Exploring State Variations in Non-degree Professional Credentials

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Background

GEMEnA Interagency Working Group on Expanded Measures of Enrollment and Attainment.

Goal

To develop the first federal data on certifications and licenses....

...questions on professional licenses and certifications added to the monthly Current Population Survey (CPS) starting in 2015

- Whether the adult has a certification or license?
- Who provided the certification or license?
- Is the certification or license is required for the job? (2016)

State Policy Implications

40+ states now have targets for the attainment of post-secondary credentials, but less than half of these have goals for non-degree credentials.

- Often less expensive and time consuming
- Difficulty finding reliable data on non-degree credentials and measuring attainment at the sub-national level

The LMI Institute (with support from the Lumina Foundation) has been producing state level estimates by pooling multiple years of PUMS CPS data and publicizing these estimates to state analysts and policymakers.

Toward a Research Agenda

- When do certifications increase earnings for under-represented populations and people with lower levels of education?

- Would raising certification attainment levels across the board or in specific industries help to improve outcomes for target populations?

- Does the urban wage premium apply to non-degree credentials?

- **Are there state differences in <u>professional certification</u> attainment rates and earning premiums?**

Primary Data Source and Methods

Current Population Survey (CPS) PUMS

- 2015 – 2019 (pooled monthly records)
- Adult civilian labor force (16+), one record per person

Research Design

- Early stage, exploratory descriptive analysis
- Multi-level models examining source of state variation in certification premium
- In-depth case studies examining specific occupations in particular states (TBA)

Are there Place Differences?

Even seemingly similar credentials can have different value in the labor market

- Carnevale, Cheah, Hanson 2015; Andreason 2018; Blair & Chung 2018; Workcred 2018
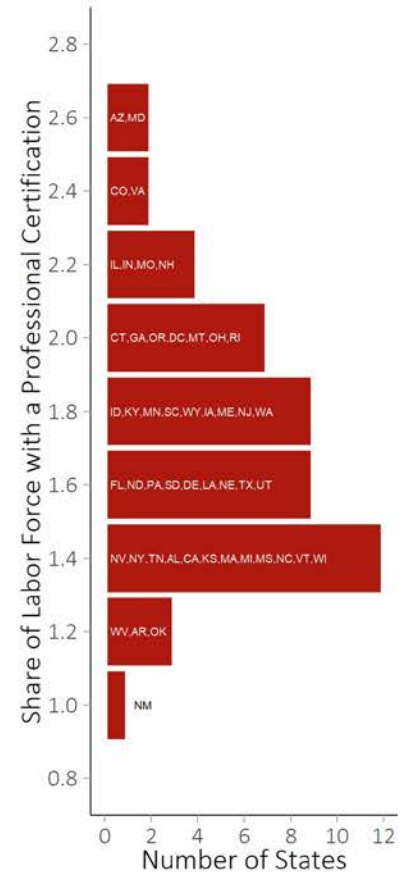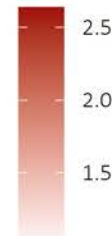
Does place also matter?

- Individual Endowments / Occupation & Industry Mix
- Human Capital Theory – Research on urban wage premiums & traditional educational credentials
- Signaling/Screening Theory –Anecdotal evidence that some credentials are recognized/valued by employers in some parts of the country but not others

