The Future of Work: Jobs and Skills

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Union Learning Conference
Mossley Mill, Newtownabbey

LISA WILSON @LISAWILSONNERI

LISA.WILSON@NERINSTITUTE.NET

WWW.NERINSTITUTE.NET

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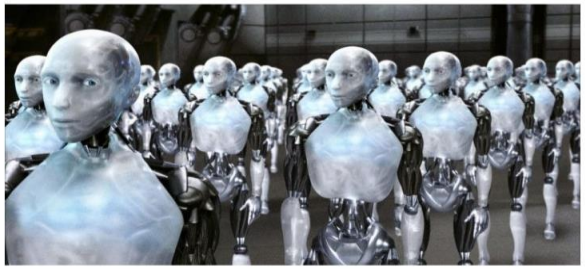
Will robots take your job? Humans ignore the coming AI revolution at their peril.

Artificial intelligence aims to replace the human mind, not simply make industry more efficient.

WILL ROBOTS TAKE MY JOB? ARTIFICIAL INTELLIGENCE AND UNEMPLOYMENT

By Jose Ferreira / 12 Min read



Automation will put half of NI jobs at risk

By Clodagh Rice
BBC News NI

18 January 2018 | Share

Jobs in Northern Ireland are at risk because of an increase in automation

Robot automation will 'take 800 million jobs by 2030' - report

29 November 2017 | Share

GETTY IMAGES

Richer countries will see more automation since they have the cash to invest in technology

Robots will take our jobs. We'd better plan now, before it's too late

Larry Elliott

The opening of the Amazon Go store in Seattle brings us one step closer to the end of work as we know it

These are the 20 jobs most likely to be taken over by robots

Is yours one of them?

May 30th 2015, 10:00 PM | 41,658 Views | 82 Comments

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MACHINES ARE ONLY getting

business

Britain can escape the rise of the robots - but Northern Ireland is still at risk

Save 2

Assembly line jobs are particularly vulnerable to automation, but Britain has done a good job of adding the type of jobs which are less susceptible to replacement by robots CREDIT: ANDY WONG/AP

Will robots bring about the end of work?

Automation looks set to replace many jobs in the next few decades. What work will be left for humans to do?

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Introduction

- Many reports highlighting risk of job loss. Figures can be quite stark. How realistic?
- Job loss, but also job creation.
- Need to examine not just the impact of automation, also the aftermath.
- 2 papers on automation
  - Job quantity
  - Job quality

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Automation & Job Quantity

Risk Level	Percentage NI workforce	Number of workers
High	7.1	56,900
High - Mid	31.6	253,224
Mid - Low	26.7	213,845
Low	12.8	102,952
Not classified	21.8	174,935

How does the potential rate of automation vary by type of worker?

	High	High-Mid	Mid- Low	Low	Not classified
Industrial Sector					
Production	0.8	15.4	10.7	5.5	67.6
Manufacturing	2.9	51.1	23.0	7.6	15.3
Construction	1.8	62.8	19.5	8.7	7.2
Distribution, hotels, restaurants	26.8	46.0	13.1	3.1	11.0
Transport & storage	4.0	67.9	13.5	2.8	11.8
Banking, finance, insurance etc.	5.6	24.8	38.3	7.5	23.8
Public administration, education & health	0.4	12.0	38.5	28.1	21.1
Other Services	2.8	23.9	19.6	11.3	42.4
Occupational Skill Level					
High skilled	0.0	3.1	35.9	44.4	16.6
Medium skilled	0.8	39.7	32.4	2.2	24.8
Low skilled	33.7	48.8	0.0	0.0	17.5
Gender					
Male	5.7	41.9	22.1	11.3	19.0
Female	8.7	20.3	31.7	14.5	24.9
Age					
18-34	11.1	36.2	21.6	10.1	21.0
35-54	4.5	27.9	30.5	15.5	21.6
55-64	6.0	32.4	26.3	10.8	24.4

How does the potential rate of automation vary by type of worker?

Occupational analysis

- Highest risk:
  - Process, plant and machine operatives.
  - Elementary occupations e.g. cleaners, food preparation.
  - Administrative & secretarial occupations.
  - Skilled trades occupations.

- Lowest risk:
  - Caring, leisure & other service occupations.
  - Sales & customer service occupations.
  - Managers, directors, Senior officials.
  - Professionals.
  - Associate professional & technical.

