

Examining Job Automation in Wisconsin's Workforce



WITS Ideas Forum
January 29, 2019
Crowne Plaza

Ryan Long

Regional Economist

Department of Workforce Development

Background



"Thou aimest high, Master Lee. Consider thou what the invention could do to my poor subjects. It would assuredly bring to them ruin by depriving them of employment, thus making them beggars."

Queen Elizabeth I, 1589

Background cont'd



“We are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come--namely, *technological unemployment*. This means unemployment due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour.”

John Maynard Keynes, *Economic Possibilities for our Grandchildren*, 1930

Background cont'd



- This discussion is about potential changes to the current labor market, NOT about job increases in other areas
- Two researchers at Oxford estimated the probability that an occupation will become automatable
- Three bottlenecks to automation
 - Perception and Manipulation
 - Creative Intelligence
 - Social Intelligence
- These bottlenecks corresponded with 9 different O*NET variables

Background cont'd



TABLE I. O*NET variables that serve as indicators of bottlenecks to computerisation.

Computerisation bottleneck	O*NET Variable	O*NET Description
Perception and Manipulation	Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
	Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
	Cramped Work Space, Awkward Positions	How often does this job require working in cramped work spaces that requires getting into awkward positions?
Creative Intelligence	Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.
	Fine Arts	Knowledge of theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.
Social Intelligence	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
	Negotiation	Bringing others together and trying to reconcile differences.
	Persuasion	Persuading others to change their minds or behavior.
	Assisting and Caring for Others	Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients.

Source: The Future of Employment: How Susceptible are Jobs to Computerisation, C.B. Frey and M.A. Osborne, September 17, 2013, Oxford Martin School, University of Oxford

Methodology



- Merged probabilities with OES data to calculate expected value of job automation
- Expected Value = $0.23 \times 4,280 = 984.4$

SOC Code	Occupation	Probability	Employment	Expected Value
13-2051	Financial Analysts	0.23	4,280	984.4

