

The Origins and Evolution of Occupational Licensing in the United States *

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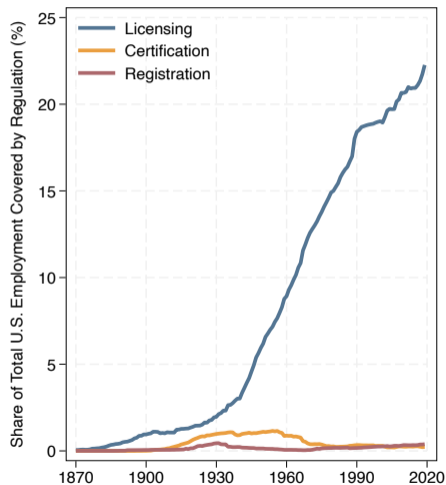
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Occupational licensing has become a pervasive feature of the U.S. labor market

This paper studies the growth of state & federal licensing requirements from 1870 to 2020



Main question: What political and economic factors are associated with enactment and diffusion of licensing?

- ▶ Task content \Rightarrow public health, safety, and economic welfare
- ▶ State demographics, institutions, and market size
- ▶ Professional associations and lobbying

Data: New database of historical licensing requirements:

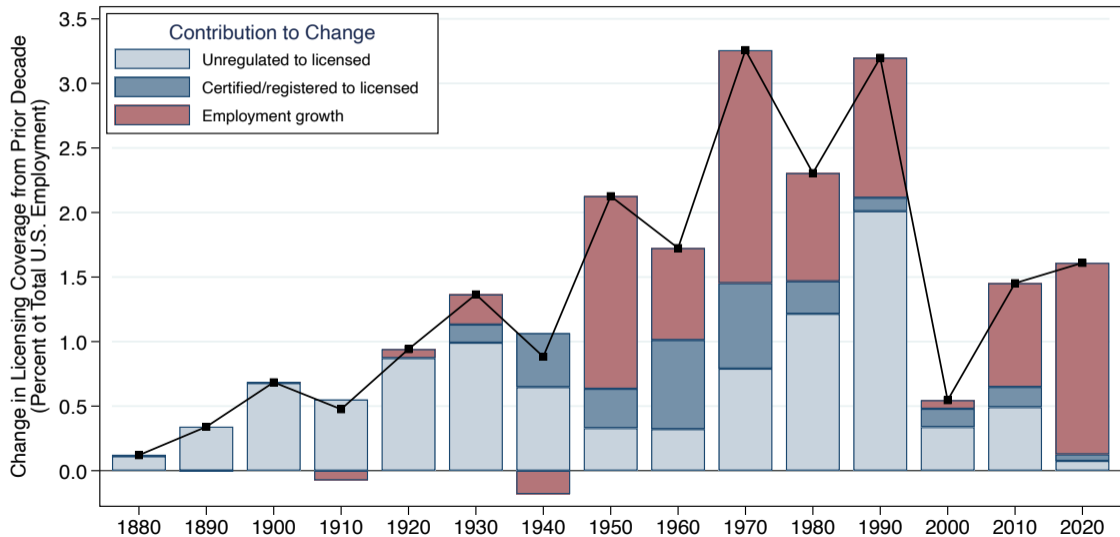
- ▶ Policy enactment dates for 250+ unique occupations
- ▶ Examination/training requirements for a subset (in progress)

Which we link to:

- ▶ Task descriptions from O*NET and the Dictionary of Titles
- ▶ Organization date of state professional associations
- ▶ Census data on employment and demographics
- ▶ State legislative and political characteristics

The growth of licensing over time reflects both policy changes and employment trends

⇒ The objective of our paper is to understand what drove the former



Measuring potential risks to public health, safety, and welfare

First, we use **numerical** features from O*NET to rank occupations on **plausibly** relevant attributes:

- ▶ **Criticality of position:** Consequence of error and frequency of decision-making
- ▶ **Task complexity:** Difficulty of learning (or evaluating) the occupation's tasks
- ▶ **Interpersonal interaction:** Direct interaction with consumers

Key challenge: How to account for changes in task content over time?