State Variation in Certifications
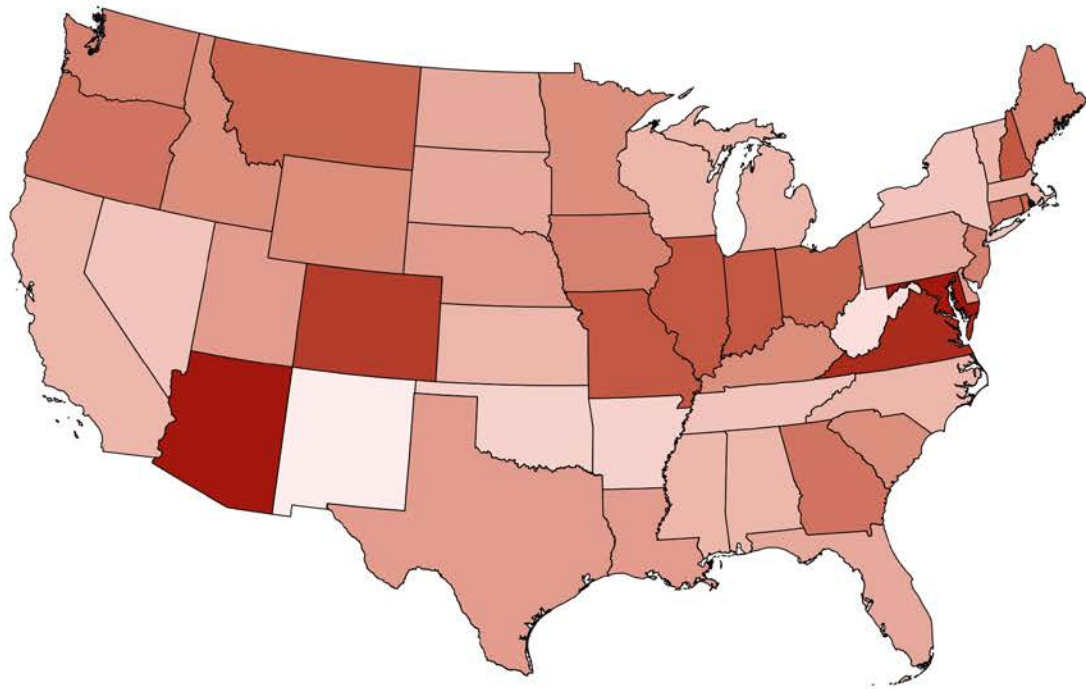
Sources of Variation for State Benchmarking

of states (e.g., 8) by percentage of the population with a certification (0% to 6%)

Attainment by Education (columns 0% — 6%)

	0%			1%				2%							3%					4%				5%				6%		
Less than a high school diploma	1			2		1	3	6	4	3	6	2	7	1	5	3		3	2				1							
High school graduates, no college				1	5	8	3	8	9	7	3	4	1		1			1												
Some college, no degree						1	2	1	7	3	4	8	3	7	5	2	2	2	2	1	1									
Associate's degree								1		1	3	3	5	2	6	7	1	6	2	3	2		1	1	1	2	1	2		
Bachelor's degree only								1		3	6	7	6	5	7	6	2	2	2		1	1	1		1					
Advanced degree									2	2	7	2	3	11	3	3	3	4	3		5		1	1		1				

Attainment by Gender (columns 0% — 6%)

	0%	1%	2%					3%				4%				5%	6%
Men			3	2	7	9	2	7	9	4	2	3		1	1	1	
Women			4	5	7	10	5	5	6	2	5	1	1				

Attainment by Age (columns 0% — 6%)

	0%	1%			2%					3%		4%		5%		6%	
16 to 24	12	2	1	5	7	6	9	4	2	1	1	1					
25 to 54					5	4	6	9	5	5	7	2	3	2	2	1	
55 to 64				2	2	3	9	8	9	3	5	2	3	4	1		
65 and older	5			3	1	2	1	2	6	2	2	5	6	2	5	2	1 2 2 2

Sources of Variation for State Benchmarking

of states (e.g., 8) by percentage of the population with a certification (0% to 10%)

Attainment by Select Occupations (columns: 0% – 10%)

Occupation	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
Business and financial operations	8		1 · 5 2 1	2 3 4 3 3	4 3 4 5	2 1					
Computer and mathematical	7			2	2 2 1 4 1 2	1 1 3 2 1 2	4 1 2 1 1	2 1 2	2		
Healthcare practitioners and technical			2 2 5 1 3 2 5	5 1 3 5 4	3 1 2 3	1 2 1					
Installation, maintenance, repair	8		1 1 3 2	1 2 1	3 1 3 4 3 1 1 1 3 1	1 1	2 1	1 1 1	1		
Natural resources, construction, maintenance	1	1 1 3	1 1 2 1 5 5 3	7 3 2 1 1 2	4 3	1 1	2				
Production, transportation, material moving	4	4 5 7 3 6 6 3	3 1 1 4 1 1 1 1								
Sales and office		2 6 8 8 9 7 4 4 3									

Attainment by Select Industries (columns: 0% – 10%)

