Rules and the Organization of Work

Ewan Rawcliffe (Harvard)

November 2026

Rules as the bureaucratic technology

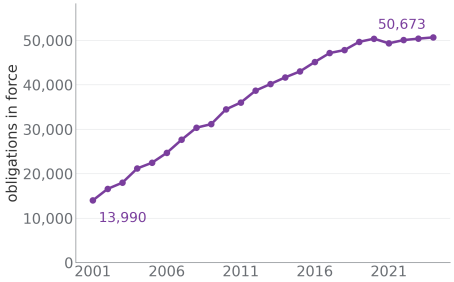
- Cooperation needs people to know what to do, and to want to do it
- In a market, **prices** deliver both (Hayek, 1945); inside an organization, people are directed by **management** (Coase, 1937)

Rules as the bureaucratic technology

- Cooperation needs people to know what to do, and to want to do it
- In a market, **prices** deliver both (Hayek, 1945); inside an organization, people are directed by **management** (Coase, 1937)
- Management must supply **shared information** where people want the same thing, and **authority** where they do not (Milgrom and Roberts, 1992)
- A common solution is **a system of rules**: written communications of central choices that limit and guide later decisions — a bureaucracy (Weber, 1968) [1921]

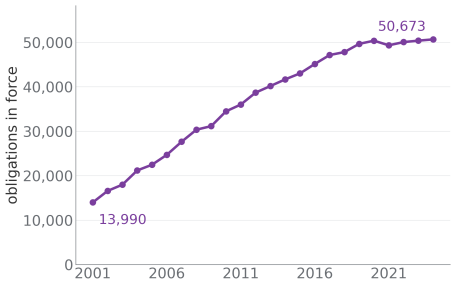
Setting: the Department of Veterans Affairs (VA) and its hospitals

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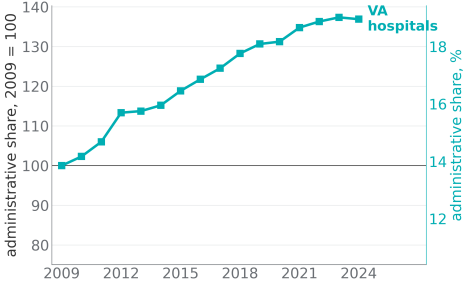


(a) Obligations in force. Each sentence in a VA directive or handbook saying someone *must* do something

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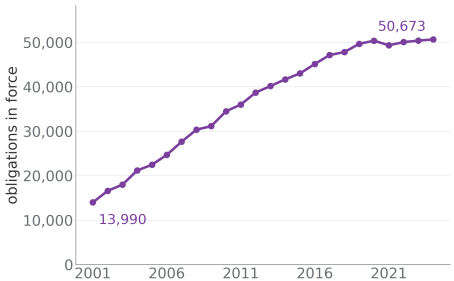


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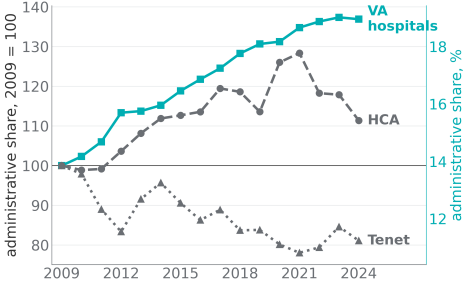


(b) Administrative share of staff. Staff in administrative and clerical occupations (OPM)

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(b) Administrative share of staff. Staff in administrative and clerical occupations (OPM); for HCA and Tenet, administrative hours (Medicare cost reports)

▸ Definitions ▸ All agencies ▸ VA breakdown

Characterizing rules

Consider two (real) obligations on clinical staff at a VA hospital:

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Obligation A. Return date

"In order for the provider and scheduler to have a clear understanding of the intent for a return appointment, the provider must document the return date in CPRS, preferably through an order."

VHA Directive 2010-027, Outpatient Scheduling (2010)

Obligation B. Controlled substances

"When new inventory is received from pharmacy, a RN, or Licensed Practical Nurse (LPN), must witness and verify the receipt of controlled substances."

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- Like a traffic light in a driving game, it **coordinates work**

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- Nurses **would not witness every delivery** unchecked: it protects the stock by ensuring verification
- As in an inspection game, it **controls work** via audit threat

Do rules mainly coordinate work, or control it?

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	Positive
Coordinating	Replace communication that would have happened anyway, and are worth writing only if cheaper than that talk: they **save work**
Controlling	Carry no such guarantee: their writer may accept that the work takes longer (audits, quality requirements) because it now serves the writer's objectives

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Echoing Marxist and public-choice critiques of organizations (Marglin, 1974; Niskanen, 2017) [1971], and the convention-versus-compliance debate in game theory (Lewis, 1969; Kreps, 1990)

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	Data
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Inputs	OPM headcounts, 7.2 million VA worker-years
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Under a simple ▸ model of rules, these findings are consistent with the conclusion that...

$\Rightarrow$ **On net, the marginal obligation behaves like control**

Literature

1. **Theories of rules** give them two functions (Weber, 1968; Gouldner, 1954; Wilson, 1989; Adler and Borys, 1996)
   - **Coordination**: rules manage hand-offs between specialists (Lewis, 1969; Kreps, 1990; Becker and Murphy, 1992; Dessein and Santos, 2006; Crémer et al., 2007)
   - **Control**: rules let managers direct and check work they cannot observe (Tirole, 1986; Holmström and Milgrom, 1991; Aghion and Tirole, 1997; Alonso and Matouschek, 2008)

   ⇒ **I test their opposite predictions for staff and for output**

2. **Empirics of rules.** Work on the state studies personnel (Finan et al., 2017; Best et al., 2023), or one margin of rules (Bandiera et al., 2021; Rasul and Rogger, 2018). Organization theory tracks rule births and revisions (March et al., 2000). Payers' rules crowd out care (Dunn et al., 2024; Brot-Goldberg et al., 2023)

   ⇒ **I measure an organization's own rules as work, and what they cost in care**

3. **Task-based work.** New tasks come from technology and demand (Acemoglu and Restrepo, 2019; Autor et al., 2024). Outside regulation adds compliance tasks to firms (Trebbi et al., 2026; Kalmenovitz, 2023)

   ⇒ **An organization's bureaucracy is a source of new tasks**

Roadmap

~~Data Construction~~

Descriptive Facts about Rules

~~Model~~

Effects of Rules on Hiring

Effects of Rules on Outputs

Descriptive Facts about Rules

Fact 1: rules ask for records, approvals and accountability

▸ Motives ▸ How rules are made

"The Audit Interpreting Physician is responsible for reviewing medical outcomes audit data at least once every 12 months."

Directive 1105.03, Mammography
→ **Medical Officer (0602)**

"The RN will place the medication order with 'hold for signature' for the VA prescriber to review and approve."

Directive 1108.13, Nursing Medication Protocols
→ **Nurse (0610)**

"Facilities must have a written mail security plan, regardless of the facility's mail volume."

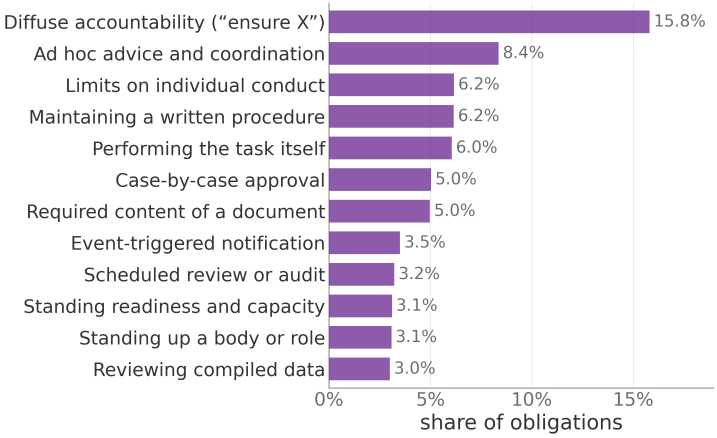
Handbook 6340, Mail Management
→ **Mail and File (0305)**

"Any theft or loss of silver and scrap film is to be reported immediately."

Handbook 7348, Personal Property
→ **Logistics Management (0346)**

Fact 1: rules ask for records, approvals and accountability

Motives How rules are made



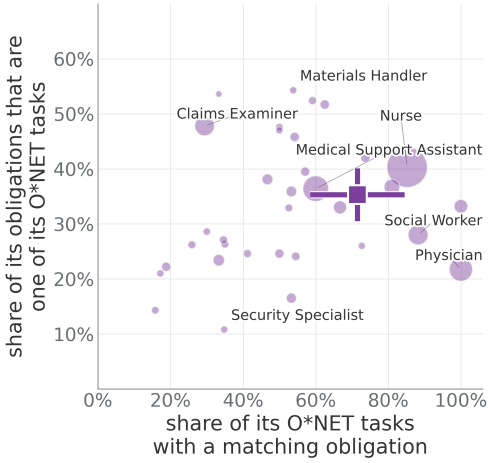
Kinds of task from agentic clustering of the obligations (Löwe and Silcock, 2026)

Fact 2: rules go beyond the core of the job

Construction

an occupation
(area: VA staff)

headcount-weighted
average, 95% intervals



35% of an occupation's obligations are one of its O*NET tasks; they reach 71% of its tasks

Fact 3: administrators carry disproportionate obligations

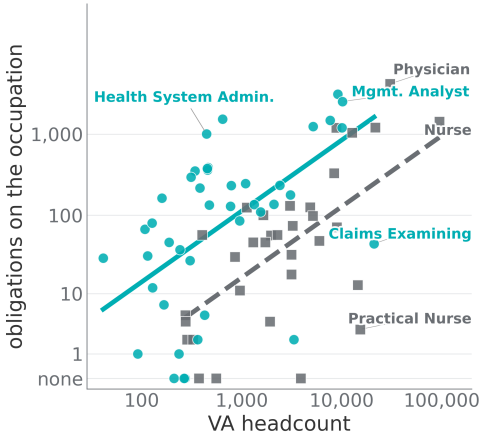
▸ Definitions ▸ Rule topics

occupations (number)

administrative (42)

clinical (33)

administrative:
6.6× the obligations of a clinical occupation of the same size

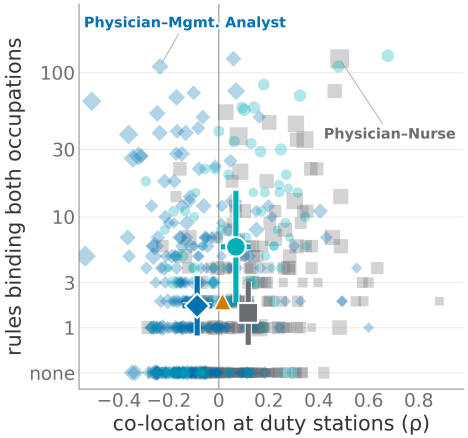


Administrators are 19% of VA staff and carry **51% of its obligations**

Fact 4: rules tie administrators to clinicians they do not work beside

pairs (% co-located)

- clinical–administrative (19%)
- both clinical (78%)
- both administrative (63%)
- permuted labels (48%)



19% of clinical–administrative pairs work side by side, against 78% of clinical pairs, yet they **share as many rules**

Effects of Rules on Hiring

How do rules affect hiring? ▸ Raw data

- **Hypothesis.** If rules control, headcounts rise after obligations are added
- **Ideal experiment.** An obligation is randomly assigned to an occupation, and we see what happens to its staff
- **What we learn.** Whether rules mainly coordinate work and economize labor, or control it at the cost of more staff
- **Independent variation.** Leaders write and revise topic-based rules that oblige *bundles* of occupations
- **Strongest test.** The rule comes from another office, not the one that mainly employs the occupation ("incidental" obligations)

Identification: each year's change in obligations is a treatment

131 VA occupations (OPM series), changes in their obligations 2003–2019:

$$\boxed{\ln E_{o,t+h} - \ln E_{o,t-1} = \beta_h \, \Delta s_{ot} + \alpha^h_{c(o)t} + \varepsilon^h_{ot}} \qquad h = -6, \ldots, 5$$

E_{ot}: the occupation's September VA headcount. $s_{ot} = \ln(1 + S_{ot})$, S_{ot} the obligations in force on it. $\alpha^h_{c(o)t}$: occupational category $\times$ year.

