A Second Chance at Schooling?
Unintended Consequences of Prison Education

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July 2025

Motivation: Recidivism is Prevalent and Difficult to Solve

- The United States has one of the highest incarceration rates globally
- More than 600,000 people released from prison annually
  - 2 out of 3 are rearrested within 3 years
  - More than half are reincarcerated within 3 years
- Recidivism costs an average of $151,662 per incident (Steinfeld et al., 2018)
- Limited success reducing incarceration cycles (Doleac, 2023)

Prison Education to the Rescue?

- $\uparrow$ education $\Rightarrow$ $\downarrow$ likelihood of criminal activity (Lochner and Moretti, 2004)
  - Providing education to incarcerated individuals might help to address recidivism?
  - 70% of inmates want to enroll in an academic programs while in prison
- Recent policies have dramatically increased prison education programs
  - Second Chance Pell Grant Pilot: more than 40,000 recipients from 2016 to 2022
  - Average Pell Grant award: \$4,491
  - Expanded to all otherwise eligible prisoners in 2023
- Very little causal evidence about the impact of prison education on outcomes
  - Data are scarce
  - Identification is hard (selection bias)

This Paper...

- We estimate the causal effect of prison education on a variety of outcomes
  - Reincarceration: new crimes vs. revocations (technical violations)
  - Future education and employment, in-prison misconduct
- Overcome typical challenges
  - Rich administrative data (IDOC, IDOE, IowaWORKS)
  - Instrumental variable approach based on course availability to deal with selection bias
- Preview of findings
  - Education increases revocations, but does not affect reincarceration for new crimes
  - Unlikely a direct effect of education, instead education affects facility release type
    - Release type (level of supervision) matters for outcomes (Lee, 2023; Sakoda, 2024)
    - Evidence of increased misconduct after taking courses
  - Limited effects on employment and education outcomes

Related Literature

- Non-causal evidence that prison education may reduce recidivism

  Linden and Perry, 1983; Kim and Clark, 2013; Duwe and Clark, 2014; Visher et al., 2017; Denney and Tynes, 2021

- Earning GEDs in prison positively impact future earnings

  Darolia et al., 2021

- Causal evidence that education is effective when paired with other interventions in other carceral settings

  Arbour et al., 2024; Alsan et al., 2025; Totarelli, 2024

Roadmap of Talk

1. Background and Data
2. Empirical Approach
3. Results
4. Mechanisms
5. Conclusion

Prison Education in Iowa

- Prison education is Iowa similar to prison education nationally
- All prison education is offered through local colleges, mostly community colleges
  - The model: the same course, but in prison
  - Drastic increase between 2014 and 2018 (Second Chance Pell Grant Pilot Program)
  - Participation limited by supply not demand
- Only 17% of our sample ever take a course while incarcerated participation
  - Conditional on taking at least one course, median is 2
  - 80% are HSE or Remedial courses
    - Prisoners can earn time (1.2 days) when they work or take GED courses
    - Failure to comply punishable with up to 30 days of disciplinary detention

Examples of Courses Offered

High School Equivalent or Remedial

- Basic Skills and Developmental/Remedial Education
- Developmental/Remedial English
- Developmental/Remedial Mathematics
- High School Equivalence Certificate Program
- Adult High School/Secondary Diploma Program

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Post Secondary

- Welding Technology/Welder
- Logistics, Materials, and Supply Chain Management
- Machine Tool Technology/Machinist
- Business/Office Automation/Technology/Data Entry
- Basic Computer Skills
- Liberal Arts and Sciences/Liberal Studies
- Carpentry/Carpenter

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- Liberal Arts and Sciences/Liberal Studies: The Golden Age of Board Games
- Carpentry/Carpenter

Data

We use data from multiple agencies in Iowa merged by SSNs by the Iowa Department of Education