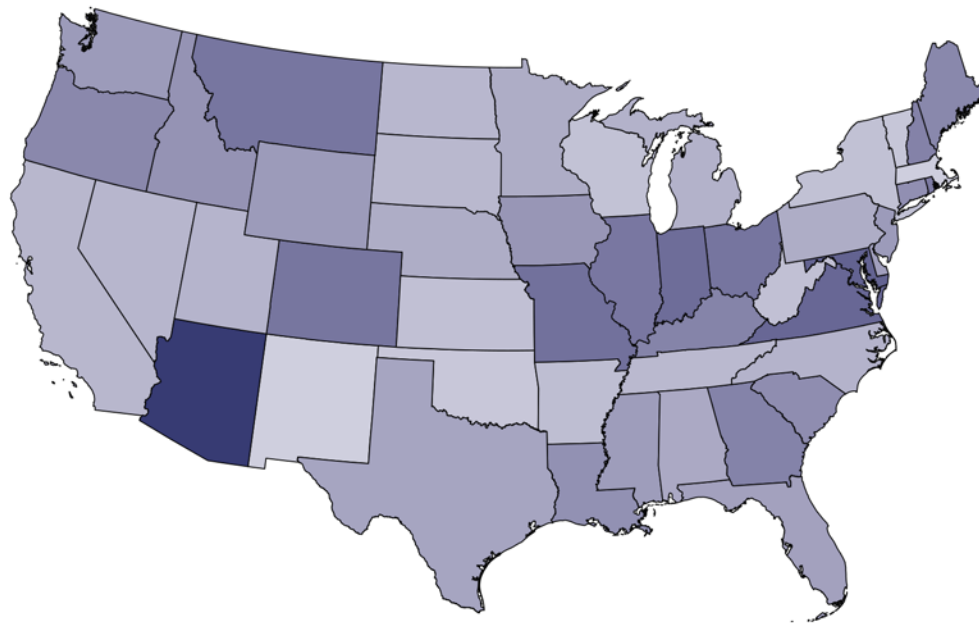| Industry	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
Construction	2	1 1 3 5	2 4 3 2 5	4 4 4 2 2 2	1 2	1 1					
Education and health services	1	2 3 4 6 5	13 3 7 4 2		1						
Financial activities	2		1 3 3 2 2 3 3	3 7 2 11 1 1 1 2 3	1						
Leisure and hospitality	5	2 3 5 7 5 6 7	3 3 3 2								
Manufacturing	6	1 1 3 3 6	5 1 6 4 7 3 1 1	1 1	1						
Professional and business services		1	1 1 4 3 3 4	4 6 6 3 4 1 2 3 2	1	1 1					

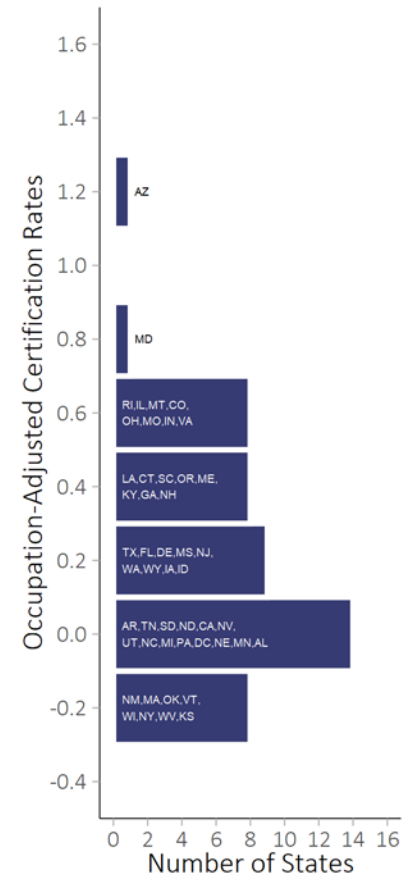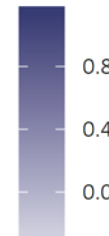# There is considerable variation in state attainment rates within occupations