- **Shocks:** the median rise adds 10% more obligations; obligations unchanged in 50% of occupation-years (up in 34%, down in 16%; median rise over the sample 117%) ▸ Shocks
- **Comparison:** occupations of the same category whose obligations changed by less that year
- **Inference:** wild cluster bootstrap, clustered by occupation
- **Interpretation:** β is the causal effect of obligations on staff if the change is unanticipated and unrelated to other staffing shocks

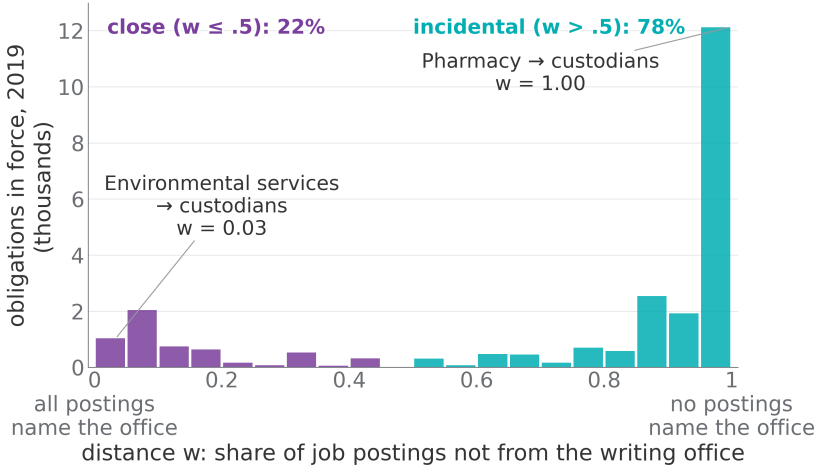
Threat: hiring might follow rules without rules causing it ▸ Directions

	The occupation's own office writes the rule	Another office writes it
Reverse causality	It writes rules for occupations that are large, or about to be ▸ Fixed cost	It plans little of the occupation's headcount
Influence	Its rules make its own staff indispensable	It gains **few staff** when the occupation grows
Program expansion	Its program brings the rulebook, the staffing plan and the budget at once	Its program staffs its own office: the occupation only **receives the duties** ▸ Checks

Idea: use incidental obligations, written by other offices

Obligations from other offices

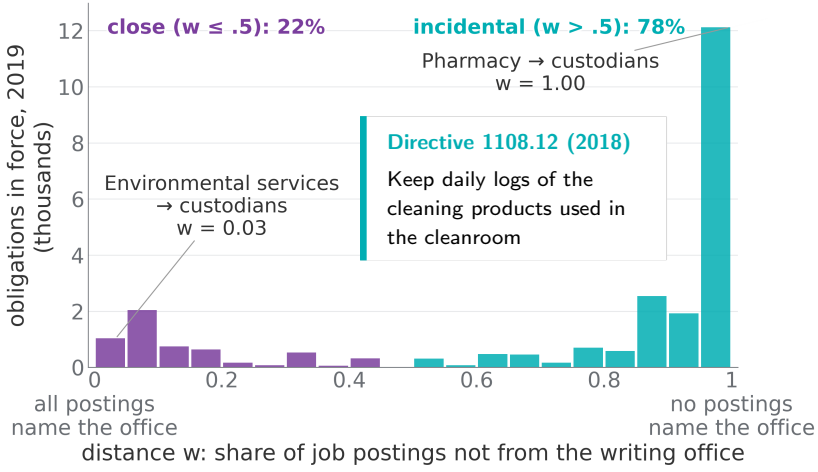
Measure



Incidental: from other offices, with under half of the occupation's postings ($w > .5$): **78% of obligations**

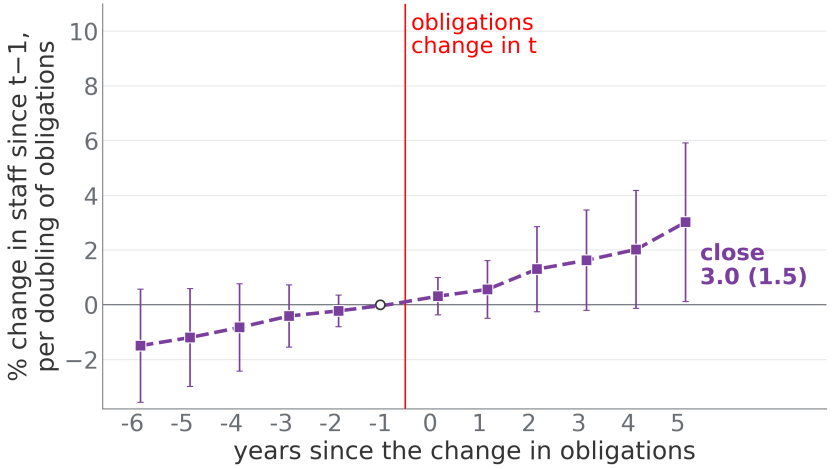
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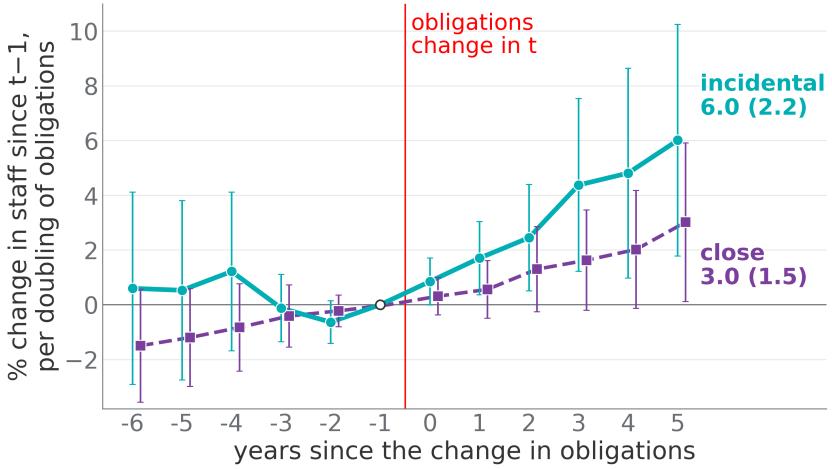
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Incidental obligations add staff



Doubled close obligations: 3.0% more staff by year five (s.e. 1.5); leads $p = 0.79$

Incidental obligations add staff



Doubled obligations from other offices: **6.0% more staff** by year five (s.e. 2.2, $p = 0.005$); leads $p = 0.30$

Interpretation: do rules control labor? ▸ Checks

- Staff rise **after** obligations rise, not before
- **Labor follows the duty, not the writer**: rules from other offices add 6.0% to an occupation's staff per doubling, its own office's rules 3.0%
- With a **fixed budget** and occupations that are **gross complements**, staff rising means rules reduce each worker's productive time

⇒ **Rules do not economize on labor: on net they add work, consistent with the control view**

Effects of Rules on Outputs

How do rules affect outputs?

- **Hypothesis.** If rules control, (some) output falls after rulebooks grow
- **Ideal experiment.** The rulebooks of a hospital's staff are randomly lengthened, and we see what happens to its medical care
- **What we learn.** Whether rules mainly coordinate work and increase efficiency, or control it by redirecting work across tasks
- **Independent variation.** Rules oblige *occupations*, which load on hospitals with different *occupation mixes*

Data: appointments, outpatient quality and news complaints at VA hospitals

	Units	Years	Obs.	Mean	S.D.
Appointments completed per year	138 hospitals	2015–2019	690	253,104	130,077
Recommended outpatient care delivered (%)	136 systems	2015–2019	678	88.1	1.82
Preventable hospitalizations per 1,000	136 systems	2015–2018	544	25.3	4.25
Top rating for primary care provider (%)	136 systems	2016–2019	543	69.9	5.87
Any news complaint story in the year (%)	119 stations	2015–2019	595	46.7	49.93

Appointments: VA Patient Access Data; the event study uses them by month (8,954 hospital-months). *Quality:* SAIL scorecards, by health care system (usually one hospital) (Nelson et al., 2014; Kang et al., 2019). *News:* U.S. newspapers in ProQuest, by VA parent station (can span several hospitals).

Identification: national rules with local exposure

Designs

Exposure of hospital f in year t: the log obligations binding its average worker,

$$X_{ft} = \sum_{o} w_{fo} \log(1 + S_{ot}) \qquad \log V_{ft} = \alpha_f + \delta_t + \gamma_t \pi_f + \beta X_{f,t-1} + \varepsilon_{ft}$$

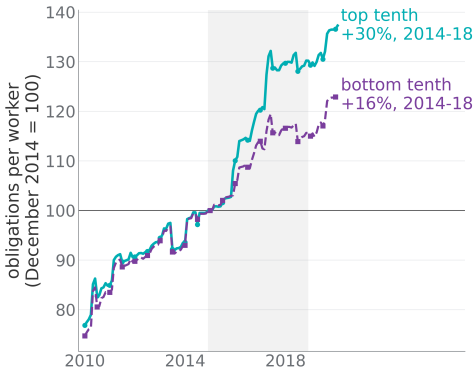
w_{fo}: occupation o's share of hospital f's staff, 2008–10. S_{ot}: obligations in force on o. V_{ft}: appointments completed. π_f: the hospital's staff growth, 2010–14.