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Estimating the risk of job loss

Two ways of estimating the risk of job loss due to automation technologies:

- Occupation-based approach
- Task-based approach

Task-based approach

- Accounts for heterogeneity in task structures within occupations by taking into account what tasks people actually do at work.
- Do they do heavy lifting, think analytically, use percentages, care for others etc.
  - Allows for the fact that individuals within the same occupation often perform quite different tasks.
- Allows for the fact that many jobs in reality involve tasks which are capable of being automated **+** are difficult to automate.

e.g. Receptionist

1. Operates switchboard.

2. Operates switchboard, administrative duties, meet/greet etc.

O*NET occupation database, an example

Example: Economist

- Teach theories, principles, and methods of economics.
- Study economic and statistical data in area of specialisation, such as finance, labour, or agriculture.
- Conduct research on economic issues and disseminate research findings through technical reports or scientific articles in journals.
- Compile, analyse, and report data to explain economic phenomena and forecast market trends, applying mathematical models and statistical techniques.
- Study the socioeconomic impacts of new public policies, such as proposed legislation, taxes, services, and regulations.

Constraints to labour substitution

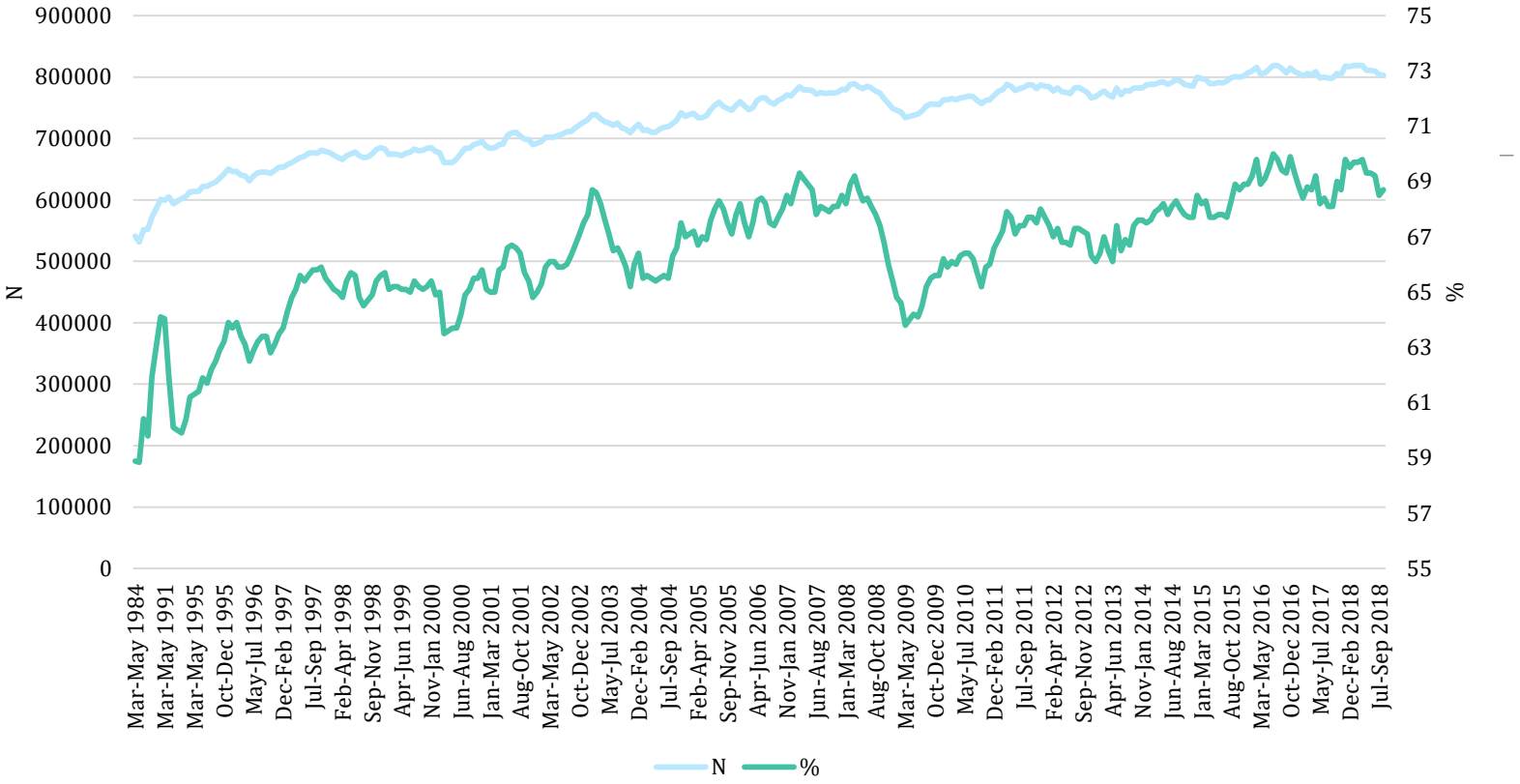
- Debate focused on technological possibility/capability.

