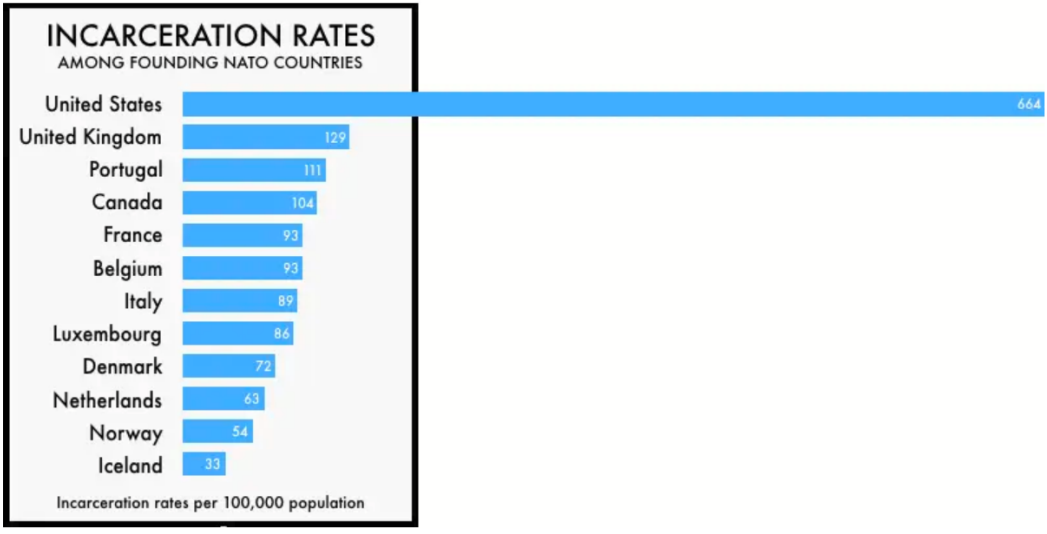
The Hidden Health Care Crisis Behind Bars: A Randomized Trial to Accredit US Jails

Marcella Alsan
Stanford & NBER

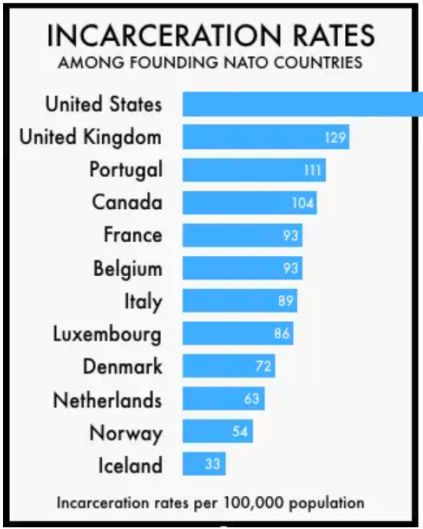
Crystal S. Yang
Harvard & NBER

July 2025

Motivation: Mass Incarceration

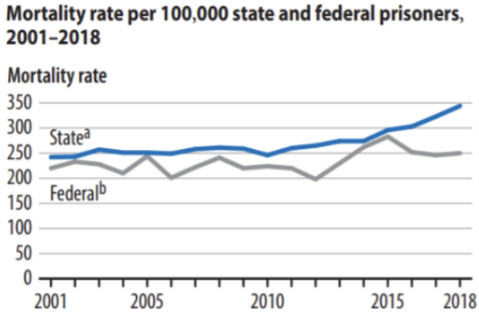


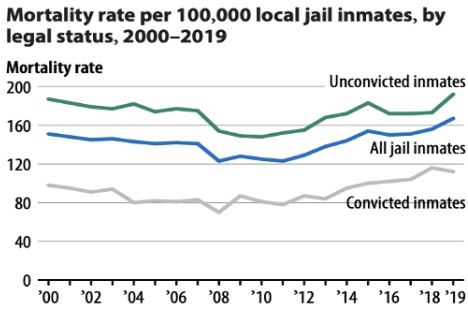
Motivation: Mass Incarceration



The U.S. has one of the highest incarceration rates in the world, with a greater than 500% increase over the last 40 years (The Sentencing Project, 2024)

Motivation: Increasing Mortality

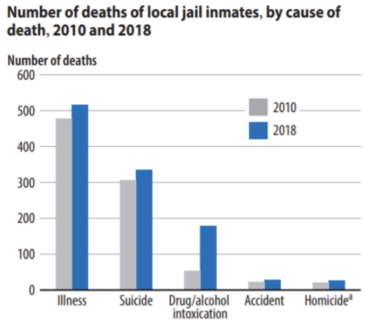


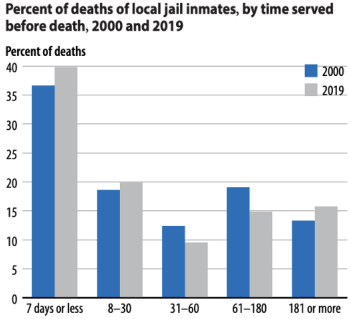


Notes: Mortality rates in jails and prisons have increased since the 2000s. Our study jails have a mortality rate of 450 per 100,000, **about 3x the national average**.

Source: Mortality in Local Jails, 2000-2018 - Statistical Tables

Motivation: Preventable, Acute Mortality





Notes: Illness and suicide are the most reported cause of deaths in jails, both increasing since 2010. Many deaths occur within the first 7 days of incarceration.

Source: Mortality in Local Jails, 2000-2018 - Statistical Tables

FOX 9



Egregious and disturbing': After son dies in county jail, a Minnesota mom takes her fight to court

Visit >

FOX 9



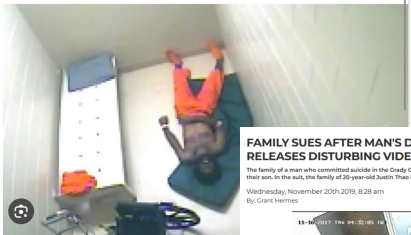
Egregious and disturbing': After son dies in county jail, a Minnesota mom takes her fight to court

Visit



PHOTO: Surveillance camera captured Texas woman's last few hours in jail
Kelly Coltrain, 27, of Austin, was found dead in her cell in Nevada's Mineral County Jail on July 22, 2017, after suffering a seizure related to drug use. This is after she had asked for medical help.
>>Swipe through to see photos of Coltrain before and during her incarceration...
Carol Fesser and Mineral County Sheriff's Office

FOX 9



Egregious and disturbing': After son dies
Minnesota mom takes her fight to court

FAMILY SUES AFTER MAN'S DEATH IN GRADY COUNTY JAIL, RELEASES DISTURBING VIDEO

The family of a man who committed suicide in the Grady County jail in 2017 is alleging jailers are to blame for not heeding the cries of their son. In the suit, the family of 20-year-old Justin Thao is accusing jailers of breaking the law and jail standar

Wednesday, November 20th 2019, 8:28 am
By: Grant Hermes









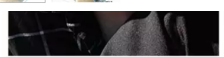


PHOTO: Surveillance camera captured Texas woman's last few hours in jail
Kelly Coltrain, 27, of Austin, was found dead in her cell in Nevada's Mineral County Jail on July 22, 2017, after suffering a seizure related to drug use. This is after she had asked for medical help.
>>Swipe through to see photos of Coltrain before and during her incarceration...
Carol Fesser and Mineral County Sheriff's Office

COMMENTARY

Dying in jail is bad; dying without being found guilty is worse | Jarvis DeBerry

14% of incarcerated people who died in Louisiana hadn't even been tried



JARVIS DEBERRY

JUNE 4, 2021 10:38 AM

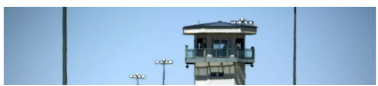
ctions

Los Angeles Times

SUBSCRIBE

CALIFORNIA

How many people die each year in jails and prisons? No one knows



SUBSCRIBERS ARE READING ›

CALIFORNIA

In one of L.A.'s largest cash heists ever, burglars steal as much as $30 million from vault

COMMENTARY

Dying in jail is bad; dying without being found guilty is worse | Jarvis DeBerry

14% of incarcerated people who died in Louisiana hadn't even been tried



JARVIS DEBERRY

JUNE 4, 2021 10:38 AM

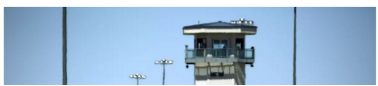
ctions

Los Angeles Times

SUBSCRIBE

CALIFORNIA

How many people die each year in jails and prisons? No one knows



SUBSCRIBERS ARE READING

CALIFORNIA

In one of L.A.'s largest cash heists ever, burglars steal as much as $30 million from vault

We conduct a RCT of accreditation of health care services across US jails trying to address the high number of preventable deaths.

Literature in Economics and Public Health

- **Incarceration and Health**
  - Public health studies find negative relationship (Binswanger et al. 2007; Daza, Palloni and Jones 2020).
  - More mixed findings in economics - one study finds mortality ↑ after release from prison due to incapacitation effects (Norris, Peneco and Weaver 2024).
  - Health of incarcerated also affects communities (Johnson and Raphael 2009).

Literature in Economics and Public Health

- **Incarceration and Health**
  - Public health studies find negative relationship (Binswanger et al. 2007; Daza, Palloni and Jones 2020).
  - More mixed findings in economics - one study finds mortality ↑ after release from prison due to incapacitation effects (Norris, Peneco and Weaver 2024).
  - Health of incarcerated also affects communities (Johnson and Raphael 2009).
- **Prison Conditions and Crime**
  - Studies find that prison ↑ access to psychologists, doctors and addiction specialists, which ↓ crime (Hjalmarsson and Lindquist 2022; Bhuller et. al. 2025).
  - Prison conditions can generate deterrent effects (Katz, Levitt and Shustorovich 2003).

Literature in Economics and Public Health

- **Incarceration and Health**
  - Public health studies find negative relationship (Binswanger et al. 2007; Daza, Palloni and Jones 2020).
  - More mixed findings in economics - one study finds mortality ↑ after release from prison due to incapacitation effects (Norris, Peneco and Weaver 2024).
  - Health of incarcerated also affects communities (Johnson and Raphael 2009).
- **Prison Conditions and Crime**
  - Studies find that prison ↑ access to psychologists, doctors and addiction specialists, which ↓ crime (Hjalmarsson and Lindquist 2022; Bhuller et. al. 2025).
  - Prison conditions can generate deterrent effects (Katz, Levitt and Shustorovich 2003).
- **Quality Assurance in Other Contexts**
  - Prior research has found positive effects under the contexts of restaurant hygiene, nursing home quality, and teacher accreditation (Jin and Leslie 2003; Goldhaber and Anthony 2007; Chen 2008; Einav, Finkelstein, and Mahoney 2024; Kane, Rockoff and Staiger 2008; Clotfelter, Ladd and Vigdor 2010).

Literature in Economics and Public Health

- **Incarceration and Health**
  - Public health studies find negative relationship (Binswanger et al. 2007; Daza, Palloni and Jones 2020).
  - More mixed findings in economics - one study finds mortality ↑ after release from prison due to incapacitation effects (Norris, Peneco and Weaver 2024).
  - Health of incarcerated also affects communities (Johnson and Raphael 2009).
- **Prison Conditions and Crime**
  - Studies find that prison ↑ access to psychologists, doctors and addiction specialists, which ↓ crime (Hjalmarsson and Lindquist 2022; Bhuller et. al. 2025).
  - Prison conditions can generate deterrent effects (Katz, Levitt and Shustorovich 2003).
- **Quality Assurance in Other Contexts**
  - Prior research has found positive effects under the contexts of restaurant hygiene, nursing home quality, and teacher accreditation (Jin and Leslie 2003; Goldhaber and Anthony 2007; Chen 2008; Einav, Finkelstein, and Mahoney 2024; Kane, Rockoff and Staiger 2008; Clotfelter, Ladd and Vigdor 2010).
- **Efficiency and Productivity**
  - Prior research finds managerial practices can improve productivity and solve "X-inefficiency," but mainly focuses on firms (Leibenstein 1966; Bloom et al. 2013, 2020; Bruhn, Karlan and Schoar 2018; Giorcelli 2019; Gosnell, List and Metcalfe 2020; Iacovone, Maloney and McKenzie 2022; Bianchi and Giorcelli 2022).

Preview

- Design:
  - Randomized 44 jails to undergo NCCHC health care accreditation.
  - 22 T facilities received large subsidy now, 22 C smaller subsidy later.

Preview

- Design:
  - Randomized 44 jails to undergo NCCHC health care accreditation.
  - 22 T facilities received large subsidy now, 22 C smaller subsidy later.
- Main Findings:
  - $\uparrow$ in standards/procedures re "personnel training" and "patient care & treatment."
  - $\downarrow$ mortality by about 70% (ITT, rel. to control mean) 71% (TOT, rel. to CCM).

  $\Rightarrow$ Mortality effects: (a) information frictions severe, (b) health outcomes worse than widely believed, and (c) preventable deaths.

Preview

- Design:
  - Randomized 44 jails to undergo NCCHC health care accreditation.
  - 22 T facilities received large subsidy now, 22 C smaller subsidy later.
- Main Findings:
  - $\uparrow$ in standards/procedures re "personnel training" and "patient care & treatment."
  - $\downarrow$ mortality by about 70% (ITT, rel. to control mean) 71% (TOT, rel. to CCM).

  $\Rightarrow$ Mortality effects: (a) information frictions severe, (b) health outcomes worse than widely believed, and (c) preventable deaths.
- Mechanisms:
  - (1) $\uparrow$ coordination between custody and health staff (2) $\uparrow$ information and monitoring by sheriff, and (3) $\uparrow$ early physical and mental health screening.

Preview

- Design:
  - Randomized 44 jails to undergo NCCHC health care accreditation.
  - 22 T facilities received large subsidy now, 22 C smaller subsidy later.
- Main Findings:
  - $\uparrow$ in standards/procedures re "personnel training" and "patient care & treatment."
  - $\downarrow$ mortality by about 70% (ITT, rel. to control mean) 71% (TOT, rel. to CCM).

  $\Rightarrow$ Mortality effects: (a) information frictions severe, (b) health outcomes worse than widely believed, and (c) preventable deaths.
- Mechanisms:
  - (1) $\uparrow$ coordination between custody and health staff (2) $\uparrow$ information and monitoring by sheriff, and (3) $\uparrow$ early physical and mental health screening.
- External Validity:
  - Treatment did not change (blinded and committee is independent).
  - Minimized selection concerns through recruitment process and study jails are representative on observables.

Outline

- Institutional Background (Population, Medical, Legal, Accreditation.)
- Aims
- Design
- Data
- Main Results (Quality Standards, Mortality)
- Mechanisms (Qualitative Findings, Staff Survey, Conceptual Framework)
- Additional Results (What Does (Not) Change, Recidivism, Litigation, CBA)
- Robustness

Institutional Background

Background

- **Demographics of Incarcerated Population**
  - Less educated, lower income, and disproportionately from minority groups. Illiteracy for adult inmates estimated at up to 50 to 75% (CEA 1991).

Background

- **Demographics of Incarcerated Population**
  - Less educated, lower income, and disproportionately from minority groups. Illiteracy for adult inmates estimated at up to 50 to 75% (CEA 1991).
- **Medical Context**
  - Jails have dual burden of disease – chronic and infectious disease, with substantially higher rates of Hep C, STD, SUD relative to general population.
  - Jails have become de facto community mental health providers for the country.
  - Increasingly contracting out healthcare services to for-profit vendors (Bedard and Frech 2008).

Background

- **Demographics of Incarcerated Population**
  - Less educated, lower income, and disproportionately from minority groups. Illiteracy for adult inmates estimated at up to 50 to 75% (CEA 1991).
- **Medical Context**
  - Jails have dual burden of disease – chronic and infectious disease, with substantially higher rates of Hep C, STD, SUD relative to general population.
  - Jails have become de facto community mental health providers for the country.
  - Increasingly contracting out healthcare services to for-profit vendors (Bedard and Frech 2008).
- **Legal Context**
  - Inmates are the only group with a constitutional right to adequate health care - failure to provide care can violate the Eighth Amendment.
  - But standard is difficult to meet: "deliberate indifference", "so grossly incompetent...*shock the conscience*." (*Estelle v. Gamble*, 1976).
  - Additional hurdles to litigation stem from the Prison Litigation Reform Act (PLRA).
  - Medicaid Inmate Exclusion Policy (MIEP) prohibits nearly all use of federal Medicaid funds for incarcerated.

Background

- **Demographics of Incarcerated Population**
  - Less educated, lower income, and disproportionately from minority groups. Illiteracy for adult inmates estimated at up to 50 to 75% (CEA 1991).
- **Medical Context**
  - Jails have dual burden of disease – chronic and infectious disease, with substantially higher rates of Hep C, STD, SUD relative to general population.
  - Jails have become de facto community mental health providers for the country.
  - Increasingly contracting out healthcare services to for-profit vendors (Bedard and Frech 2008).
- **Legal Context**
  - Inmates are the only group with a constitutional right to adequate health care - failure to provide care can violate the Eighth Amendment.
  - But standard is difficult to meet: "deliberate indifference", "so grossly incompetent...*shock the conscience*." (*Estelle v. Gamble*, 1976).
  - Additional hurdles to litigation stem from the Prison Litigation Reform Act (PLRA).
  - Medicaid Inmate Exclusion Policy (MIEP) prohibits nearly all use of federal Medicaid funds for incarcerated.

In this environment of MIEP (limited financing) and PLRA (limited litigation)
what, if any, is the role of accreditation?

Background: Accreditation

- Accreditation is a **process** where an external organization reviews the attributes of a product or service and compares them to a set of pre-defined standards.

Background: Accreditation

- Accreditation is a **process** where an external organization reviews the attributes of a product or service and compares them to a set of pre-defined standards.
- Goal is quality assurance of difficult-to-observe products or services.
  - Accreditation is viewed as one mechanism for correcting market failures due to information asymmetries, though effects ambiguous (e.g., shirking, colluding vs. assessing) (Dranove and Jin 2010).

Background: Accreditation

- Accreditation is a **process** where an external organization reviews the attributes of a product or service and compares them to a set of pre-defined standards.
- Goal is quality assurance of difficult-to-observe products or services.
  - Accreditation is viewed as one mechanism for correcting market failures due to information asymmetries, though effects ambiguous (e.g., shirking, colluding vs. assessing) (Dranove and Jin 2010).
- Through promoting proprietary industry standards and processes, accreditation also has a management and educational training component.

