

# The Minimum Wage, EITC, and Criminal Recidivism

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# Motivation

- In the U.S. over 10,000 people are released from prison a *week*
- $\sim 1/3$  will return to prison within 3 years
- Recidivism decreases with job quality and higher market wages (Schneepel 2018, Yang 2017)
- Finding employment is a challenge (Pager 2003, Agan and Starr 2018)

# Research Question

- How do low-wage labor market policies impact recidivism:
  - ▶ Minimum wage
  - ▶ Earned income tax credits
- Released prisoners present an interesting treatment group for these policies
  - ▶ The question is not just whether they can find a job, but whether then can find a job that pays better than crime

# Why might the minimum wage matter?

- Minimum wage jobs are particularly relevant for released prisoners:
  - ▶ Low-skill group (92% no college, 50% no high school degree)
  - ▶ Limited, outdated, and/or discontinuous experience
  - ▶ Gainful employment or actively seeking employment is a condition for many under supervision (i.e. limited leisure alternative)

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- Potential wage effect:

- ▶ Minimum wages salient indicator of “legal” market wages - could pull people into legal market
  - ★ Similar to decreasing high school enrollment (Chaplin et al. 2001, Neumark and Wascher 2002)
- ▶ *If* they can get a job, a higher minimum wage increases the opportunity cost of further crime

- Net effect is an empirical question

# Conceptual Framework

- Probability of entry into legal labor market will also depend on wage potential in the “illegal” market
- Assume:
  - ▶  $w_i^*$ : uncontrolled market wage
  - ▶  $w_i^c$ : illegal market (criminal) wage
  - ▶  $w^{min}$ : minimum wage
- Then:

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- (with some strong assumptions) our results can tell us something about the relative standing of average market wages and average “criminal” wages

# Why might the EITC matter?

- EITCs are tax credits to lower-income individuals who are working - larger with custodial children
  - ▶ \$506 w/ 0 children, \$3,373 w/ 1, \$6,269 w/ 3 (2016)
  - ▶ Increases effective wage rate and total income
  - ▶ Potential to increase labor force participation
- (For most part) no disemployment effects - should reduce recidivism
- Likely to be heterogeneous by gender and marital status
  - ▶ EITCs increase labor force participation of single women (Eissa and Hoynes (2006))

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- “Returning Home Survey”: Percent reporting children under 18 living with them:
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  - ▶ Women: 49%
- Effects may be concentrated amongst women

# Other Potential Mechanisms

- Direct employment is not only potential mechanism
  - ▶ Many released prisoners live with family/friends/girlfriends - higher wages could bring more support?
  - ▶ Won't be able to test household/network production models, but an interesting opportunity for future work



# Research Questions - Results Preview

- How does the minimum wage impact recidivism?
  - ▶ Higher minimum wages → *decreased* probability of recidivism
- How do state EITCs impact recidivism?
  - ▶ State EITCs → decreased probability of recidivism *for women*

# Data: Released Prisoners

- National Corrections Reporting Program (2000-2014)
  - ▶ Individual level data on prison admissions and releases for all prisoners released into reporting states
  - ▶ Includes demographic characteristics: Age, race, Hispanic ethnicity, education (highest grade completed), gender, and whether the individual has previously been convicted of a felony
  - ▶ Includes state and county of conviction
  - ▶ In 2000 38 states reported into the program, by 2014 48 states did

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- Drawbacks
  - ▶ Recidivism is return to prison in same state.
  - ▶ No employment data.
  - ▶ No data on marital status or kids

## Data: Released Prisoners

- We define recidivism as either return to prison with 1- or 3-years
- For 1-year recidivism rate:
  - ▶ 5.7 million prison spells representing 3.7 million individuals
- For 3-year recidivism rate:
  - ▶ 4.8 million prison spells representing 3 million individuals