- **Shares** held at baseline: long-stay campuses against acute hospitals, differences stable
- **Shifts** are national, occupation-specific changes in obligations (same shocks as hiring)
- **Assumption:** *when* an occupation's rules change is unrelated to appointment shocks *where* it works
- **Fails if** rules are written for hospitals in trouble: appointments would fall *before* exposure rises

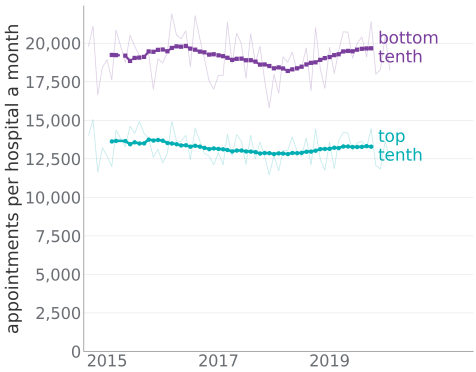
Exposure uses baseline shares, so β includes effects that run through the staff mix

Raw data: appointments and exposure

▸ Occupation mix



(a) Obligations per worker

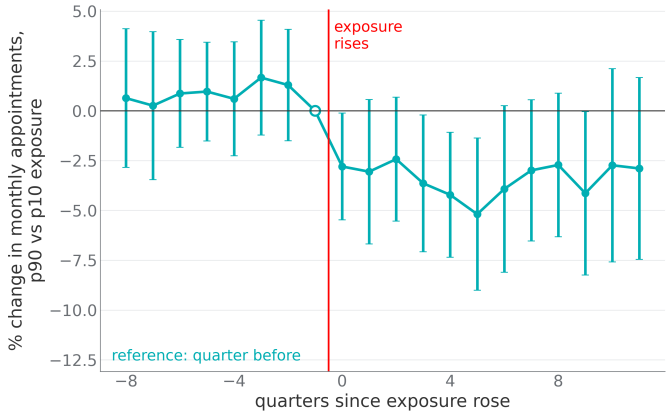


(b) Appointments per hospital a month

Top and bottom tenth of hospitals by 2014–18 growth in rule exposure. Legacy campuses in decline, or rules written for hospitals in trouble? → **Assess pre-trends**

Appointments fall with rules added

Leave one out | Clinicians | Hiring



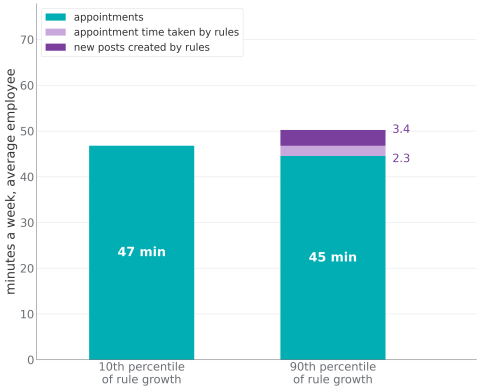
3.9% fewer appointments, four quarters after vs. before (s.e. 1.3, randomization $p = 0.02$; leads $p = 0.79$)

Outpatient quality does not move

		Randomization p	
Outcome	Effect	effect	leads
Quantity (effect in %)			
Appointments completed per year	−5.0 (1.3)	0.03	0.79
Quality (effect in s.d.)			
Recommended outpatient care delivered (%)	+0.03 (0.18)	0.88	0.80
Preventable hospitalizations per 1,000	+0.10 (0.11)	0.54	0.16
Top rating for primary care provider (%)	−0.13 (0.08)	0.33	0.52
News coverage (effect in pp)			
Any complaint story in the year	+0.9 (12.7)	0.94	0.28

Effect: 90th against 10th percentile of 2014–18 rule growth; exposure-robust s.e.

Interpretation: time goes from patients to compliance

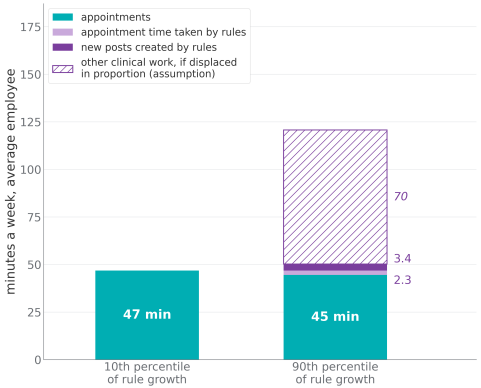


Minutes a week, average employee

- **47 appointments:** 2019 appointments × 20 min, per employee (10th percentile)
- **2.3 taken by rules:** the estimated 5.0% drop, applied to those 47 min
- **3.4 new posts:** the hiring estimate for all obligations, applied to 2015–18 rule growth outside the medical family, puts 0.14% more of staff in rule-created posts; × 2,400 min (40 hours)

At the average hospital, 5.0% is about **12,590 appointments a year**, of 253,104

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- **70 other clinical work** (*assumption*): the same 5.0% of clinicians' other time, 62% of staff × 2,400 min, less 47

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Conclusion

Conclusion

⇒ **On net, the marginal obligation behaves like control: it adds work, paid for in staff or in output**

- **What rules ask for.** Records, approvals and accountability. Administrators are 19% of staff and carry 51% of obligations
- **Hiring.** An occupation whose obligations from other offices double has 6.0% more staff five years later (s.e. 2.2)
- **Output.** Hospitals where rules grew fastest complete 5.0% fewer appointments (s.e. 1.3), with no change in quality
- **Open.** Why rules accumulate, and how they are enforced

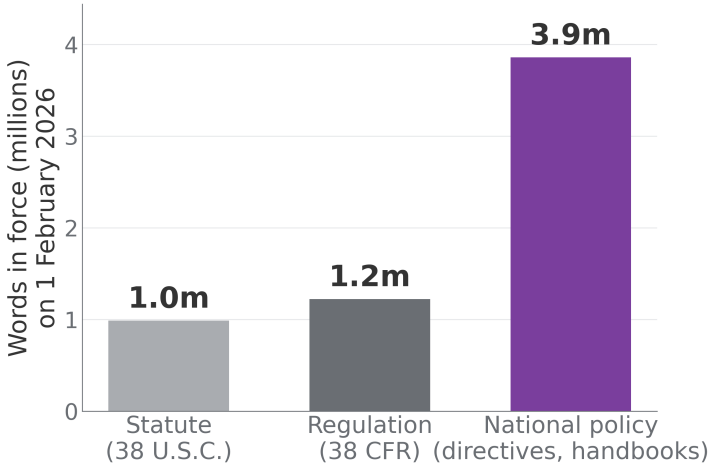
Limitations: a single national rule set, no local rules, no measure of the burden of each obligation

Thank you

ewanrawcliffe@g.harvard.edu

Data: national policy at the VA

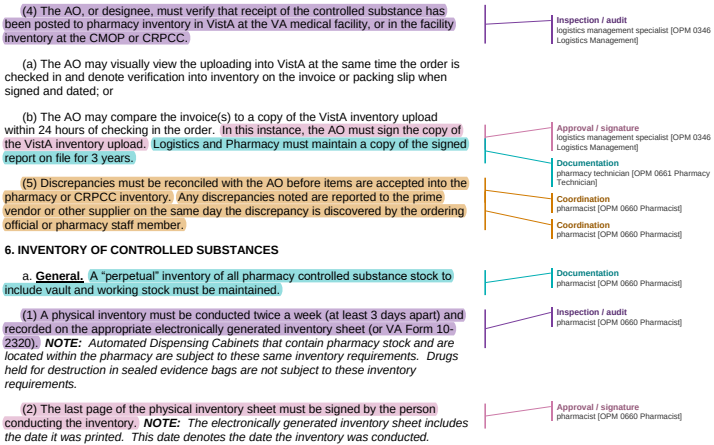
Back | Sources | Process | Rules persist



Directives and handbooks: **written for the VA, by the VA**. Not measured: local rules

Rules as bundles of obligations

Back Responsibilities



VHA Directive 1108.01(2), Controlled Substances Management. AO: Accountable Officer (chief of logistics)

Measurement of obligations at scale

Back | Four rules | Details | Validation

	1. Archive & chain	2. Extract obligations	3. Track across versions	4. Assign occupation
Method	**Chain** archived versions into rules by number and rescissions 1,644 rules, 3,916 versions	LLM **Quote** each sentence or clause that creates a duty (*must, shall, is responsible for*), one per duty, where it first appears 121,861 obligations	Unchanged provision: **inherited**. Changed: **the same obligation** if old and new wording score ≥ 85 in similarity, else it **ends**	LLM **Map** the occupation named for each duty to an OPM series 320 series, 98.4% assigned
VHA Directive 1130 *Dental program*	Directive 1130: 1998, 1999, 2011, 2016, 2017, 2020 Directive 1130(1): 2024	**2020** "Impressions must be disinfected before entering the laboratory at the dental service."	**2024**, Directive 1130(1) Provision unchanged **same obligation**, inherited	"dental assistant" → **0681** Dental Assistant
VHA Directive 7718 *Fire department services*	Handbook 7701.02: 2015, 2017 Directive 7718: 2020	**2015** "A minimum of **4** trained firefighters **shall** be maintained on duty at all times, 24 hours per day . . ."	**2020**, Directive 7718 "A minimum of **four** trained firefighters **must** be maintained on duty at all times, 24 hours per day . . ." **same obligation**, similarity 97	"fire chief" → **0081** Fire Protection and Prevention

Model: only controlling rules require monitoring

Back Results

Technology: CES in effective labor. Staff are chosen to maximize output given the budget

$Y = F(\varepsilon_1 L_1, \ldots, \varepsilon_I L_I)$, elasticity σ

Time use: a share ε_i of paid time produces output. The rest is lost at hand-offs (c_i) or spent on compliance (t_i)

$\varepsilon_i = 1 - c_i - t_i, \quad t_i = \tau_i n_i$

Rule types, defined by compliance absent monitoring

Coordinating: followed unmonitored
Controlling: followed only if monitored

Preferences: workers supply all paid hours and value only output. The writer also values coverage, $V(n)$ (records, approvals)

Writer: $\max_n \; Y(n) + V(n)$

⇒ **Effect on time**: a rule followed without monitoring cannot cost output, so it lowers c_i. One requiring monitoring adds τ_i on **every** task it covers

Coordinating: $c_i \downarrow$
Controlling: $t_i \uparrow$

⇒ **Monitoring**: administrators enforce compliance by random audits

$p_i \geq \tau_i / \bar{k}, \quad L_A \propto \sum_i p_i n_i L_i$

n_i: share of tasks covered. τ_i: time per covered task. p_i: audit probability. $\bar{k}$: maximum sanction.

Model: only rules that require monitoring reduce output

Back Shirking

Unit cost rises with lost productive time and with audit costs

$$d \ln P = -\sum_i s_i \, d \ln \varepsilon_i + \kappa$$

Output responds to unit cost with elasticity η

$$\boxed{d \ln Y = -\eta \, d \ln P}$$

Staff in i, for a rule binding i: scale and substitution effects

$$\boxed{\frac{d \ln L_i}{d \ln \varepsilon_i} = s_i \eta + (1 - s_i)\sigma - 1}$$

The writer extends coverage until marginal value equals marginal output cost

$$\partial V / \partial n_i = -\partial Y / \partial n_i$$

P: unit cost. s_i: i's cost share. κ: audits' addition to P (%). η: 0 with fixed output, 1 with fixed budget.