Background: Accreditation

- Accreditation is a **process** where an external organization reviews the attributes of a product or service and compares them to a set of pre-defined standards.
- Goal is quality assurance of difficult-to-observe products or services.
  - Accreditation is viewed as one mechanism for correcting market failures due to information asymmetries, though effects ambiguous (e.g., shirking, colluding vs. assessing) (Dranove and Jin 2010).
- Through promoting proprietary industry standards and processes, accreditation also has a management and educational training component.
- Accreditation is the norm for quality assurance in U.S. healthcare (Jha 2018).
  - Non-profit, The Joint Commission (TJC) accredits the vast majority (about 90%) of U.S. hospitals.
  - Although voluntary, there are financial benefits via reimbursement from federal authorities to obtain accreditation.
  - Due to the MIEP, there are no such incentives for correctional facilities.

The National Commission on Correctional Health Care (NCCHC)

AMA/ABA non-profit from *Estelle vs. Gamble*

- NCCHC Accreditation:
  - Multi-step accreditation process used to align a jail's health care with national, evidence-based standards.
  - Accredited correctional facilities serve about 400,000 inmates daily ($\sim$ 20% of US inmates) across U.S..
  - Not mandated nor incentivized. Reasons to Get Accredited

Quality Standards

Category	Examples
Governance Administration	health record content; staff FTE; continuous quality improvement; grievance process
Health Promotion, Safety and Disease Prevention	infectious disease prevention; suicide prevention; contraception
Personnel Training	staff credentials; custody staff training; health staff orientation
Ancillary Health and Care Services	medications; clinic space and supplies; emergency response plan
Patient Care and Treatment	health care screenings; oral care; discharge planning; health care requests
Special Needs and Services	mental health services; MAT; sexual abuse protocol; pregnancy care
Medical-Legal Issues	use of restraints; segregation; informed consent/refusal

The National Commission on Correctional Health Care (NCCHC)

- Reputation:
  - National Sheriffs' Association includes NCCHC accreditation as a key pillar of its "Triple Crown Award" given to extraordinary sheriffs.
  - Widely publicized by accredited jails.
  - NCCHC standards are regularly used in legal consent decrees.
  - Insurers state that they reduce premiums up to 10% for accredited facilities.
- Equipoise:
  - Critics express concern, however, that the process is a rubber stamp and that the standards are different than TJC.

Unique Information Frictions in Correctional Health Care

- Sheriffs run jails and oversee vendors – yet have limited information on overseeing health care provision.
- Surveys conducted by the ABA and AMA in 1970s revealed lack of understanding between custody and medical staff, and standards attempt to improve coordination and help jail administrators fulfill their constitutional mandate post-*Estelle*.
- Agents must work together to produce combined output (inmate health) (Alchian and Demsetz 1972; Holmstrom 1982).

Conceptual Framework and Hypotheses

Predictions from a Model of Accreditation

We formalize these frictions in correctional health care using a simple model to generate testable predictions.

- **Setup:**
  - *Principal* (the sheriff) seeks to minimize excess (greater than expected) inmate mortality.
  - *Two agents* (custody and medical staff) who must work together to reduce the "aggregate output" of inmate deaths.
    - Agents simultaneously choose one of two effort levels (high vs. low) and are one of two types (t^1 and t^2), with type t^1 agent using a state-dependent strategy and t^2 agent choosing low effort.

Predictions from a Model of Accreditation

We formalize these frictions in correctional health care using a simple model to generate testable predictions.

- **Setup:**
  - *Principal* (the sheriff) seeks to minimize excess (greater than expected) inmate mortality.
  - *Two agents* (custody and medical staff) who must work together to reduce the "aggregate output" of inmate deaths.
    - Agents simultaneously choose one of two effort levels (high vs. low) and are one of two types (t^1 and t^2), with type t^1 agent using a state-dependent strategy and t^2 agent choosing low effort.

- **Information Frictions:**
  1. Agent's Hidden Type (adverse selection)
  2. Hidden Action/Effort Level (moral hazard)

Predictions from a Model of Accreditation

We formalize these frictions in correctional health care using a simple model to generate testable predictions.

- **Setup:**
  - *Principal* (the sheriff) seeks to minimize excess (greater than expected) inmate mortality.
  - *Two agents* (custody and medical staff) who must work together to reduce the "aggregate output" of inmate deaths.
    - Agents simultaneously choose one of two effort levels (high vs. low) and are one of two types (t^1 and t^2), with type t^1 agent using a state-dependent strategy and t^2 agent choosing low effort.

- **Information Frictions:**
  1. Agent's Hidden Type (adverse selection)
  2. Hidden Action/Effort Level (moral hazard)

In absence of accreditation, unique Bayesian Nash Equilibrium where both agents of both types choose low effort (i.e., shirk) and death rates are excessively high.

Predictions from a Model of Accreditation

Given this setup, accreditation can lead to the following scenarios:

Accreditation Scenario	**Quality Standards**	**Health Outcomes**
Rubber Stamp	Null/Negative	Null/Negative
Distraction	Positive	Null/Negative
Information/Coordination	Positive	Positive

Aims and Contribution

Aims and Contribution

Aims: Test whether accreditation of health care services in U.S. jails causally affects compliance with quality standards and health outcomes.

Aims and Contribution

Aims: Test whether accreditation of health care services in U.S. jails causally affects compliance with quality standards and health outcomes.

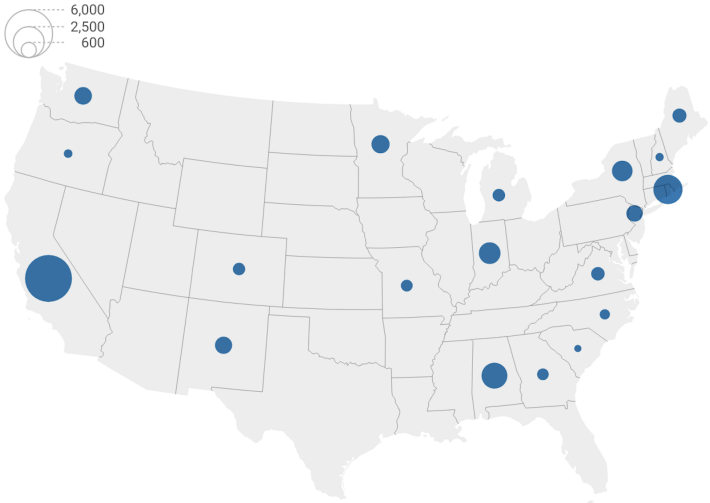
Contribution: To our knowledge, the first RCT across U.S. jails, and first RCT on the effects of accreditation of health systems in the U.S.

Experimental Design

Experiment Overview

- N = 44 participating jails from across the U.S. Consort
  - 22 facilities randomized to treatment group start the accreditation process immediately.
  - 22 facilities randomized to control group start the accreditation process after the study is complete.
  - Incentivized to participate via highly subsidized accreditation fee and survey incentives. Incentives
  - Stratified design based on timing of randomization and jail ADP.
- Sample is broadly representative of medium sized jails in the U.S. based on U.S. Census of Jails Representative Table
- Sample includes geographic coverage from the Southeast and Midwest in addition to the Coast. Map

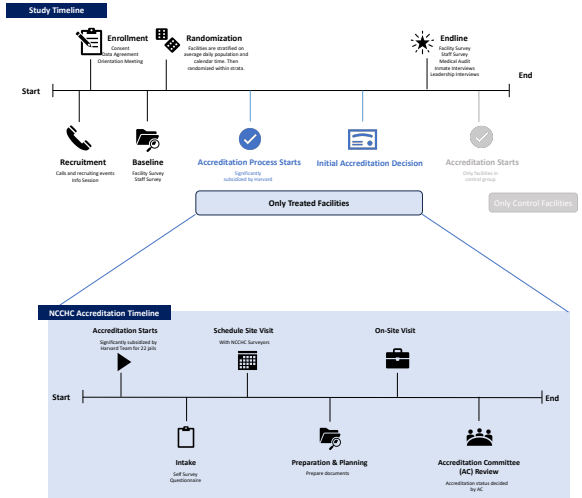
Map of Study Sample



Experiment Overview

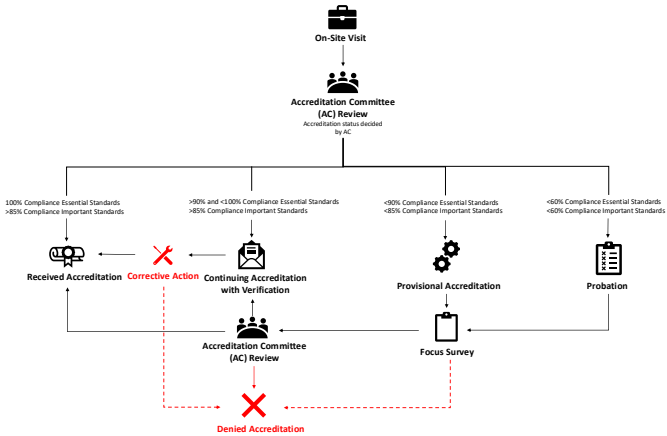
Timeline

Recruitment 2021, Enrollment 2022-2023, Study Period 2023-2024



*Endline survey was conducted approximately 16 months after baseline survey.
**NCCHC site visit usually happened approximately 10 months after the accreditation randomization date.

Accreditation Process



- Accreditation decision is based on compliance with NCCHC standards
  Definition of Standards
  - Essential Standards
  - Important Standards
- Once accredited, each year facilities need to submit a written report (Annual Maintenance Report) with updates on relevant information.
- Additional on-site visits will occur about every three years.
- In our study, 9 failed accreditation, 13 passed.

Data

Data Overview

- **Four primary survey instruments**: Study Instruments

  1. Facility Surveys - Collected at baseline and endline. Includes HSA report as well as protocol/procedures submission. Details
  2. Staff Surveys – Collected at baseline and endline. Details
  3. Medical Audit - Collected at endline with look-back for baseline. Cause of Death Seasonality of Death Details
  4. Leadership and Incarcerated Individuals Interviews - Collected at endline only.

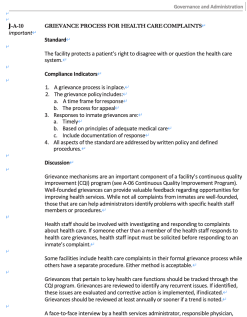
- **Expert survey**:

  5. Expert Surveys - Collected to obtain (a) weights on the importance of each quality standard and (b) baseline features predicted to impact the effect of accreditation.

- Non-response penalized in coding of all main outcomes.

Facility Surveys

Variable Name	Reason for Potential Skip	Format	Question	Coder to Determine Instructions	Valid Entries
upl_griev_pol		*Text*	*Please upload the protocol for addressing health-related grievances*	***Filled by facility***	
A10_GRV01_F	Skip if answer to upl_griev_pol is not "Document Uploaded" or "In policy and procedures manual"	Yes (1) - No (0)	Does the documentation uploaded by the facility include a protocol for addressing health-related grievances?	Coder to look at uploaded documentation/facility answer (Based on document upload - upl_griev_pol)	0 and 1
A10_GRV02_F	Skip if A10_GRV01_F was skipped, or the answer is No (0)	Integer	Based on the grievance policy, once someone files a grievance, how many days until there is a formal response?	Determine Answer by Checking Grievance Policy. A simple verbal acknowledgement of the grievance does not count as a formal response (Based on document upload - upl_griev_pol)	Integers
A10_GRV03_F	Skip if A10_GRV01_F was skipped, or the answer is No (0)	Yes (1) - No (0)	Does the grievance policy indicate that there is a process for appealing?	Determine Answer by Checking Grievance Policy (Based on document upload - upl_griev_pol)	0 and 1
A10_GRV04_F	Skip if A10_GRV01_F was skipped, or the answer is No (0)	Yes (1) - No (0)	Does the grievance policy indicate that there are formal records of health-related grievances?	Coder to look at uploaded documentation/facility answer (Based on document upload - upl_griev_pol)	0 and 1



Governance and Administration

J-A-10 important

GRIEVANCE PROCESS FOR HEALTH CARE COMPLAINTS

Standard

The facility protects a patient's right to disagree with or question the health care system.

Compliance Indicators

1. A grievance process is in place.
2. The grievance policy includes:
   a. A time frame for response
   b. The process for appeal
3. Responses to inmate grievances are:
   a. Timely
   b. Based on principles of adequate medical care
   c. Include documentation of response
4. All aspects of the standard are addressed by written policy and defined procedures.

Discussion

Grievance mechanisms are an important component of a facility's continuous quality improvement (CQI) program (see A-06 Continuous Quality Improvement Program). Well-founded grievances can provide valuable feedback regarding opportunities for improving health services. While not all complaints from inmates are well-founded, those that are can help administrators identify problems with specific health staff members or procedures.

Health staff should be involved with investigating and responding to complaints about health care. If someone other than a member of the health staff responds to health care grievances, health staff input must be solicited before responding to an inmate's complaint.

Some facilities include health care complaints in their formal grievance process while others have a separate procedure. Either method is acceptable.

Grievances that pertain to key health care functions should be tracked through the CQI program. Grievances are reviewed to identify any recurrent issues. If identified, these issues are evaluated and corrective action is implemented, if indicated. Grievances should be reviewed at least annually or sooner if a trend is noted.

A face-to-face interview by a health services administrator, responsible physician, or nursing supervisor is often an effective way to informally resolve problems and demonstrate concern.

- Conducted via secure Qualtrics link.
- Include self-reported questions and documents to upload Document List
- Design a codebook and ask coders to code outcomes by reading uploaded documents
- Coding of outcomes done by two independent Harvard students after extensive training for ethics and privacy as well as mock jail coding.
- All students blinded to the treatment condition
- If the two independent student coders disagreed, a third blinded student would code to break the tie.

Data Overview

Facility Survey: Document List

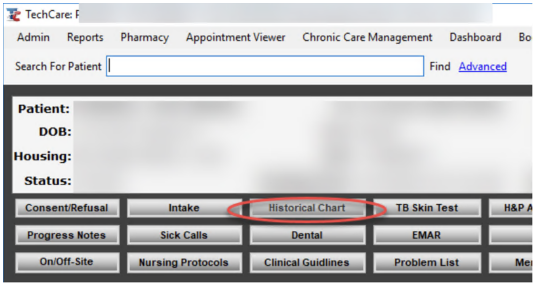
- policy and procedure manual for health services
- inmate booking records from 2021 to present
- record of inspection
- policies and protocols for management of COVID-19
- clinical protocols for asthma
- clinical protocols for diabetes
- clinical protocols for HIV
- clinical protocols for hyperlipidemia
- clinical protocols for hypertension
- clinical protocols for mood disorders
- clinical protocols for psychotic disorders
- protocol for Medication Assisted Treatment (MAT) for substance use disorders
- protocol for prenatal care
- protocol for sexual abuse intervention
- protocol for addressing health-related grievances
- nursing assessment protocol
- copy of organizational structure (including organizational structure for mental health services)
- Responsible Health Authority (RHA) contract/job description
- RHA and physician attendance records/timesheets for last week
- documentation outlining an orientation program for health staff
- certifications documenting that new hires (health staff) in the last 90 days completed health orientation
- documentations of CPR certification of healthcare personnel
- lesson plan or schedule for custody staff health training
- evidence that all health staff have at least 12 hours of CME per year
- latest Continuous Quality Improvement (CQI) report
- CQI meeting minutes (with dates and attendance) for the last 12 months
- blank receiving screening/intake form
- blank health assessment form
- blank mental health screening form
- blank health record form
- blank consent form for receipt of medical treatment
- blank form to document refusal to receive medical treatment
- blank page of death log
- blank sick call form
- blank logs of segregation rounds by health staff
- administrative meeting minutes/attendance records in the last 12 months
- health staff meeting minutes/attendance records in the last 12 months
- documentation of annual reviews by designated health staff (i.e. RHA, responsible physician)
- formulary
- latest health statistical report
- information provided to inmates on how to access health services
- photo of sharps removal if it exists
- photo documenting that healthcare/clinical encounters and exchanges of health information occur between the provider and the inmate patient in a private space

Facility Survey

Medical Audit



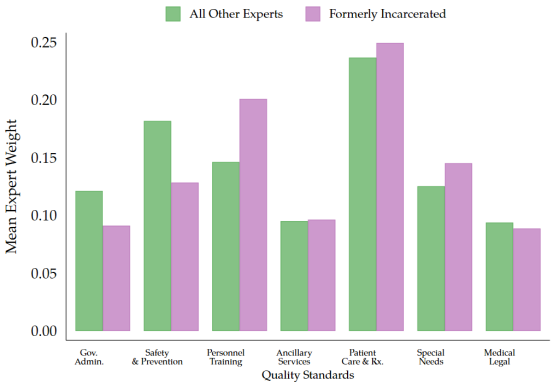
[HARVARD SURVIVOR]: The following section refers to the health record of random inmate #1 prior to 5/2021		WHERE TO LOOK	ANSWER
	TI.C.O RECEIVING SCREENING		
1	Was a receiving screening performed (if no, proceed to next section)	Intake screening form	
2	How many days after admission was the receiving screening?	See intake screening, booking date (beginning of doc) and signature date/time (end of doc), if not available ask Dr.	
3	Source of #2	Intake form or Dr.	
	Who performed the receiving screening?		
4	Custody Staff	See intake screening or ask Dr.	
5	Health Staff	See intake screening or ask Dr.	
6	Other (fill in):	See intake screening or ask Dr.	
	Check all components of the receiving screening that are completed:		
7	Current and past illnesses, health conditions, or special health requirements (e.g., hearing impairment, visual impairment, wheelchair, walker, sleep apnea machine)	See intake screening	
8	Past infectious disease	See intake screening	
9	Past or current mental illness, including hospitalization	See intake screening	
10	History of or current suicidal ideation	See intake screening	
11	Dental problems (e.g., decay, gum disease, abscess)	See intake screening	
12	Allergies	See intake screening	
13	Dietary needs	See intake screening	
14	Appearance	See intake screening	
15	Behavior	See intake screening	
16	State of consciousness	See intake screening	
17	Ease of movement	See intake screening	
18	Breathing	See intake screening	
19	Current or prior withdrawal symptoms	See intake screening	
20	Oral health assessment	See intake screening	
21	Possible, current, or recent pregnancy	See intake screening	
22	Is emergency contraception offered	See intake screening	



- Prepared by assessing type of medical record (if not EHR, we sent document camera).
- Conducted via Zoom through verified secure wifi (if not sent hotspot).
- Trained and hired medical staff and medical scribe for each audit, with all personnel blinded to treatment condition.
- Coding done in same way as facility surveys.

