# Socio-Economic Impacts of AI Acceleration on the Workforce

## Ethics Group Project

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# Introduction

- Accelerating advancements in AI will likely have a profound impact on socio-economic landscape, particularly on the workforce
- The rise of automation and AI technology is a double-edged sword. On one side, it may lead to job displacement in certain industries as tasks become automated. On the other, it opens up new job opportunities within the tech sector, particularly in AI-driven fields.
- We will discuss the following topics:
    - AI acceleration effect on Job Market Dynamics and Society
    - Educational Institutional & Private Sector Response
    - Government Policy Considerations

# Job Market Dynamics

- Globalization and Outsourcing (Late 20th Century)
  - Although started in the 1970s, offshoring began manifesting as manufacturing employment declined dramatically starting around 1998, which is 4 years after NAFTA was passed, and further exacerbated by China's entry into the WTO in 2001.
  - The top industries affected were IT, call centers, and manufacturing, primarily to reduce labor costs and increase capacity.

# Job Market Dynamics

- PC/Digital Revolution (Late 20th Century)
  - Transformed the workplace with some jobs became easier to replace such as bank tellers, telephone operators, and typists.
  - However, most other jobs did not become replaceable, but rather PCs enabled enhanced productivity and communication in businesses
  - Other types of new industries were created software development, digital media, and online commerce that required programmers, engineers and data analysts.
  - In 2015, researchers reported that entire cities' fortunes were dependent on whether a metropolitan area possessed "abstract" skills capable of complementing computer technology such as problem-solving, analytical reasoning, and complex communication.*
  - Cities with such abstract knowledge-base prospered (e.g. SF, NYC, etc) while those with more "routine" workforces didn't (e.g. Buffalo, Detroit, etc).

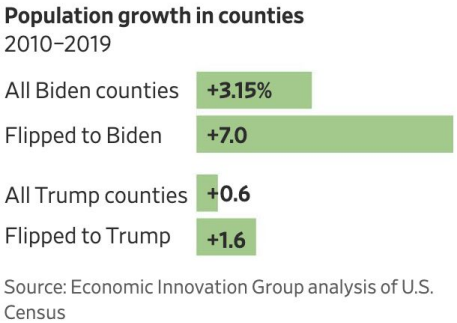
**University of Oxford, Thor Berger and Carl Benedikt Frey in Regional Science and Urban Economics*

# Job Market Dynamics

- How will AI Acceleration Affect the Workforce?
  - 2020 World Economic Forum: AI could replace up to 85 million jobs worldwide by 2025.
  - Following the previous framework of “abstract” vs “routine” jobs, it is likely that jobs that require “abstract” skills will utilize AI to be more productive, while jobs that are more “routine” will likely be replaced by a more productive and cheaper AI agents.
  - Both blue-collar (truck/taxi drivers, factory workers, etc) and low-level office jobs involving repetitive tasks like data gathering and processing, such as administrative assistants, paralegals, data entry/bookkeeping clerks, call center jobs and some copywriters.
  - In 2022, there were 3.5mm truck drivers, 600k taxi/bus/shuttle drivers, 2.9mm call center jobs, 1.6mm bookeepers/accounting jobs, and 400k paralegals in the US.
  - Case Study: Klarna’s AI Assistant Is Doing The Job Of 700 Workers, Company Says
    - Partnered with OpenAI: 2/3 of customer service chats (2.3 million conversations)
    - Resulted in fewer errors, a 25% decrease in repeat inquiries, reduced average conversation times from 11 to 2 minutes and expected to save $40mm annually.

# Job Market Dynamics

- Effects on Job Market and Society
  - The industrial revolution allowed machines to do the physical work of thousands of workers or horses.  The AI revolution will now allow machines to do the mental work of thousands of knowledge workers.
  - AI revolution will supercharge the continuing divide b/t abstract workers with college-degrees vs the rest.
  - Revolutions typically result in a populist backlash and we are currently in the midst of one.
  - In the 2020 election, Joe Biden won 16% of the nation's counties, but those counties account for 70% of nation's economic activity. By contrast, Trump won 84% of counties, accounting for less than 30% of GDP, according to the Brookings Institute.