Data

- Iowa Department of Corrections (IDOC)
  - Every person released from an Iowa prison between 2014 and 2018
  - All other periods of incarceration starting before July 2022
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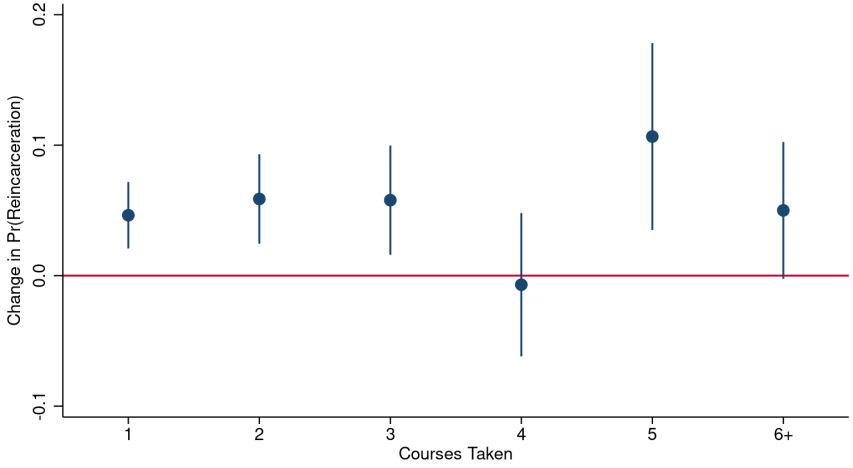
  - Missing University of Iowa courses (IMCC in 2018)
- Iowa Workforce Development (IowaWORKS)
  - Cohort-level employment and wages: matched count, quarters worked and quarterly wages
    - created cohorts of 9-17 individuals based on Xs (primary prison, time served bin, release year, opportunity score, etc)
    - one shot at these data–cohorts with fewer than 3 matches suppressed

OLS Estimates of Reincarceration on Prison Education



Empirical Strategy: IV with Opportunity to Take Courses

- Our opportunity metric is the number of courses that started while an individual was in a prison, scaled by standard deviation (Arbour et al., 2024; Alsan et al., 2025)

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- Individual opportunity varies with prison assignment, time served, and precise timing of entry and exit from prisons (including release year)
  - Long term prison assignment is based on: (1) Available space (2) Absence of known accomplices or enemies (3) Proper security level (4) Court-mandated health and programming needs (not prison education), and (5) Proximity to convicting jurisdiction

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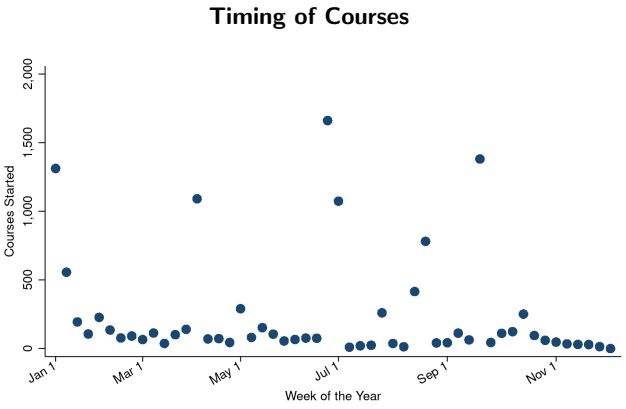
  - Long term prison assignment is based on: (1) Available space (2) Absence of known accomplices or enemies (3) Proper security level (4) Court-mandated health and programming needs (not prison education), and (5) Proximity to convicting jurisdiction
- Individuals are transferred across prisons during their sentence (2 on average), usually when a factor for primary assignment changes
  - Self-initiated transfer requests rarely granted ($< 5\%$)
  - Facilitating education is generally not considered a valid reason for transfer

▸ prison ▸ time served ▸ release year

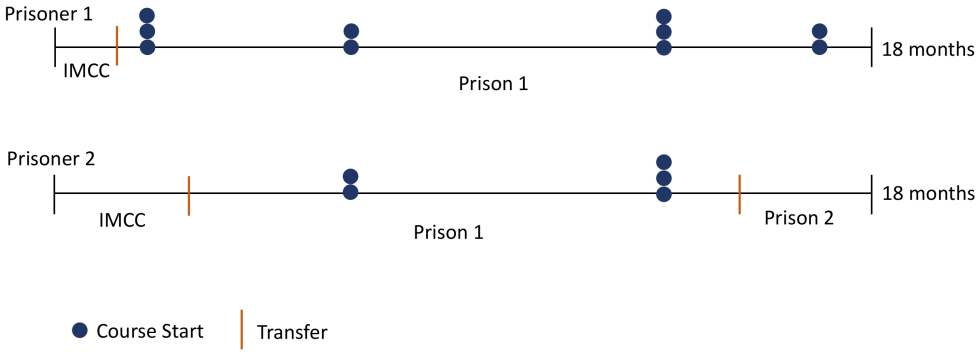
Defining the Comparison Group

- Compare individuals in the same primary prison, released the same year with similar time served (3-month bins)
- Individuals can start courses soon after entry, but IDOC policy generally prohibits taking courses that have already started



prison start time to courses

Illustration of Calculating Opportunity



Empirical Strategy

We implement a Two-Stage Least Squares (2SLS) model using the following specification:

$$\text{Courses Taken}_i = \beta_0 + \beta_1 \text{Opportunity}_i + X_i'\Gamma + \lambda_p + \lambda_y + \lambda_j + \epsilon_i \quad (1)$$