Distribution of state certification rates within major occupation groups
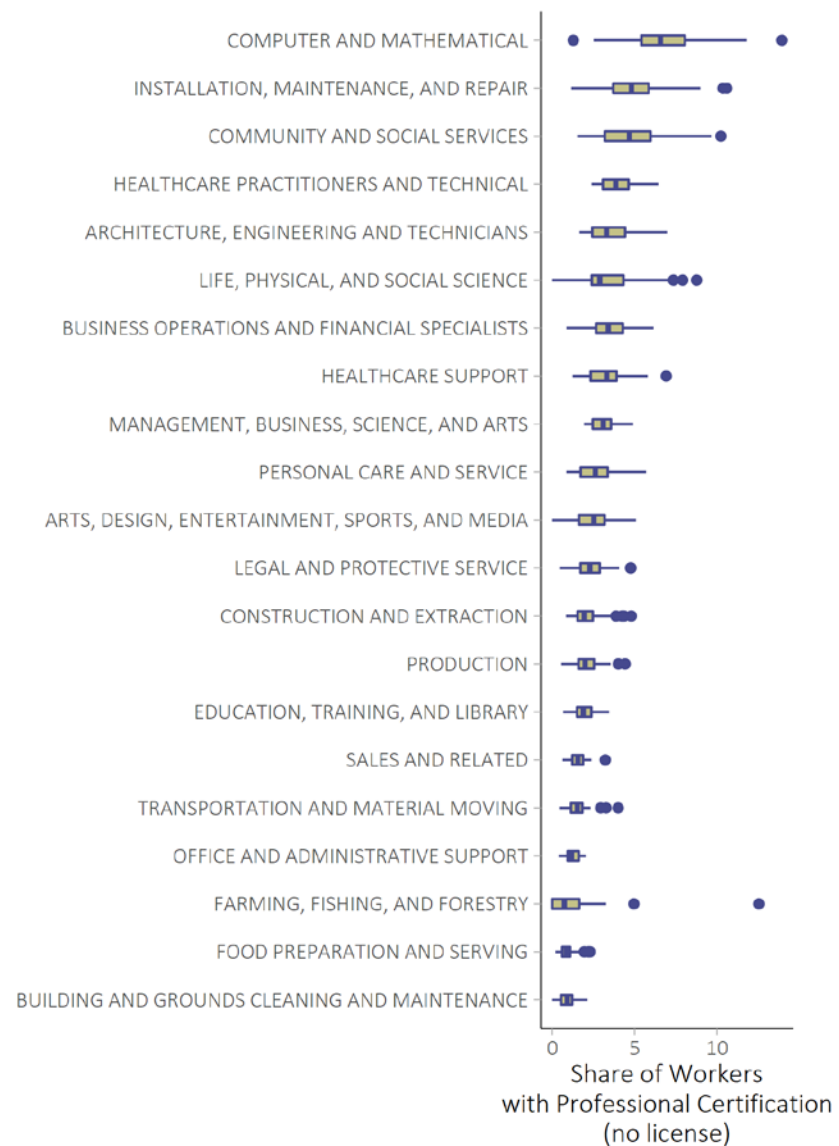