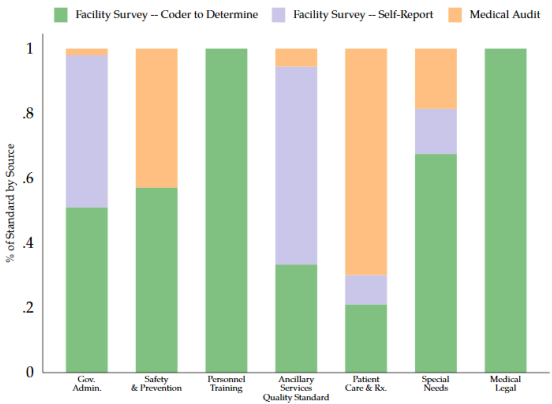
Data Overview

Expert Survey



- Expert Survey
  - 145 experts from different domains (policy/academia, jail leadership and health administrators not in study, and the formerly incarcerated).
    Demographics
  - Incentive compatible survey. Importance of different outcomes used to create reciprocal rank weights for aggregation.
  - Predicted effects and mediators to study heterogeneity.
    Heterogeneity Predictions

Objectivity of Measurement



- Study team selected objective variables from:
  - Facility Survey – Coder to Determine
  - Facility Survey – Self-Report
  - Medical Audits
- Harvard compliance score is distinct from NCCHC compliance score (58% versus 74%) although correlation is 0.71.
  Scatter Plot
- Collect independent media reports of deaths to validate death logs.
  - Correlation of 0.83 with average difference of 0.05 deaths per month.

Outcomes and Data Construction

Minimize Type 1 Error by Constructing Indices Based on Compliance with Standards

- **Main Outcome 1: Quality Standards** Quality Standards Examples
  1. Governance and Administration
  2. Health Promotion, Safety, and Disease Prevention
  3. Personnel and Training
  4. Ancillary Health Care Services
  5. Patient Care and Treatment
  6. Special Needs and Services
  7. Medical Legal Issues

Outcomes and Data Construction

Minimize Type 1 Error by Constructing Indices Based on Compliance with Standards

- **Main Outcome 1: Quality Standards** Quality Standards Examples
  1. Governance and Administration
  2. Health Promotion, Safety, and Disease Prevention
  3. Personnel and Training
  4. Ancillary Health Care Services
  5. Patient Care and Treatment
  6. Special Needs and Services
  7. Medical Legal Issues

- Per pre-analysis plan, create a meta-index of quality standards using three approaches:
  1. Simple weights across categories
  2. Principal component analysis using first component PCA Components
  3. Weighted average using expert weights

Additional Outcomes

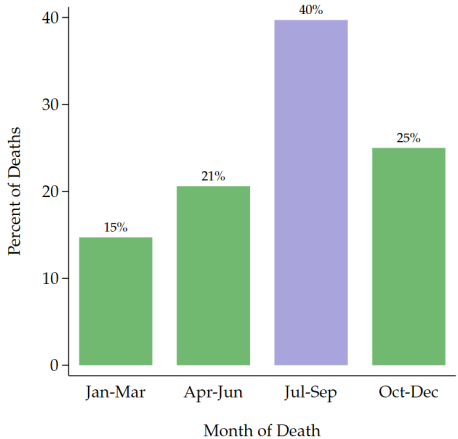
- **Main Outcome 2: Mortality**
  - Collected from medical audit death logs.
  - Verified and supplemented mortality data with news reports and can replicate results using only deaths in the news reports.

- **Main Outcome 3: Staff Sentiment**
  - Collected from staff surveys to measure **horizontal coordination** (communication between custody and medical) and **vertical coordination** (communication with supervisor) and other job attributes.

- **Secondary Outcomes**
  - Litigation
  - Recidivism
  - Qualitative components: inmate quotes and leader quotes

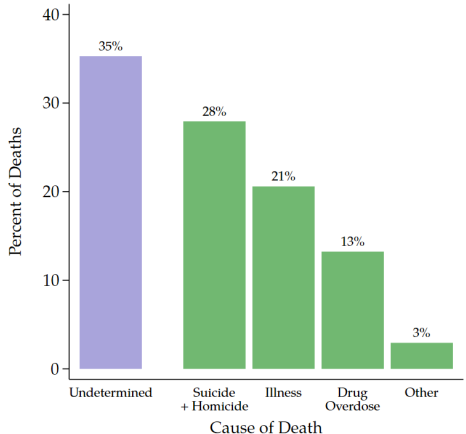
Descriptive Statistics & Balance

Seasonality of Deaths in Jails: Medical Audit



Data Overview

Cause of Death in Jails: Medical Audit



Data Overview

Balance

	(1)	(2)	(3)
	Overall Mean	Difference	SE
Governance and Administration	0.502	-0.022	(0.041)
Health Promotion, Safety and Disease Prevention	0.493	0.069	(0.055)
Personnel and Training	0.504	0.000	(0.075)
Ancillary (Supportive) Health Care Services	0.502	0.006	(0.046)
Patient Care and Treatment	0.454	-0.009	(0.036)
Special Needs and Services	0.514	0.057	(0.062)
Medical-Legal Issues	0.544	0.017	(0.101)
Simple Mean Meta-Index	0.495	0.002	(0.040)
Principal Component Analysis Meta-Index	0.571	0.003	(0.067)
Expert Weights Meta-Index	0.495	0.016	(0.046)
Baseline Monthly Mortality in Death Logs	0.225	-0.401	(0.246)
Baseline Monthly Mortality in Media Reports	0.064	-0.035	(0.053)
ADP	384.326	-173.462	(122.271)
Avg. Stay Length (Months)	1.122	-0.001	(0.278)
Medical FTE	5.795	-1.180	(1.306)
Medical FTE Variety	5.818	-0.486	(0.962)
For-Profit Health Vendor	0.682	0.009	(0.144)
Previously Accredited	0.114	0.064	(0.095)
Share County Voting Republican	0.445	-0.021	(0.039)
Sheriff is Republican	0.318	0.018	(0.127)
F-Stat		1.750	
Observations		44	
Strata FE		✓	

Notes: Column 1 shows the overall mean for all the facilities. Column 2 shows the difference between control and treatment facilities, coming from regressing treatment indicator on individual covariates and controlling for strata fixed effect. Column 3 shows the standard errors of the coefficient. "Baseline Monthly Mortality in Death Logs" is excluded from the joint *F*-test to ensure a complete sample as death logs are not available for all the facilities.

Alt Samp

Empirical Framework

Estimating Equations

Reduced Form: ITT

$$Y_i = \alpha_0 + \alpha_1 Treat_i + X_i\Gamma + \mu_i + \epsilon_i$$

- Y_i: outcome at endline
- X_i: outcome at baseline
- μ_i: Strata FE (based on timing of randomization and ADP).
- For staff surveys, each respondent is an observation, cluster at facility level.

2SLS: TOT

$$Y_i = \alpha_0 + \alpha_1 \widehat{Accreditation}_i + X_i\Gamma + \mu_i + \epsilon_i$$
$$Accreditation_i = \beta_0 + \beta_1 Treat_i + X_i\Gamma + \mu_i + \epsilon_i$$

– $Accreditation_i$: Process measure based on *fraction of process completed* as 9 non-compliers failed for various reasons but showed modest improvement.

Internal and External Validity

Treatment is Different? – Concern that NCCHC Process is Different.

- ✓ Reviewing Committee blind to Harvard facilities.
- ✓ Reviewing Committee not NCCHC employees, reputable clinicians.

Selection on Which Facility Enrolled? – External Validity Concern (Allcott (2015)).

- ✓ Appear similar on representativeness. Selection on Enrollment
- ✓ Little heterogeneity. Heterogeneity
- ✓ Clearly not the best or the worst (already accredited or mandated by consent decree).

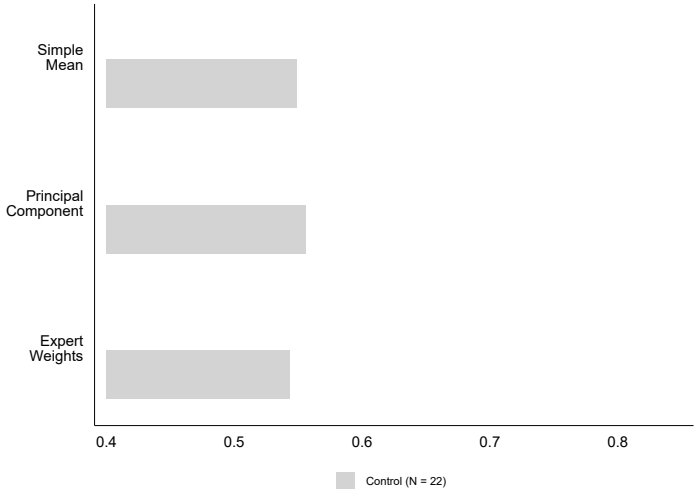
Selection on Inmates? – Better at Selecting instead of Saving Lives?

- ✓ Similar composition of inmates. Balance on Booked Inmates
- ✓ No strategic referral out. Inputs
- ✓ No displacement of deaths. Balance on Released Inmates Displacement RF Displacement 2SLS

Results

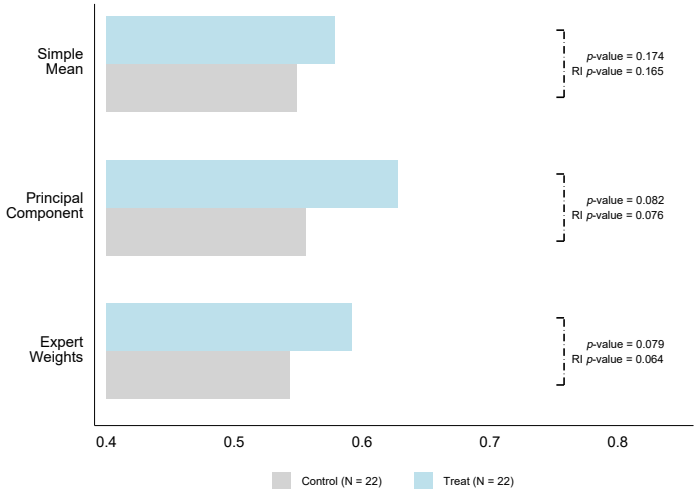
Quality Standards

Meta Quality Standards



Alt Samp

Meta Quality Standards



Alt Samp | By Type

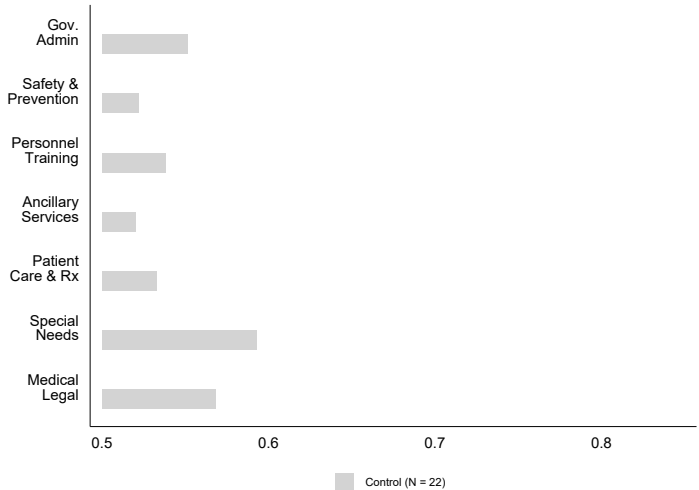
2SLS Estimates: Meta Quality Standards

	Simple Mean	Principal Component	Expert Weights
	(1)	(2)	(3)
$\widehat{Accreditation}$	0.043	0.103**	0.070**
	(0.028)	(0.050)	(0.034)
F-stat	214.88	203.46	184.09
CCM	0.599	0.632	0.572
Observations	44	44	44
Baseline Control	✓	✓	✓
Strata FE	✓	✓	✓

Notes: All specifications include the baseline quality standard and randomization strata fixed effects. The outcome variable is the endline meta index. Control compiler mean is computed as described in the main text. Robust standard errors are reported in parentheses.

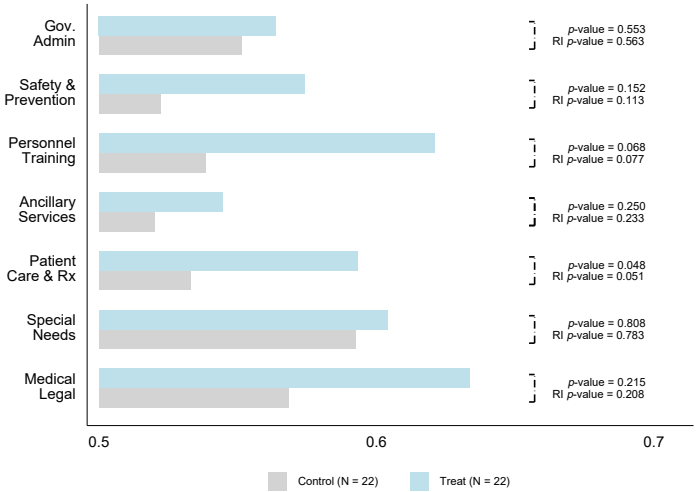
First Stage | Expert Type | Alt Samp

Quality Standards



Alt Sample

Quality Standards



Alt Samp

2SLS Estimates: Quality Standards

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Gov. Admin.	Safety & Prevention	Personnel Training	Ancillary Services	Patient Care & Rx	Special Needs	Medical Legal
$\widehat{Accreditation}$	0.017	0.078*	0.119**	0.035	0.086**	0.017	0.094
	(0.026)	(0.046)	(0.057)	(0.027)	(0.038)	(0.063)	(0.065)
F-stat	241.54	144.96	172.79	168.64	226.48	167.51	173.62
CCM	0.612	0.587	0.528	0.545	0.568	0.676	0.646
Observations	44	44	44	44	44	44	44
Baseline Control	✓	✓	✓	✓	✓	✓	✓
Strata FE	✓	✓	✓	✓	✓	✓	✓

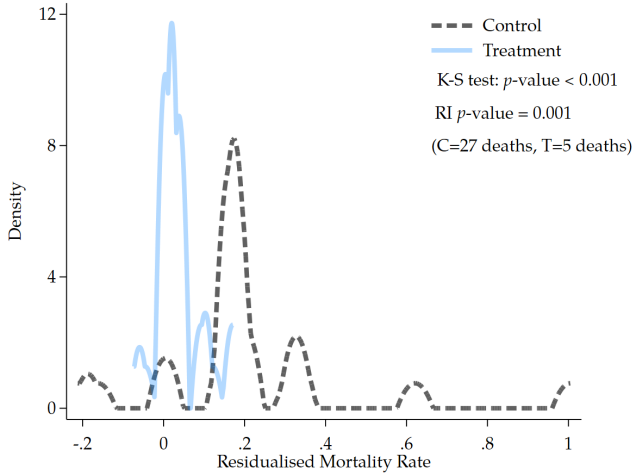
Notes: 2SLS estimates the treatment effect of accreditation on indices outcomes of quality standards. All specifications include baseline indices and strata f.e. Each variable in the index received equal weights. Robust standard errors in parentheses. * ** *** represent significance at the 10, 5 and 1% level respectively.

First Stage | Alt Samp | Subsections | Robustness

Mortality

Skip to Conclusion

Distribution of Mortality, Treatment versus Control



Alt Samp

Mortality

	(1)	(2)	(3)
Treat	-0.171**	-0.136***	-0.141***
	(0.070)	(0.048)	(0.053)
Control Mean	0.205	0.205	0.205
Observations	44	44	44
Strata FE	✓	✓	✓
Control for ADP		✓	
Baseline Control			✓

Notes. Reduced form estimates of the treatment effect of accreditation assignment on mortality. Baseline mortality refers to the average number of deaths per month occurring during the six months preceding treatment assignment. The outcome variable is the average number of deaths per month occurring in the six-month window after treatment assignment and expected on-site audit. Robust standard errors in parentheses.

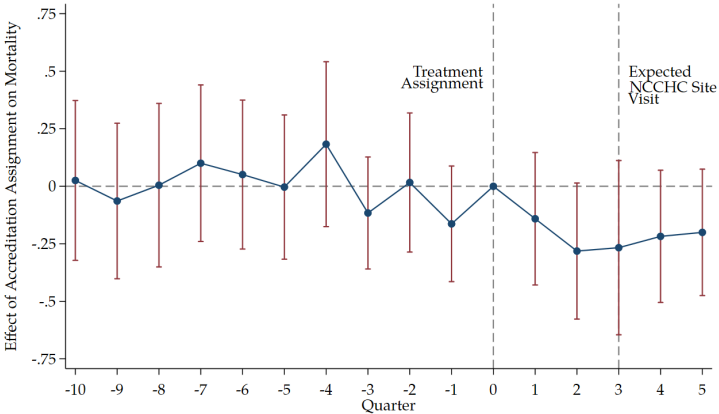
2SLS Estimates: Mortality

	(1)	(2)	(3)
$\widehat{Accreditation}$	-0.246***	-0.191***	-0.204***
	(0.091)	(0.060)	(0.069)
F-stat	167.02	177.09	154.65
Control Complier Mean	0.333	0.262	0.288
Observations	44	44	44
Strata FE	✓	✓	✓
Control for ADP		✓	
Baseline Control			✓

Notes: The outcome variable is the average number of deaths per month occurring in the six-month window starting ten months after treatment assignment (the expected time to NCCHC's on-site visit). Robust standard errors in parentheses.

First Stage

Event Study: Mortality



Notes: We report coefficients from the following estimating equation: $Y_{jt} = \alpha_0 + \sum_{\tau=-10}^{5} \sigma_\tau \cdot D_{\tau,jt} + \gamma_j + \mu_{s(j)} + \delta_{q(t)} + \omega_{y(t)} + \epsilon_{jt}$. Standard errors are clustered at the facility level. We include facility level (γ_j) and randomization strata (μ_s) fixed effects. We also include calendar year (ω_q) and season fixed effects (δ_q). Outcome variable is the total number of deaths in quarter t.