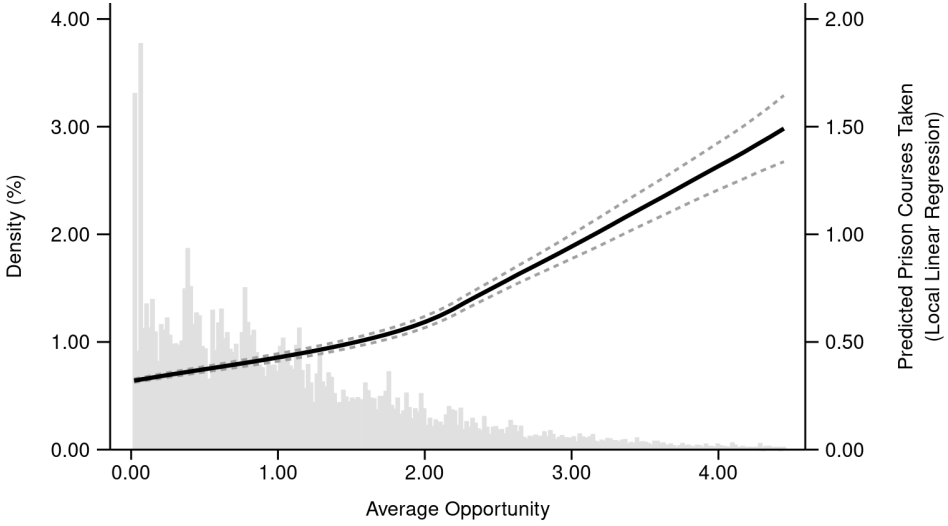
$$\text{Outcome}_i = \alpha_0 + \alpha_1 \widehat{\text{Courses Taken}}_i + X_i'K + \sigma_p + \sigma_y + \sigma_j + \upsilon_i \quad (2)$$

X: prison transfers, age quintiles, prior recidivism, number of felonies, number of charges, crime type, race, years of education, medical days during sentence, and violence score

$Outcome_i$: (1) reincarceration: new crime vs. revocation, (2) employment and wages, or (3) community college courses taken within 3 years of release

Standard errors clustered at the primary-prison-by-release-year level

Relevance: Increased Opportunities Increase Prison Courses Taken



Balance Test (Select Variables)

monotonicity

	No Courses	1+ Course	Difference	Courses Taken	Opportunity
Number of Prison Transfers	1.686	1.869	0.182**	-0.022**	-0.001
			(0.087)	(0.011)	(0.010)
Age 25-29	0.189	0.214	0.025***	-0.136***	-0.016
			(0.008)	(0.040)	(0.014)
Prior Recidivist	0.771	0.643	-0.128***	-0.037***	0.006
			(0.037)	(0.013)	(0.005)
Felony Convictions	1.556	1.787	0.231***	0.016***	0.005*
			(0.041)	(0.004)	(0.003)
Any Violent Crime?	0.280	0.368	0.087***	0.052	0.034*
			(0.018)	(0.033)	(0.018)
White	0.705	0.604	-0.102***	-0.046**	0.010
			(0.017)	(0.023)	(0.009)
Highest Grade Completed	11.669	10.933	-0.736***	-0.145***	-0.002
			(0.072)	(0.027)	(0.004)
Share of Sentence in Hospital	0.009	0.008	-0.001	-0.152**	-0.180**
			(0.002)	(0.059)	(0.086)
Violence Score	5.868	5.381	-0.487*	0.001	-0.000
			(0.254)	(0.005)	(0.003)
Observations	18,594	3,884	22,478	22,478	22,478
F-Stat				5.03	1.20
P-value				0.00	0.30

Effect of Prison Education on Reincarceration within 3 Years: Increases Revocations, Not New Crimes

	Reincarceration	New Crime	Revocation
Courses Taken	0.022*	0.006	0.032**
	(0.013)	(0.009)	(0.015)
Observations	22,478	22,478	22,478
Outcome Mean	0.445	0.268	0.337
First Stage F Stat	133.772	133.772	133.772
Randomization FE	X	X	X
Controls	X	X	X

Limited Effect on Future Employment

	Pr(Employed)	Quarters Worked	Quarterly Wages	Nonzero Quarterly Wages
Courses Taken	0.031***	0.174	48.397	-61.710
	(0.009)	(0.114)	(75.778)	(103.952)
Observations	21,647	21,647	21,647	21,647
Outcome Mean	0.771	4.432	1839.952	4732.242
First Stage F Stat	93.467	93.467	93.467	93.467
Randomization FE	X	X	X	X
Controls	X	X	X	X