# Skills Gap and Education

- One industry that will see increased job opportunities is in AI technology
  - Demand for expertise in AI, machine learning, and data science far exceeds current supply.
  - This gap poses a critical challenge for the global workforce, necessitating concerted efforts from educational institutions, corporations, and governments to bridge it.
  - Addressing this skills gap is essential not only for individuals seeking to thrive in an AI-driven future but also for societies aiming to harness the full potential of AI technologies.
- Educational Institutions
  - Universities and colleges are increasingly developing specialized degree programs in AI, machine learning, and data science.
  - These programs are designed to equip students with the technical skills necessary for careers in these fields, as well as a deep understanding of the ethical and societal implications of technology.

# Skills Gap and Education

- Corporate Training Programs
  - Recognizing the rapid pace of technological change and the need for a continuously evolving skill set, many companies are investing in professional development programs for employees.
  - These initiatives range from in-house training sessions on the latest AI technologies to partnerships with educational platforms and institutions that offer specialized courses.
- Case Study: IBM's Skills Academy
  - A corporate training program that collaborates with universities worldwide.
  - Specialized courses in areas like Business Intelligence, Predictive Analytics, and Big Data
  - IBM and Egypt's Ministry of Communications and IT established specialized educational centers that have trained over 22,000 students in AI and data science since 2019.
- Case Study: Google Career Certificates
  - In partnership with Coursera, Google offers online certificate programs in Cybersecurity, Data Analytics, Digital Marketing & E-commerce, IT Support, Project Mangement, and UX Design.
  - Courses are beginner level and asynchronous that take about 6 months to complete assuming 7 hours of work per week.

# Policy Considerations for Government

- Why is Government Intervention Necessary?
  - Mobilizing Large-Scale Resources and Enacting Legislation
  - Funding and Managing Public Education Systems
  - Setting Standards and Regulations
- Policy Challenges
  - Balancing AI Integration and Workforce Impact
  - Crafting Comprehensive AI Policy & Regulations
  - Creative Tax Policies without Discouraging Innovation

# Policy Considerations for Government

- Types of Policies
  - Financial Incentives: Offering tax credits or subsidies for individuals and businesses that invest in skills development related to AI and emerging technologies.  Consider financial incentives to place jobs in Red states to address political divide.
  - Creative Tax Policies: Creating Job Displacement Funds by taxing AI technologies that displaces certain categories of workers.  For example, an autonomous vehicle tax in order to facilitate reskilling of truck/taxi drivers.
  - Public-Private Partnerships: Collaborating with the private sector and educational institutions to develop training programs that are directly aligned with market needs.
  - Online Learning Platforms: Investing in or partnering with online platforms to provide accessible and flexible learning opportunities for a wider audience.
  - Apprenticeship Programs: Expanding apprenticeship programs that combine on-the-job training with classroom learning, particularly in sectors most affected by AI advancements.

# Policy Considerations for Government

- Case Study: SkillsFuture Singapore (SSG)
  - SkillsFuture Singapore (SSG) is a national initiative that encourages lifelong learning and helps people make informed choices about education, training, and careers.
  - The initiative was launched in 2015, and has seen participation in training increase from 35% to 50%.
  - Examples of Program Initiatives
    - SkillsFuture Credit: Singaporeans aged 25 years and above received an credit of $500 to deepen your existing skills or reskill into new fields.  Others aged 40 years and above will receive a top-up of $4,000 to pursue a substantive skills reboot.
    - SkillsFuture Career Transition Program: Supports mid-career individuals in acquiring skills to improve employability and pivot to new job roles. It is a train-and-place program typically ranging from three to 12 months.
    - SkillsFuture Employer Awards: Honor exemplary organisations that champion employees' skills development and build a lifelong learning culture at the workplace.

# Conclusion

- The recent acceleration of AI technologies will likely impact the job market dynamics in a way that's closer to the PC revolution than the globalization and outsourcing movement, with many jobs being displaced.
- Educational institutions and corporations have a large role to play in preparing the next generation of the workforce and reskilling the current workforce.
- Government has a key role to play in creating a framework in regulating AI and incentives for collaboration in preparing for the transition.
- The goal is to foster an environment of continuous learning, ethical development, and stakeholder engagement, in order to navigate the complexities of the AI era and shape a future that harnesses its vast potential for the betterment of humanity.