

Supplement to:

Denice, Patrick, and Jake Rosenfeld. 2018. "Unions and Nonunion Pay in the United States, 1977–2015." *Sociological Science* 5: 541-561.

Data Appendix

Below we list all covariates and values used in the models. We exclude upper-level managers and executives, the self-employed, and respondents missing on occupation from our samples. Samples limited to respondents aged 16 to 64.

1. Tables 2 and 3, Model 1

Private sector unionization: a weighted proportion of private sector workers in each occupation, region, and year who belong to a union.

Public sector unionization: a weighted proportion of public sector workers in each occupation, region, and year who belong to a union.

Lagged employment rate: a weighted proportion of individuals who are employed. Measured by occupation, region, and year, and lagged by one year.

Proportion with at least a BA: a weighted proportion of individuals in each occupation, region, and year who have completed at least 4 years of college.

Proportion in manufacturing: a weighted proportion of workers in each occupation, region, and year who work in manufacturing industries (the manufacturing of durables, nondurables, and transportation equipment).

Risk of automation: an index increasing from 0 to 10 as the routine task content of an occupation rises (Autor and Dorn 2013). We aggregate this index up to a weighted average by occupation, region, and year.

Race/ethnicity effects (5): white (ref.), African-American, Hispanic, other, missing.

Potential experience

Potential experience²

Education effects (4): less than high school (ref.), high school or equivalent completion, some college (but less than 4 years), at least 4 years of college.

Weekly hours worked

Metro effects (3): resides in a metropolitan area (ref.), resides outside of a metropolitan area, missing.

Industry effects (8): (1) manufacturing; (2) mining; (3) construction; (4) transportation, communications, and utilities; (5) wholesale and retail trade; (6) services, finance, insurance, and real estate; (7) agriculture, forestry, and fisheries; (8) unclassified.

Region effects (9): (1) New England; (2) Middle Atlantic; (3) South Atlantic; (4) East North Central; (5) West North Central; (6) Mountain; (7) East South Central; (8) West South Central; (9) Pacific.

Year effects (38): 1977-2015

2. Tables 2 and 3, Model 2

All covariates listed above for Model 1, plus:

Occupation fixed effects (24): (1) management-related; (2) professional specialty; (3) technicians and related support; (4) financial sales and related; (5) retail sales; (6) administrative support; (7) firefighting, police, and correctional institutions; (8) farm operators and managers; (9) other agricultural and related; (10) mechanics and repairers; (11) construction trades; (12) extractive; (13) precision production; (14) machine operators, assemblers, and inspectors; (15) transportation and material moving; (16) housekeeping and cleaning; (17) protective service (security guards, crossing guards, etc.); (18) food preparation and service; (19) health care support; (20) building and grounds cleaning and maintenance; (21) personal appearance; (22) recreation and hospitality; (23) child care workers; and (24) miscellaneous personal care and service. These occupation codes are based on a system developed by Autor and Dorn (2013; see also Dorn 2009) that reconciles changes made to the Census occupation classification scheme over time.

3. Tables 2 and 3, Model 3

All covariates listed above for Model 2, except for the occupation and region effects, plus:

Occupation-region fixed effects (216): 24 occupation \times 9 regions.

Table A1: Effects of private sector occupation-region unionization on nonunion, private sector log weekly wages, GLM models, 1977-2015, men

	(1)	(2)	(3)
<i>Occupation-region controls</i>			
Private sector unionization	0.37 [†] (0.07)	0.29 [†] (0.06)	0.57 [†] (0.06)
Public sector unionization	-0.18 [†] (0.03)	-0.01 (0.02)	-0.00 (0.01)
Lagged employment rate	1.60 [†] (0.23)	0.34 [†] (0.08)	0.39 [†] (0.06)
Proportion with at least a BA	0.57 [†] (0.04)	0.61 [†] (0.08)	0.44 [†] (0.09)
Proportion in manufacturing	-0.04 (0.02)	-0.16* (0.06)	-0.26 [†] (0.05)
Risk of automation	0.02 [†] (0.00)	0.02 (0.02)	0.01 (0.02)
<i>Individual controls</i>			
Race/ethnicity (ref.=white)			
African-American	-0.18 [†] (0.01)	-0.16 [†] (0.01)	-0.16 [†] (0.01)
Hispanic	-0.20 [†] (0.01)	-0.18 [†] (0.01)	-0.18 [†] (0.01)
Other	-0.10 [†] (0.01)	-0.08 [†] (0.01)	-0.08 [†] (0.01)
Missing	-0.02 [†] (0.01)	-0.02 [†] (0.01)	-0.02 [†] (0.01)
Potential experience	0.04 [†] (0.00)	0.04 [†] (0.00)	0.04 [†] (0.00)
Potential experience squared	-0.00 [†] (0.00)	-0.00 [†] (0.00)	-0.00 [†] (0.00)
Education (ref.=less than HS)			
HS	0.16 [†] (0.01)	0.15 [†] (0.00)	0.15 [†] (0.00)
Some college	0.27 [†] (0.01)	0.25 [†] (0.01)	0.25 [†] (0.01)
At least 4 years of college	0.57 [†] (0.01)	0.54 [†] (0.01)	0.54 [†] (0.01)
Hours worked per week			
	0.02 [†] (0.00)	0.02 [†] (0.00)	0.02 [†] (0.00)
Metro (ref.=in metro area)			
Non-metro	-0.12 [†] (0.01)	-0.12 [†] (0.01)	-0.12 [†] (0.01)
Missing	-0.07 [†] (0.01)	-0.07 [†] (0.01)	-0.08 [†] (0.01)
Intercept	3.63 [†] (0.20)	4.93 [†] (0.12)	5.00 [†] (0.11)
Occupation FE	No	Yes	No
Region FE	Yes	Yes	No
Occupation-region FE	No	No	Yes
<i>N</i>	1,194,511	1,194,511	1,194,511
<i>Number of parameters</i>	70	94	278
<i>AIC</i>	15.49	15.48	15.48