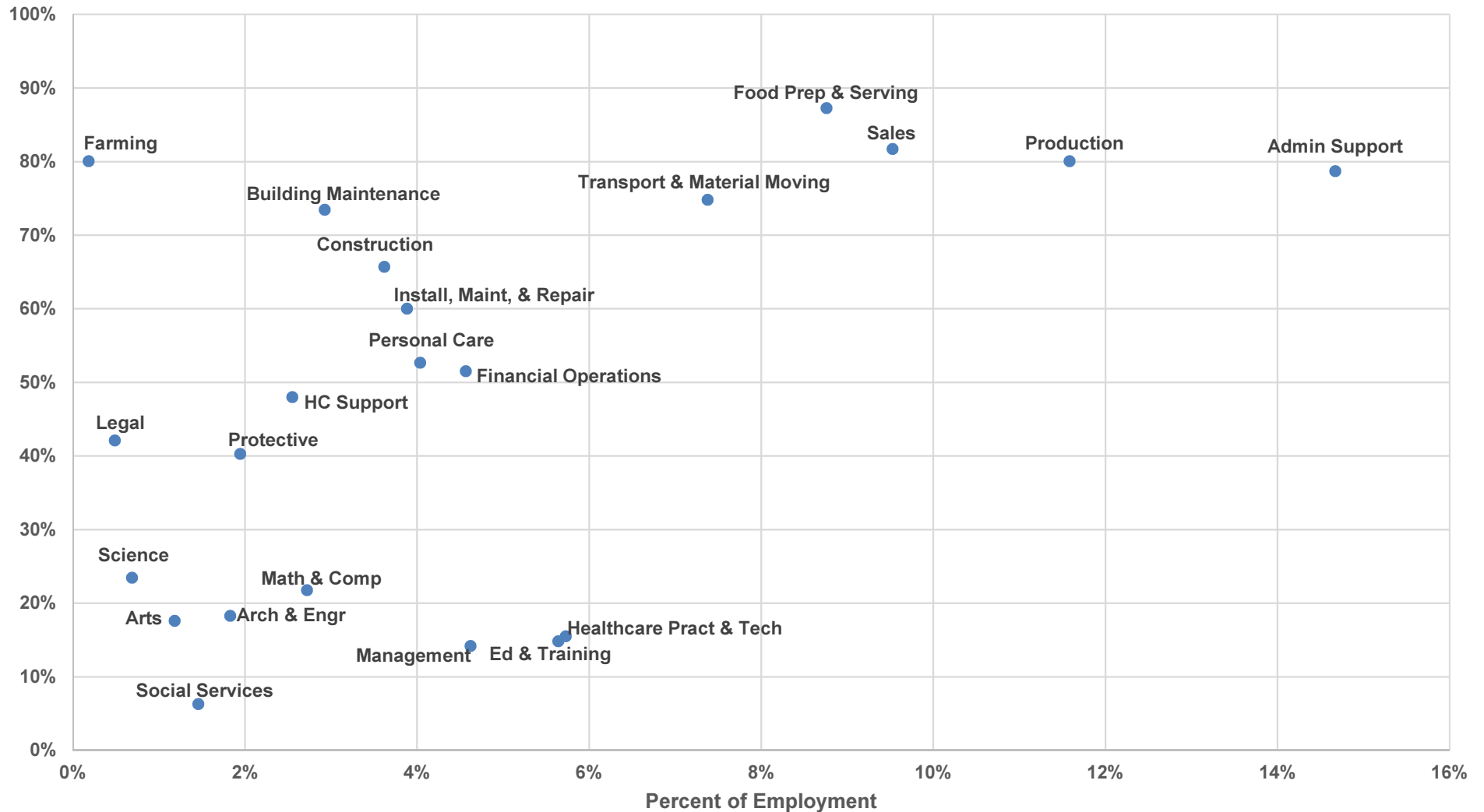
Methodology cont'd



- Within each group, the sum of the expected values was divided by total employment to generate the propensity for automation
- Propensity = $6,701.2 / 14,410 = 46.5\%$