Alternative Functional Forms | Media Reports | Alt Samp

2SLS Estimates: Probability of Death

	Probability that Number of Deaths Equals		
	[0-1]	[2-4]	[$\geq$ 5)
	(1)	(2)	(3)
$\widehat{Accreditation}$	0.399***	-0.270***	-0.082
	(0.108)	(0.096)	(0.069)
Control Complier Mean	0.524	0.302	0.175
F-stat	162.55	156.30	153.08
Observations	44	44	44
Strata FE	✓	✓	✓
Baseline Control	✓	✓	✓

Notes. 2SLS estimates of the effect of accreditation on the probability that the total number of deaths that occur in a six-month period following randomization and expected on-site visit.

2SLS Estimates: Cause of Mortality

	Illness	Suicide & Homicide	Undetermined	Drug Overdose
	(1)	(2)	(3)	(4)
Accreditation	-0.094**	-0.033**	-0.108	-0.040*
	(0.047)	(0.017)	(0.073)	(0.023)
F-stat	165.05	165.05	165.05	165.05
Control Complier Mean	0.114	0.040	0.146	0.061
Observations	44	44	44	44
Strata FE	✓	✓	✓	✓

Notes. 2SLS estimates of the treatment effect of accreditation on mortality, disaggregated by cause. Robust standard errors in parentheses.

Media Reports

2SLS Estimates: Timing of Mortality Using Media Reports

	Deaths by Days Since Admission to Jail		
	[0-7]	(7-30]	(30, 60]
	(1)	(2)	(3)
$\widehat{Accreditation}$	-0.339**	-0.076	-0.082
	(0.146)	(0.070)	(0.104)
F-stat	166.00	152.94	156.52
Control Complier Mean	0.415	0.092	0.095
Observations	44	44	44
Strata FE	✓	✓	✓
Baseline Control	✓	✓	✓

Notes. 2SLS estimates of the effect of accreditation on mortality, by number of days since admission to jail using only the deaths reported in the media.

What Does (Not) Change

Skip to Conclusion

FTE, Vendor, Referral Patterns, Equipment

	Medical FTE (1)	Vendor Change (2)	Refer Out (3)	Equipment (4)	Services (5)
$\widehat{Accreditation}$	-1.090	-0.053	-0.035	0.013	0.105**
	(0.771)	(0.168)	(0.038)	(0.027)	(0.042)
F-stat	185.08	167.02	980.17	184.31	165.97
CCM	8.111	0.302	0.816	0.915	0.262
Observations	44	44	253	44	44
Baseline Control	✓		✓	✓	✓
Strata FE	✓	✓	✓	✓	✓

Notes: Services include pharmacy, records, radiology, physical therapy unit, emergency, labs, hospice and medical orthoses or prostheses or other aids to impairment. Each component of equipment and services has the same weight and we calculate a weighted share.

Validity

Recidivism and Litigation

Skip to Conclusion Skip to Mechanism

2SLS Estimates: Recidivism and Litigation

	Recidivism			Litigation		
	Has Jail Records	3-Month Recid	6-Month Recid	# Lawsuits		
	(1)	(2)	(3)	(4)	(5)	(6)
$\widehat{Accreditation}$	-0.013	-0.111	-0.172**	-0.184	-0.190	-0.185
	(0.180)	(0.072)	(0.073)	(0.125)	(0.115)	(0.124)
	Panel B. First Stage					
Treat	0.696***	0.763***	0.750***	0.696***	0.710***	0.698***
	(0.054)	(0.051)	(0.049)	(0.054)	(0.053)	(0.054)
F-stat	167.02	226.95	232.63	167.02	177.09	164.59
Control Complier Mean	0.778	0.238	0.397	0.302	0.286	0.299
Observations	44	9748	9748	44	44	44
Strata FE	✓	✓	✓	✓	✓	✓
Control for ADP					✓	
Baseline Control						✓

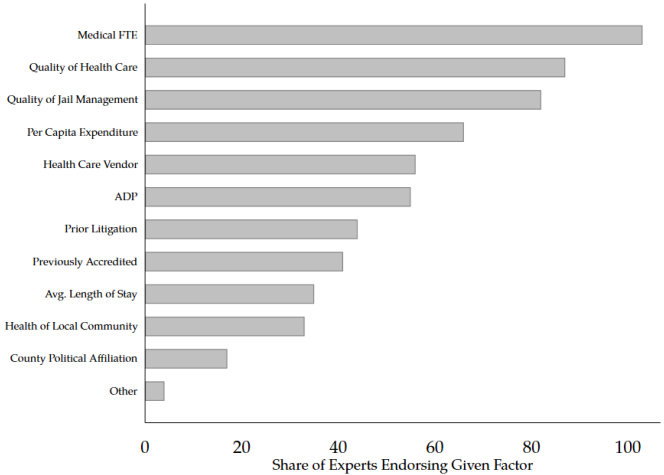
Notes: Columns 2 and 3's outcomes are 3-month and 6-month recidivism, with the outcome variable being a binary indicator for whether an inmate released within 45 days of the endline survey is re-booked within 3 months and 6 months of release, respectively. Column 4-6's outcome is the number of healthcare related lawsuits occurring in the six-month window following the endline survey.

Expert Predictions*

*Almost all predicted the accreditation would have a salubrious effect and there were not marked differences across expertise from different domains.

Skip to Conclusion Skip to Mechanism

Expert Prediction Heterogeneity



Notes: Respondents are asked "Which of the following factors do you think will impact whether NCCHC accreditation of jail health care services will affect the outcomes of interest? Recall, our outcomes of interest include health care procedures, health outcomes, staff outcomes, and litigation against jails."

Expert Prediction Heterogeneity

Figure 2: Quality Meta Index

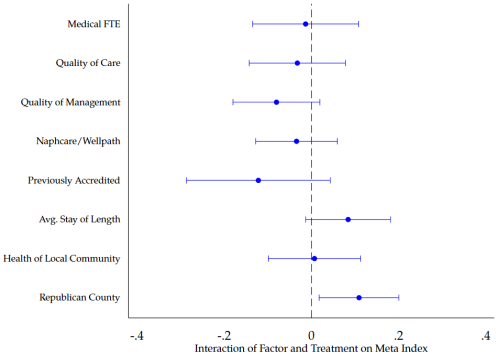
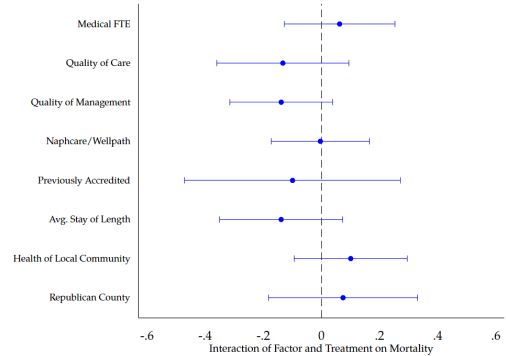


Figure 3: Mortality



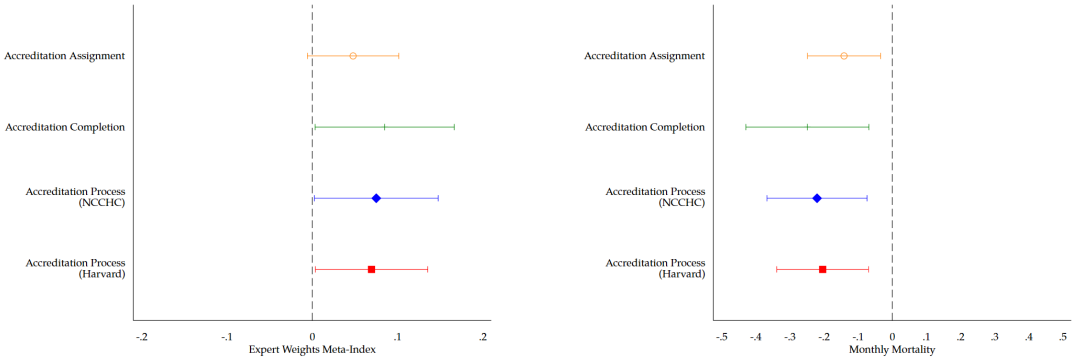
Notes: Figures show the coefficients from the interaction between accreditation assignment and each factor for the meta-index expert weights (left) and mortality (right).

Validity

Robustness

Skip to Conclusion

Comparison of Accreditation Completion vs. Process



Notes: The figure shows the effects of accreditation assignment, completion and process on expert weights meta-index (left) and monthly mortality (right).

First Stage Validity Analytical Sample

Cost Benefit Analysis

	Lower Bound	Upper Bound
	(1)	(2)
Panel A: Social Benefits of Accreditation		
Mortality	$5,879,808	$38,788,992
Litigation	-$60,863	$345,123
Recidivism	$1,398,792	$22,157,890
Panel B: Social Costs of Accreditation		
Accreditation Fee	$8,199	
Personnel Cost (Medical)	$1,382,335	
Personnel Cost (Custody)	$3,283,506	

Notes: Benefit from reducing mortality is calculated as 0.141 fewer deaths per month $\times$ 12 $\times$ **$**13.2 million (VSL). Benefit from reducing litigation is calculated as 0.129 fewer lawsuits per six months $\times$ 2 $\times$ **$**1,101,786.1, which is the average weighted litigation cost. Benefit from reducing recidivism is calculated as 0.129 less recidivism $\times$ 4413 admissions per year $\times$ **$**20,690, which is the average weighted cost of future crime. The table reports the 95% confidence interval for each benefit. Costs of accreditation include the accreditation fee and personnel costs of custody and medical staff, which are constants. The 95% CI of the net benefits (benefit-cost) is **$**2,543,077 to **$**56,617,345.

Potential Mechanisms: Interviews and Staff Surveys

Skip to Conclusion

Exit Interview Suggests ↑ Screenings

- "It was that intake for the initial and it going immediately going to medical" (Custody)
- "Receiving screening is one of the bigger ones. Way more contact with patients when they come in now. Also coordination with custody staff is more comprehensive now. The continuous quality improvement is now a lot more detailed and stringent, also more comprehensive across all aspects of healthcare (all positives, makes them more proud of the job they're doing)." (Medical)
- "Chronic disease management, screening everyone on admission, accreditation gave teeth to move these forward on the admin end." (Medical)
- "Mental health. Staying on top of mental health assessments was important. With the new protocols, the facility can ensure psychiatrists are staying on top of what they need to be doing." (Medical)
- "The biggest change was the mental health was minimal at best and they would not receive mental health medication at all but now they are providing more mental healthcare." (Medical)

Exit Interview - Relationship Between Custody and Medical



Exit Interview Suggests ↑ Coordination

- "When you look at officers they have better understanding why they are making sure sick call slips are being given timely and being seen timely after submission rather than just giving aspirin." (Custody)
- "What changed was their perception of what we do and how much of a role we play in the organization. Showing the deputies all of the different regulations and rules we need to follow that they need to help us with. Understand why we are asking for certain things. Really good education for us and custody. Makes it easier to do our work." (Medical)
- "If you have a health issue, you first have to tell the officer and they work together with medical [staff]." (Inmate)
- "I have built relationships with the vendor and staff here. I am a hands on leader. They are not afraid to tell me if something is wrong. I need to hear the good and the bad." (Custody) Vertical

Quantitative Evidence on Coordination - Defns | Staff Indices RF Results | Staff Indices IV Results | Skip to Next Section | Model

Concluding Comments

Concluding Comments

- Accreditation improves compliance with quality standards.
  - Substantial improvements in (1) prevention & safety, (2) personnel training and (3) patient care & treatment.

Concluding Comments

- Accreditation improves compliance with quality standards.
  - Substantial improvements in (1) prevention & safety, (2) personnel training and (3) patient care & treatment.
- Large reductions in mortality, particularly for preventable and acute deaths.

Concluding Comments

- Accreditation improves compliance with quality standards.
  - Substantial improvements in (1) prevention & safety, (2) personnel training and (3) patient care & treatment.
- Large reductions in mortality, particularly for preventable and acute deaths.
- Estimates suggest that if accreditation were offered to all *medium-sized jails* in the U.S., could save up to 160 lives per month (ITT x $\approx$ 1,100 jails).

Concluding Comments

- Accreditation improves compliance with quality standards.
  - Substantial improvements in (1) prevention & safety, (2) personnel training and (3) patient care & treatment.
- Large reductions in mortality, particularly for preventable and acute deaths.
- Estimates suggest that if accreditation were offered to all *medium-sized jails* in the U.S., could save up to 160 lives per month (ITT x $\approx$ 1,100 jails).
- Indicative of dire state of health care in U.S. jails and large scope for improvement.

Thank you!

Special Thanks to...

Research Coordinators: Nadia Huffman (2022-2024) and Tasfia Jahanghir (2020-2022).

Research Assistants: Shipra Karan, Xingyou Ye, Qing Liu, Vanessa Jia, Lukas Leister, Nada Shalash, Miguel Purroy, and Nick Shankar.

Law Students: Gwen Byrne, Josh Alpert, Anne Deng, Christine Smith, Sarah Kliment, Farrah Kalach, Anita Onyimah, Kathryn Li, Kaitlyn Ham, Jennifer Ding, Louis Lin, Israa Alzami, Fiona Doyle, Christian Carson, Drew Lane, Jack Haney, and Haley Dougherty.

College and High School Students: James Jolin, Lucy Tu, Pierre Jolin, Daniel Tochimani-Hernandez, Emily Shah, Susan Takang, Kate De Groote, Worthy Cho, Folukemi Olufidipe, Cana Nakase, Sophia Fend, Bolin Shen, Yedith Ortiz Iturbide, Achele Agada, Aydin Alsan, Tatheer Adnan, Lea Han, Allie Oh, Zach Channen, and Nick Zappia.

Medical Students: George Hutchins, Nicky Joseph, Janine Robredo, Meisui Liu, and Aisha Oshilaja.

Policy Students: Phoebe Canagarajah.

Medical Staff: Cara Buchanan Munoz, MD and George Hutchins.

Medical Scribes: Meisui Liu, Nicky Joseph, Sophia Fend, Janine Robredo, James Jolin, and Pierre Jolin.

Content Experts: Jim Martin.

County Sheriffs.

Jail Health and Custody Staff.

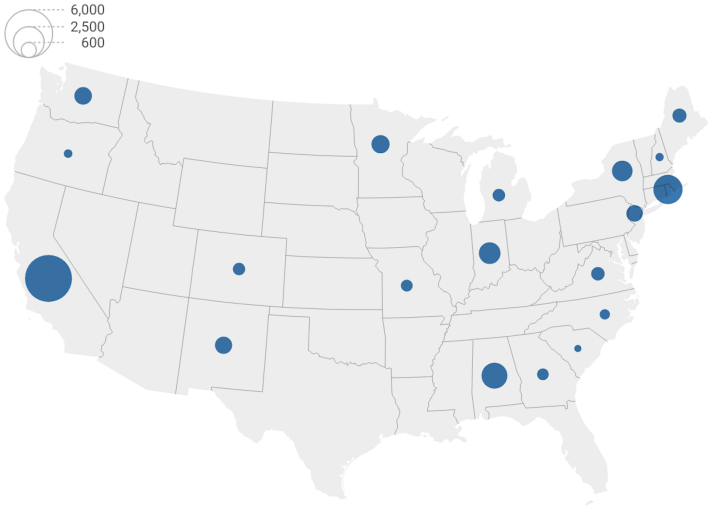
Incarcerated Persons.

We gratefully acknowledge funding from:

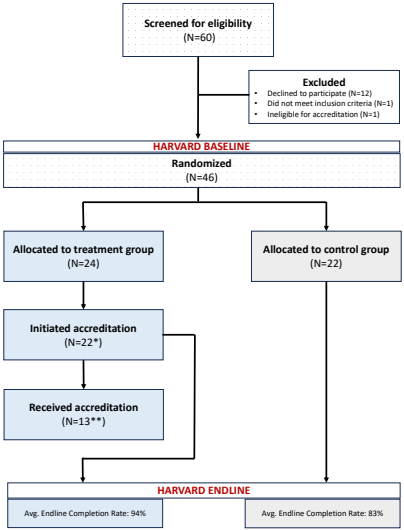
- JPAL North America
- The William T. Grant Foundation
- The Preparedness and Treatment Equity Coalition
- Arnold Ventures
- Malcolm Wiener Center

Appendix

Map of Study Sample



Experiment Overview



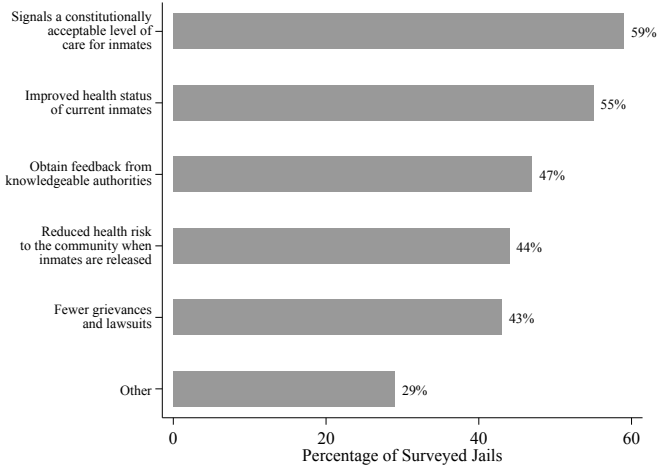
Instrument	Description	Baseline	Endline
Facility Survey	Review of facility documents to determine compliance with quality standards: - Policy and procedure manual - Staff FTE, credentials, and training - Health screenings, records, and documents	✓	✓
Staff Survey	Health and custody staff are invited to complete an online survey to share perceptions of: - Quality of health care - Staff engagement and satisfaction - Collaboration - Institutional norms within their facilities - Compliance with quality standards	✓	✓
Medical Audit	Review of patient health records including: - Receiving Screening - Initial Health Assessment - Sick Call Logs - Death logs - Condition-specific treatment/management for hypertension, suicidality, and substance use disorder	✓*	✓
Inmate Interviews	Three inmates at each facility are randomly selected for ∼45-minute interviews inquiring on: - Satisfaction of health care - Quality of health care - Length of care - Compliance with quality standards		✓
Leader Interviews	One health and one custody leader at each facility is selected for ∼40 minute interviews inquiring on: - Quality of health care - Collaboration - Compliance with quality standards		✓

*: Collected by looking back from endline.

Data Overview

Reasons Jails Become Accredited

Based on Survey Performed on Separate Set of Jails



Notes: 75 jails who had obtained NCCHC accreditation selected reasons they decided to get accredited. More than one option could be selected.