- Other factors will compound the impact of automation technologies:

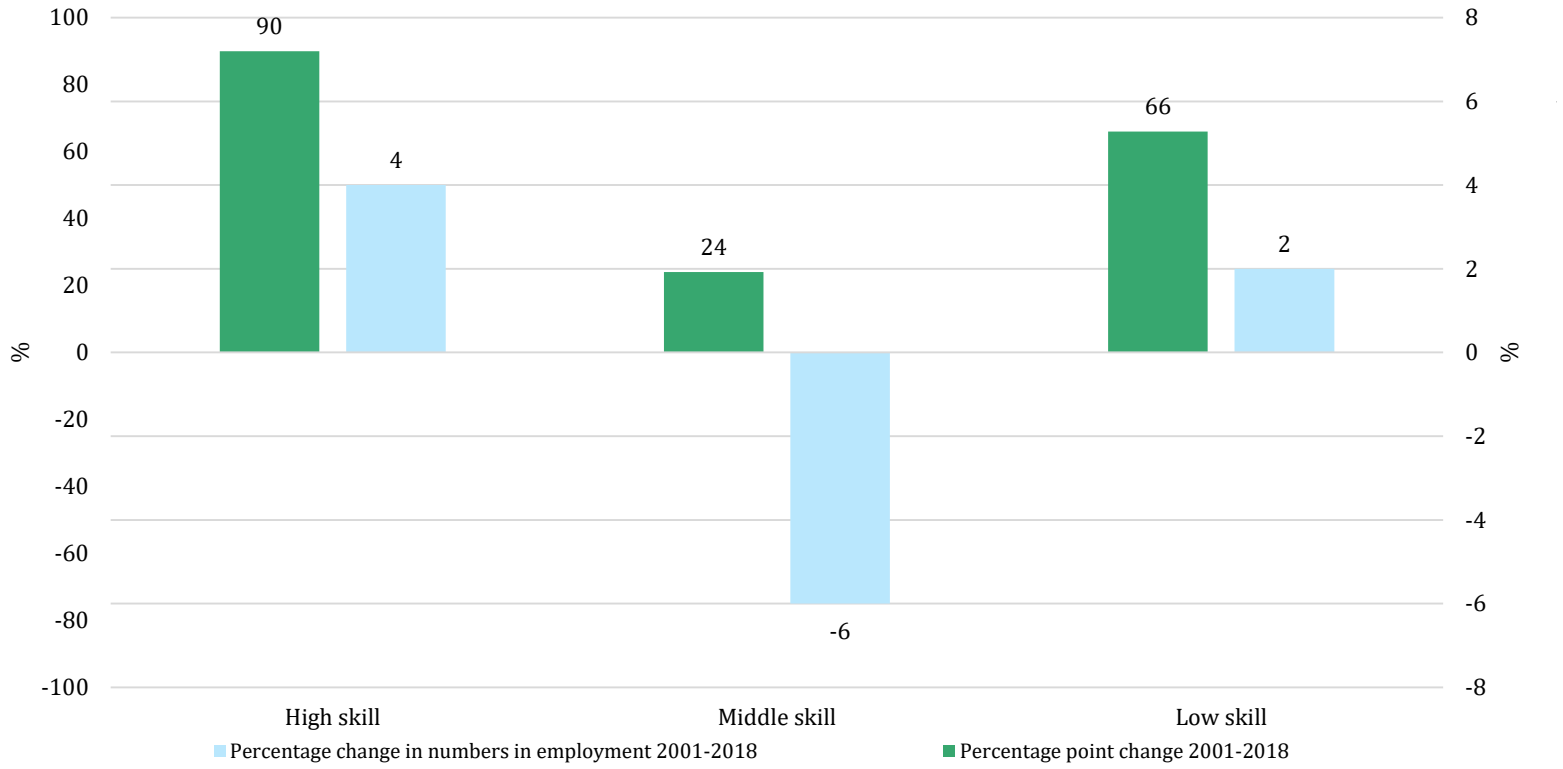
  - Economic viability - relative cost & productivity of investment in technology. Might businesses choose to rely on low-paid workers as the safest option?