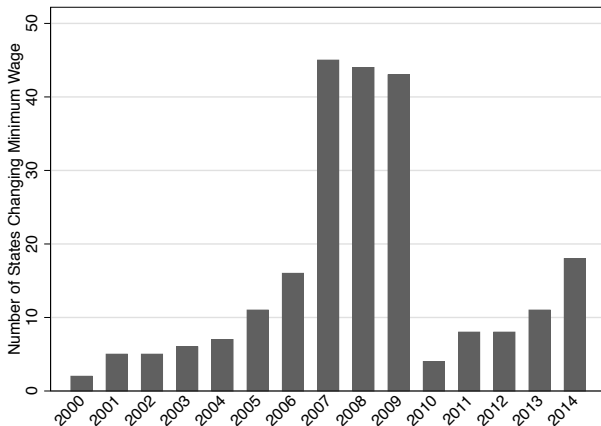
## Data: Released Prisoners

- The sample is 88.2% male

	(1) Recidivate 1 Year	(2) Recidivate 3 Years
Overall	0.173	0.346
Men	0.177	0.355
Women	0.142	0.284
Black (Not Hisp)	0.178	0.370
White (Not Hisp)	0.168	0.331
Hispanic	0.156	0.303
Less Than HS	0.179	0.363
HS	0.178	0.349
More Than HS	0.148	0.299
Returning Off. - Violent	0.032	0.062
Returning Off. - Property	0.057	0.113
Returning Off. - Drug	0.047	0.103
Observations	5786062	4749284

# Data: Minimum Wages

- Data on minimum wages by locality and month (Vaghul and Zipperer 2016)
  - ▶ We focus on state minimum wages in main analysis



**Note:** Federal minimum wage increases on July 24 2007, 2008, and 2009 (\$5.85, \$6.55, \$7.25)

## Data: EITC

- Data on state EITCs from the Tax Policy Center
  - ▶ In 2000 15 states had a state EITC, in 2014 26 states had a state EITC
  - ▶ Vary from 5% - 40% (of the federal EITC)

# Minimum Wages and EITC Top-ups in Sample

Table: Minimum Wage Sum Stats by State

	mean	sd	min	max
Minimum Wage	6.43	1.10	5.15	9.50
Number of MW Changes	4.73	2.54	2.00	13.00
Size of MW Change	0.51	0.33	0.04	1.80
Size of MW Change (Perc)	0.08	0.06	0.01	0.35
Has State EITC	0.39	0.49	0.00	1.00
State EITC Perc	6.39	10.22	0.00	40.00



# Methodology

- Exploit variation in minimum wages and EITCs top-ups across states and time

$$\begin{aligned} Recidivate_{isct} = & \alpha + \beta_1 MW_{st} + \beta_2 MW_{st} x Female_i + \\ & \beta_3 EITC_{st} + \beta_4 EITC_{st} x Female_i + \\ & + \beta_5 \mathbf{X}_i + \beta_6 \mathbf{K}_{ts} + \gamma_y + \delta_s + \epsilon_{isct} \end{aligned}$$

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- $\mathbf{X}_i$ : age, race, gender, education, sentence length, incarcerating offense, etc...
- $\mathbf{K}_{ts}$ : housing price index, number of police per 1000, % Democrat in state legislature, Drug Felons banned from TANF, Felons able to vote
  - ▶ Unemployment rate in robustness check

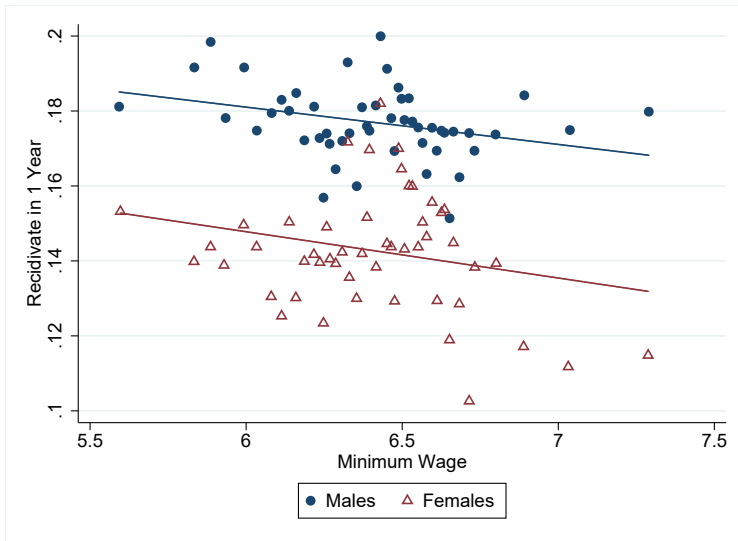
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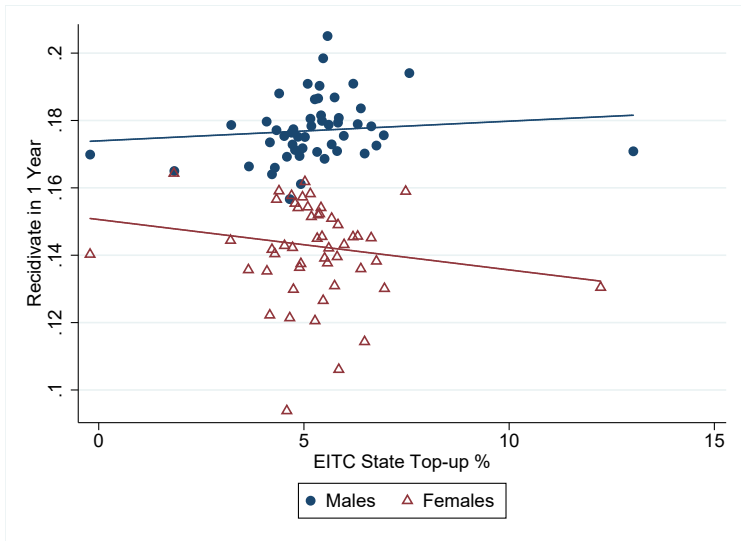
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- $\mathbf{X}_i$ : age, race, gender, education, sentence length, incarcerating offense, etc...
- $\mathbf{K}_{ts}$ : housing price index, number of police per 1000, % Democrat in state legislature, Drug Felons banned from TANF, Felons able to vote
  - ▶ Unemployment rate in robustness check
- Specifications to deal with locality-specific economic time trends
  - ▶ State-specific time trend polynomials
  - ▶ Census division x year FE
  - ▶ Binding federal minimum wage changes
  - ▶ Minimum wage leads