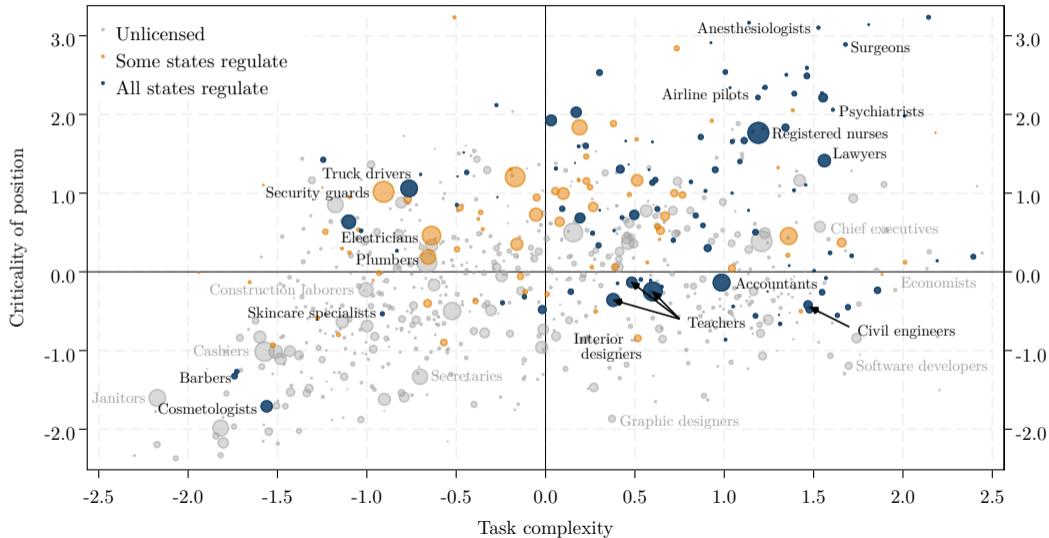
- ▶ Compile **textual** descriptions of job tasks from O*NET
- ▶ Represent the text numerically using word embeddings (GloVe)
- ▶ Train an NLP model to predict numerical rankings from task embeddings

⇒ Apply model's weights to occupation definitions in the 1939 and 1977 Dictionary of Occupational Titles to predict attributes using historical descriptions of job tasks.

- ▶ Essentially, model "learns" that *diagnose disease* is riskier than *analyze data*
- ▶ Changes in occupational attributes reflect changes in task descriptions

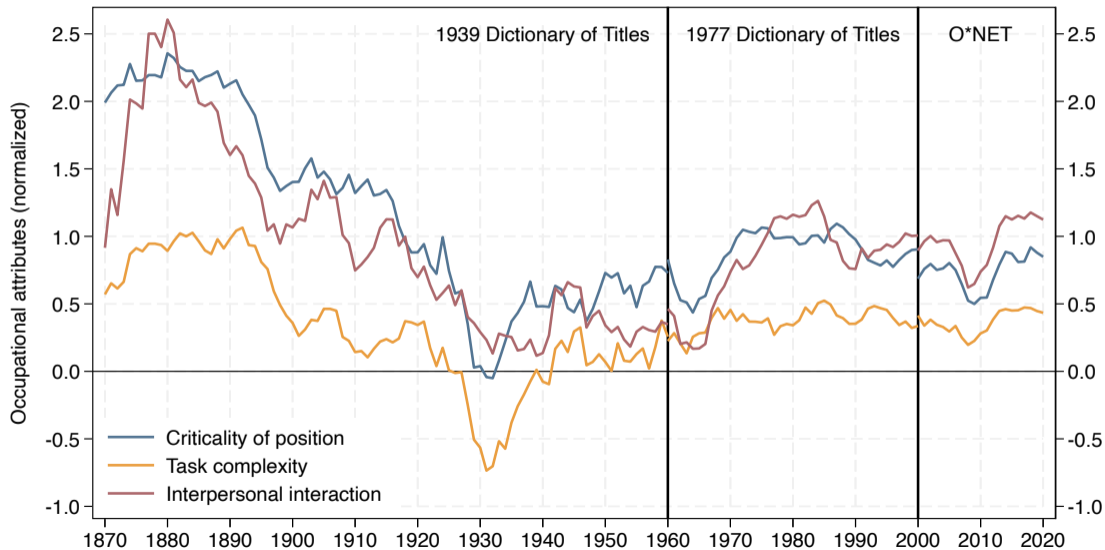
Task content and occupational licensing as of 2019