  - Ethical/Legal obstacles - drone technologies delivering all of our parcels?

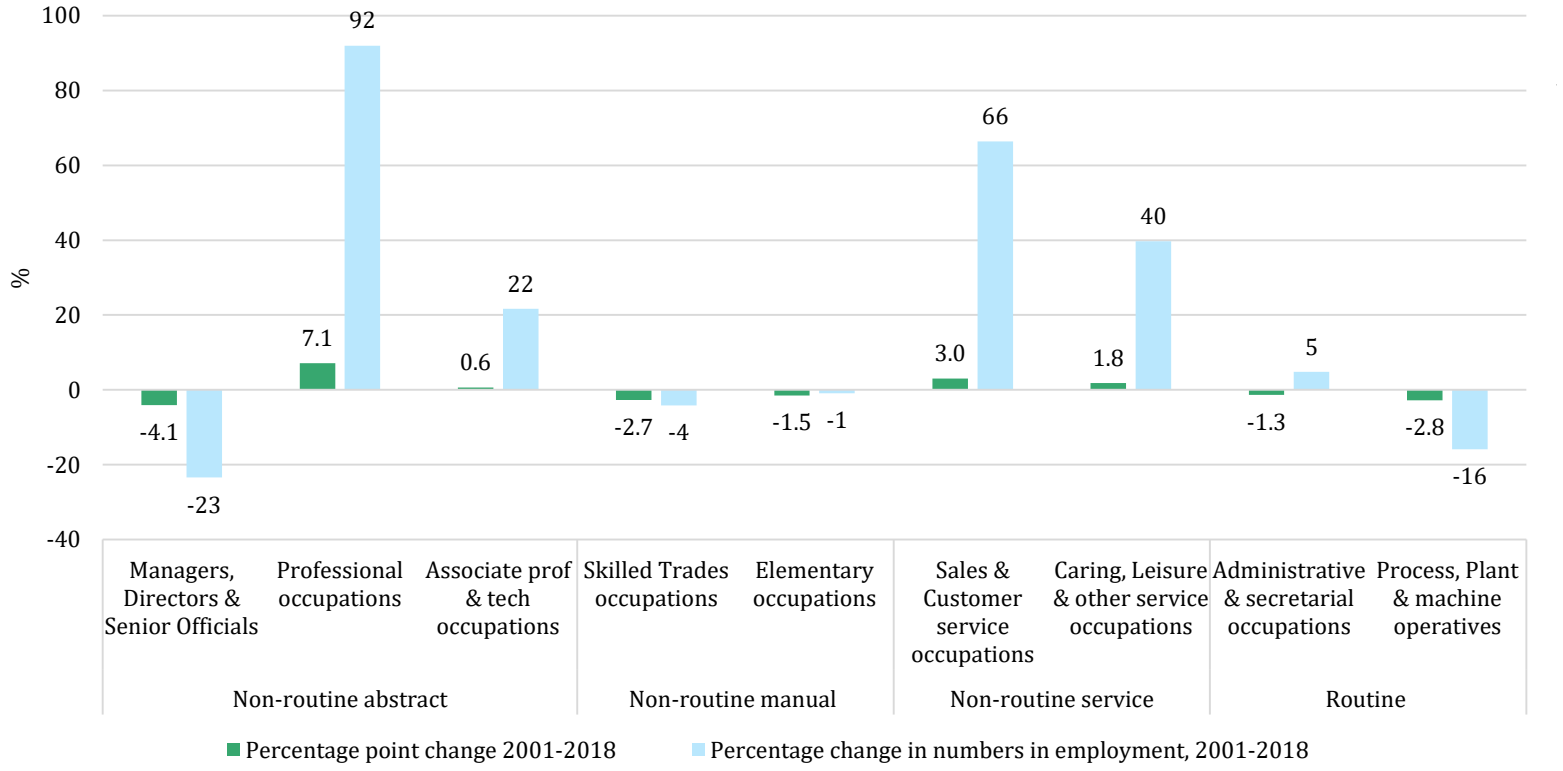
  - Societal preference/value of humans - Do we really want robot nurse or robot waiter?