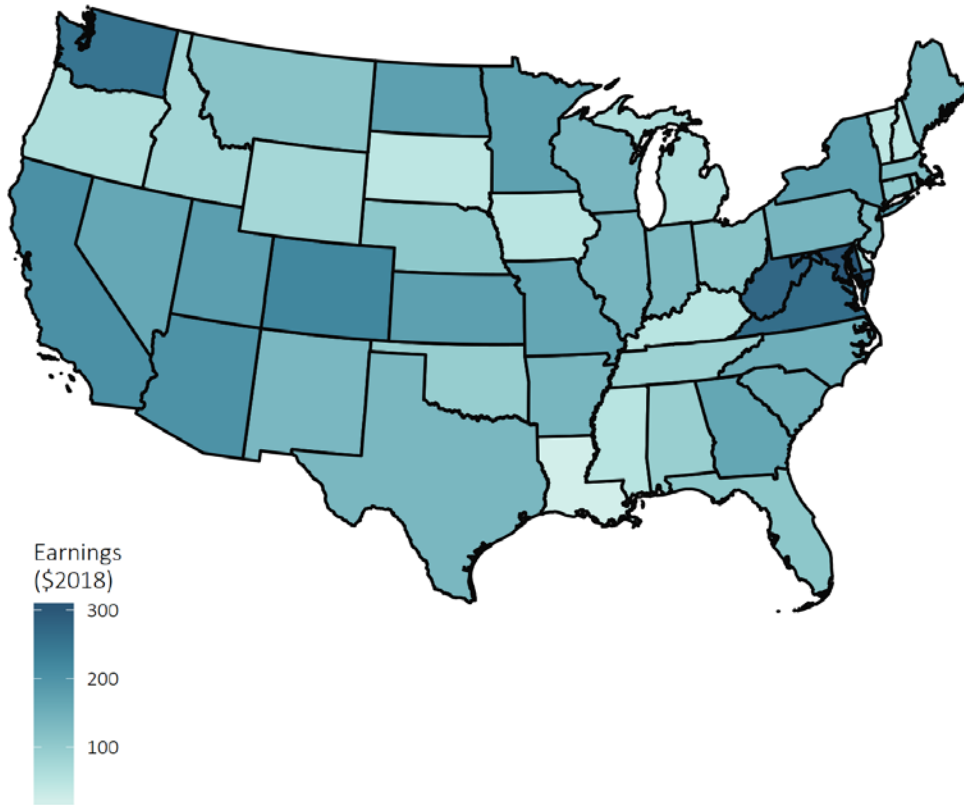
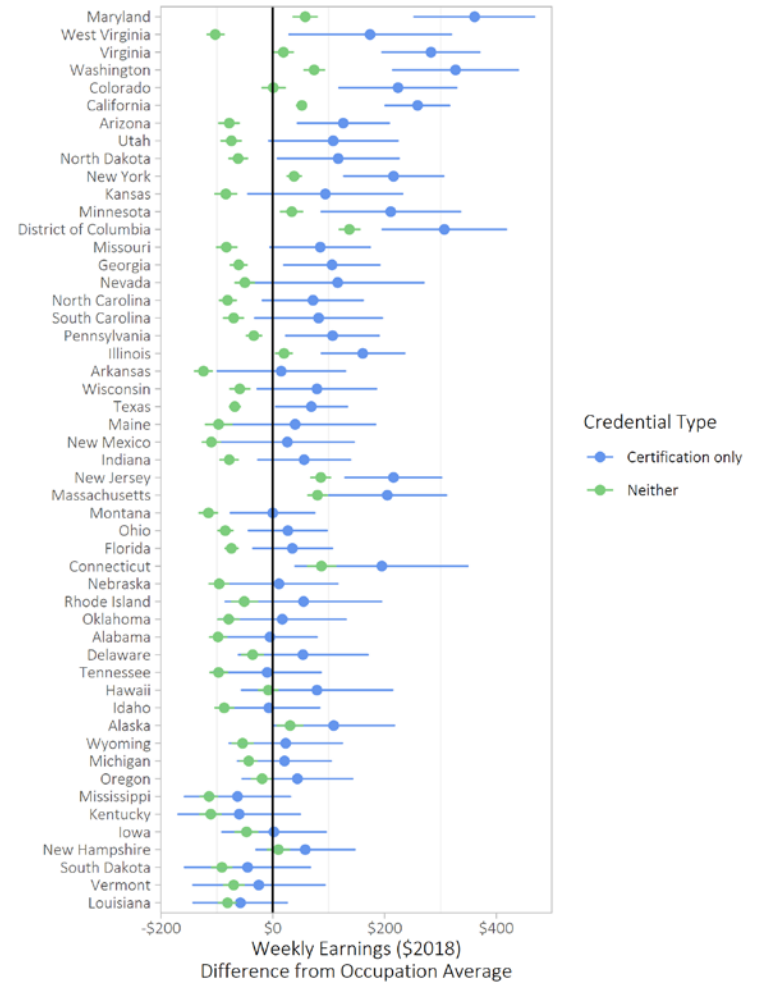# "Adjusted" Certification Rates