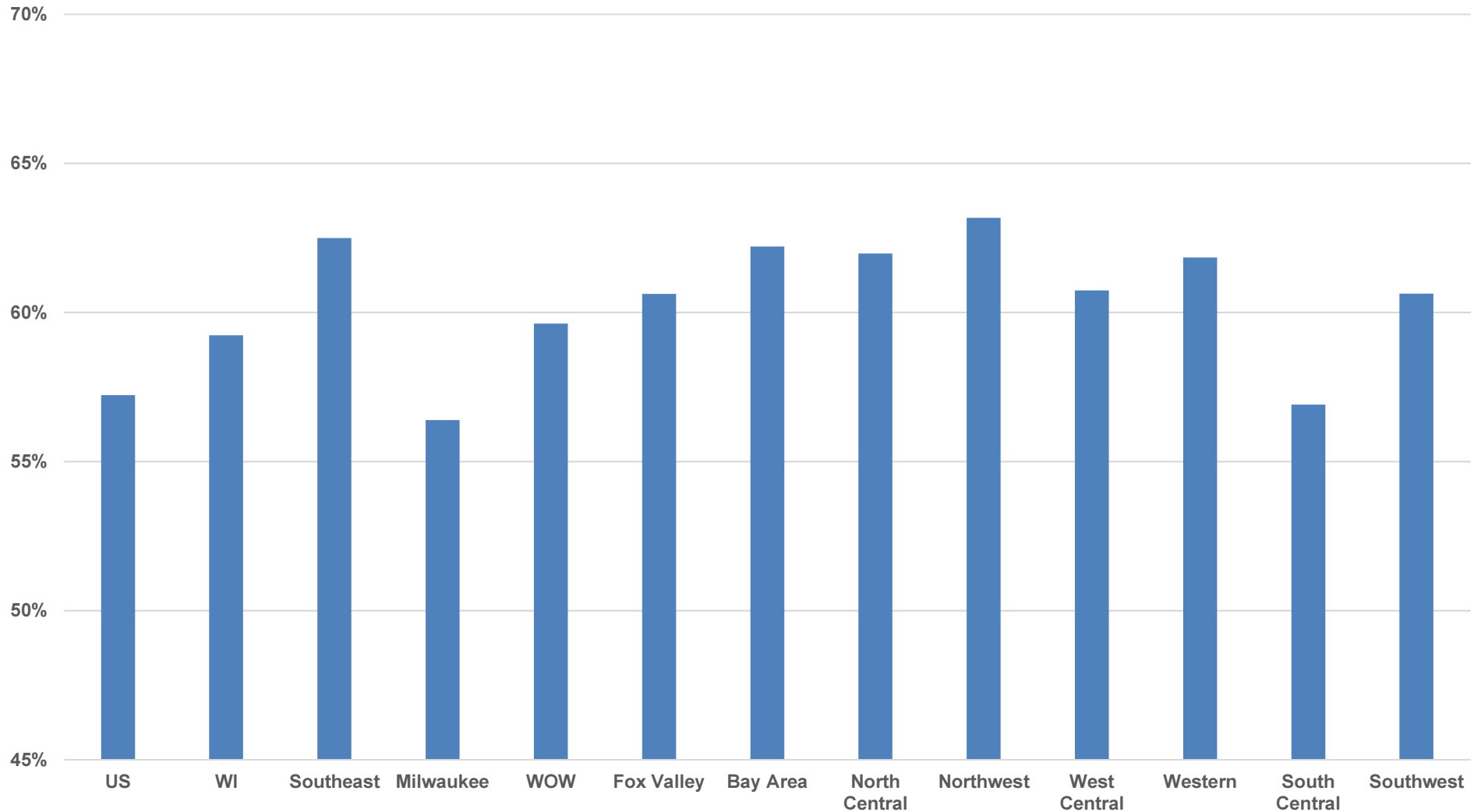
SOC Code	Occupation	Probability	Employment	Expected Value
31-1011	Home Health Aides	0.39	4,750	1,852.5
31-2021	Physical Therapist Assistants	0.018	1,640	29.5
31-9091	Dental Assistants	0.51	5,860	2,988.6
31-9094	Medical Transcriptionists	0.89	1,620	1,441.8
31-9095	Pharmacy Aides	0.72	540	388.8
Total			14,410	6,701.2