Definition of Essential/Important Standards

- Essential Standards:
  - Responsible Health Authority
  - Administrative Meetings and Reports
  - Policies and Procedures
  - Continuous Quality Improvement Program
  - Health Records
  - Infectious Disease Prevention and Control
  - Clinical Preventive Services
  - Suicide Prevention and Intervention
  - Credentials
  - Professional Development
  - Health Training for Correctional Officers
  - Medication Administration Training
  - Medication Services
  - Medical Diets
  - Emergency Services and Response Plan
  - Information on Health Services
  - Receiving Screening
  - Initial Health Assessment
  - Mental Health Screening and Evaluation
  - Nonemergency Health Care Requests and Services
  - Patients with Chronic Disease and Other Special Needs
  - Mental Health Services
  - Medically Supervised Withdrawal and Treatment
  - Counseling and Care of the Pregnant Inmate
  - Response to Sexual Abuse
  - Restraint and Seclusion
  - Segregated Inmates
  - Emergency Psychotopic Medication
- Important Standards:
  - Privacy of Care
  - Procedure in the Event of an Inmate Death
  - Grievance Process for Health Care Complaints
  - Healthy Lifestyle Promotion
  - Contraception
  - Staffing
  - Orientation for Health Staff
  - Clinic Space, Equipment, and Supplies
  - On-Site Diagnostic Services
  - Nursing Assessment Protocols and Procedures
  - Care for the Terminally Ill
  - Therapeutic Relationship, Forensic Information, and Disciplinary Actions

Incentives

	(1)	(2)
	Treatment	Control
Subsidy for Accreditation	$7,110.83	$2,181.82
Survey Incentives	$813.64	$1,104.55
Total Amount	$7,924.47	$3,286.36

Notes: "Subsidy for Accreditation" includes the total contribution towards accreditation. For both groups, "Survey Incentives" includes incentives for finishing facility survey and staff survey. For facility surveys, facilities can opt-in to receive $500 in direct payment via check or direct deposit, or can credit the payment towards their accreditation or re-accreditation at endline. For staff surveys, staff who complete the survey are entered into a lottery for a $100 gift card. "Total Amount" is the sum of "Subsidy for Accreditation" and "Survey Incentives". The difference between Treatment and Control for total amount is statistically significant (p-value¡0.001).

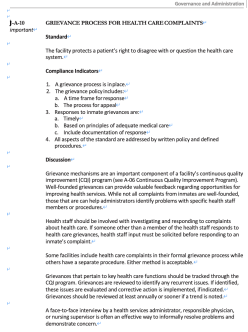
Experiment Overview

Facility Survey: Document List

- policy and procedure manual for health services
- inmate booking records from 2021 to present
- record of inspection
- policies and protocols for management of COVID-19
- clinical protocols for asthma
- clinical protocols for diabetes
- clinical protocols for HIV
- clinical protocols for hyperlipidemia
- clinical protocols for hypertension
- clinical protocols for mood disorders
- clinical protocols for psychotic disorders
- protocol for Medication Assisted Treatment (MAT) for substance use disorders
- protocol for prenatal care
- protocol for sexual abuse intervention
- protocol for addressing health-related grievances
- nursing assessment protocol
- copy of organizational structure (including organizational structure for mental health services)
- Responsible Health Authority (RHA) contract/job description
- RHA and physician attendance records/timesheets for last week
- documentation outlining an orientation program for health staff
- certifications documenting that new hires (health staff) in the last 90 days completed health orientation
- documentations of CPR certification of healthcare personnel
- lesson plan or schedule for custody staff health training
- evidence that all health staff have at least 12 hours of CME per year
- latest Continuous Quality Improvement (CQI) report
- CQI meeting minutes (with dates and attendance) for the last 12 months
- blank receiving screening/intake form
- blank health assessment form
- blank mental health screening form
- blank health record form
- blank consent form for receipt of medical treatment
- blank form to document refusal to receive medical treatment
- blank page of death log
- blank sick call form
- blank logs of segregation rounds by health staff
- administrative meeting minutes/attendance records in the last 12 months
- health staff meeting minutes/attendance records in the last 12 months
- documentation of annual reviews by designated health staff (i.e. RHA, responsible physician)
- formulary
- latest health statistical report
- information provided to inmates on how to access health services
- photo of sharps removal if it exists
- photo documenting that healthcare/clinical encounters and exchanges of health information occur between the provider and the inmate patient in a private space

Facility Surveys

Variable Name	Reason for Potential Skip	Format	Question	Coder to Determine Instructions	Valid Entries
upl_griev_pol		*Text*	*Please upload the protocol for addressing health-related grievances*	***Filled by facility***	
A10_GRV01_F	Skip if answer to upl_griev_pol is not "Document Uploaded" or "In policy and procedures manual"	Yes (1) - No (0)	Does the documentation uploaded by the facility include a protocol for addressing health-related grievances?	Coder to look at uploaded documentation/facility answer (Based on document upload - upl_griev_pol)	0 and 1
A10_GRV02_F	Skip if A10_GRV01_F was skipped, or the answer is No (0)	Integer	Based on the grievance policy, once someone files a grievance, how many days until there is a formal response?	Determine Answer by Checking Grievance Policy. A simple verbal acknowledgement of the grievance does not count as a formal response (Based on document upload - upl_griev_pol)	Integers
A10_GRV03_F	Skip if A10_GRV01_F was skipped, or the answer is No (0)	Yes (1) - No (0)	Does the grievance policy indicate that there is a process for appealing?	Determine Answer by Checking Grievance Policy (Based on document upload - upl_griev_pol)	0 and 1
A10_GRV04_F	Skip if A10_GRV01_F was skipped, or the answer is No (0)	Yes (1) - No (0)	Does the grievance policy indicate that there are formal records of health-related grievances?	Coder to look at uploaded documentation/facility answer (Based on document upload - upl_griev_pol)	0 and 1



Governance and Administration

J-A-10 important

GRIEVANCE PROCESS FOR HEALTH CARE COMPLAINTS

Standard

The facility protects a patient's right to disagree with or question the health care system.

Compliance Indicators

1. A grievance process is in place.
2. The grievance policy includes:
   a. A time frame for response
   b. The process for appeal
3. Responses to inmate grievances are:
   a. Timely
   b. Based on principles of adequate medical care
   c. Include documentation of response
4. All aspects of the standard are addressed by written policy and defined procedures.

Discussion

Grievance mechanisms are an important component of a facility's continuous quality improvement (CQI) program (see A-06 Continuous Quality Improvement Program). Well-founded grievances can provide valuable feedback regarding opportunities for improving health services. While not all complaints from inmates are well-founded, those that are can help administrators identify problems with specific health staff members or procedures.

Health staff should be involved with investigating and responding to complaints about health care. If someone other than a member of the health staff responds to health care grievances, health staff input must be solicited before responding to an inmate's complaint.

Some facilities include health care complaints in their formal grievance process while others have a separate procedure. Either method is acceptable.

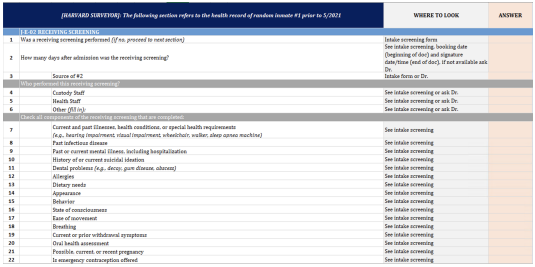
Grievances that pertain to key health care functions should be tracked through the CQI program. Grievances are reviewed to identify any recurrent issues. If identified, these issues are evaluated and corrective action is implemented, if indicated. Grievances should be reviewed at least annually or sooner if a trend is noted.

A face-to-face interview by a health services administrator, responsible physician, or nursing supervisor is often an effective way to informally resolve problems and demonstrate concern.

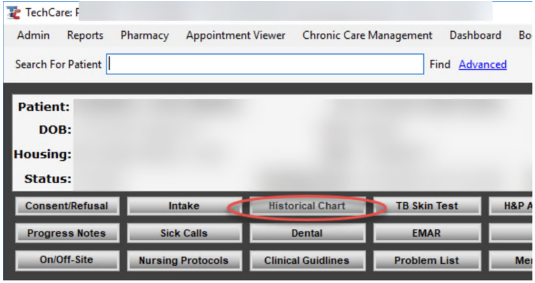
- Conducted via secure Qualtrics link.
- Include self-reported questions and documents to upload Document List
- Design a codebook and ask coders to code outcomes by reading uploaded documents
- Coding of outcomes done by two independent Harvard students after extensive training for ethics and privacy as well as mock jail coding.
- All students blinded to the treatment condition
- If the two independent student coders disagreed, a third blinded student would code to break the tie.

Data Overview

Medical Audit



[HARVARD SURVIVOR]: The following section refers to the health record of random inmate #1 prior to 5/2021		WHERE TO LOOK	ANSWER
	TI & CI RECEIVING SCREENING		
1	Was a receiving screening performed *(if no, proceed to next section)*	Intake screening form	
2	How many days after admission was the receiving screening?	See intake screening, booking date (beginning of doc) and signature date/time (end of doc), if not available ask Dr.	
3	Source of #2	Intake form or Dr.	
	Who performed the receiving screening?		
4	Custody Staff	See intake screening or ask Dr.	
5	Health Staff	See intake screening or ask Dr.	
6	Other (fill in):	See intake screening or ask Dr.	
	Check all components of the receiving screening that are completed:		
7	Current and past illnesses, health conditions, or special health requirements (e.g., hearing impairment, visual impairment, wheelchair, walker, sleep apnea machine)	See intake screening	
8	Past infectious disease	See intake screening	
9	Past or current mental illness, including hospitalization	See intake screening	
10	History of or current suicidal ideation	See intake screening	
11	Dental problems (e.g., decay, gum disease, abscess)	See intake screening	
12	Allergies	See intake screening	
13	Dietary needs	See intake screening	
14	Appearance	See intake screening	
15	Behavior	See intake screening	
16	State of consciousness	See intake screening	
17	Ease of movement	See intake screening	
18	Breathing	See intake screening	
19	Current or prior withdrawal symptoms	See intake screening	
20	Oral health assessment	See intake screening	
21	Possible, current, or recent pregnancy	See intake screening	
22	Is emergency contraception offered	See intake screening	



- Prepared by assessing type of medical record (if not EHR, we sent document camera).
- Conducted via Zoom through verified secure wifi (if not sent hotspot).
- Trained and hired medical staff and medical scribe for each audit, with all personnel blinded to treatment condition.
- Coding done in same way as facility surveys.

Data Overview

Staff Surveys and Qualitative Interviews

- Staff Surveys
  - Obtained staff emails from sheriff for custody and health.
  - Sent Qualtrics survey link directly (in most instances) to the employees.
  - Incentivized with a lottery for a gift card worth $100 USD as long as at least 5 individuals complete the survey.
  - Responses were strictly anonymous.

- Qualitative Interviews
  - Conducted qualitative interviews with custody leadership, heath leadership, and three randomly selected incarcerated individuals per facility.
  - Not mandatory.
  - Conducted via Zoom with trained Harvard personnel.

Data Overview

Representativeness

	(1)	(2)	(3)
	Overall Mean	Difference	SE
Panel A: Jail Characteristics			
ADP	372.493	32.037	(54.743)
Admissions	5,177.080	1,281.462*	(747.622)
Avg. Stay Length (Months)	1.096	-0.207***	(0.079)
# Staff	104.897	33.541	(23.620)
Under Consent Decree	0.044	0.005	(0.034)
Maximum Jail Capacity	438.440	74.366	(86.527)
Holds Felony Offenders	0.484	-0.123	(0.077)
Panel B: Incarcerated Population Characteristics			
Share Male	0.833	0.011	(0.009)
Share White	0.596	-0.072**	(0.035)
Share Black	0.263	0.011	(0.035)
Share Hispanic	0.111	0.049	(0.032)
Share Felony	0.665	0.042	(0.031)
Share Misdemeanor	0.264	-0.013	(0.027)
F-stat		1.489	
Analytical Sample Facilities		41	
Comparative Facilities		1085	

Notes: Column 1 reports the sample mean. Column 2 reports the coefficient of an indicator, equal to one if the facility is within our analytical sample. Column 3 reports the associated robust standard error. ADP, the number of admission, and the number of staff are reported at the reporting unit level, and are adjusted to facility level by dividing them with number of facilities managed under each unique reporting unit.

Experiment Overview

Balance Table: Alt Samp

	(1)	(2)	(3)
	Overall Mean	Difference	SE
Governance and Administration	0.494	-0.028	(0.040)
Health Promotion, Safety and Disease Prevention	0.480	0.049	(0.056)
Personnel and Training	0.491	-0.011	(0.072)
Ancillary (Supportive) Health Care Services	0.490	-0.009	(0.046)
Patient Care and Treatment	0.446	-0.013	(0.035)
Special Needs and Services	0.500	0.034	(0.061)
Medical-Legal Issues	0.527	-0.007	(0.102)
Simple Mean Meta-Index	0.485	-0.008	(0.039)
Principal Component Analysis Meta-Index	0.557	-0.012	(0.066)
Expert Weights Meta-Index	0.483	0.003	(0.046)
Baseline Monthly Mortality in Death Logs	0.220	-0.400	(0.239)
Baseline Monthly Mortality in Media Reports	0.062	-0.036	(0.051)
ADP	375.812	-169.677	(117.846)
Avg. Stay Length (Months)	1.124	0.008	(0.276)
Medical FTE	5.689	-1.192	(1.276)
Medical FTE Variety	5.717	-0.481	(0.951)
For-Profit Health Vendor	0.652	-0.047	(0.143)
Previously Accredited	0.109	0.051	(0.088)
Share County Voting Republican	0.448	-0.024	(0.040)
Sheriff is Republican	0.326	0.007	(0.126)
F-Stat		1.210	
Observations		46	
Strata FE		✓	

Notes: "Baseline Monthly Mortality in Death Logs" is excluded from the joint *F*-test to ensure a complete sample as death logs are not available for all the facilities.

Initiation and Completion Rate

	Failure to Initiate (1)	Endline Study Components: Average Completed (2)	Facility Survey (3)	Medical Audits (4)	Death Logs (5)	Staff Survey (6)
		Panel A: IV Estimates				
$\widehat{Accred}$	0.101	0.080	0.007	0.158	0.218*	-0.064
	(0.069)	(0.099)	(0.128)	(0.166)	(0.128)	(0.128)
		Panel B: Reduced Form Estimates				
Treat	0.067	0.053	0.004	0.104	0.144	-0.042
	(0.047)	(0.073)	(0.092)	(0.121)	(0.093)	(0.090)
Control Mean	0.00	0.83	0.86	0.73	0.82	0.91
Observations	46	46	46	46	46	46
Strata FE	✓	✓	✓	✓	✓	✓

Notes: This table shows the treatment effects of accreditation assignment on failure to initiate the accreditation process and completion rate of either a specific endline survey (Columns (3) – (6)) or the average completion of endline components in Column (2). Panel (A) shows 2SLS estimates, and Panel (B) shows reduced form estimates. Robust standard errors are reported in parentheses. Asterisks indicate coefficient statistical significance level : $*p < 0.10; **p < 0.05; ***p < 0.01$.

*staffing challenges as admin changed and others had allegations of staff sexual harassment.

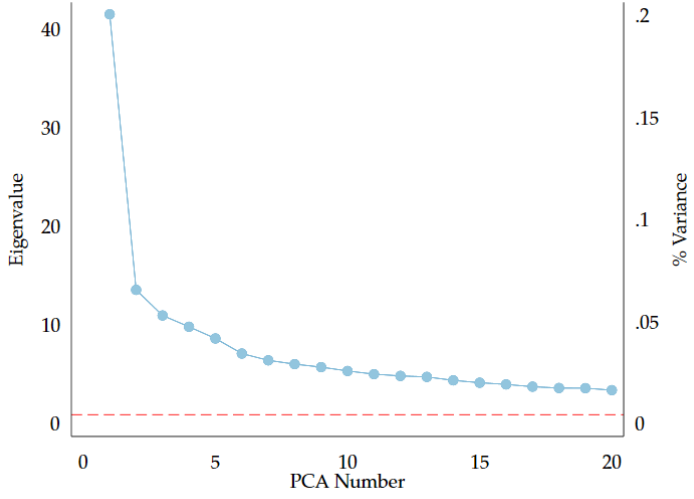
Experiment Overview

Expert Survey Demographics

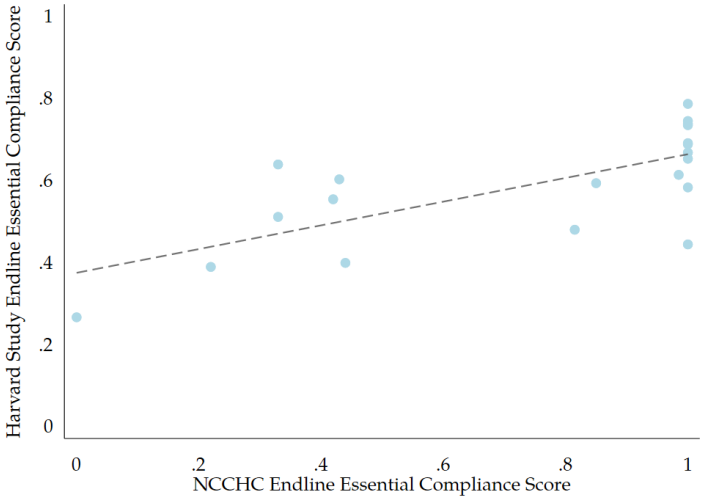
	Number of Respondents	Share of Respondents
Age		
18-24	3	2.07
25-34	23	15.86
35-44	41	28.28
45-54	51	35.17
55-64	20	13.79
65-74	5	3.45
75+	2	1.38
Gender		
Male	66	45.52
Female	78	53.79
Transgender	1	0.69
Race/Ethnicity		
Asian	12	8.28
Black or African	19	13.10
Hispanic	4	2.76
Native American	1	0.69
Mixed race	6	4.14
White/Caucasian	101	69.66
Prefer not to say	2	1.38
Schooling		
Some college but no degree	22	15.17
Associate's degree (2 years)	22	15.17
Bachelor's degree (4 years)	29	20.00
Post-graduate degree	64	44.14
High school degree or less	8	5.52

Expert Survey

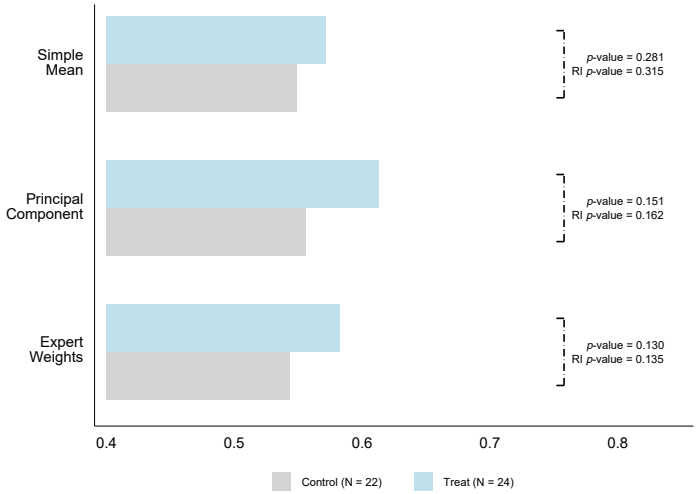
Eigenvalues and Variance After PCA



Comparison of NCCHC Compliance Scores and Study Compliance Score

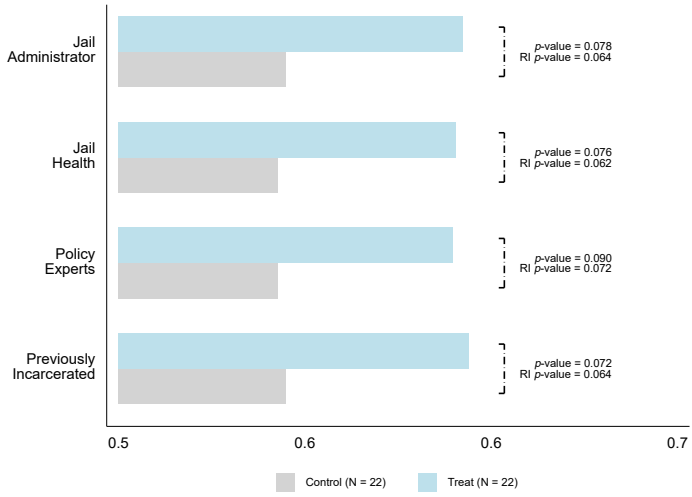


Meta Quality Standards, Alt Samp



Analytical Sample

Meta Quality Standards, By Type



Analytical Sample

Accreditation Completion, First Stage Estimates: Meta-Index of Quality Standards

	Simple Mean	Principal Component	Expert Weights
	(1)	(2)	(3)
Treat	0.695***	0.695***	0.688***
	(0.047)	(0.049)	(0.051)
F-stat	214.88	203.46	184.09
CCM	0.599	0.632	0.572
Observations	44	44	44
Baseline Control	✓	✓	✓
Strata FE	✓	✓	✓

Notes: All specifications include the baseline quality standard and randomization strata fixed effects. The outcome variable is the endline meta index. Control compiler mean is computed as described in the main text. Robust standard errors are reported in parentheses.