Notes: Results provide GLM estimates of models in Table 2. Robust standard errors clustered by occupation-region are in parentheses. All models include year and industry fixed effects. Statistical significance (two-tailed tests) is indicated by: * $p < 0.05$, [†] $p < 0.01$.

Table A2: Effects of private sector occupation-region unionization on nonunion, private sector log weekly wages, GLM models, 1977-2015, women

	(1)	(2)	(3)
<i>Occupation-region controls</i>			
Private sector unionization	0.29 [†] (0.08)	0.26 [†] (0.08)	0.45 [†] (0.07)
Public sector unionization	-0.10 [†] (0.03)	-0.00 (0.02)	-0.00 (0.01)
Lagged employment rate	1.74 [†] (0.23)	0.33 [†] (0.08)	0.16* (0.07)
Proportion with at least a BA	0.57 [†] (0.04)	0.43 [†] (0.07)	0.36 [†] (0.08)
Proportion in manufacturing	-0.14 [†] (0.03)	-0.07 (0.07)	-0.31 [†] (0.07)
Risk of automation	0.03 [†] (0.01)	0.04 [†] (0.01)	0.05 [†] (0.01)
<i>Individual controls</i>			
Race/ethnicity (ref.=white)			
African-American	-0.08 [†] (0.01)	-0.07 [†] (0.01)	-0.07 [†] (0.01)
Hispanic	-0.13 [†] (0.01)	-0.12 [†] (0.01)	-0.12 [†] (0.01)
Other	-0.05 [†] (0.01)	-0.04 [†] (0.01)	-0.04 [†] (0.01)
Missing	-0.01 (0.01)	-0.02* (0.01)	-0.02 [†] (0.01)
Potential experience	0.03 [†] (0.00)	0.02 [†] (0.00)	0.02 [†] (0.00)
Potential experience squared	-0.00 [†] (0.00)	-0.00 [†] (0.00)	-0.00 [†] (0.00)
Education (ref.=less than HS)			
HS	0.14 [†] (0.01)	0.13 [†] (0.01)	0.12 [†] (0.01)
Some college	0.25 [†] (0.01)	0.24 [†] (0.01)	0.23 [†] (0.01)
At least 4 years of college	0.50 [†] (0.02)	0.49 [†] (0.02)	0.48 [†] (0.02)
Hours worked per week	0.03 [†] (0.00)	0.03 [†] (0.00)	0.03 [†] (0.00)
Metro (ref.=in metro area)			
Non-metro	-0.15 [†] (0.01)	-0.15 [†] (0.01)	-0.15 [†] (0.01)
Missing	-0.11 [†] (0.01)	-0.10 [†] (0.01)	-0.11 [†] (0.01)
Intercept	3.11 [†] (0.20)	4.58 [†] (0.12)	4.78 [†] (0.12)
Occupation FE	No	Yes	No
Region FE	Yes	Yes	No
Occupation-region FE	No	No	Yes
<i>N</i>	1,026,955	1,026,955	1,026,955
<i>Number of parameters</i>	70	94	278
<i>AIC</i>	14.89	14.88	14.88

Notes: Results provide GLM estimates of models in Table 3. Robust standard errors clustered by occupation-region are in parentheses. All models include year and industry fixed effects. Statistical significance (two-tailed tests) is indicated by: * $p < 0.05$, [†] $p < 0.01$.