No Effect on Future Community College Courses

	Courses	Credit Courses	Noncredit Courses	Passed Courses
Courses Taken	-0.011	-0.004	-0.007	0.009
	(0.053)	(0.044)	(0.022)	(0.039)
Observations	22,478	22,478	22,478	22,478
Outcome Mean	0.562	0.292	0.270	0.356
First Stage F Stat	133.772	133.772	133.772	133.772
Randomization FE	X	X	X	X
Controls	X	X	X	X

Additional Results

Robustness (sentence length not observed, only actual time served)

- Alternative choices of time served bin size ▸ bins
- Alternative instrument definition based on opportunities in first 3 months (95% of our sample served at least 3 months) ▸ 3 month iv

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Heterogeneity

- Larger effects among white individuals ▸ race
- Larger effects from taking post-secondary courses ▸ course type
- Effects concentrated among individuals with 12+ years of education at entry; No evidence of significant peer effects ▸ peer effects

Why Might Prison Education Increase Reincarceration?

- Lee (2023) and Sakoda (2024) show that higher post-release supervision increases reincarceration through revocations
- Could prison education be affecting release type?

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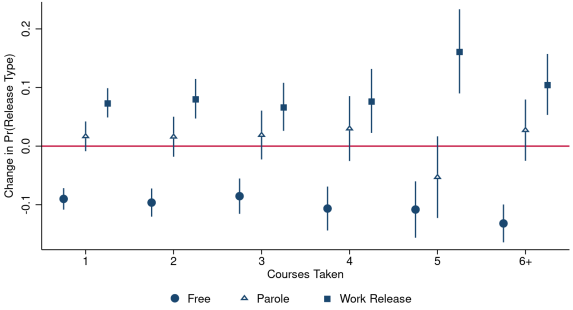

Prison Education Increases Likelihood of Work Release

	Free	Parole	Work Release
Courses Taken	-0.048**	-0.001	0.049**
	(0.021)	(0.019)	(0.023)
Observations	22,478	22,478	22,478
Outcome Mean	0.219	0.433	0.347
First Stage F Stat	133.772	133.772	133.772
Randomization FE	X	X	X
Controls	X	X	X

Reincarceration Effects Likely Mediated by Release Type

	Reincarceration	New Crime	Revocation	Reincarceration	New Crime	Revocation
Opportunity	0.010*	0.003	0.015**	0.004	0.002	0.004
	(0.005)	(0.004)	(0.007)	(0.005)	(0.004)	(0.005)
Parole				0.129***	-0.052***	0.314***
				(0.010)	(0.009)	(0.010)
Work Release				0.284***	0.019	0.494***
				(0.012)	(0.011)	(0.012)
Observations	22,478	22,478	22,478	22,478	22,478	22,478
Outcome Mean	0.445	0.268	0.337	0.445	0.268	0.337
Randomization FE	X	X	X	X	X	X
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Why More Intensive Post-Release Supervision for Participants in Education?

- Data not well suited to address this question
- Discussions with case managers (de facto make release decisions with great discretion)

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- Data not well suited to address this question
- Discussions with case managers (de facto make release decisions with great discretion)
  - Participation in prison education, particularly post-secondary education, viewed favorably
  - A range of views on assignment to work release (Lee, 2023), even positively as providing stable housing
  - In-prison misconduct could be important, though unlikely to be pivotal
    - use event study framework to exploit temporal variation in misconduct

Misconduct: Poisson Regression Event Study Framework

	Total	Drug	Order	Property	Violent
After First Course	0.086*	0.153**	0.090	0.200*	-0.030
	(0.051)	(0.061)	(0.054)	(0.113)	(0.083)
Observations	12,231,879	8,444,387	11,387,839	3,110,224	6,355,331
Individual FE	X	X	X	X	X
Prison FE	X	X	X	X	X
Fraction of Time Served Decile	X	X	X	X	X

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Two potential explanations for increased misconduct:

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Switching release type could reflect case managers' balancing positive signal with potential negative consequences of participation in education?

Conclusion

- Participating in prison education significantly increases revocations, but has no effect on reincarceration for new crimes
  - Surprising given low rates of course taking even conditional on participation
  - Unintended consequences are a concern–effects likely mediated by changes to post-release supervision
- Limited effects on future employment or education
- Consider institutional agent response to interventions and whether these responses may undermine intended effects
  - Increased misconduct citations
  - Increased likelihood of assignment intensive post-release supervision
- Cultural changes are likely important

Thank you!

