



Gender, Race, and Ethnic Differences in Exposure to Automation and Trade Related Job Loss

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Introduction

Wonkblog • Analysis

Trump said he would save jobs at Carrier. The layoffs start July 20.



By **Danielle Paquette**
May 24, 2017



Donald Trump, then president-elect, speaks at Carrier in Indianapolis. (Jabin Botsford/The Washington Post)

This story has been updated to include Carrier's response

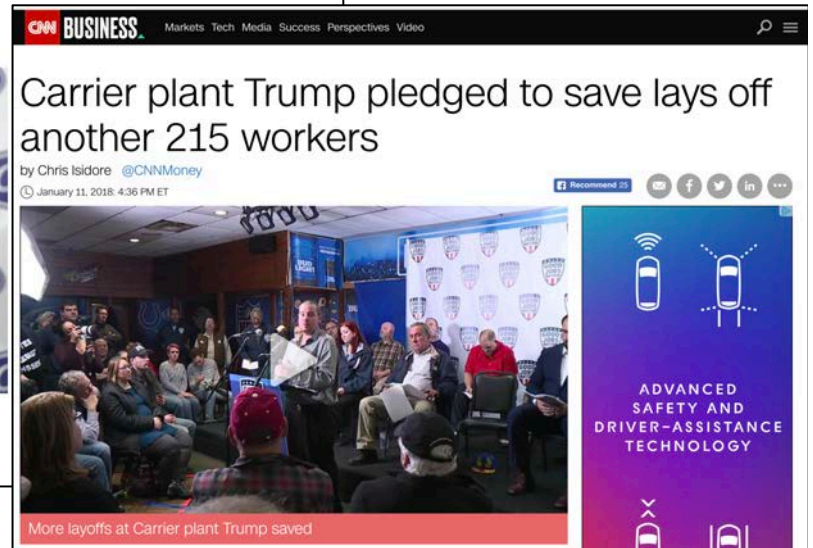
Carrier, the company President Trump pledged to keep on

Hundreds to be laid off at Indiana factory a year after Trump deal to save jobs



Donald Trump reacts after speaking at Carrier Corp Thursday, Dec. 1, 2016, in Indianapolis. Trump promised to save jobs at Carrier, but the company is nonetheless laying off hundreds of workers. (Darron Cummings / AP)

By **Tom Davies**
Associated Press



Carrier says it will spend millions automating Indiana plant, plans to lay off workers Trump 'saved'

The deal keeps getting worse.

AARON RUPAR DEC 9, 2016, 4:12 PM

U.S.

