

# Minimum Wage and State Level Unemployment: Panel Data Analysis 1976-2019

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# Introduction

- Workers receiving minimum wage tend to be young
  - ▷ Under the age of 25 make up 48% of workers paid the federal minimum wage or lower. (BLS, 2020)
- Leisure and Hospitality Industry has the highest percentage of workers earning wages at or below the federal minimum wage
  - ▷ ~8 percent
  - ▷ 3/5 of all workers paid at or below the federal minimum wage were in this industry. (BLS, 2020)



## Research Question

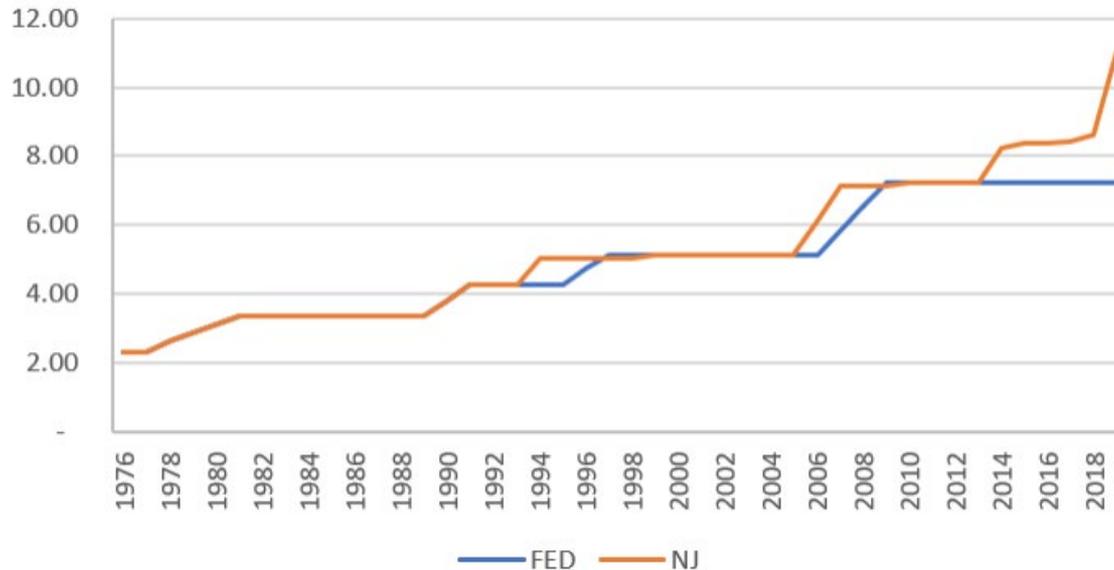
- Does minimum wage increase unemployment?
  - ▶ Does minimum wage increase unemployment more in teens and the leisure and hospitality industry?



# Background

Current Federal  
Minimum Wage:  
\$7.25/hour

## Minimum Wage Over Time





# Literature Review

- Most papers have found little to no relationship
  - ▷ Dube, Lester, & Reich
  - ▷ Card & Krueger
  - ▷ Berstein & Schmitt
- Wescher, Hutchinson, Rannou
  - ▷ Teens are most affected
- Marimpi & Koning
  - ▷ Youth unemployment increases as minimum wage increases
- Zavodny
  - ▷ Industries with higher % receiving minimum wage have significant results



## Data

■ 1976-2019

■ 6 data sources:

- ▶ BLS state FIPS codes, state % pop receiving minimum wage, state productivity rate, teens unemployment, teens productivity rate, L&H income, L&H population and L&H unemployment
- ▶ Federal Reserve Bank of St. Louis minimum wage, state unemployment, state population, recession, L&H % pop receiving minimum wage
- ▶ Census % below poverty level, state median income
- ▶ NCES number of graduates
- ▶ U.S. DOL federal minimum wage
- ▶ CDC teens population

■ 3 Samples Statelevel U.S. data, Teens ages 16-19, Leisure & Hospitality Industry

Variable	Mean	Std. Dev.	Min	Max
Unemployment	5.881	2.072	2.3	17.792
Minimum Wage	8.282	1.043	6.531	13.5
Diff between State and Fed Min Wage	.289	.721	0	6.25
Pop(000s)	17,476.216	85,132.687	396.952	741,456
% Pop Receiving Min Wage	.817	1.641	0	13.3
% Pop Receiving Min Wage Missing	.592	.492	0	1
% Pop Below Poverty Level	12.924	3.847	2.9	27.2
Productivity Rate	.304	1.344	-6.6	13.8
Productivity Rate Missing	.731	.443	0	1
Recession	.182	.386	0	1
Median Income	57.843	9.987	35.194	95.572
Number of HS Graduates	54.699	60.52	4.832	426.14
Year	1997.5	12.701	1976	2019