Analytical Sample

Accreditation Completion, 2SLS Estimates: Meta-Index of Quality Standards by Expert Type

			Expert Weights	
	Simple Mean	Principal Component	All Other Experts	Formerly Incarcerated
	(1)	(2)	(3)	(4)
$\widehat{Accreditation}$	0.043	0.103**	0.069**	0.071**
	(0.028)	(0.050)	(0.034)	(0.034)
F-stat	214.88	203.46	183.88	184.60
Control Complier Mean	0.599	0.632	0.572	0.571
Observations	44	44	44	44
Baseline Control	✓	✓	✓	✓
Strata FE	✓	✓	✓	✓

Notes: All specifications include the baseline quality standard and randomization strata fixed effects. The outcome variable is the endline meta index. Control compiler mean is computed as described in the main text. Robust standard errors are reported in parentheses.

Analytical Sample

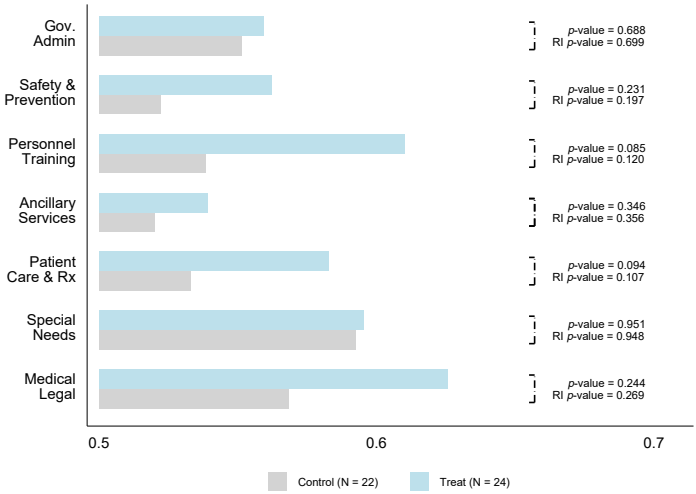
Accreditation Completion, 2SLS Estimates: Meta-Index of Quality Standards by Expert Type, Alt Samp

	Simple Mean	Principal Component	Expert Weights
	(1)	(2)	(3)
$\widehat{Accreditation}$	0.034	0.086*	0.059*
	(0.028)	(0.051)	(0.033)
F-stat	198.38	185.85	172.09
CCM	0.629	0.683	0.606
Observations	46	46	46
Baseline Control	✓	✓	✓
Strata FE	✓	✓	✓

Notes: All specifications include the baseline quality standard and randomization strata fixed effects. The outcome variable is the endline meta index. Control compiler mean is computed as described in the main text. Robust standard errors are reported in parentheses.

Analytical Sample

Reduced Form Estimates: Quality Standards, Alt Samp



Analytical Sample

Accreditation Completion, First Stage Estimates: Quality Standards

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Gov. Admin.	Safety & Prevention	Personnel Training	Ancillary Services	Patient Care & Rx.	Special Needs	Medical Legal
Treat	0.711***	0.670***	0.696***	0.695***	0.703***	0.674***	0.694***
	(0.046)	(0.056)	(0.053)	(0.053)	(0.047)	(0.052)	(0.053)
F-stat	241.54	144.96	172.79	168.64	226.48	167.51	173.62
CCM	0.612	0.587	0.528	0.545	0.568	0.676	0.646
Observations	44	44	44	44	44	44	44
Baseline Control	✓	✓	✓	✓	✓	✓	✓
Strata FE	✓	✓	✓	✓	✓	✓	✓

Notes: The table shows the first stage regression estimates, where the accreditation is instrumented by the accreditation offer. All specifications include baseline indices and strata f.e. Each variables in the index received equal weights. Robust standard errors in parentheses. * ** *** represent significance at the 10, 5 and 1% level respectively.

Analytical Sample

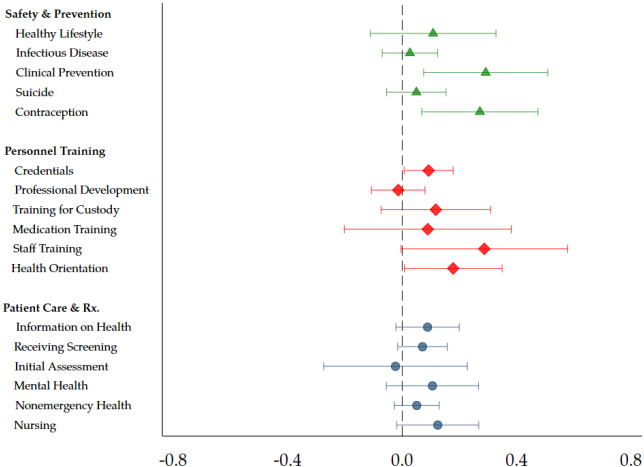
Accreditation Completion, 2SLS Estimates: Quality Standards, Alt Samp

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Gov. Admin.	Safety & Prevention	Personnel Training	Ancillary Services	Patient Care & Rx.	Special Needs	Medical Legal
$\widehat{Accreditation}$	0.012	0.063	0.108**	0.028	0.074*	0.004	0.086
	(0.026)	(0.045)	(0.055)	(0.027)	(0.039)	(0.062)	(0.064)
F-stat	204.09	138.01	151.63	153.41	183.34	158.63	153.50
CCM	0.626	0.623	0.550	0.559	0.586	0.699	0.669
Observations	46	46	46	46	46	46	46
Baseline Control	✓	✓	✓	✓	✓	✓	✓
Strata FE	✓	✓	✓	✓	✓	✓	✓

Notes: 2SLS estimates of the effect of accreditation process on index outcomes of quality standards. All specifications include baseline indices and strata f.e. Each variables in the index received equal weights. Robust standard errors in parentheses. * ** *** represent significance at the 10, 5 and 1% level respectively.

Analytical Sample

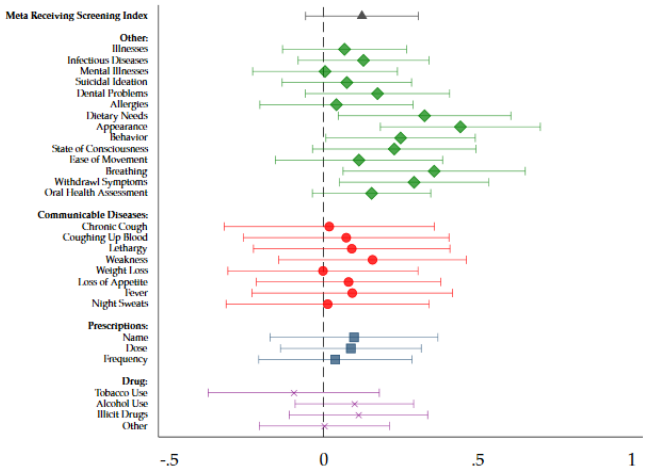
2SLS Estimates: Quality Standards – Subsections



Notes: This figure shows the 2SLS estimates of the treatment effect on each subsection under quality standards – Safety Prevention, Personnel Training and Patient Care Rx.. 95% confidence interval is plotted.

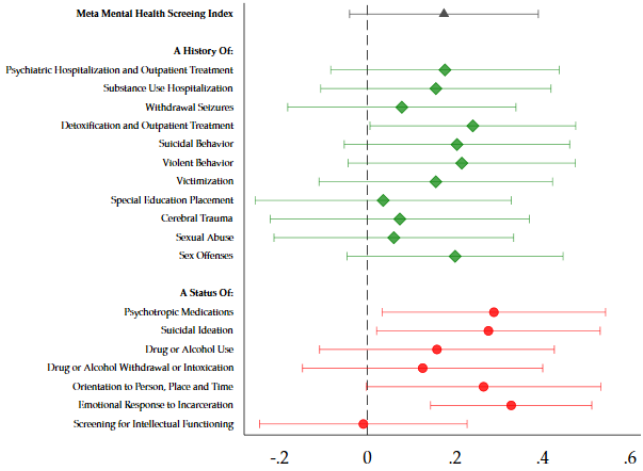
Analytical Sample | Qualitative Evidence on Screening

Accreditation Completion, 2SLS Estimates: Receiving Screening



Notes: This figure shows the 2SLS estimates of the treatment effect on each component within the receiving screening section. 95% confidence interval is plotted.

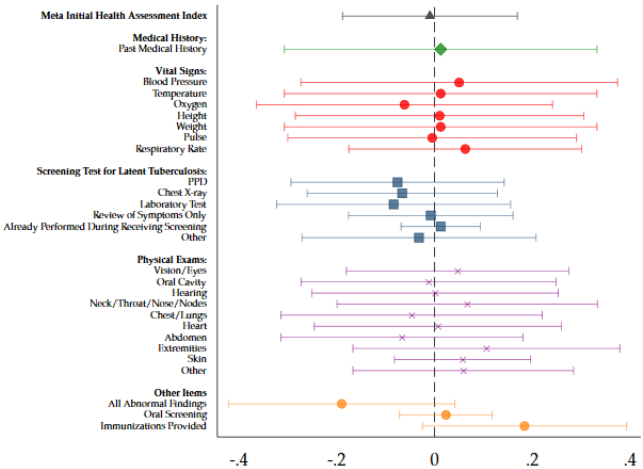
Accreditation Completion, 2SLS Estimates: Mental Health Screening



Notes: This figure shows the 2SLS estimates of the treatment effect on each component within the mental health screening section. 95% confidence interval is plotted.

Qualitative Evidence on Screening

Accreditation Completion, 2SLS Estimates: Initial Health Assessment



Notes: This figure shows the 2SLS estimates of the treatment effect on each component within the initial health assessment section. 95% confidence interval is plotted.

Accreditation Completion, 2SLS Estimates: Screening and Treatment for SI, OUD, and HTN

	Screening Index			Treatment Index		
	SI	OUD	HTN	SI	OUD	HTN
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Second Stage					
$\widehat{Accreditation}$	0.202**	0.171*	0.009	0.071	-0.061	0.0
	(0.097)	(0.099)	(0.157)	(0.085)	(0.084)	(0.097)
	Panel B: First Stage					
Treat	0.701***	0.695***	0.684***	0.690***	0.685***	0.642***
	(0.050)	(0.050)	(0.054)	(0.053)	(0.053)	(0.060)
F-stat	197.17	189.77	161.99	169.18	169.30	113.14
Control Complier Mean	0.513	0.451	0.561	0.757	0.820	0.480
Observations	88	88	88	88	88	88
Number of Clusters	44	44	44	44	44	44
Strata FE	✓	✓	✓	✓	✓	✓
Baseline Control	✓	✓	✓	✓	✓	✓

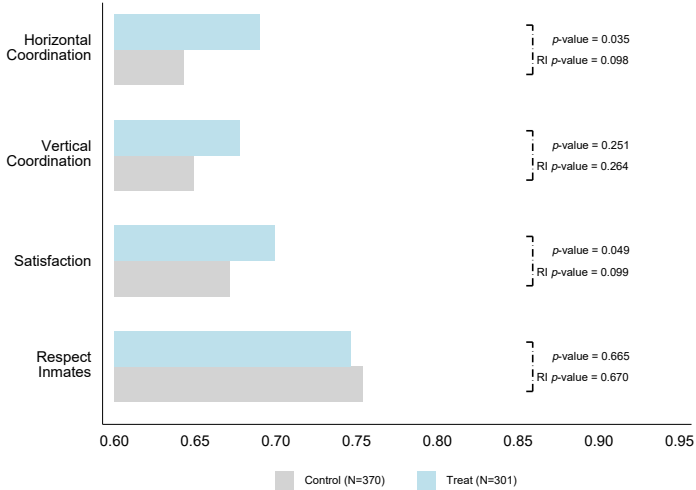
Notes: This table reports 2SLS estimates of the treatment effect of accreditation completion on medical screening and treatment for inmates with suicidal ideation, opioid use disorder or hypertension.

Qualitative Evidence on Screening

Staff Survey

- Horizontal Coordination
  - custody-medical support
  - custody-medical collaboration
  - custody-medical communication
- Vertical Coordination
  - supervisor considers suggestions on staff
  - staff speak up
  - supervisor open to concerns
  - supervisor takes actions on inmates
  - supervisor takes actions on staff
  - supervisor considers suggestions on inmates
- Staff Satisfaction
  - properly trained
  - sufficient tools
  - job satisfying
  - job meaningful
  - feel valued
  - job challenging
  - recommend job
- Respect Inmate

Coordination – Staff Survey



Alt Samp | Horizontal | Vertical | Satisfaction | Qualitative Evidence on Relationship

2SLS Estimates: Staff Survey

	(1)	(2)	(3)	(4)
	Horizontal Coordination	Vertical Coordination	Satisfaction	Respect Inmates
$\widehat{Accreditation}$	0.058**	0.036	0.035**	-0.010
	(0.026)	(0.030)	(0.017)	(0.022)
F-stat	526.38	398.05	359.79	424.10
Control Complier Mean	0.618	0.627	0.639	0.764
Observations	671	671	671	671
Number of Clusters	44	44	44	44
Strata FE	✓	✓	✓	✓
Baseline Control	✓	✓	✓	✓

Notes: Column 1-4 represent each staff sentiment indices.

Qualitative Evidence on Relationship

2SLS Estimates: Horizontal Coordination

	(1)	(2)	(3)
	Custody-Medical Support	Custody-Medical Collaboration	Custody-Medical Communication
$\widehat{Accreditation}$	0.067**	0.048*	0.064**
	(0.032)	(0.026)	(0.031)
F-stat	73.11	127.06	106.16
CCM	0.603	0.642	0.606
Observations	671	671	671
Strata FE	✓	✓	✓
Baseline Control	✓	✓	✓

Notes: Column 1-3 represent staff's agreement on the following statements: (1) "Custody staff support the implementation of clinical decisions and partner with clinical staff"; (2) "Custody and clinical team staff work collaboratively to give good health care to inmates"; (3) "There is open communication between custody and health staff". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Qualitative Evidence on Relationship

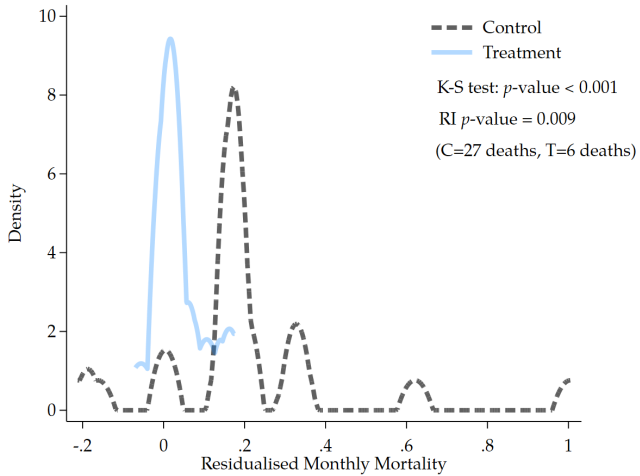
2SLS Estimates: Vertical Coordination

	(1)	(2)	(3)	(4)	(5)	(6)
	Sup. Considers Suggestions on Staff	Staff Speak Up	Sup. Open to Concerns	Sup. Takes Actions on Inmates	Sup. Takes Actions on Staff	Sup. Considers Suggestions on Inmates
$\widehat{Accreditation}$	0.063**	0.075**	0.101***	0.014	0.035	0.035
	(0.031)	(0.037)	(0.032)	(0.037)	(0.034)	(0.040)
F-stat	66.24	160.51	149.86	65.10	63.93	73.32
CCM	0.599	0.671	0.620	0.635	0.606	0.629
Observations	671	259	259	671	671	671
Strata FE	✓	✓	✓	✓	✓	✓
Baseline Control	✓	✓	✓	✓	✓	✓

Notes: Column 1-4 represent staff's agreement on the following statements: (1) "My supervisor takes direct actions to address staff concerns for improving inmate or staff's health and safety"; (2) "My supervisor considers staff suggestions for improving inmate or staff's health and safety"; (3) "Staff feel comfortable speaking up when they see something that may negatively affect inmate care"; (4) "When staff speak up about inmate safety and care decisions, those with greater authority are open to their concerns". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Qualitative Evidence on Relationship

Distribution of Mortality, Treatment versus Control, Alt Samp



First Stage Estimates: Mortality

	(1)	(2)	(3)
Treat	0.696***	0.710***	0.693***
	(0.054)	(0.053)	(0.056)
F-stat	167.02	177.09	154.65
Control Complier Mean	0.333	0.262	0.288
Observations	44	44	44
Strata FE	✓	✓	✓
Control for ADP		✓	
Baseline Control			✓

Notes. The table shows the first stage regression estimates, where the accreditation is instrumented by the accreditation offer. Robust standard errors in parentheses.

