

AT WHAT COST?

State and National Estimates of the
Economic Costs of Occupational Licensing

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Executive Summary

Occupational licensing is widely recognized as one of the most important labor market issues in the United States. An occupational license is, put simply, government permission to work for pay in a particular occupation. Securing a license may require education or experience, exams, fees, and more, which means licensing can pose a major barrier to entry for aspiring workers.

Taking advantage of a uniquely large dataset, this study offers the first state-level estimates of key economic costs from occupational licensing—lost jobs and reduced economic activity—for a large sample of states. It also confirms earlier research demonstrating licensing’s growth nationwide and its considerable costs to the national economy. Results include:

- The share of the workforce with a license varies across the 50 states and District of Columbia from 14 percent in Georgia to 27 percent in Nevada. Nationwide, this study finds roughly 19 percent of workers are licensed. Although lower than previous estimates (ranging from 22 percent to 29 percent), this finding confirms licensing has grown substantially since the early 1950s, when just 5 percent of American workers were licensed.
- Across 36 states where the dataset permitted state-level estimates, licensing’s toll on jobs ranges from 6,952 (Rhode Island) to 195,917 (California). At the national level, licensing may cost the economy between 1.8 and 1.9 million jobs.
- In the same 36 states, estimates of lost economic output range from \$27.9 million (Rhode Island)

to \$840.4 million (California). Nationally, licensing may cost the economy between \$6.2 and \$7.1 billion each year in lost output. Also known as deadweight loss, lost output provides a conservative measure of economic value lost due to licensing.

- A broader measure of lost economic value, misallocated resources, finds steeper costs across the 36 states, with estimates ranging from \$675 million (Rhode Island) to \$22.1 billion (California). At the national level, licensing may cost the economy between \$183.9 and \$197.3 billion each year in misallocated resources. Unlike deadweight loss, this measure accounts for resources directed away from their most highly valued uses, likely providing a truer picture of licensing’s cost to the economy.

Licensing likely leads to such economic losses because it restricts competition, generating economic returns to licensees above what they would make absent licensing. These economic returns are costs borne by consumers, likely through higher prices, and the wider economy, through fewer jobs and reduced economic activity.

These costs are substantial. Given our cost estimates and ample prior research showing licensing rarely improves outcomes for consumers, it seems likely that eliminating needless licensing burdens—and, if necessary, replacing them with less restrictive alternatives—would translate into higher employment, higher economic output, and a more efficient and equitable allocation of resources. By and large, when markets are more competitive, both workers and consumers win.

Introduction

In February 2016, three individuals went to the Minnesota House of Representatives to ask the state to create an occupational license to regulate the practice of music therapy. These were not people who had experienced or observed harms from the unlicensed practice of music therapy. They did not come bearing empirical evidence of a genuine threat to public health and safety from unlicensed music therapists. Instead, they were representatives from the music therapy industry, all privately certified music therapists themselves, arguing for licensure of their own occupation.

The industry representatives made vague, unsupported appeals to the need for licensing to protect the public, but their primary argument was that licensing was necessary so that health care organizations could more easily differentiate between music therapists and “other non-music therapy musicians in health care.”¹ Calling licensure “a viable solution with minimal government involvement,” one industry representative said, “[w]e feel this is a low-cost approach for the government and taxpayer as we hope it will be budget-neutral.”²

Leaving aside the arguable question of whether the music therapy license amounts to “minimal government involvement,” the belief that it would be budget neutral ignores a variety of other costs from licensure, including the costs to aspiring music therapists, to consumers of music therapy services and to the wider economy.³

For example, under the proposal, anyone wishing to work as a music therapist would need to earn a bachelor’s degree in music therapy, complete at least 1,200 hours of clinical training, pass an exam and fulfill an ongoing continuing education requirement.⁴

These are steep hurdles,⁵ and clearing them requires a great deal of time, money and income forgone. Not coincidentally, they are also the requirements for private certification through the Certification Board for Music Therapists (CBMT)⁶—the same private body through which the three industry representatives voluntarily became certified. The lack of substantiated harms from unlicensed music therapists suggests that alternatives like private certification through the CBMT are working well to keep the public safe. At the same time, the lack of substantiated harms from uncertified music therapists suggests that fulfilling the CBMT’s requirements is not the only path to safe practice.