Variable	Mean	Std. Dev.	Min	Max
Unemployment	17.172	5.624	5.4	36.3
Minimum Wage*	8.156	.997	6.531	13.5
Diff between State and Fed Min Wage*	.553	.95	0	6.25
Pop	423,784.91	474,225.71	36,288	2,834,241
% Pop Receiving Min Wage**	1.997	2.045	.1	13.3
% Pop Below Poverty Level*	12.366	3.373	3.7	25.8
Productivity Rate	.636	1.891	-6.6	13.8
Productivity Rate Missing	.437	.496	0	1
Recession*	.143	.35	0	1
Median Income*	61.171	9.724	38.397	95.572
Number of HS Graduates*	60.692	70.306	5.441	426.14
Year	2009	6.058	1999	2019

Variable	Mean	Std. Dev.	Min	Max
Unemployment	8.34	1.929	5.225	12.167
Minimum Wage*	8.166	1.02	6.531	13.5
Diff between State and Fed Min Wage*	.578	.966	0	6.25
Pop(000s)	271.981	298.449	24.033	2064.2
% Pop Receiving Min Wage	4.613	1.525	.004	14.815
% Pop Below Poverty Level*	12.417	3.375	3.7	25.8
Productivity Rate**	25.234	.424	24.7	26.075
Recession*	.15	.357	0	1
Median Income**	12.9	1.895	9.813	16.561
Number of HS Graduates*	61.161	70.939	5.441	426.14
Year	2009.5	5.769	2000	2019

## Overall OLS &amp; Fixed Effects Regression N

Unemployment	OLS	Fixed Effects
Minimum Wage	0.613*** (0.047)	0.598** (0.268)
Diff between State and Fed Min Wage	-0.73*** (0.073)	-0.673** (0.265)
% Pop Receiving Min Wage	-0.063* (0.036)	-0.06** (0.026)
% Pop Receiving Min Wage Missing	-0.084 (0.141)	0.228 (0.722)
% Pop Below Poverty Level	0.317*** (0.015)	0.197*** (0.014)
Recession	0.332*** (0.101)	3.257*** (0.401)
Productivity Rate	0.04 (0.029)	-0.01 (0.019)
Productivity Rate Missing	-0.003 (0.131)	0.407 (0.336)
Median Household Income	0.044*** (0.006)	-0.007 (0.007)
Number of HS Graduates	0.003*** (0.001)	0.009*** (0.002)
Constant	-5.797*** (0.709)	-2.376 (2.091)
R-Squared	0.335	0.785
N	2,200	2,200

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## Teen OLS &amp; Fixed Effects Regression N

Unemployment	OLS	Fixed Effects
Minimum Wage	3.519*** (0.379)	-6.506*** (2.096)
Diff between State and Fed Min Wage	-2.76*** (0.364)	7.156*** (2.066)
% Pop Receiving Min Wage	-0.211* (0.118)	0.106 (0.234)
% Pop Below Poverty Level	0.995*** (0.075)	0.378*** (0.087)
Recession	-0.301*** (0.414)	14.656*** (2.767)
Productivity Rate	0.059 (0.078)	-0.042 (0.065)
Productivity Rate Missing	0.072 (0.389)	2.34** (1.154)
Median Household Income	0.120*** (0.027)	-0.135*** (0.040)
Number of HS Graduates	0.008*** (0.003)	0.024** (0.012)
Constant	-29.74*** (0.371)	65.78*** (16.175)
R-Squared	0.335	0.674
N	2,200	2,200

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## L&amp;H OLS &amp; Fixed Effects Regression N=

Unemployment	OLS	Fixed Effects
Minimum Wage	0.2643*** (0.065)	3.034
Diff between State and Fed Min Wage	-0.308*** (0.066)	-3.039
% Pop Receiving Min Wage	-0.0002 (0.012)	-2.31e-09
% Pop Below Poverty Level	0.024*** (0.006)	-2.18e-09
Recession	-1.09*** (0.057)	2.775
Productivity Rate	-8.60*** (0.164)	1.015
Median Household Income	-1.964*** (0.031)	0.176
Number of HS Graduates	-0.00 (0.0003)	2.83e-10
Constant	248.64*** (4.922)	-44.805
R-Squared	0.910	1.00
N	1,000	1,000

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## Conclusion

- As minimum wage increases, unemployment increases
  - ▶ This relationship is more prominent in teens, but not the L&H industry
- More research could be necessary, as not all of my data was state level or industry and age based
- Keeping up with this relationship remains vital economically



# THANKS!

**Any questions?**

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