants, Indigenous peoples, LGBTQ2+, those with low socioeconomic status, people with disabilities
Past events provide a roadmap for how FoW might contribute to health and social inequities

1980s/1990s
Personal computers

2008
Recession

Automation
Research objectives

1. To identify existing evidence on different trends that may span social, technological, economic, environmental and political domains and characterize the future of work

2. To synthesize and describe how the convergence of the trends that we identified might impact vulnerability within the labour market
Systematic information-generating activity to identify trends that have the potential to emerge over time

- Inclusive and seeks to identify and synthesize diverse evidence sources
- Five core documents selected by the research team to develop an initial pool of search terms
  - Social, technological, political, economic and environmental
  - Vulnerability
  - Work outcomes
- Iteratively identified new search terms
- December 2019-January 2020; updated in August 2020

Source: Van der Merwe, 2008; Slaughter, 1998; Hines and Bishop, 2006
Horizon scan: Search process

Peer-reviewed and gray literature
- ASSIA, Business Source Premier, IBSS, PAIS Index, Sociological Abstracts, WPSA

Twitter
- Tweets with moderate amount of engagement
- Tweet included a link to a specific resource

Eligibility
- English language
- Published ≥2015
- Documented a potential FoW trend
- Focused on an industrialized context
- Described an explicit impact on vulnerability
• Reviewed and synthesized relevant articles
  • Summarized FoW trend
  • How the trend contributed to vulnerability
  • Specific groups of workers who could be affected
• Articles were categorized according to common themes to develop macrotrends
• Weak signals were captured but not synthesized
Results
Existing sociopolitical, technological, economic and environmental trends that characterize the future of work for vulnerable workers

**Literature search**

- ASSIA (n=392)
- CBCA (n=609)
- IBSS (n=1,103)
- SA (n=894)
- WPSA (n=330)
- Twitter (n=1,305)
- Other (n=516)

**Retrieved (N=5,149)**

349 duplicates removed

1,913 screened out

1,285 screened out

**Abstract and title relevance screen (N=4,800)**

**Full Text eligibility screen (N=2,887)**

**Full text, abstract, and Synthesis (N= 1,602)**
Digital transformation of the economy

AI/ML-enhanced automation

Biases in AI-enabled management systems

Future of work skills gaps

External shocks

Populist values in the future of work

Gen Zs and inclusive work environments

Globalization 4.0

Climate change and the green economy
Trend 1. Digital transformation of the economy

Advancement and application of novel digital technologies that contribute to hyperconnectivity, advance telepresence, automate work, and increase reliance on mobile apps.

- Displacement of routinized and low skilled jobs
- Job tasks could be contracted out
- Competition for limited jobs
- Precious or unsafe working conditions

- Creation of new work opportunities
- Efficiency
- Accessibility to the work environment
- Flexibility work conditions
- Gig work could provide an entry point into the labor market
Trend 2. Automation enhanced by artificial intelligence and machine learning

Digital systems that replicate human intelligence and behaviours. Automate job tasks and make predictions to perform complex work. Increase the requirement for humans to work alongside smart machines.

- Displacement of those in routinized and low skilled jobs
- Professional jobs could also be replaced by machines
- Entry level jobs have greater physical demands and precarity

- New job opportunities
- Efficiency and accuracy of job tasks
- Workers with emotional intelligence could be in high demand
Trend 3. Biases in AI-enabled management systems

Algorithms used to inform the initial parameters of AI-enabled hiring and performance management systems have the potential to reinforce existing social conditions within a workplace.

- Biases towards workers who didn’t fit a pre-determined mold
- Potential for discrimination
- Exclusion from work opportunities

Level the playing field by making HR decisions based on objective metrics.
Workers across all industries are required to possess advanced technical competencies, digital literacy and soft skills to obtain jobs of the future.

- Low educational attainment or job skill readiness
- Barriers to upskilling or reskilling

- Companies broaden their hiring to groups of previously overlooked workers
- Diverse lived experience and soft skills could be an asset
Trend 5. Globalization 4.0

Advancement of technologies will facilitate exchange of ideas, services and goods within physical and virtual environments across the globe.

• Displacement of workers in blue and white-collar jobs
• Increased competition for a limited
• Worsen work conditions in other contexts

• Greater attention paid to addressing inequities within the context of globalization
**Trend 6. Climate change and green economy**

Extreme weather events will disrupt employment and contribute to lost productivity. The climate crises may contribute new job opportunities.

- Jobs that are affected by extreme weather events
- Unsafe working
- Less access to safety nets during a climate crisis
- Barriers to obtaining green jobs

- New jobs may emerge in the green economy
Trend 7. Gen Z workers and inclusive work environments

Growing numbers of Gen Zs will enter the workforce. Gen Zs value inclusivity, diversity and social responsibilities.

- Work environments more accessible and inclusive
- Employers adopt policies on work-life balance, work-from-home arrangements
- Environmental sustainability
- Encourage job training
Trend 8. Populism and the future of work

Rejection of the establishment, elites and expertise by a growing community of people. Growing frustration and anxiety about the future among people who may hold populist sentiments.

- Workers may experience discrimination
- Workers may be excluded from the labour market
- Policy change that limit work opportunities
Trend 9. External shocks and the future of work

Work significantly affected by external shocks such as an economic recession, natural disaster or global pandemic

- Job displacement
- Work conditions most likely to be affected
- Facilitate the automation of work
- Growth in populist sentiments

- Increased adoption of digital technologies may increase accessibility
Discussion

• FoW will be fragmented and have health implications for the working population
• Some workers enter FoW at a position of disadvantage
• Interrelationships between technological innovation and social and political changes (e.g., AI, globalization and populism)
• External shocks contribute to an acceleration of change and may exacerbate inequities
• Unclear if opportunities will be available to vulnerable groups
Where do we go from here?

- Operationalize and measure vulnerability in FoW
- Examine diverse challenges and opportunities for specific groups
- Consideration of intersectionalities
- Determine how different digital technologies impact diverse groups of workers
- Capture evolving FoW characteristics and weak signals
- Determining social policy and labour protections for vulnerable groups
Upcoming FoW studies at IWH

- Interviews with policy experts, labour market specialists, disability employment service providers
- Delphi survey on workplace practices and policy supports that are relevant to the future of work
- Interviews with diverse young workers on thoughts and perceptions on the future of work

Are you interested in participating?
Thank you

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