Riskier and more complex occupations are more likely to be licensed (but significant heterogeneity)



Trends in task content of *newly-enacted* regulations over time

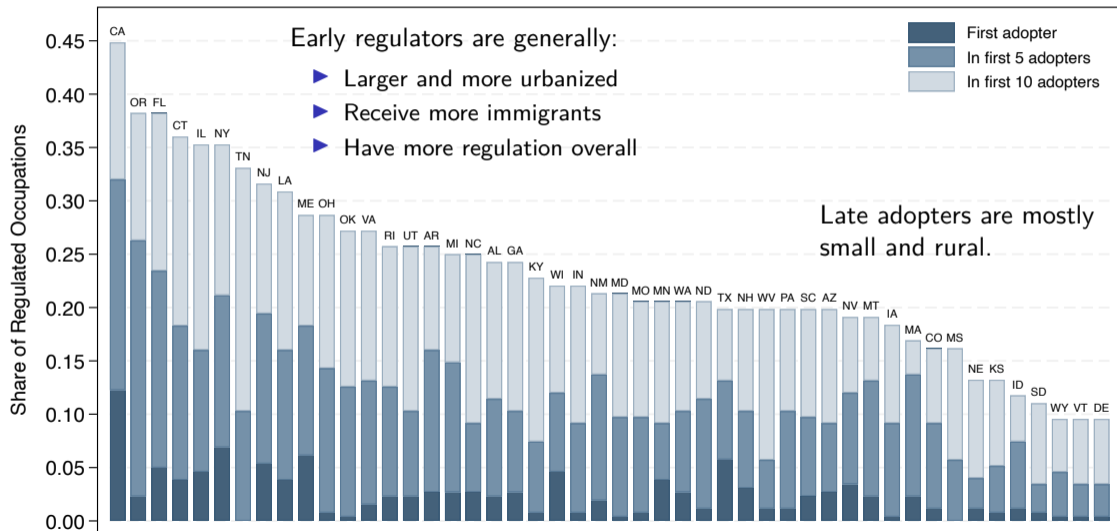
From 1870 to 1950, licensing diffused to less risky and complex occupations; relative stability since the 1970s



Note: Five-year moving averages of attributes for newly-enacted policies.

Conditional on any regulation, some states are consistently early adopters

Data on 260 unique occupations; all policies enacted 1870 to 2020



Within occupations, regulation originates in larger markets, diffuses geographically

Logistic hazard regression estimates, policies enacted 1870 to 1940

Dependent Variable: Policy Adoption Indicator	Coef.	(Std. Err)	dy/dx	(Std. Err.)
Log Total State Population	-0.122	(0.093)	-0.030	(0.026)
Urbanization Rate (%)	-0.236	(0.318)	-0.058	(0.079)
Democratic Legislature	-0.214*	(0.115)	-0.053*	(0.028)
Democratic Governor	-0.070	(0.090)	-0.017	(0.022)
Women's Suffrage	0.035	(0.149)	0.009	(0.037)
Progressive Legislation Index	0.043	(0.040)	0.011	(0.010)
Log Occupational Employment	0.377***	(0.105)	0.093***	(0.034)
Neighboring States Regulating (%)	1.040***	(0.168)	0.256***	(0.044)

Observations = 14,256; Number of Events = 990; Number of Occupations = 43

Note: Regressions also include controls for territorial government, southern states, and alternative methods of regulation (local, certification, registration).