# Basic Relationships



## Basic Relationships



# Main Results

Table: Minimum Wage and EITC at Release and Recidivism Rates

	Any State EITC		State EITC Percent	
	(1) 1 year	(2) 3 year	(3) 1 year	(4) 3 year
Min Wage	-0.010** (0.004)	-0.015*** (0.005)	-0.010** (0.004)	-0.015*** (0.005)
Min Wage x Female	0.002 (0.002)	0.003 (0.004)	0.002 (0.002)	0.003 (0.004)
State EITC	0.010* (0.006)	0.000 (0.007)	0.001 (0.001)	-0.000 (0.001)
State EITC x Female	-0.023* (0.012)	-0.032*** (0.011)	-0.001** (0.000)	-0.002*** (0.000)
Female EITC Effect	-0.013	-0.031	0.000	-0.002
Female EITC p-value	0.284	0.014	0.973	0.065
Observations	5786062	4749284	5786062	4749284

**Note:** Standard errors are clustered at the state level

# Pre-Trends and Time Trends

	Leading MWs		State-Specific Time Trend Polynomials		
	(1) t+1	(2) t+2	(3) Linear	(4) 2nd	(5) 3rd
Min Wage	-0.008** (0.004)	-0.009** (0.004)	-0.004 (0.004)	-0.007** (0.003)	-0.006** (0.003)
Min Wage x Female	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
State EITC	0.010 (0.006)	0.010 (0.006)	0.001 (0.006)	0.006 (0.005)	-0.009 (0.009)
State EITC x Female	-0.023* (0.012)	-0.023* (0.012)	-0.023* (0.012)	-0.023* (0.012)	-0.023* (0.012)
Min Wage Lead	-0.002 (0.006)	-0.004 (0.005)			
Female EITC Effect	-0.013	-0.013	-0.022	-0.017	-0.032
Female EITC p-value	0.282	0.275	0.095	0.235	0.058
Observations	5786062	5786062	5786062	5786062	5786062

## Geographic Heterogeneity

	Division X Year FE	Binding Changes
	(6)	(7)
Min Wage	-0.009* (0.005)	-0.010** (0.005)
Min Wage x Female	0.003 (0.002)	
State EITC	0.010** (0.005)	
State EITC x Female	-0.023* (0.012)	
Bound MW		0.005 (0.034)
Min Wage X Bound		-0.001 (0.005)
Female EITC Effect	-0.012	
Female EITC p-value	0.270	
Observations	5786062	5786062



# Robustness

	(1) State Unemp	(2) MW at Admit	(3) Avg MW 6 Months	(4) Avg MW 12 Months
Min Wage	-0.011** (0.004)	-0.009** (0.004)	-0.012** (0.005)	-0.012* (0.006)
Min Wage x Female	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
State EITC	0.009 (0.005)	0.010* (0.006)	0.010* (0.006)	0.010 (0.006)
State EITC x Female	-0.023* (0.012)	-0.023* (0.012)	-0.023* (0.012)	-0.022* (0.012)
State Unemp Rate	0.004** (0.002)			
MW Admit		-0.000 (0.002)		
MW 1 Yr Bef Admit		-0.002 (0.002)		
Female EITC Effect	-0.014	-0.012	-0.013	-0.013
Female EITC p-value	0.237	0.287	0.283	0.283
Observations	5786062	5786036	5786062	5786062