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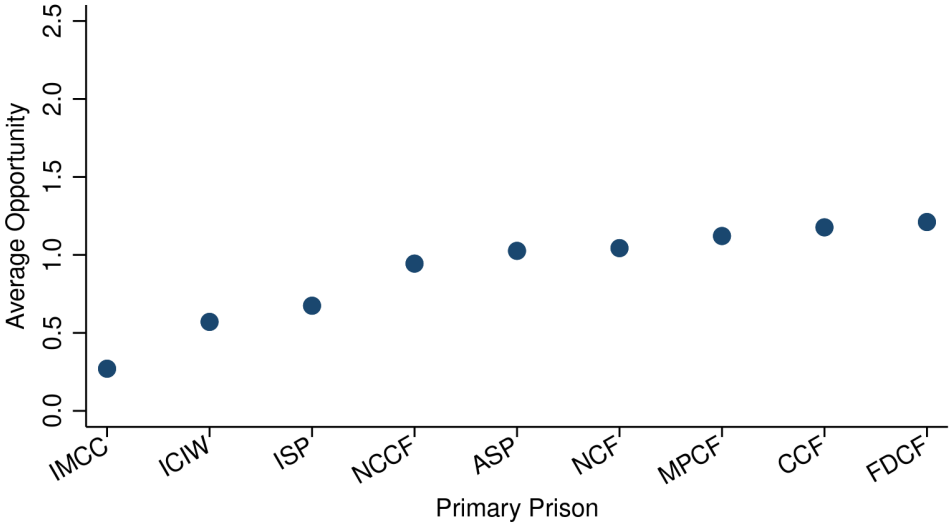
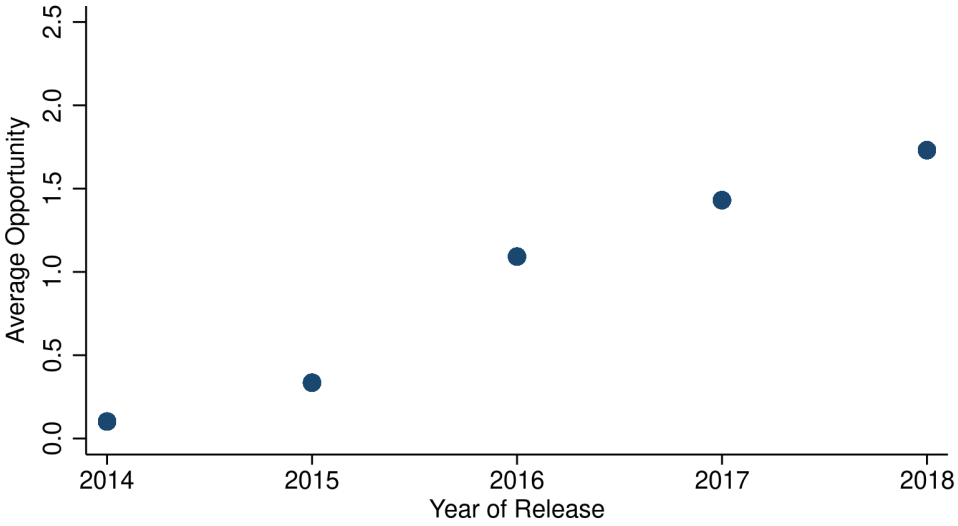
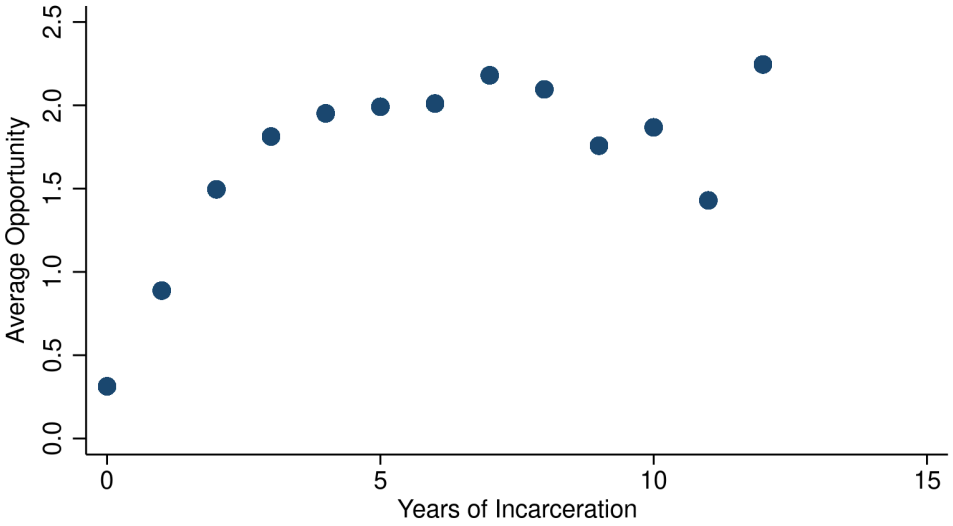
Variation in Educational Opportunities by Primary Prison map