Employment trends in Northern Ireland overtime, number of workers (aged 16-64) and employment rate



Percentage change in numbers in employment 2001-2018 & percentage-point change as a share of employment 2001-2018, by broad occupational skills group



Percentage change in numbers in employment 2001-2018 and Percentage-point change as a share of employment 2001-2018, grouped by broad task structure

Quality of working arrangements

		Employment arrangements	Working hours			
		Non-standard	0-10	11-20	21-40	41+
		%	%	%	%	%
Non-routine abstract	Managers, Directors & SO	33.7	1.1	1.7	67.8	29.4
Non-routine abstract	Professional	30.9	3.8	8	78.3	10.4
Non-routine abstract	Associate Professional & Tech	25.7	3	5	74.3	14.8
Routine	Administrative & Secretarial	36.1	2.2	8	77.9	3.4
Non-routine manual	Skilled Trades	40.6	x	4.8	57.1	3.1
Non-routine service	Caring, Leisure & Other	47.1	3.9	22.4	63.3	10.3
Non-routine service	Sales & Customer Service	53	11.4	29.7	51.6	7.3
Routine	Process, Plant & Machine Op	23.8	x	6	65	29
Non-routine manual	Elementary	47.4	12.1	23.4	52.4	12.1

Working arrangements across occupations, 2017-2018

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Earnings Quality

		Hourly pay excluding overtime as a % of the median	Gross weekly pay as a % of the median	Annual gross pay as a % of median
Non-routine abstract	Managers, Directors & Senior Officials	179.7	177.1	177.4
Non-routine abstract	Professional	171.6	159.5	156.7
Non-routine abstract	Associate Professional & Technical	130.9	131.8	135.5
Routine	Administrative & Secretarial	90.9	85.2	82.9
Non-routine manual	Skilled Trades	92.2	107.7	104.6
Non-routine service	Caring, Leisure & Other service	79.2	65.6	63.7
Non-routine service	Sales & Customer service	70.2	55.2	53.1
Routine	Process, Plant & machine operatives	83.3	94.5	96.7
Non-routine manual	Elementary	70.8	52.5	54.6

Earnings quality across occupations, 2018

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Quality of working conditions

		Autonomy over speed of work	Flexibility over work tasks	Flexibility over work pace	Flexibility over manner of work	Flexibility over order of tasks	Flexibility over hours of work	Job Satisfaction	Job Satisfaction
		%	%	%	%	%	%	%	%
Non-routine abstract	Managers, Director & SO	82	96	92	95	98	72	82	97
Non-routine abstract	Professional	78	87	79	92	95	44	84	92
Non-routine abstract	Associate Professional & Technical	80	82	80	90	90	55	88	95
Routine	Administrative & Secretarial	76	59	67	67	70	52	78	92
Non-routine manual	Skilled Trades	63	78	75	82	85	63	85	99
Non-routine service	Caring, Leisure & other service	79	70	69	81	65	30	93	97
Non-routine service	Sales & Customer service	74	60	63	70	66	21	81	77
Routine	Process, Plant & Machine	45	43	57	61	48	31	77	92
Non-routine manual	Elementary	57	59	71	70	69	23	80	92

Quality of the working environment

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Policy

- Policy responses to date limited by focus on job loss. Need to shift to focus on job change.
- Polarisation is key. Yes, increase in high-skill jobs, but also increase in low-skill jobs.
- We have to get used to 'bad jobs' and start to make them better.
- Context of labour commodification and why we value some jobs less than others. Gender issues.
- Job quality - key to evaluating impact of automation.

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Policy Responses

- Social Security - Need to talk about replacement rates. Move away from subsistence welfare provision (Hartz etc.)
- Regional development - Job creation will not match job loss. Cost of living implications.
- Skills - predominant policy focus on up-skilling. Need to talk about re-skilling and skills recognition.
- Unionisation/Collective bargaining. Underpins all of the above. New jobs, least likely to be unionised.

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