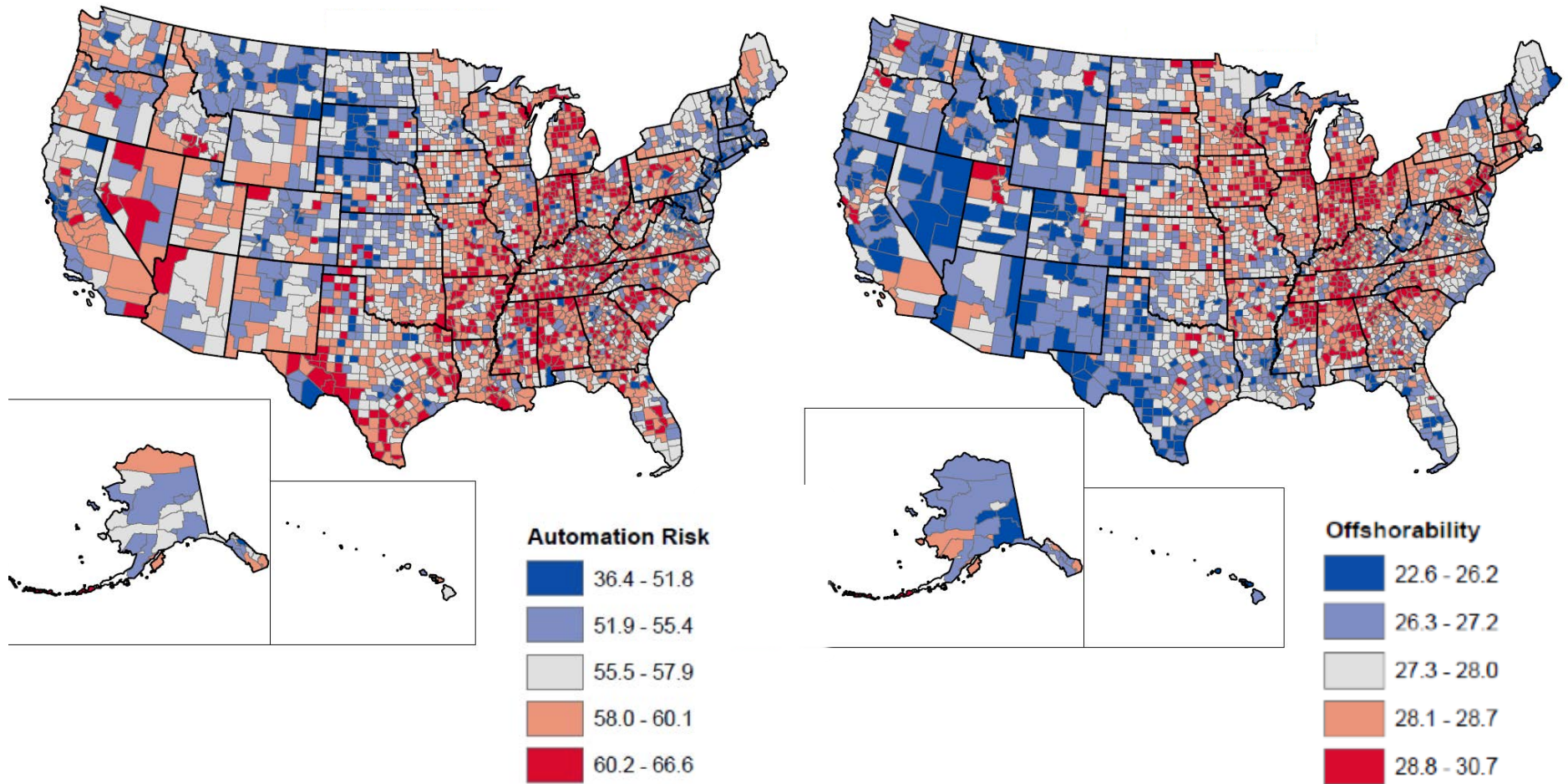
CARRIER TO LAY OFF 215 MORE WORKERS FROM INDIANA PLANT DESPITE TRUMP'S VOWS TO SAVE JOBS

BY SUMMER MEZA ON 1/11/18 AT 9:36 AM

U.S. Relative Automation and Offshoring Risk to Employment

Automation risk

Offshoring risk



Source: Blinder 2009; Frey and Osborne, 2017; authors' calculations

Research questions

The New York Times



Center for Business and Economic Research

Ball State University

Research questions



Research questions

- 1) Are there gender, racial, or ethnic differences in exposure to automation and/or trade related job losses?
- 2) If there are demographic differences in potential job losses, do they follow the dominant political and social discourse regarding white-male job losses to offshoring?

Data and methods

Job-based vulnerability

Frey and Osborne, 2017: Automation
Blinder, 2009: Offshoring



Automation-risk index (Frey and Osborne, 2017)

- Probability of job losses at occupational-level based on job functions
- The index is between 0 and 100
- Study corroborated by Bowles (2014); McKinsey (2017) and replicated to other locations (Frey, Osborne and Holmes, 2016)

Offshorability-risk index (Blinder, 2009)

- Ordinal scale of job losses at occupational-level based on job functions
- We converted the scale to an index between 15 and 100 for comparability
- Study was supported by Smith and Rivkin (2008) and Blinder and Krueger (2013)

Demographic vulnerability



Demographic vulnerability (IPUMS-USA)

Study sample and analysis

Variable	Mean	Std Dev	Min	Max
Automation index	52.37	35.74	0.28	99
Offshorability index	27.73	22.34	15	100
Female	0.4786	0.4995	0	1
White	0.7591	0.4276	0	1
Black	0.1303	0.3366	0	1
Asian	0.0657	0.2477	0	1
Hispanic	0.1647	0.3709	0	1
Wages and salaries	\$46,743	\$57,888	\$4	\$714,000