Main Result: Mortality IV Estimates

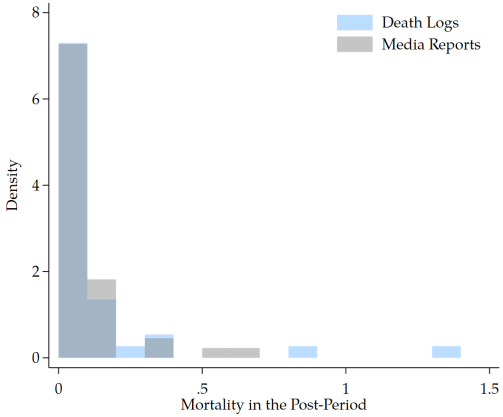
Alternative Functional Forms and Estimation: Mortality

	Count Model				Log Mortality		Mortality/ ADP
	Poisson		Negative-Binomial				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\widehat{Accreditation}$	-2.002***	-1.947***	-1.861***	-1.789**	-0.471***	-0.474***	-0.432***
	(0.597)	(0.647)	(0.675)	(0.711)	(0.150)	(0.144)	(0.164)
Control Mean	1.227	1.227	1.227	1.227	0.552	0.552	0.376
Observations	44	44	44	44	44	44	44
Strata FE	✓	✓	✓	✓	✓	✓	✓
Control for ADP	✓	✓	✓	✓	✓	✓	
Baseline Control		✓		✓		✓	✓

Notes. 2SLS estimates of the effect of accreditation completion on mortality. Columns 1-2 report estimates from a Generalized Linear Model (GLM) with Poisson distributed errors and a log-link function. Columns 3-4 report GLM estimates with negative-binomial distributed errors and a log-link function. Columns 1-4 use the log of current Average Daily Population (ADP) as the offset. The outcome variable is the total number of deaths per month occurring in the six-month window starting ten months after treatment assignment. In columns 2, 4, and 6 we control for baseline level of mortality. Robust standard errors in parentheses.

Event Study

Distribution of Mortality by Data Source



Measurement

2SLS Estimates: Mortality Using Only Media Reports

	(1)	(2)	(3)
$\widehat{Accreditation}$	-0.141***	-0.112***	-0.116***
	(0.050)	(0.039)	(0.040)
F-stat	167.02	177.09	154.65
Control Complier Mean	0.180	0.144	0.153
Observations	44	44	44
Strata FE	✓	✓	✓
Control for ADP		✓	
Baseline Control			✓

Notes. 2SLS estimates of the treatment effect of accreditation on mortality using only the deaths reported in media. Baseline mortality refers to the average number of deaths per month occurring during the six months preceding treatment assignment. The outcome variable is the average number of deaths per month occurring in the six-month window starting ten months after treatment assignment. Robust standard errors in parentheses.

Event Study

2SLS Estimates: Mortality, Alt Samp

	(1)	(2)	(3)
$\widehat{Accreditation}$	-0.242***	-0.184***	-0.197***
	(0.093)	(0.061)	(0.070)
F-stat	138.89	142.47	128.70
Control Complier Mean	0.337	0.260	0.287
Observations	46	46	46
Strata FE	✓	✓	✓
Control for ADP		✓	
Baseline Control			✓

Notes. 2SLS estimates of the treatment effect of accreditation on mortality. Baseline mortality refers to the average number of deaths per month occurring during the six months preceding treatment assignment. The outcome variable is the average number of deaths per month occurring in the six-month window starting ten months after treatment assignment. Robust standard errors in parentheses.

Event Study

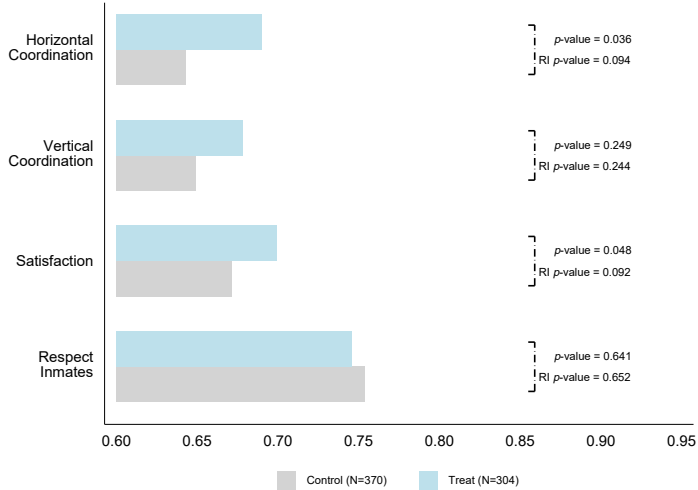
2SLS Estimates: Cause of Mortality Using Media Reports Only

	Illness	Suicide & Homicide	Undetermined	Drug Overdose
	(1)	(2)	(3)	(4)
Accreditation	-0.033**	-0.011	-0.044*	-0.040*
	(0.017)	(0.016)	(0.027)	(0.022)
F-stat	165.05	165.05	165.05	165.05
Control Complier Mean	0.040	0.024	0.053	0.048
Observations	44	44	44	44
Strata FE	✓	✓	✓	✓

Notes. 2SLS estimates of the treatment effect of accreditation on mortality, disaggregated by cause. Robust standard errors in parentheses.

Death Logs

Reduced Form Estimates: Staff Sentiment Indices, Alt Samp



Analytical Sample

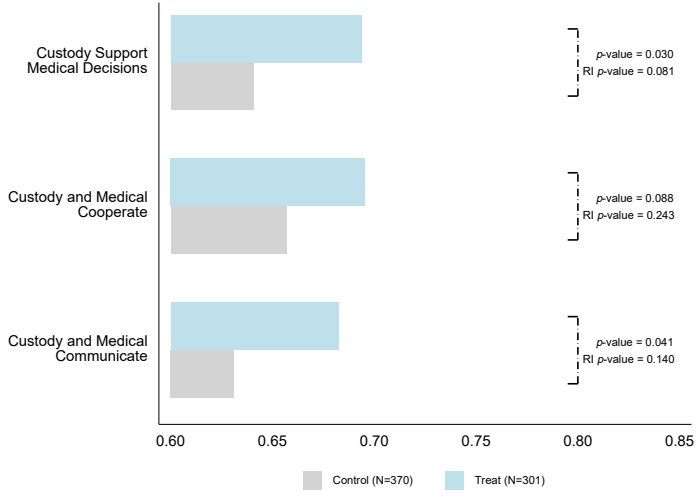
Accreditation Completion, 2SLS Estimates: Staff Sentiment Indices, Alt Samp

	(1)	(2)	(3)	(4)
	Horizontal Coordination	Vertical Coordination	Satisfaction	Respect Inmates
$\widehat{Accreditation}$	0.059**	0.037	0.037**	-0.011
	(0.027)	(0.031)	(0.018)	(0.023)
F-stat	104.39	64.53	55.51	67.90
CCM	0.618	0.627	0.639	0.764
Observations	674	674	674	674
Number of Clusters	46	46	46	46
Strata FE	✓	✓	✓	✓
Baseline Control	✓	✓	✓	✓

Notes: Column 1-4 represent each staff sentiment indices.

Analytical Sample

Reduced Form Estimates: Horizontal Coordination



Analytical Sample

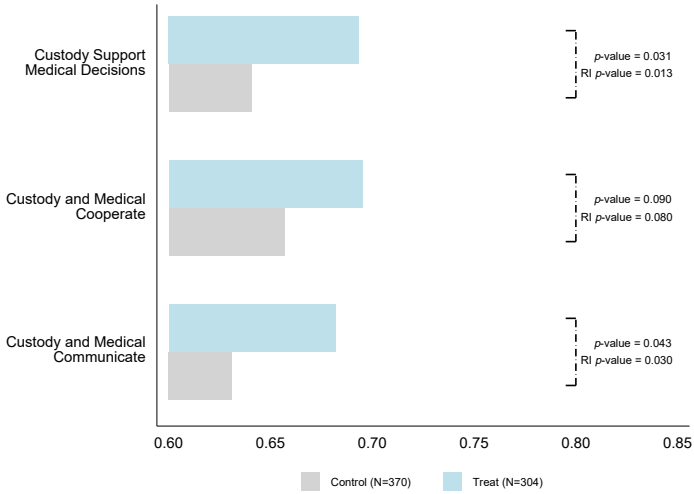
Accreditation Completion, 2SLS Estimates: Horizontal Coordination

	(1)	(2)	(3)
	Custody-Medical Support	Custody-Medical Collaboration	Custody-Medical Communication
$\widehat{Accreditation}$	0.067**	0.048*	0.064**
	(0.032)	(0.026)	(0.031)
F-stat	73.11	127.06	106.16
CCM	0.603	0.642	0.606
Observations	671	671	671
Strata FE	✓	✓	✓
Baseline Control	✓	✓	✓

Notes: Column 1-3 represent staff's agreement on the following statements: (1) "Custody staff support the implementation of clinical decisions and partner with clinical staff"; (2) "Custody and clinical team staff work collaboratively to give good health care to inmates"; (3) "There is open communication between custody and health staff". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Analytical Sample | Leader Quotes on Relationship

Reduced Form Estimates: Horizontal Coordination, Alt Samp



Analytical Sample

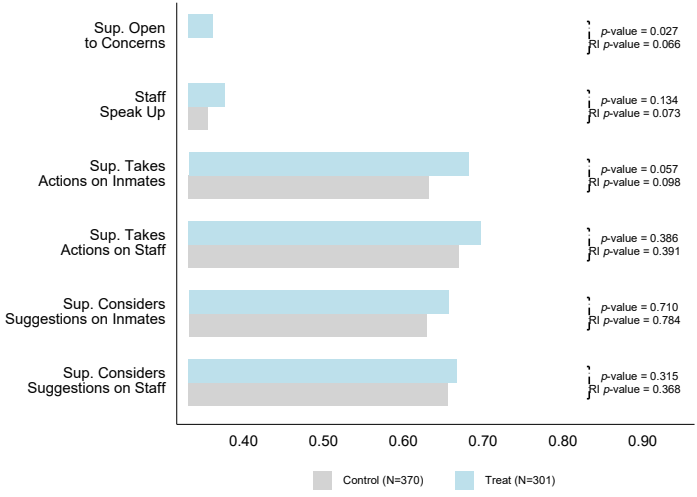
Accreditation Completion, 2SLS Estimates: Horizontal Coordination, Alt Samp

	(1)	(2)	(3)
	Custody-Medical Support	Custody-Medical Collaboration	Custody-Medical Communication
$\widehat{Accreditation}$	0.067**	0.047*	0.064**
	(0.032)	(0.026)	(0.031)
F-stat	72.82	125.54	103.08
Control Complier Mean	0.603	0.642	0.606
Observations	674	674	674
Strata FE	✓	✓	✓
Baseline Control	✓	✓	✓

Notes: Column 1-3 represent staff's agreement on the following statements: (1) "Custody staff support the implementation of clinical decisions and partner with clinical staff"; (2) "Custody and clinical team staff work collaboratively to give good health care to inmates"; (3) "There is open communication between custody and health staff". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Analytical Facilities

Reduced Form Estimates: Vertical Coordination



Analytical Sample

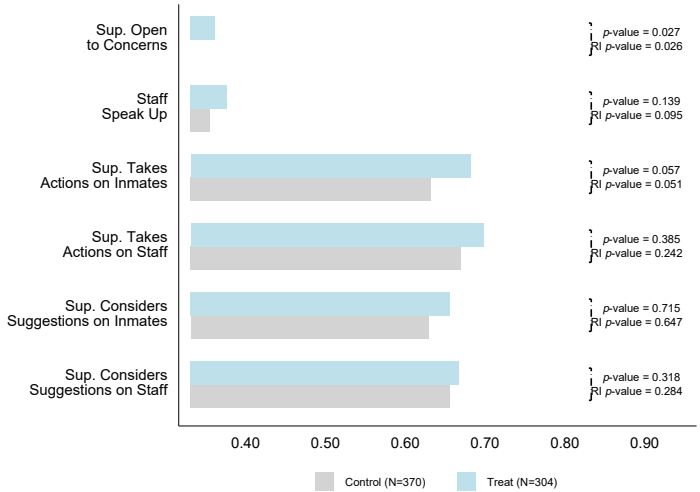
Accreditation Completion, 2SLS Estimates: Vertical Coordination

	(1)	(2)	(3)	(4)	(5)	(6)
	Sup. Takes Actions on Inmates	Sup. Takes Actions on Staff	Sup. Considers Suggestions on Inmates	Sup. Considers Suggestions on Staff	Staff Speak Up	Sup. Open to Concerns
$\widehat{Accreditation}$	0.063**	0.075**	0.101***	0.014	0.035	0.035
	(0.031)	(0.037)	(0.032)	(0.037)	(0.034)	(0.040)
F-stat	66.24	160.51	149.86	65.10	63.93	73.32
CCM	0.599	0.671	0.620	0.635	0.606	0.629
Observations	671	259	259	671	671	671
Strata FE	✓	✓	✓	✓	✓	✓
Baseline Control	✓	✓	✓	✓	✓	✓

Notes: Column 1-4 represent staff's agreement on the following statements: (1) "My supervisor takes direct actions to address staff concerns for improving inmate or staff's health and safety"; (2) "My supervisor considers staff suggestions for improving inmate or staff's health and safety"; (3) "Staff feel comfortable speaking up when they see something that may negatively affect inmate care"; (4) "When staff speak up about inmate safety and care decisions, those with greater authority are open to their concerns". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Analytical Sample

Accreditation Assignment, Reduced Form Estimates: Vertical Coordination, Alt Samp



Analytical Sample

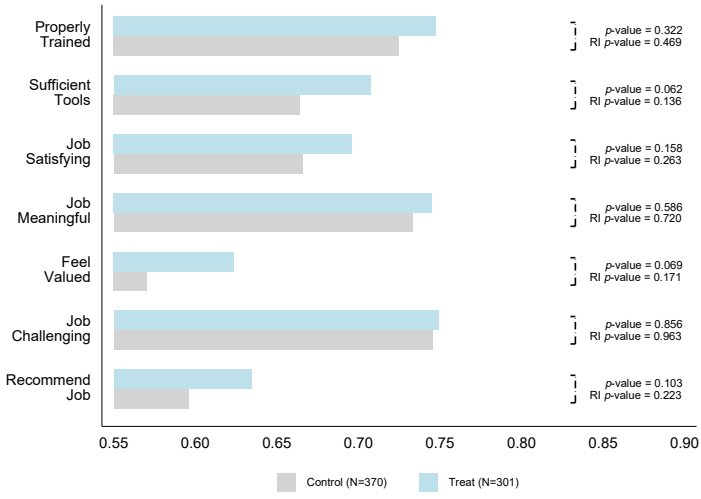
Accreditation Completion, 2SLS Estimates: Vertical Coordination, Alt Samp

	(1)	(2)	(3)	(4)	(5)	(6)
	Sup. Takes Actions on Inmates	Sup. Takes Actions on Staff	Sup. Considers Suggestions on Inmates	Sup. Considers Suggestions on Staff	Staff Speak Up	Sup. Open to Concerns
$\widehat{Accreditation}$	0.014	0.035	0.036	0.063**	0.075**	0.101***
	(0.037)	(0.034)	(0.040)	(0.031)	(0.037)	(0.032)
F-stat	64.86	63.66	72.66	65.91	156.93	147.29
CCM	0.635	0.606	0.629	0.599	0.671	0.620
Observations	674	674	674	674	261	261
Strata FE	✓	✓	✓	✓	✓	✓
Baseline Control	✓	✓	✓	✓	✓	✓

Notes: Column 1-4 represent staff's agreement on the following statements: (1) "My supervisor takes direct actions to address staff concerns for improving inmate or staff's health and safety"; (2) "My supervisor considers staff suggestions for improving inmate or staff's health and safety"; (3) "Staff feel comfortable speaking up when they see something that may negatively affect inmate care"; (4) "When staff speak up about inmate safety and care decisions, those with greater authority are open to their concerns". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Analytical Facilities

Reduced Form Estimates: Staff Satisfaction



Analytical Sample

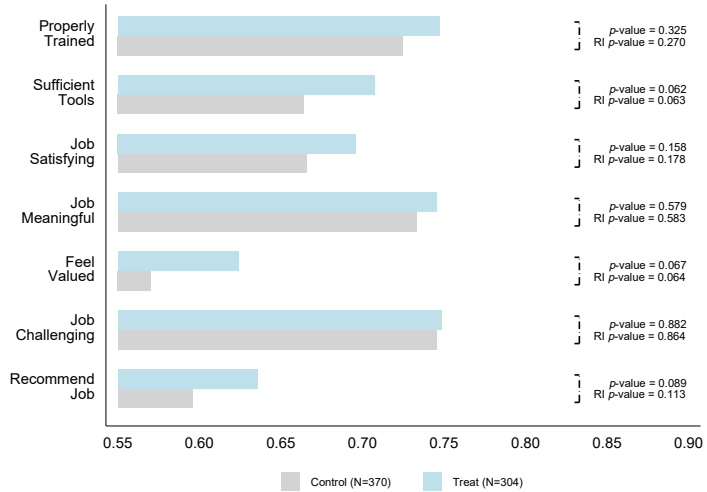
Accreditation Completion, 2SLS Estimates: Staff Satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Properly Trained	Sufficient Tools	Job Satisfying	Job Meaningful	Feel Valued	Job Challenging	Recommend Job
$\widehat{Accreditation}$	0.029	0.056*	0.039	0.015	0.069*	0.005	0.050*
	(0.029)	(0.030)	(0.026)	(0.028)	(0.037)	(0.026)	(0.029)
F-stat	56.99	60.31	63.94	60.84	62.01	61.07	60.53
CCM	0.694	0.628	0.638	0.710	0.517	0.727	0.558
Observations	671	671	671	671	671	671	671
Baseline Control	✓	✓	✓	✓	✓	✓	✓
Strata FE	✓	✓	✓	✓	✓	✓	✓