	Audits	Output if $\eta > 0$	Staff in i if $\sigma < 1$, $\eta \leq 1$	Written
Coordinating rule: $c_i \downarrow$	none	rises	fall	always, even if $V \equiv 0$
Controlling rule: $t_i \uparrow$	a sample	falls	rise	up to $\partial V / \partial n_i = -\partial Y / \partial n_i$

Extension: with shirking, a controlling rule can reduce staff

Back

Baseline: no shirking. Rules reallocate time across tasks $\varepsilon_i = 1 - c_i - t_i$

Extension: workers shirk when it pays. Rules can raise effort $\varepsilon_i = 1 - c_i - t_i - u_i$

Example: office attendance, a controlling rule. Workers w shirk less, and managers m cut monitoring by more $du_w < 0, \quad dt_m < 0, \quad d\ln \varepsilon_m > d\ln \varepsilon_w$

Staff shift toward workers ($\sigma = 0$, $\eta = 1$) $\boxed{d\ln L_m = -s_w \left(d\ln \varepsilon_m - d\ln \varepsilon_w\right) < 0}$

u_i: shirking, paid time not worked. t_m: managers' monitoring time per worker. t_w is unchanged: commuting time is unpaid.

	Margin	Output	Staff	Written
Coordinating rule: $c_i \downarrow$	task allocation	rises	fall	always, even if $V \equiv 0$
Controlling rule: $t_i \uparrow$	task allocation	falls	rise	up to $\partial V/\partial n_i = -\partial Y/\partial n_i$
Controlling rule: $u_w, t_m \downarrow$	effort	rises	m fall, w rise	always, even if $V \equiv 0$

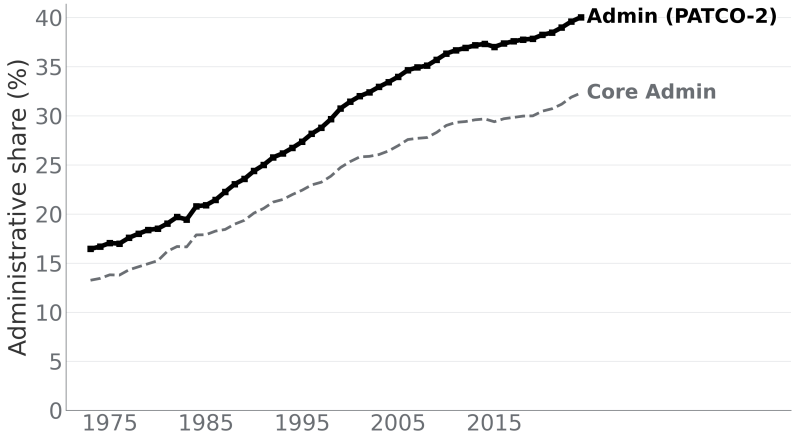
Occupational categories (PATCO): definitions and largest series

Back Fact 3

Category (2024 share)	OPM definition	Three largest series, September 2024
Professional (1), 28.5%	Knowledge of a field of science or learning acquired through a bachelor's or higher degree with major study in that field.	Nurse (111k); Contracting (45k); General Attorney (44k)
Administrative (2), 40.0%	Analytical ability, judgment and knowledge of administration or management; no specialized degree, skills gained through general college education or progressively responsible experience.	Miscellaneous Administration and Program (113k); Information Technology Management (101k); Management and Program Analysis (97k)
Technical (3), 16.9%	Nonroutine support of a professional or administrative field, drawing on practical knowledge gained on the job or through training short of a degree.	Compliance Inspection and Support (57k); Miscellaneous Clerk and Assistant (47k); Contact Representative (37k)
Clerical (4), 3.1%	Structured office, business or fiscal support under established procedures; training or working knowledge of the tasks.	Medical Support Assistance (42k); Secretary (8k); Tax Examining (5k)
Other white collar (5), 3.6%	White-collar work fitting none of the above; chiefly protective service.	Border Patrol Enforcement (19k); Correctional Officer (16k); Police (14k)
Blue collar (6), 7.9%	Trades, crafts and manual labor under the Federal Wage System.	Custodial Working (14k); Maintenance Mechanic (12k); Aircraft Mechanic (9k)

All agencies: the administrative share, and the series behind it

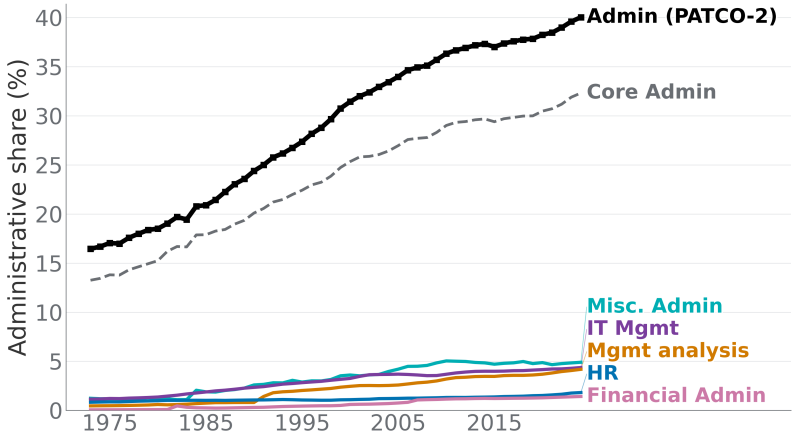
Back By agency



Every federal agency, administrative (PATCO 2) share of staff. **Core Admin** drops the 16 PATCO-2 series in enforcement, inspection, security, intelligence and aviation (e.g. Border Patrol, Air Traffic Control)

All agencies: the administrative share, and the series behind it

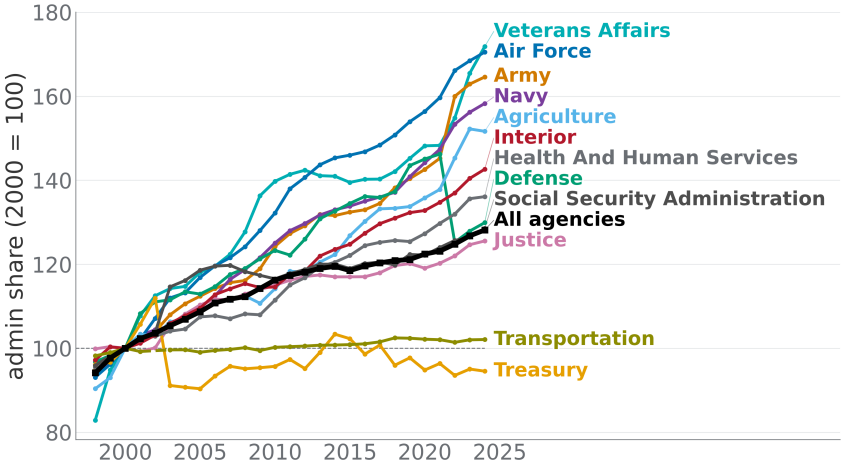
Back By agency



Every federal agency, administrative (PATCO 2) share of staff. **Core Admin** drops the 16 PATCO-2 series in enforcement, inspection, security, intelligence and aviation (e.g. Border Patrol, Air Traffic Control)

Administrative share by agency, indexed to 2000

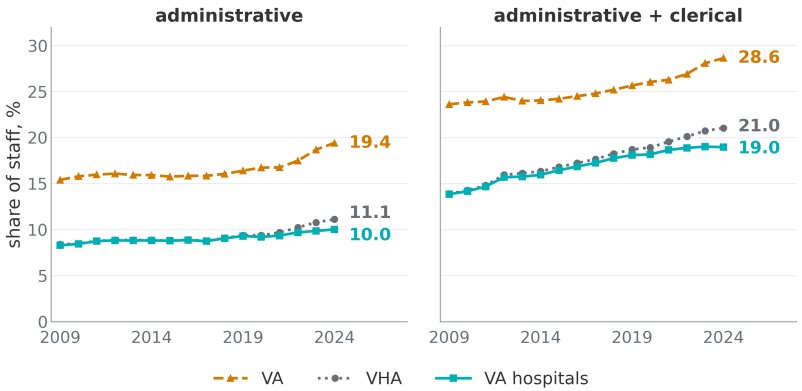
◂ Back ▸ VA breakdown



Each agency's PATCO-2 share of its own staff. Veterans Affairs is the whole department, not only its hospitals

VA breakdown: most of the hospitals' rise is clerical

Back By agency



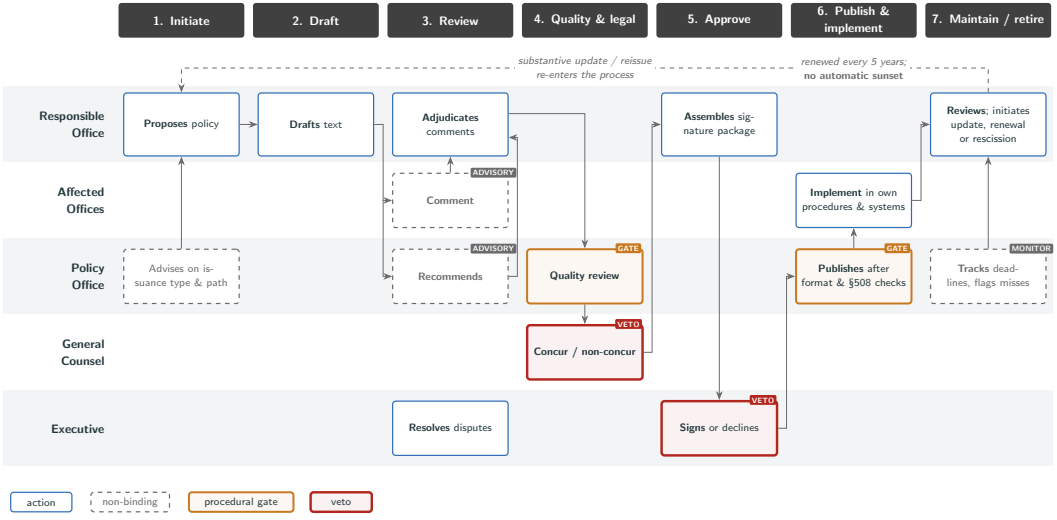
Words in force, by layer

Back

- **Statute:** Title 38 of the US Code with statutory notes, release point 119-73: 987,360 words
- **Regulation:** 38 CFR chapter I, annual edition of 1 July 2025: 1,222,645 words
- **National policy:** 654 VA directives and handbooks in force: 3,859,420 words
- National policy is 3.9 times statute, 3.2 times regulation, 1.7 times both. Counted on 1 February 2026
- Not counted: VBA's M21-1 adjudication manual (about 1.4m words), local medical-center policies (tens of thousands)

How a VA rule is made (VA Enterprise Procedure Manual 0999)

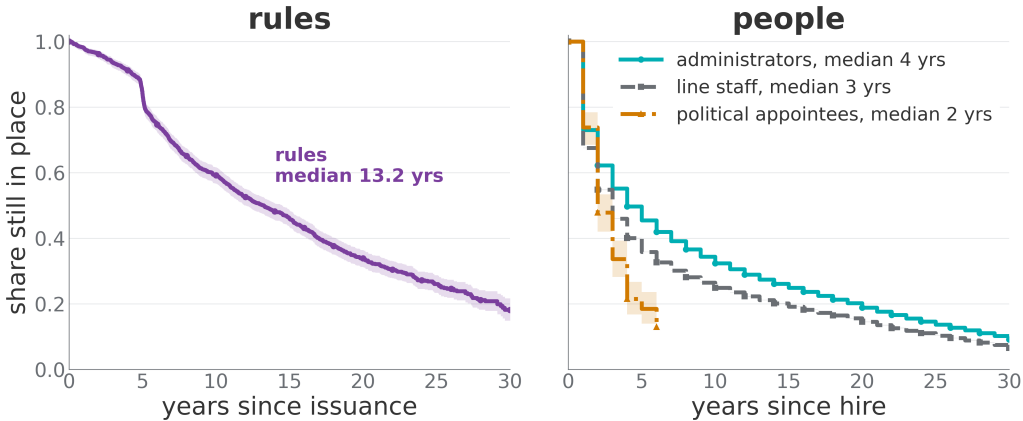
Back Fact 1



Columns are the steps, rows who acts. Blue: actions; dashed grey: non-binding inputs; orange: procedural gates; red: vetoes. The dashed arrow returns a substantive update, or the five-yearly renewal, to the start.