Sample:
159,723,903 jobs

Automation:
<5 | >95

Offshoring:
<20 | >95

Findings

Table 2: Employment Risk by Type and Demographic Characteristics

	Overall	High and Low Risk Levels				Risk Difference from Overall			
		<u>Automation</u>		<u>Offshorability</u>		<u>Automation</u>		<u>Offshorability</u>	
		<5	>95	<20	>95	<5	>95	<20	>95
Overall	159,723,903	16.8%	7.2%	72.2%	0.5%				
Female	47.9%	51.6%	67.2%	48.2%	45.9%	3.7%	19.4%	0.4%	-2.0%
Male	52.1%	48.4%	32.8%	51.8%	54.1%	-3.7%	-19.4%	-0.4%	2.0%
White	75.9%	79.1%	74.9%	76.0%	73.6%	3.2%	-1.0%	0.1%	-2.4%
Black	13.0%	10.5%	14.5%	13.4%	9.3%	-2.6%	1.5%	0.3%	-3.8%
Asian	6.6%	8.6%	6.1%	5.7%	15.7%	2.0%	-0.5%	-0.9%	9.1%
Non-Hispanic	83.5%	89.9%	82.9%	82.6%	90.5%	6.3%	-0.7%	-1.0%	6.9%
Hispanic	16.5%	10.1%	17.1%	17.4%	9.5%	-6.3%	0.7%	1.0%	-6.9%

Findings

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Male	52.1%	48.4%	32.8%	51.8%	54.1%	-3.7%	-19.4%	-0.4%	2.0%
White	75.9%	79.1%	74.9%	76.0%	73.6%	3.2%	-1.0%	0.1%	-2.4%
Black	13.0%	10.5%	14.5%	13.4%	9.3%	-2.6%	1.5%	0.3%	-3.8%
Asian	6.6%	8.6%	6.1%	5.7%	15.7%	2.0%	-0.5%	-0.9%	9.1%
Non-Hispanic	83.5%	89.9%	82.9%	82.6%	90.5%	6.3%	-0.7%	-1.0%	6.9%
Hispanic	16.5%	10.1%	17.1%	17.4%	9.5%	-6.3%	0.7%	1.0%	-6.9%

Findings

Table 3: Automation and offshoring risk, within gender and race/ethnic groups, difference from the mean

	Overall	Automation <5	Automation >95	Offshorability <20	Offshorability >95
White Female	74.9%	3.69%	0.51%	0.11%	-3.09%
Black Female	14.5%	-2.61%	-0.06%	0.29%	-1.57%
Asian Female	6.7%	1.46%	-0.89%	-0.57%	5.83%
Non-Hispanic Female	84.8%	6.18%	-1.61%	-0.28%	3.69%
Hispanic Female	15.2%	-6.18%	1.61%	0.28%	-3.69%
White Male	76.8%	2.88%	-3.11%	0.10%	-1.81%
Black Male	11.7%	-2.75%	3.08%	0.35%	-5.53%
Asian Male	6.4%	2.58%	0.20%	-1.15%	11.89%
Non-Hispanic Male	82.4%	6.30%	-0.18%	-1.60%	9.78%
Hispanic Male	17.6%	-6.30%	0.18%	1.60%	-9.78%

Findings

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Findings

Table 2: Employment Risk by Type and Demographic

	High and Low Risk Levels					Ups, difference
	Overall	Automation		Offshorability		
		<5	>95	<20	>95	
Overall	159,723,903	16.8%	7.2%	72.2%	0.5%	Offshorability >95 -3.09%
Black Female	14.3%	2.81%	0.88%	0.25%		-1.57%
Asian Female	6.7%	1.46%	-0.89%	-0.57%		5.83%
Non-Hispanic Female	84.8%	6.18%	-1.61%	-0.28%		3.69%
Hispanic Female	15.2%	-6.18%	1.61%	0.28%		-3.69%
White Male	76.8%	2.88%	-3.11%	0.10%		-1.81%
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Findings

Table 4: Wages by risk level and demographic characteristic

	Average (\$)	Automation		Offshoring	
		<5	>95	<20	>95
White Female	38,368	58,178	27,624	37,114	37,359
Black Female	32,192	54,147	27,929	31,178	35,539
Asian Female	47,575	74,955	29,230	44,749	61,632
Non-Hispanic Female	39,247	59,595	28,346	37,870	41,335
Hispanic Female	27,793	50,469	24,306	26,480	28,579
White Male	58,424	83,864	36,821	55,498	79,503
Black Male	37,227	59,374	29,140	35,272	55,207
Asian Male	68,068	101,782	37,190	60,565	78,797
Non-Hispanic Male	59,015	85,194	36,667	55,854	79,853
Hispanic Male	37,493	59,152	29,344	35,467	54,138

Summary



- Big take-aways:
 - Dominant social/political narrative of white-male job loss due to offshoring is inaccurate:
 - The story of future job loss is one of gender and minority status;
 - Persistence of white-male job loss due to offshoring may be due to wage differentials.



Thank you. Questions?

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