Variation in Educational Opportunities by Release Year

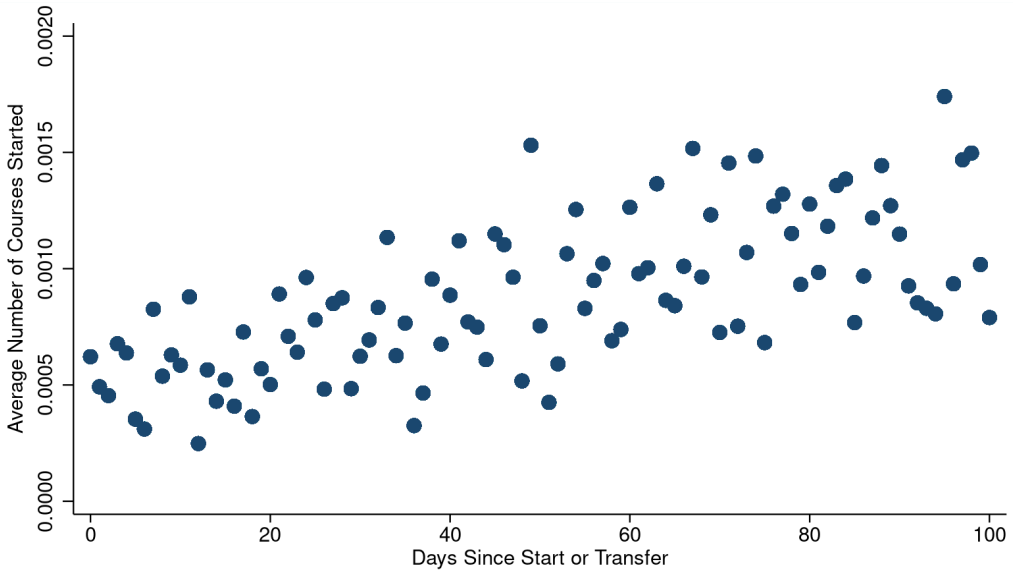


Variation in Educational Opportunities by Years Served



When Do Prisoners Start Courses?

back



Iowa Prisons

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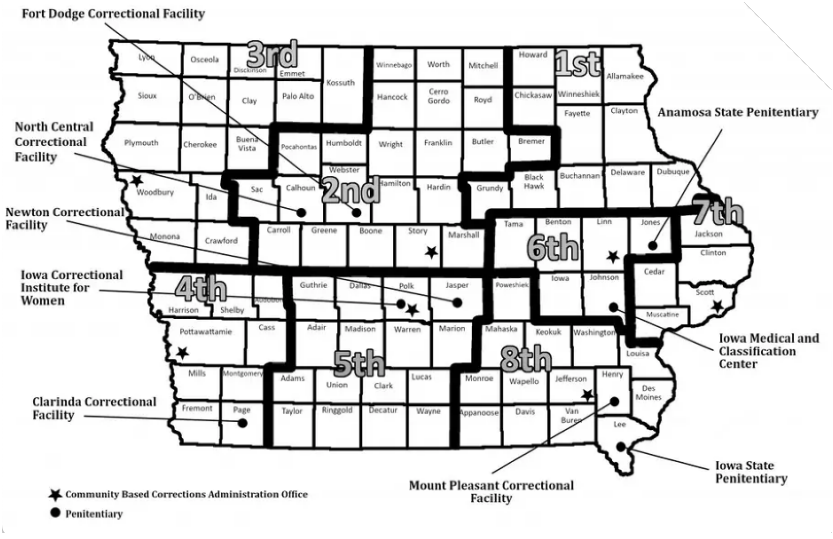


Monotonicity Test

back

	5 knots	10 knots	15 knots	20 knots
Test Statistic	314.78	306.46	292.10	244.40
Degrees of Freedom	(303)	(298)	(293)	(288)
P-value	[0.309]	[0.355]	[0.504]	[0.971]

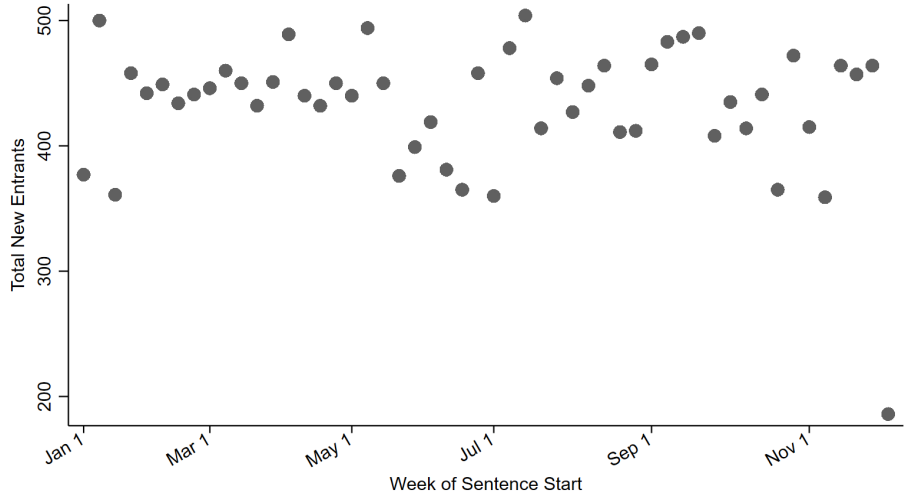
Participation Statistics by Education Category