## Results by Crime Type

Table: By Return Crime Type - 1 Year

	Crime Type			
	(1) Violent	(2) Property	(3) Drug	(4) Other
Min Wage	-0.001 (0.001)	-0.005*** (0.001)	-0.003** (0.002)	-0.001 (0.001)
Min Wage x Female	0.002* (0.001)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.002)
State EITC	0.004** (0.002)	0.003 (0.004)	0.006*** (0.002)	-0.003 (0.002)
State EITC x Female	-0.008** (0.003)	-0.003 (0.003)	-0.009 (0.006)	-0.003 (0.004)
Female EITC Effect	-0.004	-0.001	-0.002	-0.005
Female EITC p-value	0.277	0.880	0.598	0.201
Observations	5786062	5786062	5786062	5786062

# Results by Crime Type

Table: By Return Crime Type - 3 Year

	Crime Type			
	(1) Violent	(2) Property	(3) Drug	(4) Other
Min Wage	-0.001 (0.002)	-0.006*** (0.002)	-0.006** (0.002)	-0.002 (0.002)
Min Wage x Female	0.004*** (0.001)	-0.001 (0.002)	0.001 (0.001)	-0.001 (0.003)
State EITC	0.001 (0.002)	0.001 (0.005)	0.008*** (0.003)	-0.009** (0.004)
State EITC x Female	-0.012*** (0.004)	-0.001 (0.003)	-0.014** (0.006)	-0.004 (0.006)
Female EITC Effect	-0.012	-0.001	-0.007	-0.013
Female EITC p-value	0.016	0.923	0.233	0.095
Observations	4749284	4749284	4749284	4749284

## Results by Education

Table: By Education - 1 Year

	Education		
	(1) < HS	(2) HS	(3) > HS
Min Wage	-0.015*** (0.005)	-0.011** (0.005)	-0.012 (0.008)
Min Wage x Female	0.001 (0.002)	0.003* (0.002)	0.008** (0.003)
State EITC	0.011* (0.005)	0.007 (0.007)	0.009 (0.008)
State EITC x Female	-0.030 (0.018)	-0.023* (0.012)	-0.033** (0.015)
Female EITC Effect	-0.020	-0.016	-0.024
Female EITC p-value	0.227	0.248	0.158
Observations	2245904	1824652	317609

## Results by Education

Table: By Education - 3 Year

	Education		
	(1) < HS	(2) HS	(3) > HS
Min Wage	-0.021*** (0.006)	-0.018*** (0.006)	-0.015 (0.009)
Min Wage x Female	0.000 (0.004)	0.006* (0.003)	0.005 (0.003)
State EITC	-0.001 (0.006)	-0.003 (0.008)	-0.000 (0.006)
State EITC x Female	-0.036** (0.015)	-0.035*** (0.012)	-0.035** (0.013)
Female EITC Effect	-0.037	-0.037	-0.035
Female EITC p-value	0.021	0.020	0.013
Observations	1907947	1472633	258196

## Results by Race

Table: By Race- 1 Year

	Race		
	(1) Black (NH)	(2) White (NH)	(3) Hispanic
Min Wage	-0.012** (0.005)	-0.008* (0.005)	-0.005 (0.006)
Min Wage x Female	0.003 (0.004)	0.001 (0.002)	-0.001 (0.002)
State EITC	0.017*** (0.006)	0.005 (0.007)	0.020** (0.008)
State EITC x Female	-0.034** (0.016)	-0.012 (0.008)	-0.030*** (0.008)
Female EITC Effect	-0.017	-0.007	-0.011
Female EITC p-value	0.269	0.471	0.444
Observations	2457794	2471327	696338

## Results by Race

Table: By Race- 3 Year

	Race		
	(1) Black (NH)	(2) White (NH)	(3) Hispanic
Min Wage	-0.015** (0.007)	-0.012** (0.005)	-0.014* (0.007)
Min Wage x Female	0.001 (0.007)	-0.000 (0.003)	0.006 (0.005)
State EITC	0.005 (0.007)	-0.005 (0.009)	0.023** (0.009)
State EITC x Female	-0.027* (0.014)	-0.024*** (0.008)	-0.055*** (0.012)
Female EITC Effect	-0.022	-0.029	-0.032
Female EITC p-value	0.130	0.032	0.073
Observations	2062432	1998305	561803

# Alternative Specifications

- We included 1,2, and 3-year lags on the minimum wage
  - ▶ Accounting for delayed growth effects of the MW
- We ran a battery of robustness checks using county of conviction
  - ▶ County unemployment, county FE, Metro purchasing parity
  - ▶ Assigning city minimum wage to whole county
  - ▶ Dropping counties with substate minimum wages
- Results are qualitatively similar to core results