Professional Certification Premiums

Adjusted for State Occupation Mix

Earnings ($2018)
300
200
100

Average Weekly Earnings, by State (normalized)
Certification vs. No Professional Credential

Credential Type
— Certification only
— Neither

Weekly Earnings ($2018)
Difference from Occupation Average

Multi-level (Random Intercept) Model

$$Y_{i,j} = \beta_{0,j} + \beta_1 X_{i,j} + \varepsilon_{i,j} \quad \text{Level 1: Individual}$$

$$\beta_{0,j} = \beta_0 + \mu_{0,j} \quad \text{Level 2: State}$$

- Full-time employed with professional certifications
- Dependent variable: Difference in earnings from state average for workers w/out a license or certification in same occupation
- Independent variables: Demographic characteristics (sex, race, hispanic, foreign, age), educational attainment, union member, metro size, industry sector
- Enter independent variables in successive blocks and compare changes in state variance component

Fixed Effects (full model)

What explains the weekly earnings premium of workers with professional certification?

| Variable	Beta	tscore
(Intercept)	-1203.65	-14.83
Female	-153.52	-11.34
Foreign Citizen	-24.96	-1.01
Hispanic	-58.49	-2.68
African American (vs White)	-120.40	-5.53
Asian (vs White)	-25.47	-0.22
Multi-Racial or Other (vs White)	-48.15	-2.05
Age (years)	43.95	13.73
Age Squared	-0.41	-11.56
Mid-skilled (vs no HS)	116.96	2.92
Bachelors (vs no HS)	310.52	7.54
Graduate (vs no HS)	407.80	9.70
Union Member	60.42	3.03
Mid-size Metro (vs Non/Sm Metro)	35.41	2.22
Large Metro (vs Non/Sm Metro)	93.78	5.41

**Industry fixed effects are not shown

Level Two Random Effects

Significant state variation in earnings premiums (LR tests).

Controlling for demographics / industry *increases* state-level variation.

Education and metropolitan status *decreases* variation.
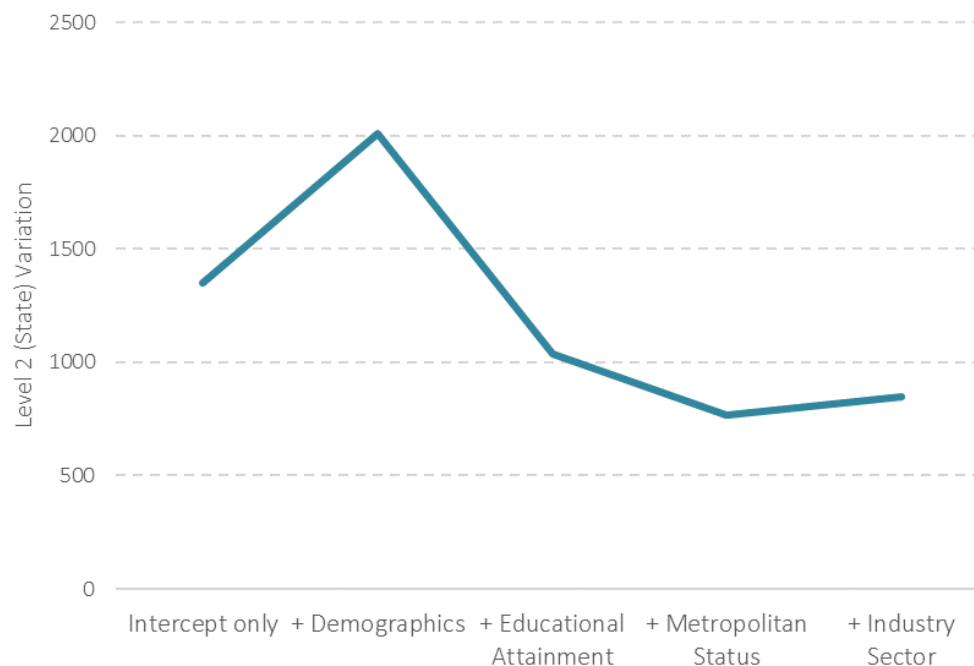
Next steps

By examining why attainment rates and premiums are higher in some places, we hope to inform strategies aimed at expanding coverage and employer confidence

Still very early stage ... Future work will consider:

- State-level factors
  - Agglomeration/specialization, value-added, unemployment, etc..
- Interactions: endowments & state random effects
  - Are there differences across states associated with different levels of education or race?
- Select case studies
  - Identify the more nuanced and less tangible factors

Thank you

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