back

Education Type	Participation Rate	Participants	Average Courses Participation	Average Opportunity
All Courses	0.17	3,884.00	2.63	46.90
	[0.38]		[2.36]	[49.03]
HSE or Remedial Courses	0.14	3,074.00	2.21	25.44
	[0.34]		[1.65]	[28.50]
Post-Secondary Courses	0.05	1,019.00	3.35	21.46
	[0.21]		[3.34]	[27.39]
HSE Courses	0.02	553.00	2.00	5.30
	[0.15]		[1.05]	[9.14]
Remedial Courses	0.12	2,791.00	2.04	20.14
	[0.33]		[1.57]	[23.19]
Blue Collar Training Courses	0.01	307.00	4.46	7.14
	[0.12]		[3.32]	[14.38]
White Collar Training Courses	0.01	180.00	2.75	2.34
	[0.09]		[1.92]	[3.97]
Liberal Arts Courses	0.01	139.00	3.68	4.67
	[0.08]		[3.43]	[7.40]

Timing of Prison Entry

back



violent property drug

Timing of Prison Entry - Violent Crimes

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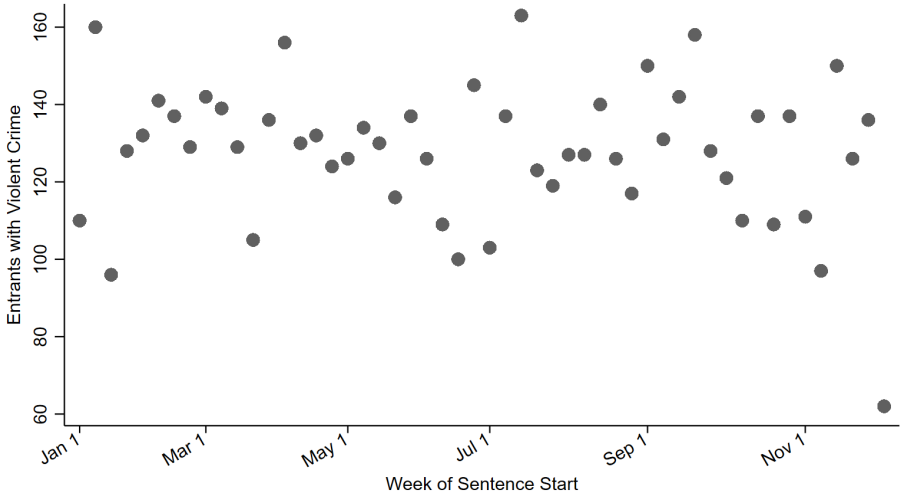
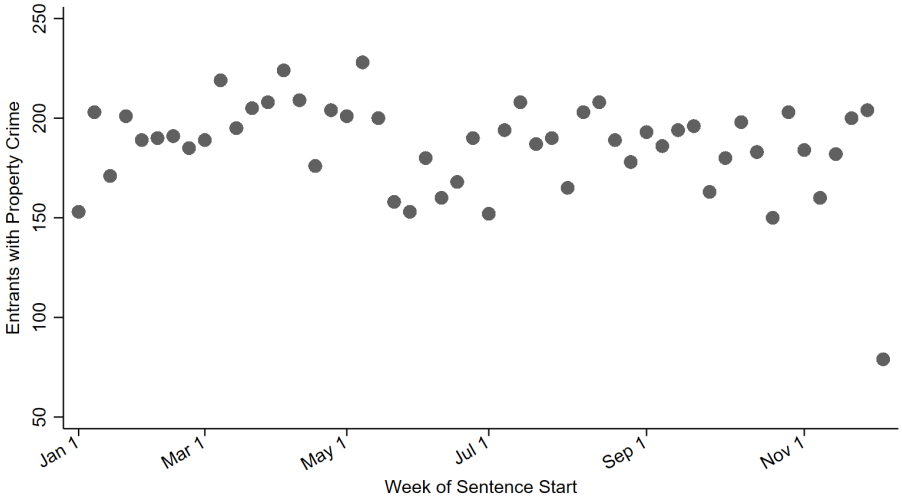