# Summary

- On net higher minimum wages decrease recidivism
  - ▶ The average minimum wage increase decreases recidivism by 1-4% (depending on the specification)
- Our results imply that on average for the minimum wage, the “wage effect” dominates the “unemployment effect” for released prisoners
- State EITCs reduce recidivism, particularly longer-term re-incarceration, for women

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- State EITCs reduce recidivism, particularly longer-term re-incarceration, for women
- Hard to get data to dig into mechanisms
  - ▶ Longitudinal data (NLSY97, Pathways to Desistance) may offer opportunities for structural analysis of returns to crime

# Appendix

APPENDIX SLIDES

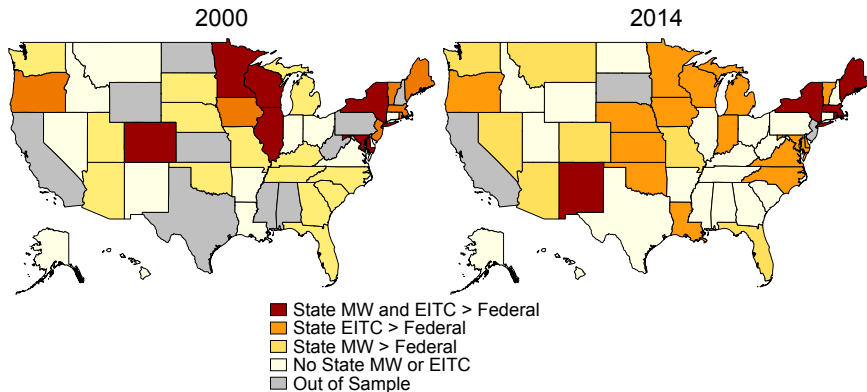
# Evidence on Children and EITC Post-Release

- “Returning Home Survey”
- Sample of released prisoners from Chicago, Cleveland, and Baltimore
- Surveyed 1-4 months after release (in addition to other times)
- What percent reported children under 18 living with them?
  - ▶ Men: 28%
  - ▶ Women: 49%

# Evidence on Children and EITC Post-Release

- Data from Treasury department
- All prisoners in state custody on August 31, 2014 or released between January 1, 2014 and August 31, 2014
- A single cross-section
- What percent received EITCs with children 2 years after their release?
  - ▶ Men: 11%
  - ▶ Women: 20%

# Variation in MWs and State EITCs



# Lagged MW

Table: Lagged Min Wages

	(1)	(2)	(3)	(4)
Min Wage				-0.009* (0.005)
MW - 1 Year Lag	-0.007 (0.005)			0.001 (0.005)
MW - 2 Year Lag		-0.005 (0.005)		-0.004 (0.002)
MW - 3 Year Lag			-0.003 (0.005)	-0.001 (0.004)
Min Wage x Female				-0.004 (0.004)
MW-1 Yr Lag x Female	0.002 (0.002)			-0.004 (0.003)
MW-2 Yr Lag x Female		0.004 (0.003)		0.011* (0.006)
MW-3 Yr Lag x Female			0.004 (0.003)	-0.000 (0.004)
Female	-0.049*** (0.014)	-0.056*** (0.015)	-0.057*** (0.016)	-0.052*** (0.016)
Observations	5786062	5786062	5786062	5786062

# County

Table: Using County Variable

	(1) Baseline With County	(2) County Unemp	(3) County FE	(4) Metro RPP	(5) No Substate	(6) Substate All
Min Wage	-0.008** (0.004)	-0.008** (0.004)	-0.008** (0.004)	-0.012*** (0.003)	-0.008** (0.004)	-0.008** (0.004)
Min Wage x Female	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.004* (0.002)	0.002 (0.003)	0.002 (0.003)
State EITC	0.009 (0.006)	0.009 (0.006)	0.010 (0.006)	0.010 (0.006)	0.009 (0.006)	0.009 (0.006)
State EITC x Female	-0.023* (0.012)	-0.023* (0.012)	-0.023** (0.011)	-0.022* (0.012)	-0.023* (0.012)	-0.023* (0.012)
Female	-0.041** (0.015)	-0.041** (0.015)	-0.042*** (0.015)	-0.053*** (0.015)	-0.041** (0.015)	-0.041** (0.015)
Female EITC Effect	-0.014	-0.014	-0.013	-0.013	-0.014	-0.014
Female EITC p-value	0.231	0.244	0.271	0.273	0.230	0.231
Observations	5579060	5579060	5579060	5579060	5565953	5579060