Yet taking the CBMT’s requirements for certification and making them mandatory forces everyone wishing to work as a music therapist to follow this same path—and shuts them out if they are unable (or unwilling) to do so. This is a loss for disappointed aspirants, for consumers who find a smaller pool of music therapists from which to choose, and for society and the economy at large as people are blocked from the occupation for which they might

As licensing has expanded, so, in all likelihood, have its costs.

be best suited, forcing them to work in an occupation less aligned with their skills, interests and aspirations.

These issues are not unique to music therapy. Indeed, a body of research has shown that, by raising the costs of entering licensed occupations, licensing reduces access to jobs, restrains worker mobility between states, hinders entrepreneurship, reduces consumer choice and raises service prices—without improving consumer outcomes in terms of safety or quality.

Yet these and other costs of licensing are frequently invisible to policymakers and the public. Unaware of the costs of licensing—and of alternatives to it—and faced with insistence from members of an occupation and their professional associations that licensing is necessary, policymakers too often give in to an occupation's demands for licenses.⁷ The result has been rapid growth in licensing over the past several decades: Where in the 1950s, only about one in 20 American workers had a license to work, current estimates put it at between one in five and one in three.⁸ And as licensing has expanded, so, in all likelihood, have its costs.

Previous research has explored the extent and costs of licensing.⁹ However, because of data limitations, most of the analyses have been at the national level only, although licensing is most often a matter of state or local policy. This study takes advantage of a uniquely large dataset to estimate, at both the state and national levels, (1) how many American workers have government-mandated licenses to work and (2) four costs to the economy from licensing:

- Economic returns from licensing, or how much more licensed workers can make because licensing gives them a monopoly. These returns are costs borne by consumers and the wider economy, factoring into estimates of each of the following three costs.
- Losses in jobs due to licensing, or how many fewer jobs there are due to licensing.
- Losses in output due to licensing (also known as deadweight loss), or a conservative measure of value lost from the economy due to licensing.
- Misallocated resources due to licensing, or a broader measure of value lost from the economy due to licensing. While losses in output accounts only for lost production, misallocated resources also accounts for resources not being put toward their most highly valued use.

This study finds that roughly 19 percent of American workers now have a license to work, with individual state percentages ranging from about 14 to 27 percent. It also finds that licensing produces substantial economic returns for licensees in 36 states and nationally. For those 36 states and nationally, these returns imply large costs for consumers and the wider economy, in terms of losses in jobs, losses in output and misallocated resources. Annually, licensing may cost the national economy upwards of 1.8 million jobs, \$6.2 billion in lost output and \$183.9 billion in misallocated resources.

The Costs of Occupational Licensing

An occupational license is, put simply, government permission to practice a particular occupation for pay. Under licensing laws, it is illegal to work in a licensed occupation without first fulfilling the government's requirements. This feature makes licensing the most restrictive form of occupational regulation. The next most restrictive form, state certification, often appears similar to licensing in that it involves certain requirements that must be fulfilled. However, in contrast to licensing, state certification restricts only the use of a particular occupational title, such as “certified interior designer” or “certified athletic trainer”: Anyone can work in the occupation, but only those who have met the requirements for certification can use the restricted title. Less restrictive still is private certification, which occupational practitioners—like the three music therapy industry representatives from our introduction—can choose to pursue as a signal to consumers that they have voluntarily undertaken specific training.¹⁰

Licensing burdens often bear little relationship to public health or safety—the purported rationale for much licensing. For example, a recent Institute for Justice (IJ) study found that, on average, it takes 11 times as much training to become a licensed cosmetologist as it does to become a licensed emergency medical technician.¹¹