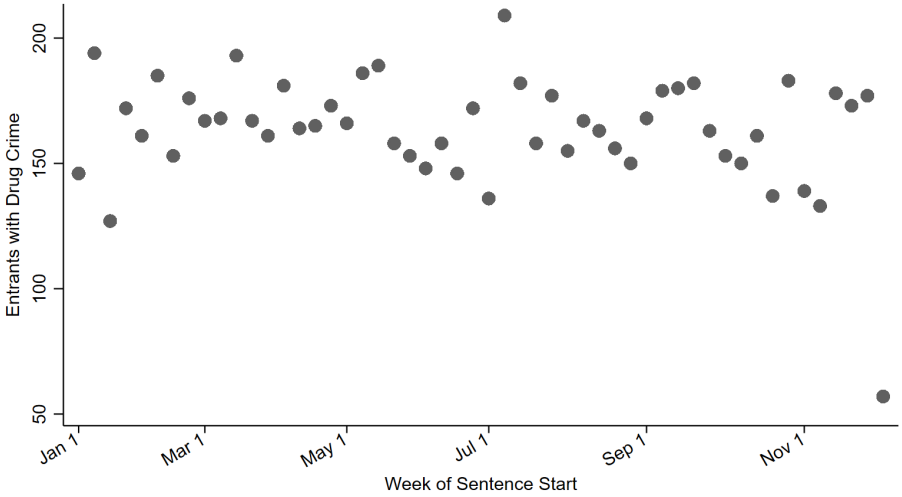
Timing of Prison Entry - Property Crimes

back



Timing of Prison Entry - Drug Crimes

back



Effects on Recidivism by Race and Course Type

back

	Reincarceration	New Crime	Revocation	Reincarceration	New Crime	Revocation
			Panel A. By Race			
		White			Nonwhite	
Courses Taken	0.037**	0.013	0.046**	0.004	-0.003	0.017
	(0.018)	(0.016)	(0.020)	(0.017)	(0.013)	(0.018)
Outcome Mean	0.442	0.267	0.333	0.450	0.269	0.346
Observations	15,453	15,453	15,453	7,025	7,025	7,025
First Stage F Stat	82.091	82.091	82.091	96.969	96.969	96.969
			Panel B. By Course Type			
		HSE or Remedial Courses			Post-Secondary Courses	
Courses Taken	0.013	0.013	0.019	0.038**	0.004	0.057***
	(0.022)	(0.018)	(0.027)	(0.017)	(0.013)	(0.018)
Outcome Mean	0.445	0.268	0.337	0.445	0.268	0.337
Observations	22,478	22,478	22,478	22,478	22,478	22,478
First Stage F Stat	89.585	89.585	89.585	159.473	159.473	159.473
Randomization FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

Peer Effects?

back

	HSE or Remedial Courses			Post-Secondary Courses		
	Reincarceration	New Crime	Revocation	Reincarceration	New Crime	Revocation
	Panel A. Individuals with At Least 12 Years of Education					
Opportunity	0.000	0.002	0.003	0.010*	0.002	0.016***
	(0.006)	(0.005)	(0.007)	(0.006)	(0.004)	(0.006)
Outcome Mean	0.445	0.268	0.339	0.445	0.268	0.339
Observations	18,402	18,402	18,402	18,402	18,402	18,402
	Panel B. Individuals with Fewer Than 12 Years of Education					
Opportunity	0.016	0.008	0.010	0.014	-0.003	0.014
	(0.013)	(0.010)	(0.013)	(0.013)	(0.012)	(0.013)
Outcome Mean	0.442	0.265	0.326	0.442	0.265	0.326
Observations	4,076	4,076	4,076	4,076	4,076	4,076
Randomization FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

Robust to Different Time Served Bin Specifications

back

	Reincarceration	New Crime	Revocation
Panel A. 1-month Time Served Bins			
Courses Taken	0.021	0.006	0.032**
	(0.013)	(0.010)	(0.016)
First Stage F Stat	131.232	131.232	131.232
Panel B. 6-month Time Served Bins			
Courses Taken	0.021*	0.006	0.032**
	(0.012)	(0.009)	(0.015)
Outcome Mean	0.445	0.268	0.337
Observations	22,478	22,478	22,478
First Stage F Stat	136.493	136.493	136.493
Randomization FE	X	X	X
Controls	X	X	X

Robust to Different Instrument Specification–Opportunity in First 3 Months

back

	Reincarceration	New Crime	Revocation
Courses Taken	0.010	0.008	0.014**
	(0.007)	(0.006)	(0.007)
Observations	22,475	22,475	22,475
Outcome Mean	0.445	0.268	0.337
First Stage F Stat	126.60	126.60	126.60
Prison FE	X	X	X
Start Year FE	X	X	X
Controls	X	X	X