Rules persist

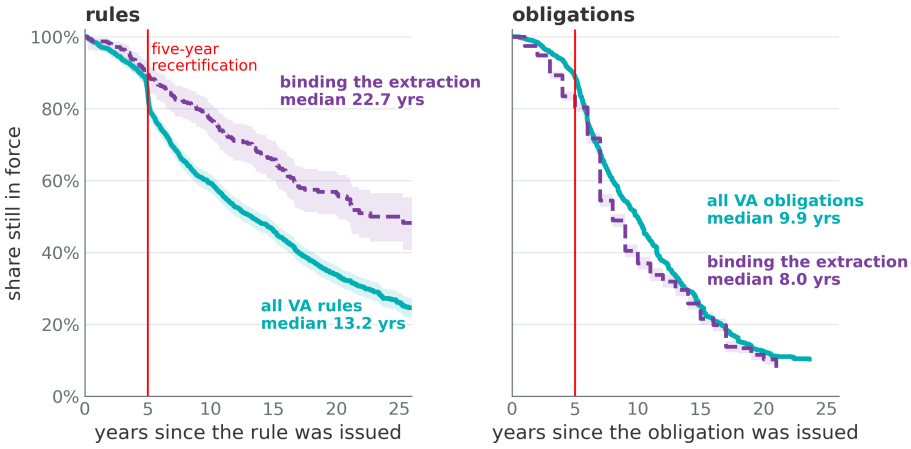
Back Obligations



The median rule lasts **13.2 years**; the median political appointee stays 2 years

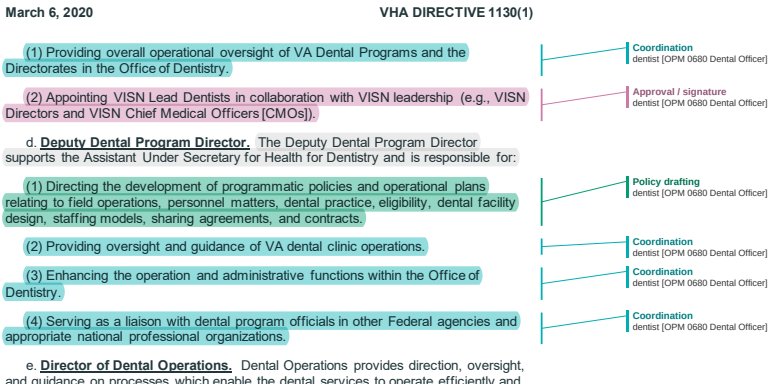
How long rules and their obligations last

Back



Kaplan–Meier, rules (left) and obligations (right); teal all, dashed purple those binding the extraction; red line at five years. Median rule 13.2 years

A list of responsibilities: VHA Directive 1130(1), dental care



March 6, 2020 VHA DIRECTIVE 1130(1)

(1) Providing overall operational oversight of VA Dental Programs and the Directorates in the Office of Dentistry.

Coordination
dentist [OPM 0680 Dental Officer]

(2) Appointing VISN Lead Dentists in collaboration with VISN leadership (e.g., VISN Directors and VISN Chief Medical Officers [CMOs]).

Approval / signature
dentist [OPM 0680 Dental Officer]

d. **Deputy Dental Program Director.** The Deputy Dental Program Director supports the Assistant Under Secretary for Health for Dentistry and is responsible for:

(1) Directing the development of programmatic policies and operational plans relating to field operations, personnel matters, dental practice, eligibility, dental facility design, staffing models, sharing agreements, and contracts.

Policy drafting
dentist [OPM 0680 Dental Officer]

(2) Providing oversight and guidance of VA dental clinic operations.

Coordination
dentist [OPM 0680 Dental Officer]

(3) Enhancing the operation and administrative functions within the Office of Dentistry.

Coordination
dentist [OPM 0680 Dental Officer]

(4) Serving as a liaison with dental program officials in other Federal agencies and appropriate national professional organizations.

Coordination
dentist [OPM 0680 Dental Officer]

e. **Director of Dental Operations.** Dental Operations provides direction, oversight, and guidance on processes which enable the dental services to operate efficiently and

Raw data: the next page of the same directive

Back

g. **Director of Homeless Veterans Dental Program.** The Homeless Veteran Dental Program promotes access to focused dental services for qualifying Veterans who have experienced or are at-risk for homelessness. The Director of Homeless Veterans Dental Program is responsible for:

(1) Overseeing the Homeless Veterans Dental Program.

Coordination
health program specialist [OPM 0671 Health System Specialist]

(2) Serving as a resource for issues related to the oral health and dental care delivery of Veterans experiencing homelessness.

Coordination
health program specialist [OPM 0671 Health System Specialist]

h. **Director of Dental Education Program.** The Dental Education Program develops and promotes a variety of educational opportunities for all VA staff, with a focus on supporting the lifelong learning habits in dental professionals who are entrusted with delivering optimum health care to Veterans. The Director of Dental Education is responsible for:

(1) Providing VA medical facility dental staff with educational and development opportunities.

Training
health educator [OPM 1725 Public Health Educator]

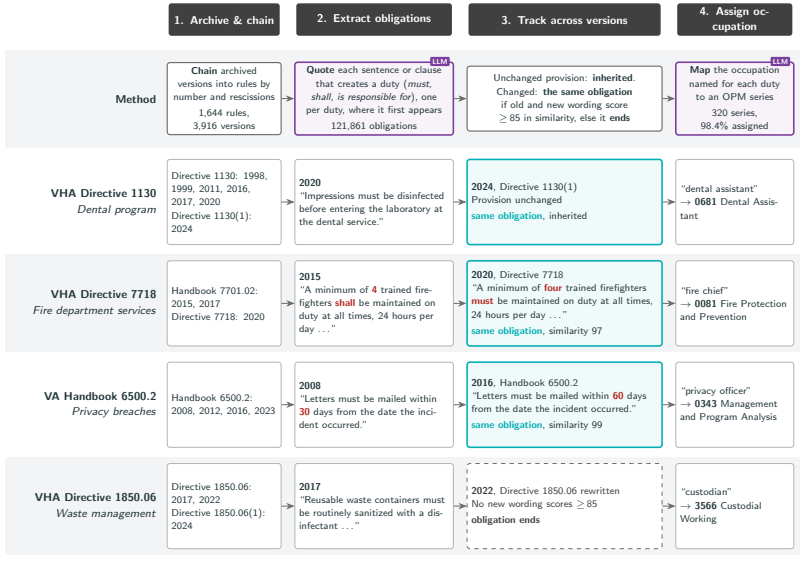
(2) Consulting on issues related to academic training programs involving dentistry in collaboration with the Office of Academic Affiliations (which has primary responsibility for oversight and funding of dental trainees [undergraduate, graduate, and auxiliary]).

Coordination
health educator [OPM 1725 Public Health Educator]

See VHA Handbook 1400.04, Supervision of Associated Health Trainees, dated March

Four rules followed through each step

Back



Measurement, step by step

Back

- **Sample:** every national VA directive and handbook listed on the VA's publication sites and their predecessors, in force 2001–2024; earlier versions from the Wayback Machine, chained by number and by the rescissions each records
- **Extraction:** a language model returns every obligation, verbatim, with nine attributes: who bears it, office, tier, occupation, frequency, kind of labor, conditional, by reference. Chunks of at most 24,000 characters, cut at provision boundaries
- **Tracking:** a provision is read once, where it first appears; a reworded obligation (word overlap $\geq$85) continues, an unpaired one ends
- **Occupation:** 2,565 occupation strings to 320 OPM series, majority of three runs, top strings hand-audited; 98.4% assigned
- **Not in the corpus:** notices, manuals, memoranda, local policy; VBA's M21-1

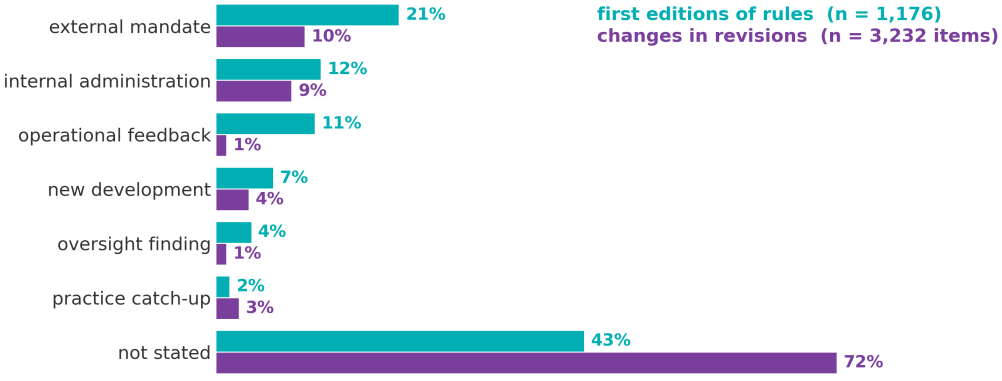
Validation

Back

Check	Result
Obligations	precision **0.97**, recall **0.80**
Occupations, agreement in obligations	93 of 97
Occupations, agreement in job postings	98%

Stated motives: mandates and reorganizations, then field problems

Back



43% of first editions state no reason; of those that do, 37% cite a mandate, 21% a reorganization, 20% a problem in the field

An unstated incident

A scandal wrote the rules: sterile processing reached dentistry in 2010

Back

- **2009.** Improper endoscope reprocessing is found at several VA hospitals; national sterile-processing directives follow. They are **written for endoscopes** and do not name dentistry
- **St. Louis.** With sterile-processing staff overwhelmed, a dental clinic's staff begin cleaning and packaging their own instruments. A March 2010 inspection finds unacceptable infection-control conditions; the clinic closes and patients are told of possible exposure to bloodborne infection
- **July 2010.** A memorandum writes the dental rule: reprocessing "shall only occur in SPD". It gives no reason
- **Since 2020.** The stock binding the procedure has fallen by 24%, by relocation, not repeal