Propensity for Automation by Occupational Group



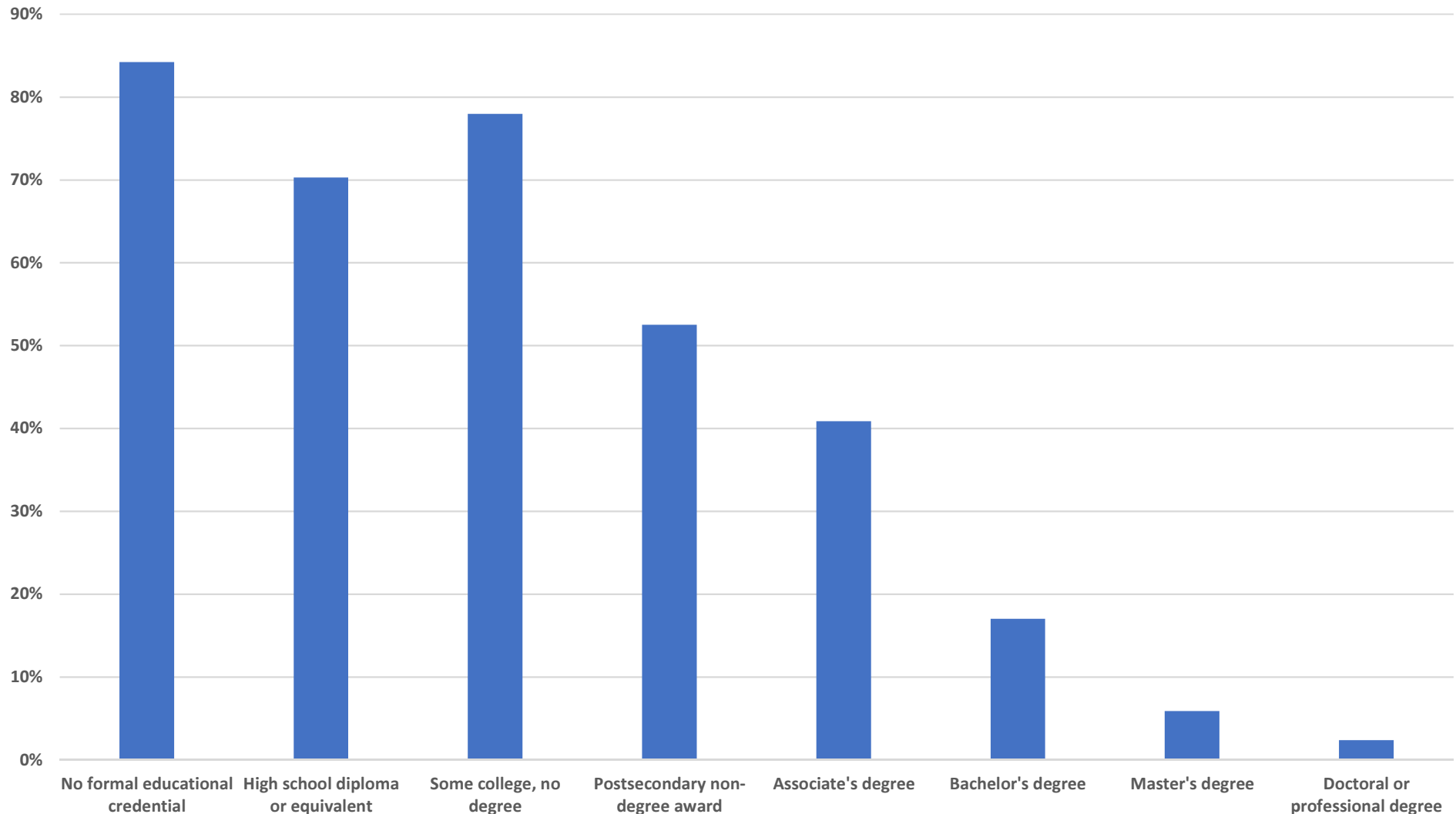
Source: The Future of Employment: How Susceptible are Jobs to Computerisation, C.B. Frey and M.A. Osborne, September 17, 2013, Oxford Martin School, University of Oxford; OES.