Did professional associations spur the enactment of licensing legislation?

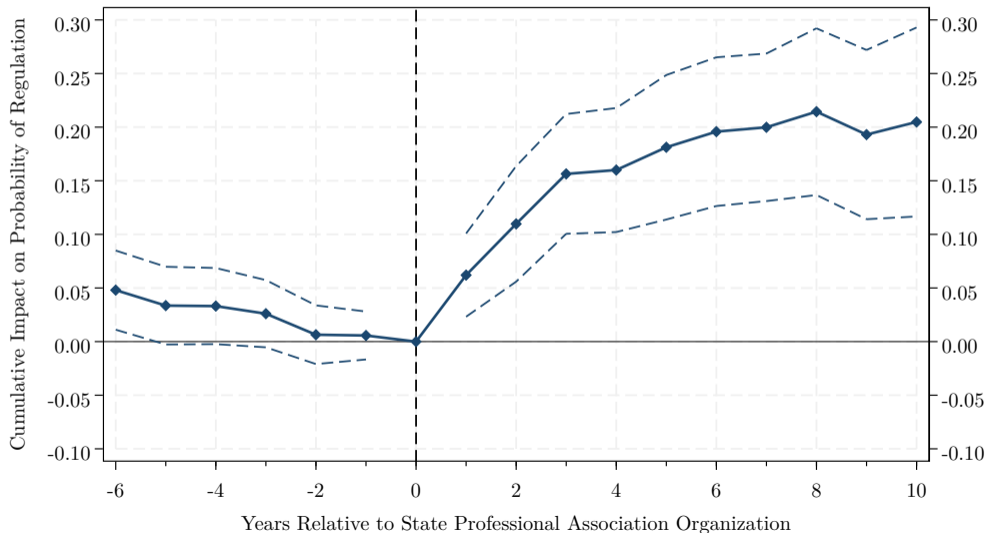
*“State Registration has been the **principal feature** of the preliminary work at least of all the Associations, and this has been successfully carried through by twelve of the twenty-one Societies. Those Societies not as yet successful are nothing daunted and declare their intention of continuing their efforts until bills meeting their requirements are finally passed.”* – Maryland State Association of Graduate Nurses, January 1906

- ▶ We collect data on the founding of **state professional associations** for 7 occupations:
 - Architects, dentists, lawyers, physicians, nurses, real estate agents, and land surveyors
 - Represent $\approx 20\%$ of licensed workers today
- ▶ Empirical strategy leverages variation in the year associations are organized:

$$Regulated_{ist} = \alpha_{is} + \sum_{\tau=-10}^{15} \beta_{\tau} \times ProfAssociation_{ist}^{(\tau)} + \gamma' \mathbf{X}_{ist} + \delta_{it} + \epsilon_{ist}$$

Professional associations and occupational licensing: 1870 to 1950

Cumulative probability of regulation increases $\approx 20\text{pp}$ within 5 years of organization



Conclusion and work in progress

We present the first comprehensive analysis of occupational licensing laws in the United States

Our findings are broadly consistent with elements of both the “public interest” and “special interest” views of labor market regulation.

- ▶ Licensed occupations are riskier and more complex on average than unlicensed occupations ... but less so for many that were recently-licensed.
- ▶ Certain states are consistently responsible for regulating new occupations ... and these tend to be larger markets with more regulation overall
- ▶ Professional associations in the early 20th century were effective in obtaining licensing

Work in progress:

- ▶ Additional evidence on licensing as **economic protectionism** (ex. competition from immigrants)
- ▶ Additional evidence on **demand** for licensing (ex. changes in public health insurance rules)
- ▶ Determinants of licensing **qualifications** using data from the Occupational Licensing Law Research Project