> $\Rightarrow$ **A rule written after one failure binds every process that shares a step; the rule does not say why**

Matching obligations to O*NET tasks

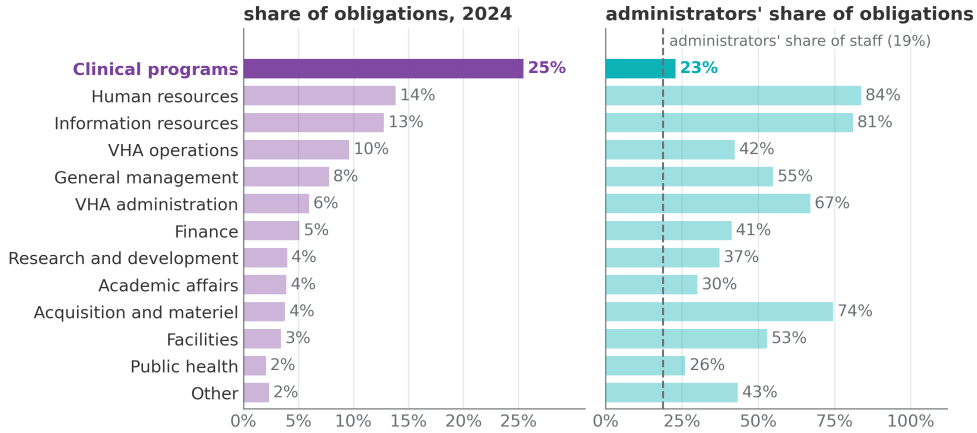
Back

- **Occupations:** OPM series with 30–1,500 obligations in 2024, at least 1,000 VA staff and one clear O*NET occupation (matched by hand): 34 series, 62% of VA staff
- **Obligations:** distinct duties on the series in 2024, 14,697
- **Matching:** a language model reads the O*NET tasks with 30 obligations at a time, names the task a complier would do, and grades the fit
- **Measures:** y, share of obligations with a **direct** fit; x, share of tasks with one; square, headcount-weighted mean, robust 95% CI

Fit	Obligation on registered nurses (0610), abbreviated	O*NET task, Registered Nurses
Direct: complying is plainly doing the task	Perform the Pressure Injury Risk Assessment daily for all patients with a newly diagnosed spinal cord injury	Monitor, record, and report symptoms or changes in patients' conditions
Loose: only touches the task's area	Needles and syringes should be disposed of immediately after use in a sharps container	Prepare rooms, sterile instruments, equipment, or supplies
None	Nurses requesting the 72/80 work schedule or the Baylor Plan must complete VA Form 0870a	—

Many rules are clinical rules

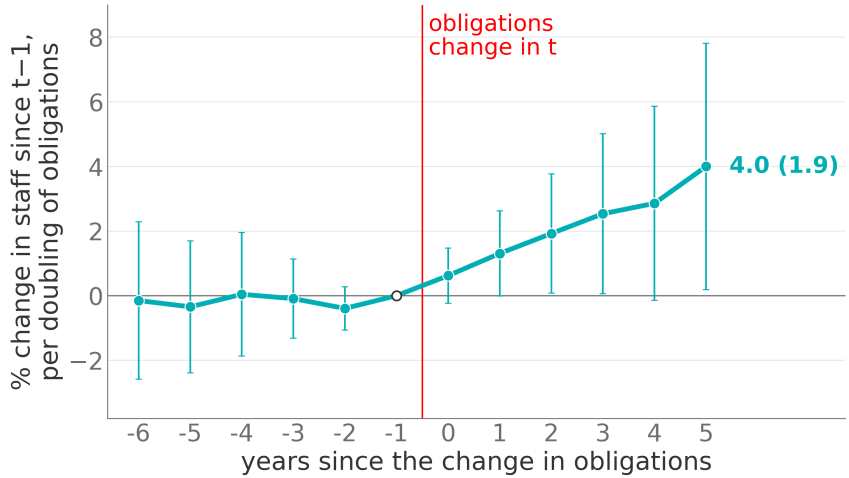
Back



Administrators carry **23% of the obligations in clinical rules**, near their 19% of staff, and 61% in the rest

All obligations increase headcounts

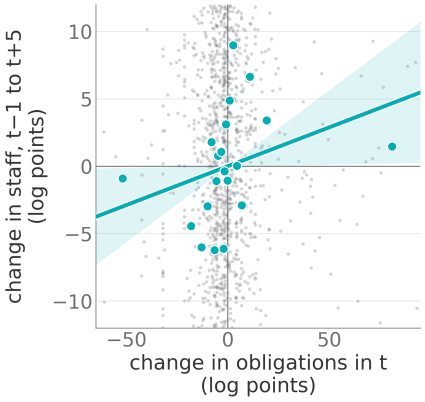
Back | Specifications | Example



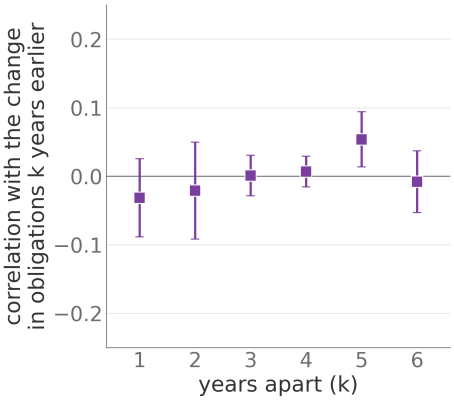
Doubled obligations: **4.0% more staff** by year five (s.e. 1.9, $p = 0.04$); leads jointly $p = 0.81$

Raw data: staff after a change in obligations; changes are one-off

Back Estimation



(a) Staff against the change in obligations

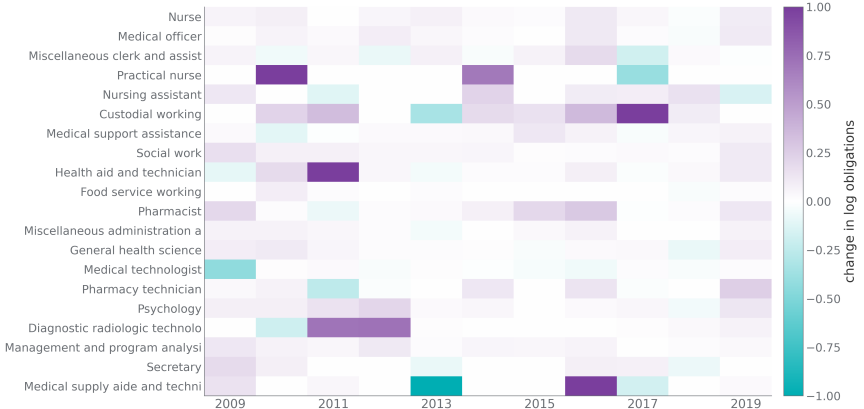


(b) Each change against earlier ones

(a) 2,218 occupation-years, both axes net of category × year means; circles: 20 equal bins; line and band: the year-5 estimate, 95% CI; 53% of dots outside the frame. (b) Raw; 95% CIs clustered by occupation

Shocks: rules change in steps, at different times

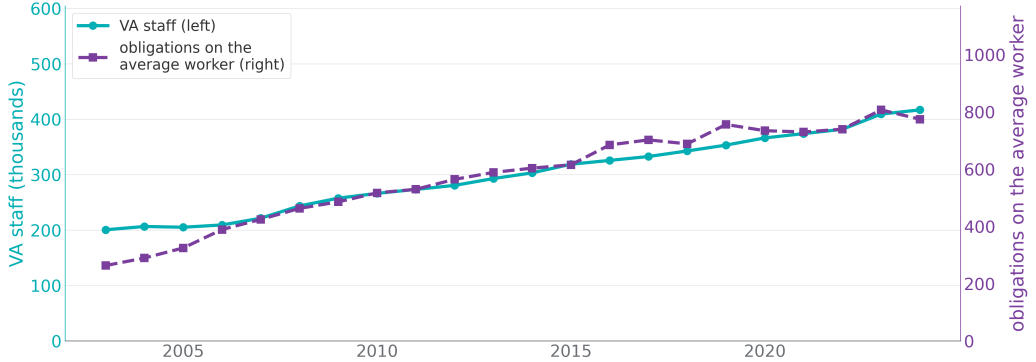
Back Levels



Custodians' obligations jump in 2017 with the waste and textile directives; nurses' grow a little every year

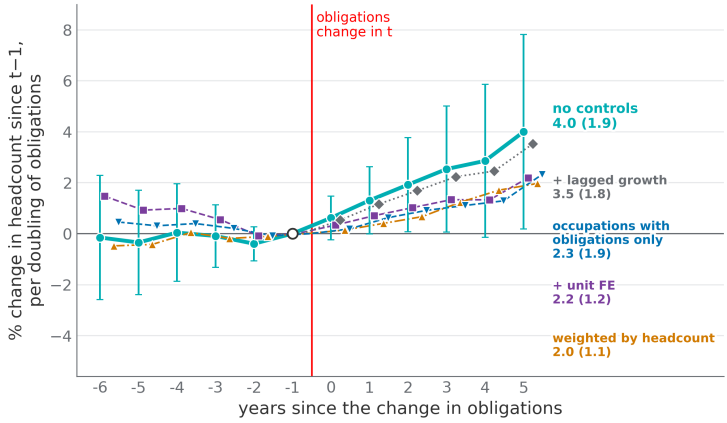
Staff and the obligations on the average worker

Back



All obligations under other specifications

Back



Year 5: no controls 4.0% ($p = 0.04$); holding fixed the six prior years' growth 3.5% ($p = 0.05$); weighted by headcount 2.0% ($p = 0.07$); occupations with obligations only 2.3% ($p = 0.23$); occupation fixed effects 2.2% ($p = 0.06$)

Example: sterile processing rules and the technicians they bind

Back Job postings

Aug 2002: +127 Handbook revised; a 1992 handbook folded in

"Scrubbing must be done under the surface of the solution."
VA Handbook 7176 (2002)

Jun–Nov 2009: +26 Directives after the endoscope reprocessing failures

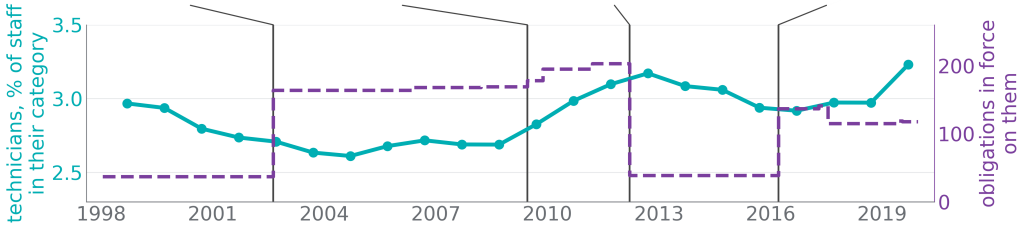
"A quality management program must be in place to ensure appropriate and safe reprocessing is being performed."
VHA Directive 2009-031