Propensity for Automation by Region



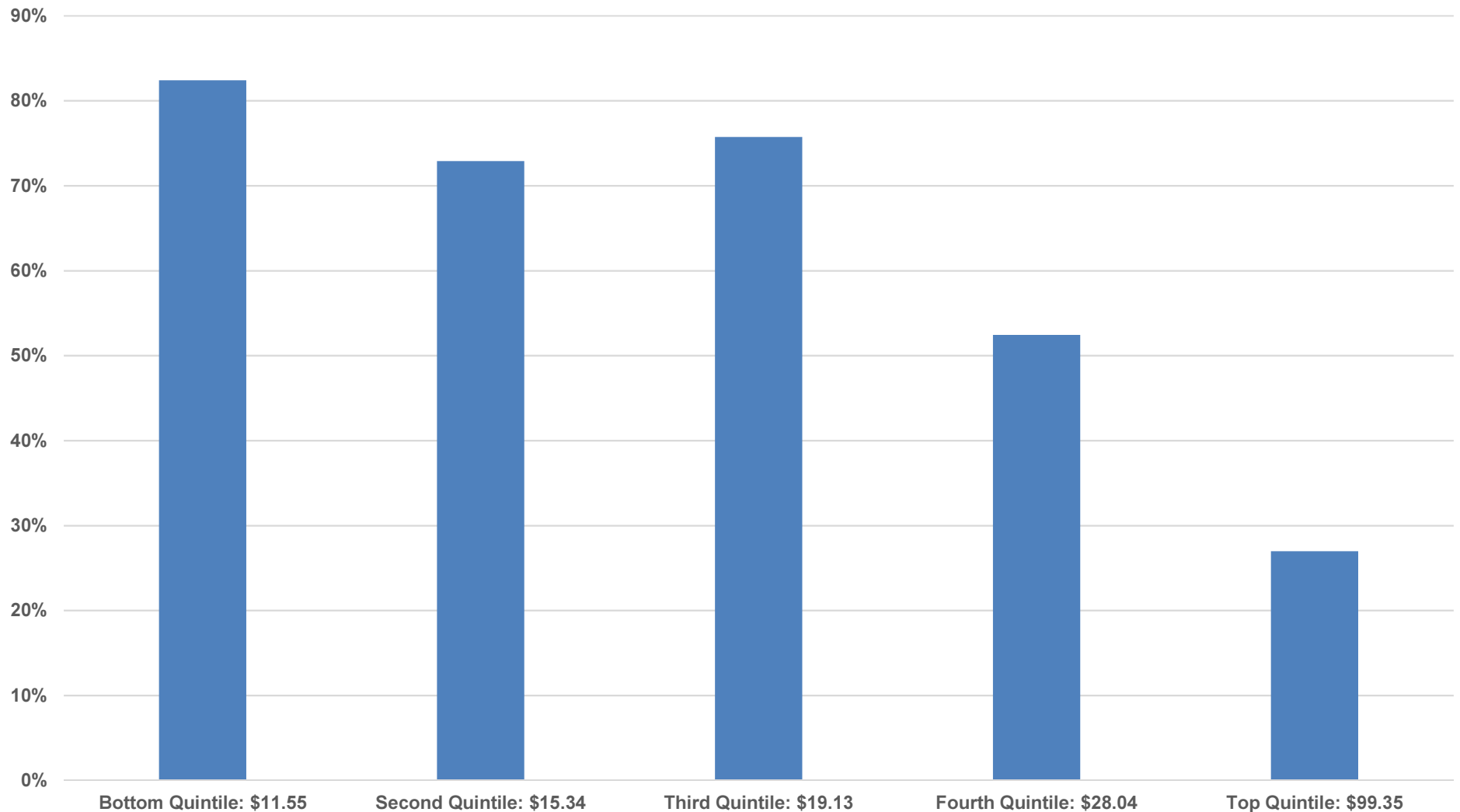
Source: The Future of Employment: How Susceptible are Jobs to Computerisation, C.B. Frey and M.A. Osborne, September 17, 2013, Oxford Martin School, University of Oxford; OES.

Propensity for Automation by Typical Educational Requirements



Source: The Future of Employment: How Susceptible are Jobs to Computerisation, C.B. Frey and M.A. Osborne, September 17, 2013, Oxford Martin School, University of Oxford; OES.

Propensity for Automation by Median Hourly Wage



Source: The Future of Employment: How Susceptible are Jobs to Computerisation, C.B. Frey and M.A. Osborne, September 17, 2013, Oxford Martin School, University of Oxford; OES.

Takeaways



- Automation exposure is anticipated to continue to increase inequality across different measures of “skill” (education and wages)
- However, it might play a role in mitigating the quantity challenge
- Adopting a flexible mindset can benefit labor market participants

Questions?

Ryan Long

Regional Economist

920-448-5268

Ryan.Long@dwd.wisconsin.gov

<http://dwd.wisconsin.gov>