Notes: Column 1-7 represent staff's agreement on the following statements: "I received the training I need to do my job well" (1); "I have the tools and resources I need to do my job well" (2); "I am satisfied with my job" (3); "I find my job to be meaningful" (4); "I feel valued at my job" (5); "I find my job to be challenging" (6); "I would recommend my job to others" (7). They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

Analytical Sample

Accreditation Assignment, Reduced Form Estimates: Staff Satisfaction, Alt Samp



Analytical Sample

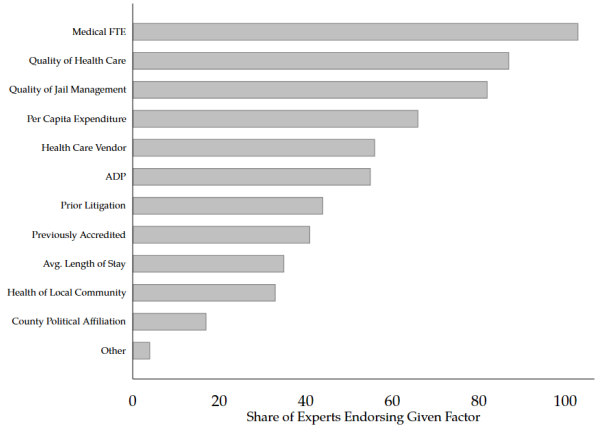
Accreditation Completion, 2SLS Estimates: Staff Satisfaction, Alt Samp

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Properly Trained	Sufficient Tools	Job Satisfying	Job Meaningful	Feel Valued	Job Challenging	Recommend Job
$\widehat{Accreditation}$	0.029	0.056*	0.039	0.016	0.069*	0.004	0.052*
	(0.029)	(0.030)	(0.026)	(0.028)	(0.037)	(0.026)	(0.029)
F-stat	56.56	60.29	63.43	60.42	61.72	61.13	59.05
CCM	0.694	0.627	0.637	0.710	0.516	0.728	0.555
Observations	674	674	674	674	674	674	674
Baseline Control	✓	✓	✓	✓	✓	✓	✓
Strata FE	✓	✓	✓	✓	✓	✓	✓

Notes: Column 1-7 represent staff's agreement on the following statements: (1) "I received the training I need to do my job well"; (2) "I have the tools and resources I need to do my job well"; (3) "I am satisfied with my job"; (4) "I find my job to be meaningful"; (5) "I feel valued at my job"; (6) "I find my job to be challenging"; (7) "I would recommend my job to others". They are all categorical questions (0=Strongly Disagree, 0.25=Disagree, 0.5=Neither Agree or Disagree, 0.75=Agree, 1=Strong Agree).

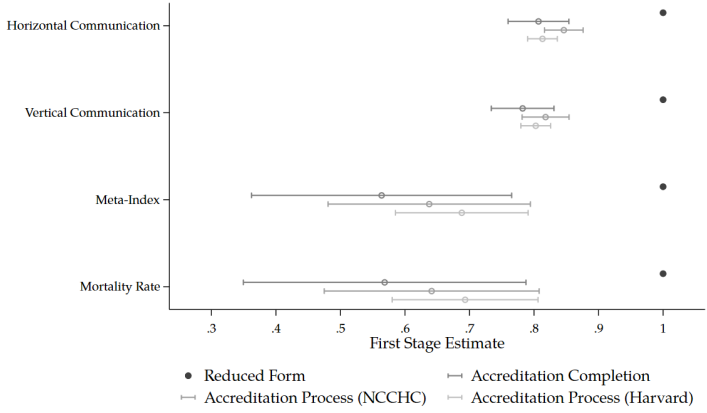
Analytical Facilities

Expert Survey: Heterogeneity Predictions



Notes: Respondents are asked "Which of the following factors do you think will impact whether NCCHC accreditation of jail health care services will affect the outcomes of interest? Recall, our outcomes of interest include health care procedures, health outcomes, staff outcomes, and litigation against jails." The graph plots the share of all respondents choosing a given factor; they could select up to five factors listed in the graph.

Comparison of First Stage Estimates for Accreditation



Notes: The figure shows the first stage estimates of accreditation assignment on accreditation completion and process. The accreditation process is measured by Harvard and NCCHC scores separately. The coefficients come for estimating the first stage. In reduced form, this coefficient is mechanically equal to 1.

Analytical Sample Validity

Selection on Enrollment

	Overall Mean (1)	Difference (2)	SE (3)
Monthly Mortality at Screening	0.057	0.001	(0.035)
2019 ADP	645.793	-396.294	(252.836)
Has Health Vendor	0.786	0.152	(0.151)
NaphCare/Wellpath	0.179	0.121	(0.102)
For-Profit Health Vendor	0.875	0.159	(0.135)
Sheriff Up For Election	0.482	-0.023	(0.166)
Anticipated Vendor Change	0.146	-0.214	(0.203)
Enrolled Facilities		44	
Excluded Facilities		12	

Notes: Column (2) reports the coefficient of regressing an indicator for whether the facility enrolled in the experiment on the outcome variable. Monthly mortality at screening refers to the average number of deaths in media reports in the 6-month period ranging from 2 months prior to screening up to 4 months post-screening. For-profit health vendor is defined as whether the health vendor is a private company.

Validity

Balance on Booked Inmates

	Control Mean (1)	Treatment Mean (2)	*p*-value (3)
Panel A: Charges and Length of Stay			
Number of Charges	4.195	4.446	0.133
Length of Stay (Days)	92.408	83.594	0.507
Panel B: Race			
White	0.439	0.513	0.105
Black	0.279	0.263	0.977
Hispanic	0.179	0.197	0.055
Other	0.029	0.019	0.758
Unknown	0.074	0.009	0.095
Panel C: Sex			
Male	0.886	0.842	0.532
Female	0.113	0.156	0.580
Panel D: Age			
Age	36.237	36.706	0.521
Number of Inmates	6498	3250	

Notes: This table shows the balance test in the inmates booked into facilities at endline between control and treatment facilities in the 32 facilities with booking records. Due to data availability, information in Panel A is available for 4 facilities. Column 3 reports the *p*-value, which is obtained by regressing the outcome variable on a treatment indicator and controlling for the strata fixed effects and clustering standard errors clustered at the facility level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Validity

Balance on Baseline Jail Characteristics for Released Inmates

	Mean	Coefficient	SE
ADP	536.805	-250.764	(170.150)
Avg. Stay Length (Months)	0.910	0.994**	(0.472)
Medical FTE	5.687	-0.786	(1.982)
Medical FTE Variety	5.888	-0.074	(1.614)
For-Profit Health Vendor	0.672	0.224	(0.170)
Previously Accredited	0.084	-0.072	(0.175)
Share County Voting Republican	0.435	0.011	(0.034)
Sheriff is Republican	0.220	0.111	(0.119)
Region: South	0.132	-0.088	(0.136)
F-Stat		3.276	
Observations		250	
Strata FE		✓	

Notes: Data are from the baseline facility survey. Column (1) reports the sample mean, columns (2) and (3) report the coefficient on an indicator for treatment assignment and the associated robust standard error, respectively. ADP stands for average daily population. FTE is the number of full-time equivalents of health staff. For-profit health vendor indicates that the facility has hired an external private company to provide health services. We report an omnibus test of balance by regressing treatment assignment on either the variables within the same panel or all the variables in the table, controlling for randomization strata fixed effects. We compute the F-statistic from a test of the variables' joint significance. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Validity

Accreditation on Probability of Death of Released Inmates: Reduced Form Estimates

	(1)
Treat	0.017
	(0.013)
Control Mean	0
Observations	250
Strata FE	✓

Notes: This table reports RF estimates of the effect of accreditation assignment on the probability of death. The outcome variable is a binary indicator of whether the inmate released at endline dies between date of release and April 2025. All specifications include randomization strata fixed effects. Standard errors are clustered at the facility level. $*$, $**$, and $***$ refer to the statistical significance at 10, 5, and 1 percent level, respectively.

Validity

Accreditation on Probability of Death of Released Inmates: 2SLS Estimates

	(1)
	Panel A: Second Stage
$\widehat{Accreditation}$	0.023
	(0.016)
	Panel B: First Stage
Treat	0.758^{***}
	(0.136)
F-stat	2.05
Control Mean	0
Observations	250
Strata FE	✓

Notes: This table reports the two-stage-least-squares estimates of the effect of accreditation completion on the probability of death. The outcome variable is a binary indicator of whether the inmate released at endline dies between date of release and April 2025. All specifications include randomization strata fixed effects. Standard errors are clustered at the facility level. $*$, $**$, and $***$ refer to the statistical significance at 10, 5, and 1 percent level, respectively.

Validity

Conceptual Framework

Model Setup

- **Players**
- **Actions**
- **Payoffs**
- **Information**

Players

- **Players:** Principal (Sheriff) and two agents: Medical (M) and Custody (C).
- Actions
- Payoffs
- Information

Actions

- Players: (Sheriff) and two agents: Medical (M) and Custody (C).
- **Actions:**
  - Agents choose between two effort levels to reduce mortality rate d; $e_i = \{h, l\}$.
  - $0 < l < h < 1$ and effort in reducing deaths is complementary.
  - Principal levies penalty (η).

$$d = 1 - \lambda(\min\{e_M, e_C\})$$

- Payoffs
- Information

Payoffs

- Players: (Sheriff) and two agents: Medical (M) and Custody (C).
- Actions: Agents choose between two effort levels to reduce mortality rate d; $e_i = \{h, l\}$.
- **Principal Payoff:** Liability from excess mortality rate among jail population

$$L = \begin{cases} 0 & \text{if } d \in [0, \hat{d}] \\ d - \hat{d} & \text{if } d > \hat{d} \equiv (1 - \lambda h) \end{cases} \tag{1}$$

- **Agent Payoff:** $-(\eta * L + e_i)$
- Information

Information

- Players: (Sheriff) and two agents: Medical (M) and Custody (C).
- Actions: Agents choose between two effort levels to reduce mortality rate d; $e_i = \{h, l\}$.
- Payoffs: L for principal; $-(\eta * L + e_i)$ for agents.
- **Information:**
  1. Agent's Hidden Type (adverse selection).
     - Two types per agent (t^1, t^2), which differ in cost (θ) of coordination on high effort.
     - Flat priors over other agent's type. Beliefs updated via Bayes rule.
  2. Hidden Action/Effort Level (moral hazard).
     - Only aggregate output is observed, which in this case is the mortality rate (Alchian and Demsetz 1972; Holmstrom 1982).

Absent Accreditation

Let $B = \lambda(h - l)$ and $\eta_m = \eta_c = \eta$, with bounds: $\frac{1}{2}\eta B < (h - l) < \eta B$.

Aversion to coordination determines type

- $\theta = 0$ if agents are type t^1
- $\theta > \eta B$ if agents are type t^2

		Custody	
		$e_C = h$	$e_C = l$
Medical	$e_M = h$	$(-h - \theta, -h - \theta)$	$(-\eta B - h, -\eta B - l)$
	$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

Absent Accreditation

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

– $(s_M^*(t^1), s_M^*(t^2), s_C^*(t^1), s_C^*(t^2))$ represents a Bayesian Nash Equilibrium (BNE) of this game if no agent of either type prefers to deviate.

– Unique BNE: (ll, ll) in the absence of accreditation.

Proof

Accreditation Resolves Information Frictions

Horizontal Coordination

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

- Perfect signal about other agent's type
- Agents know the state of the world
- BNE: (hl, hl) and (ll, ll)

Horizontal & Vertical Coord.

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-h, -\hat{\eta} B - l)$
$e_M = l$	$(-\hat{\eta} B - l, -h)$	$(-\eta B - l, -\eta B - l)$

- Perfect signal about other agent's type
- Principal informed of/penalizes based on individual agent action η;
  $\hat{\eta} B - (h - l) > \theta$
- Unique BNE: (hh, hh)

Proof

Accreditation Resolves Information Frictions

Horizontal Coordination

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

- Perfect signal about other agent's type
- Agents know the state of the world
- BNE: (hl, hl) and (ll, ll)

Horizontal & Vertical Coord.

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-h, -\hat{\eta} B - l)$
$e_M = l$	$(-\hat{\eta} B - l, -h)$	$(-\eta B - l, -\eta B - l)$

- Perfect signal about other agent's type
- Principal informed of/penalizes based on individual agent action η;
  $\hat{\eta} B - (h - l) > \theta$
- Unique BNE: (hh, hh)

Proof

Accreditation as Rubber Stamp

Base Case

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

- Unique BNE: (ll, ll)

Rubber Stamp

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-h, -l)$
$e_M = l$	$(-l, -h)$	$(-l, -l)$

- No penalty is levied for whichever effort level an agent chooses: $\eta_i = 0$
- Unique BNE: (ll, ll)

Proof

Accreditation as Distraction

Base Case

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

- Unique BNE: (ll, ll)

Distraction

	$e_C = h$	$e_C = l$
$e_M = h$	$(-\eta B - h - \theta, -\eta B - h - \theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

- Targets wrong inputs; Same penalty (ηB) is levied for both effort levels.
- Unique BNE: (ll, ll)

Proof

Recap

Accreditation Scenario	Quality Standards	Health Outcomes
Information/Coordination	Positive	Positive
Rubber Stamp	Null/Negative	Null/Negative
Distraction	Positive	Null/Negative

Qualitative Evidence on Relationship

Proof: Absent Accreditation BNE

- Agent M's best response to the strategy profile ll of agent C is ll.
  - l is the dominant strategy for type t^2 agents as θ is large enough to make $e_i = l$ the best response for agent i when $e_{-i} = h$. Agent's best response to $e_{-i} - l$ is always $e_i = l$ as $h > l$.
  - Agent M of type t^1 will choose l over h, implying that $U_M(ll, ll|t^1) > U_M(hl, ll|t^1)$.
  - Utility from h: $U_M(hl, ll|t^1) = \frac{1}{2}(-\eta B - h) + \frac{1}{2}(-\eta B - h) = (-\eta B - h)$
    Utility from l: $U_M(ll, ll|t^1) = -\eta B - l$
    As $-\eta B - l > -\eta B - h$, l is the best response for type t^1 agent to a ll strategy by agent C.
  - As payoffs are symmetric, agent C's best response to the strategy profile ll of agent M is ll.
- (hl, hl) is not a BNE.
  - We have shown that agent M of type t^2 has l as a dominant strategy. We need to show that agent M of type t^1 chooses h, when agent C plays (hl), which would require $U_M(hl, hl|t^1) > U_M(ll, hl|t^1)$. $U_M(hl, hl|t^1) = \frac{1}{2}(-h) + \frac{1}{2}(-\eta B - h)$ and $U_M(ll, hl|t^1) = -\eta B - l$. However, $U_M(hl, hl|t^1) < U_M(ll, hl|t^1)$ as $\eta B < 2(h - l)$, which is a contradiction.

Proof: Accreditation Improves Coordination (1/2)

1. Horizontal Coordination introduces the (hl, hl) BNE in addition to (ll, ll)

- Agent M plays h when their type is t^1 and when agent C plays hl.
  - Utility from h: $U_M(hl, hl|t^1) = (-h) + 0(-\eta B - h) = -h$
  - Utility from l: $U_M(ll, hl|t^1) = -\eta B - l$
  - As $-h > -\eta B - l$, h is the best response for type t^1 agent.
- Agent C plays h their type is t^1 and when agent M plays hl.
  - Utility from h: $U_C(hl, hl|t^1) = (-h) + 0(-\eta B - h) = -h$
  - Utility from l : $U_C(hl, ll|t^1) = -\eta B - l$
  - As $-h > -\eta B - l$, h is the best response for type t^1 agent.

  Both agents of type t^2 continue to play l as that is the dominant strategy.

Proof: Accreditation Improves Coordination (2/2)

2. Vertical Coordination eliminates (ll, ll) BNE.

- Agents of either type will now only choose h as it becomes the dominant strategy.
  - An agent of type t^1 chooses h as it is the dominant strategy. If $e_{-i} = l$, the best response of agent i is h as $h - l < \eta B$. Similarly, if $e_{-i} = h$, agent i's best response is h as $h - l < \hat{\eta} B$.
  - An agent of type t^2 chooses h as it is the dominant strategy. If $e_{-i} = l$, the best response of agent i is h as $h - l < \eta B$. Similarly, if $e_{-i} = h$, agent i's best response is h as $h - l + \theta < \hat{\eta} B$.

Accred Model

Accreditation as Rubber Stamp

Under the rubber stamp scenario, we assume that $\eta_i = 0$ such that no penalty is levied for whichever action an agent chooses. The modified payoff matrix is given below:

	$e_C = h$	$e_C = l$
$e_M = h$	$(-h-\theta, -h-\theta)$	$(-h, -l)$
$e_M = l$	$(-l, -h)$	$(-l, -l)$

- It is straightforward to see that l becomes the dominant strategy for agents of type t^1 as $-h < -l$.
- (ll, ll) is therefore the unique BNE.

Accreditation as Distraction

Accreditation might also serve as a distraction by targeting the wrong inputs and processes. In this case, choosing h does not reduce mortality any more than choosing l, and therefore the same penalty is levied on agents for both effort levels.

	$e_C = h$	$e_C = l$
$e_M = h$	$(-\eta B - h - \theta, -\eta B - h - \theta)$	$(-\eta B - h, -\eta B - l)$
$e_M = l$	$(-\eta B - l, -\eta B - h)$	$(-\eta B - l, -\eta B - l)$

Despite receiving a perfect signal about the other agent's type, a unique (ll, ll) BNE is obtained and accreditation fails to introduce the (hl, hl) BNE as l becomes a dominant strategy for both types of both agents.

- Utility from h: $U_M(hl, hl|t^1) = (-\eta B - h) + 0(-\eta B - h) = -\eta B - h$
- Utility from l: $U_M(ll, hl|t^1) = -B - l$
- As $-\eta B - h < -\eta B - l$, l is the best response for type t^1 agent.
- As shown earlier, type t^2 agent chooses l.