Mar 2012: −164 Handbook rescinded; duties move to a program office

"A six digit control number will be assigned for each sterilizing cycle."
VA Handbook 7176 (ends)

Mar 2016: +98 VHA Directive 1116 is issued

"All other SPS employees must obtain a minimum of 12 educational hours annually."
VHA Directive 1116(2)



Example: job postings cite the directive, and advertise auditors

Back

The directive is written into the job

> "Per VHA Directive 1116(2), chapter 7a and d, all new Medical Supply Technicians (MST) must complete Level 1 training within 90 days of hire."
>
> Medical Supply Technician (Sterile Processing), November 2018

> "Perform assembly of surgical case carts for the Operating Room, retrieval and delivery of RME and maintenance of the work environment in accordance with VHA Directive 1116(2)."
>
> Medical Supply Technician (Sterile Processing), November 2018

> "Must have in-depth knowledge and practice all guidelines set forth in VHA Directive 1116(2) Sterile Processing Services (SPS)."
>
> Advanced Medical Supply Technician, January 2020

The directive creates posts that check compliance

> "The incumbent . . . serves as the monitoring specialist for all . . . Quality Assurance Auditor (QA) activities of the Sterile Processing Services (SPS) Section and all other areas in the facility where reprocessing . . . takes place."
>
> Censitrac Instrument Coordinator/Quality Assurance Auditor, December 2017

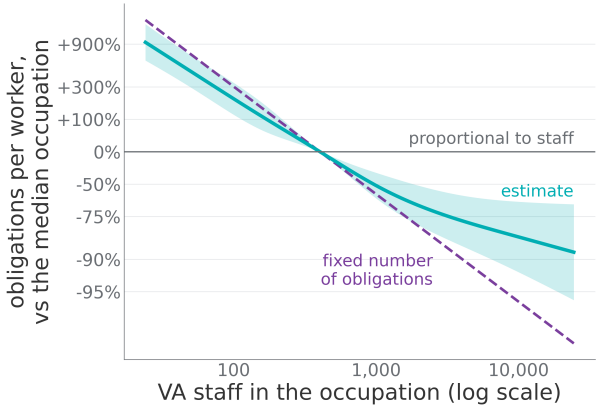
> "Using Infection Prevention, AAMI, 1116 and ST79 standards for unannounced and announced RME tracer and audits that are required by Central Office."
>
> Sterile processing posting, June 2019

> "Performs inspections and audits for SPS quality assurance, maintains and submits QA records, and reports regularly to Leadership on the SPS QA program."
>
> Sterile processing posting, September 2018

VA job announcements for sterile processing technicians, USAJOBS, 2017–2024. RME: reusable medical equipment

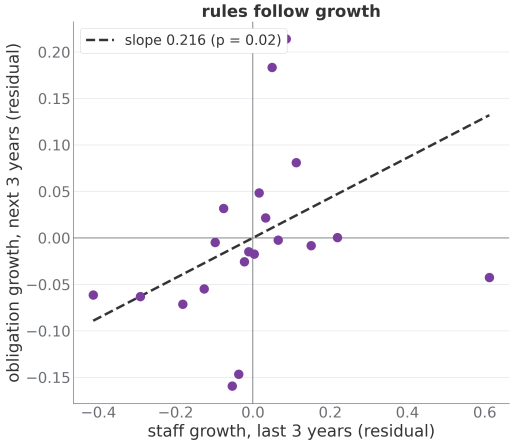
Larger occupations carry fewer obligations per worker

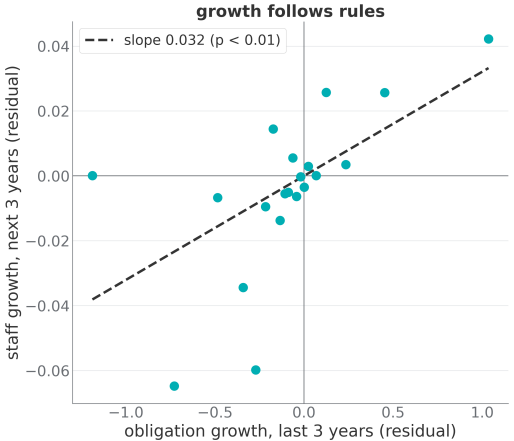
Back Directions



Both directions: rules follow hiring, and hiring follows rules

Back Fixed cost





Identification: distance from a rule's writer

Back Results

- Every directive names the office that wrote it; 750,316 VA job postings show which offices hire which occupations
- Example: a custodian's duty is **close** if environmental services wrote it (it employs custodians) and **incidental** if the pharmacy office did (keep daily logs of the cleaning products used in its cleanroom)

Measure for each rule r and occupation o:

$$\boxed{w_{ro} = 1 - c_{X(r)o}} \qquad I_{ot} = \sum_r \mathbf{1}[w_{ro} > \tfrac{1}{2}]\, S_{rot}, \qquad N_{ot} = \sum_r \mathbf{1}[w_{ro} \leq \tfrac{1}{2}]\, S_{rot}$$

$X(r)$: the office that owns rule r. c_{Xo}: share of occupation o's earliest postings (opened by 2018, or until it has 20) that name office X. S_{rot}: rule r's obligations on o. I: the **incidental** stock; N: the **close** stock.

Fails if another office's program brings the duties and its own hiring of the occupation together Checks

Estimation: incidental and close obligations

Back Specifications

The design's local projection with the two stocks in place of the total:

$$\ln E_{o,t+h} - \ln E_{o,t-1} = \beta_h^I \, \Delta \ln(1 + I_{ot}) + \beta_h^N \, \Delta \ln(1 + N_{ot}) + \gamma_h \, \Delta \ln(1 + U_{ot}) + \alpha_{c(o)t}^h + \varepsilon_{ot}^h$$

- I_{ot}: obligations from offices that hold less than half of the occupation's earliest postings ($w > \frac{1}{2}$); N_{ot}: the rest; U_{ot}: obligations of unknown distance. Rules with a known office and occupations with at least 20 postings naming a service hold 95% of the obligations in force in 2019
- 131 occupations, changes in 2003–2019, 2,218 occupation-years; occupations count equally; SEs clustered by occupation
- Year-5 p-values from the wild cluster bootstrap. Incidental against close at year five: difference $p = 0.15$ (wild bootstrap $p = 0.16$)
- Series that OPM relabelled during the sample are merged: clerks who became medical support assistants (2009–12), engineering technicians folded into facilities (2008)

The incidental estimate under other specifications

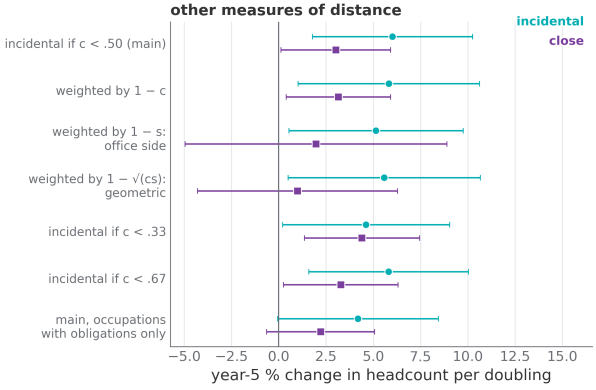
Back Results

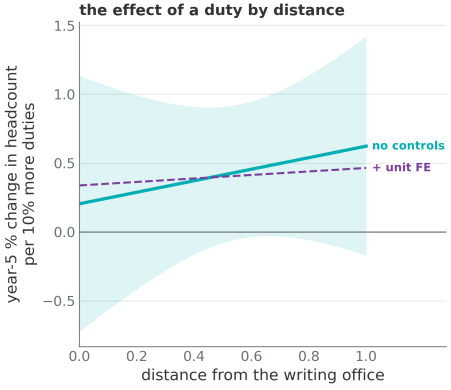
Year 5, % more staff per doubling	Incidental	p	Close	p
Main: category × year effects	6.0 (2.2)	0.006	3.0 (1.5)	0.04
Holding fixed the six prior years' growth	5.8 (2.4)	0.02	2.3 (1.4)	0.09
Occupation fixed effects	3.7 (1.9)	0.05	1.3 (0.9)	0.17
Occupations with obligations only	4.2 (2.2)	0.06	2.2 (1.5)	0.13

Standard errors and p-values clustered by occupation. In a design in changes, occupation fixed effects remove each occupation's average growth over the sample, growth its rules caused included, so they remove part of a lasting effect along with any trend

Other measures of distance, and the effect of a duty by distance

Back

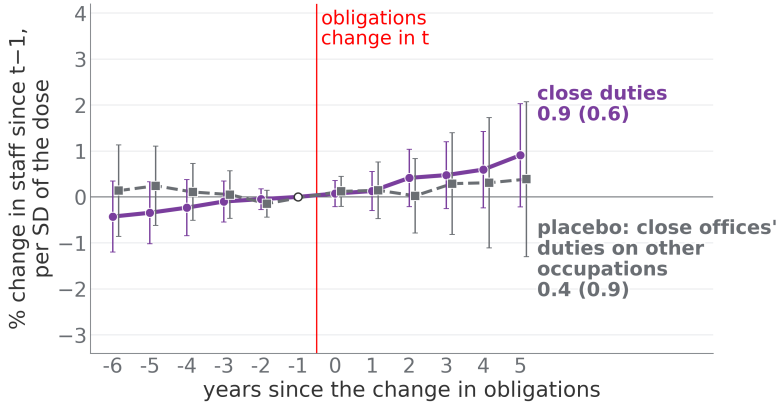




Incidental estimates from 4.6% to 5.8% under the other measures. Ten percent more duties: 0.20% more staff from the occupation's own office, 0.62% from the farthest

Placebo: close offices' duties elsewhere show no staff effect

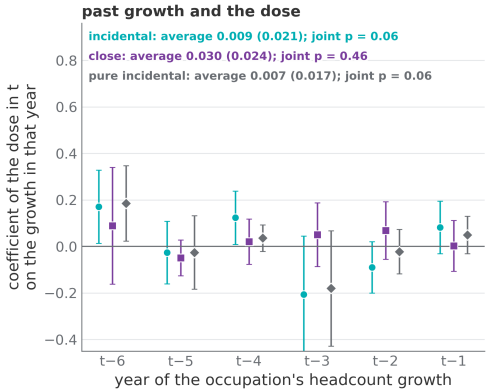
Back

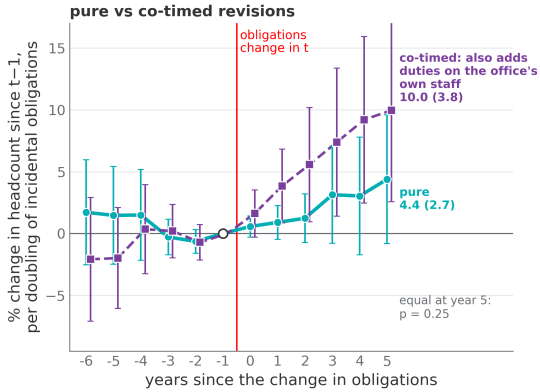


Placebo: duties that an occupation's close offices put on other occupations, in rules that do not name it. Year 5, per SD of each dose: placebo 0.4% (0.9), close 0.9% (0.6); equal, $p = 0.60$. *Limitations:* the placebo's 95% interval (−1.3% to 2.1%) includes the close estimate; 123 occupations with offices measured

Two checks: past growth and program timing

Back | Threats | Offices' growth

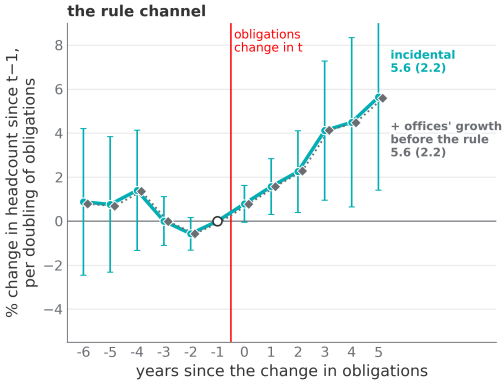


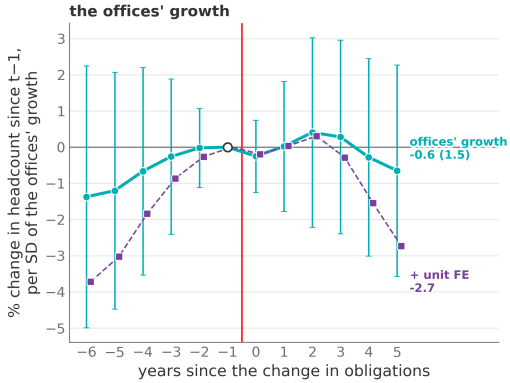


(a) Average coefficient of past growth: incidental 0.009 (s.e. 0.021, joint $p = 0.06$), close 0.030 ($p = 0.46$). (b) 23% of incidental growth came in revisions that also added duties on the writing office's own staff. Pure 4.4% (2.7), co-timed 10.0% (3.8); equal, $p = 0.25$

Controlling for the writing offices' growth before the rule

Back

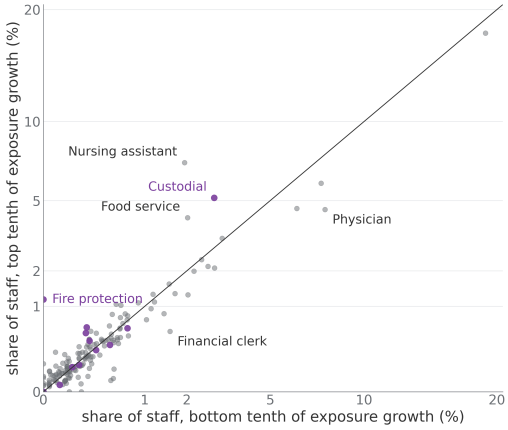




Growth of the occupations that staff the offices writing an occupation's incidental duties, over the two years before the rule: the incidental estimate moves from 5.6% to 5.6%. Both include an indicator for the 37% of occupation-years with no duties from offices that post jobs

Differences in occupational mix

Back



Purple: occupations whose obligations more than doubled

Appointments and clinicians across designs, annual data

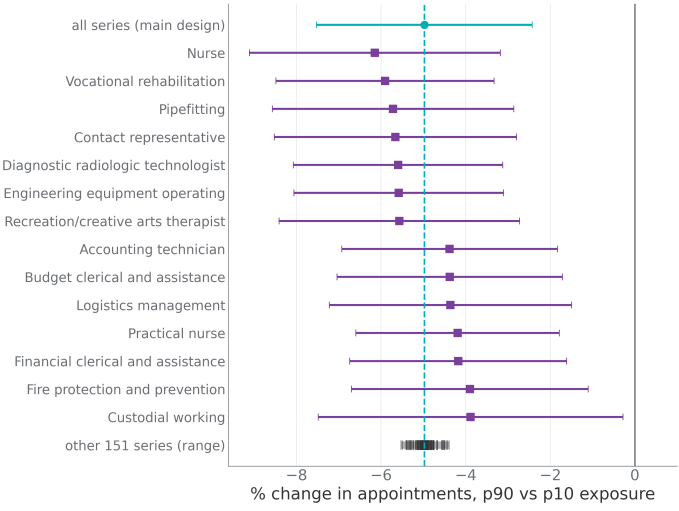
Back Appointments

	Appointments (log)	Licensed clinicians (log)	Appointments per licensed clinician (log)
Hospital and year effects	−5.8***	−4.6***	−1.2
	(1.2)	(0.9)	(1.7)
+ prior staff growth (main design)	−5.0***	−4.0***	−1.0
	(1.3)	(1.0)	(1.8)
+ baseline occupation mix	−5.6	−2.4	−3.2
	(3.9)	(1.8)	(4.9)
+ hospital-specific trends	−6.0**	1.0	−7.0*
	(2.5)	(1.8)	(4.0)
Main design + series-specific growth	−4.6***	−4.1***	−0.5
	(1.3)	(1.1)	(1.9)
Main design + region × year effects	−5.8***	−2.3***	−3.5*
	(1.5)	(0.8)	(1.9)
Hospital-years (hospitals)	690 (138)	690 (138)	690 (138)
Outcome, mean	9.81	6.49	3.32
Outcome, standard deviation	0.59	0.65	0.29

Effective shocks: 16 by exposure share, 2.9 by leverage, 6 within occupational groups. Exposure growth, p90 − p10: 0.068

No single occupation drives the appointments estimate, annual data

Back



Outpatient quality across designs, annual data

Back

	Outpatient composite (higher is better)	Preventable hospitalizations (lower is better)	Primary care rating (higher is better)
System and year effects	−0.01	0.30	−0.80*
	(0.29)	(0.44)	(0.45)
+ prior staff growth (main design)	0.06	0.44	−0.76
	(0.32)	(0.46)	(0.49)
+ baseline occupation mix	0.17	0.73	−1.21*
	(0.38)	(1.07)	(0.72)
+ system-specific trends	0.42	1.50	0.16
	(0.43)	(1.40)	(1.76)
Main design + series-specific growth	−0.01	0.44	−0.68
	(0.29)	(0.47)	(0.54)
Main design + region × year effects	−0.06	0.79*	−0.61
	(0.29)	(0.43)	(0.59)
System-years (systems)	678 (136)	544 (136)	543 (136)
Years	2015–2019	2015–2018	2016–2019
Outcome, mean	88.1	25.3	69.9
Outcome, standard deviation	1.82	4.25	5.87
Effective number of shocks, by exposure share	16	16	16
Effective number of shocks, by leverage	2.8	2.8	2.8
Effective number of shocks within occupational groups	6	6	6
Exposure, p90 − p10 of 2014–2018 growth	0.068	0.068	0.068

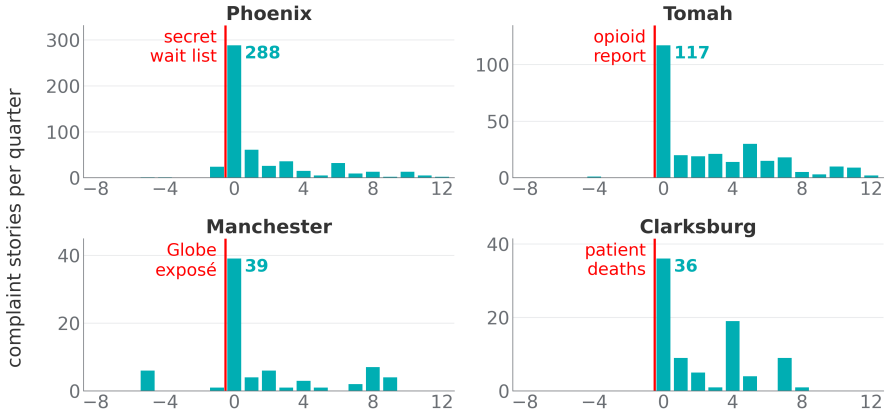
Thirty-day mortality relative to nearby private hospitals

Back

	Heart attack	Heart failure	Pneumonia
Hospital and window effects	0.31	0.53*	−0.01
	(0.40)	(0.27)	(0.31)
+ prior staff growth (main design)	0.31	0.51*	0.03
	(0.42)	(0.29)	(0.35)
+ baseline occupation mix	1.13*	−0.17	−0.49
	(0.65)	(0.62)	(0.80)
+ hospital-specific trends	0.81	−0.38	−0.50
	(1.43)	(0.43)	(0.76)
Main design + series-specific growth	0.30	0.56**	0.06
	(0.41)	(0.27)	(0.34)
Main design + region × year effects	0.37	0.58**	0.01
	(0.33)	(0.29)	(0.29)
Hospital-windows (hospitals)	303 (79)	443 (113)	450 (115)
Gap, mean (percentage points)	−0.38	−1.55	−1.86
Gap, standard deviation	1.05	1.57	2.08
Private hospitals within 50 miles, median	14	15	16
Effective number of shocks, by exposure share	15	16	16
Effective number of shocks, by leverage	2.4	2.7	2.8
Effective number of shocks within occupational groups	6	6	7
Exposure, p90 − p10 of 2014–2018 growth	0.068	0.068	0.068

Complaint stories spike when a scandal breaks

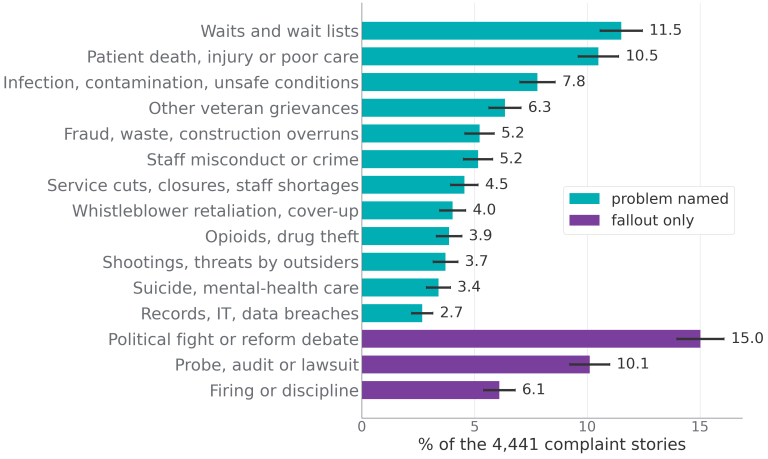
Back · What complaints are about



Quarter of the first report: Phoenix **288**, Tomah 117, Manchester 39, Clarksburg 36; Boise never above 1

Waits, harm and unsafe conditions lead the named problems

Back



Shares of the 4,441 complaint stories; **31% report only the fallout**: a probe, a firing or a political fight

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