Such inconsistencies in licensing laws can be explained by the observation that licenses are most often created in response to lobbying by those already at work in an occupation and their industry associations.¹² The idea that occupational practitioners would ask to be regulated may seem counterintuitive, but there are numerous well-documented examples of this happening, including in funeral services,¹³ interior design¹⁴ and—as

we discussed in the introduction—music therapy. And this makes sense given that occupational licenses confer extraordinary benefits on licensed workers: In serving as a bottleneck for entry into an occupation, licensing restricts the supply of practitioners, allowing those who are licensed to command more for their services—a cost that is borne by consumers and the wider economy.¹⁵

This effect is exacerbated by the fact that the licensing boards created to administer licenses are often composed in whole or in part of members of the relevant occupation. The result is that boards are frequently “captured” by people with a vested interest in the occupation and sometimes even by the same people who lobbied for a license's creation.¹⁶ These boards enjoy tremendous power, which they can wield to exclude potential competitors from the field.

In effect, then, licensing laws grant a monopoly to licensed workers in an occupation and empower captured boards to guard entry into the occupation and otherwise enforce the monopoly. Licensing proponents argue that such monopolies are justified because they raise the quality of services and protect the public from unsafe, incompetent or unscrupulous providers. According to this theory, barriers to entry force aspirants to invest in their human capital—i.e., their education and skills—and shut out those who fail to do so. In this way, barriers keep out those who are likely to provide low-quality service, thereby increasing service quality across the industry and protecting the public from those who are unqualified.¹⁷

Unfortunately for licensing proponents, few studies support their theory.¹⁸ To the contrary, the preponderance of scholarly evidence suggests that claims about the benefits of licensing to consumers in terms of higher quality are, at best, overstated. Some studies have found that licensing has little effect on quality, while others have found that it may limit or even lower quality, as



Nevada tried to shut down a makeup artistry school because the owner, IJ client Lissette Waugh, did not have a cosmetology instructor's license—even though makeup artistry is not cosmetology.

well as dampen the innovation necessary to increase quality in the future. Similarly, studies on the public safety benefits are scarce and provide limited support for the idea that licensing provides added protection.¹⁹

At the same time, a growing body of research suggests that licensing imposes substantial costs that may, on balance, outweigh the purported benefits. These costs include costs to aspiring workers and entrepreneurs themselves, costs to consumers, and costs to society and the economy at large.

Costs to Workers

Licensing often requires aspiring workers and entrepreneurs to devote substantial resources—time, money and income forgone—fulfilling burdensome requirements that may not make them better at doing their jobs.²⁰ The Institute for Justice’s 2017 report *License to Work* found that, on average, the licensing laws for 102 lower-income occupations require nearly a year of education or experience, one exam, and more than \$260 in fees.²¹ Not only do burdens often vary considerably across states, suggesting that many higher burdens are unnecessarily high, but burdens are frequently disproportionate to the actual risks to the public from an occupation.²²

Thus, for many aspirants, time spent earning a license is time that could be better spent earning a living—and creating value for society. With certification, in contrast, aspirants need only make such investments if they (or an employer for whom they would like to work) determine it is valuable to do so. They do not stand as a legal barrier to entry.²³

Licensing often requires aspiring workers and entrepreneurs to devote substantial resources—time, money and income forgone—fulfilling burdensome requirements that may not make them better at doing their jobs.

At the same time, many aspirants may find it too costly or time-consuming to become licensed. Research has shown that licensing presents particular burdens for minorities, the less educated and those with fewer financial resources at their disposal.²⁴

Other aspirants may still find themselves shut out of a job for which they are well suited because of unnecessary or unnecessarily burdensome regulations.²⁵ For example, several American cities require tour guides to pass a licensing exam before they can do their job. Typically, these tests cover a city’s official history and major points of interest. Yet not every aspiring guide wants to cover such topics. No matter; they must master this information—or else—even though a study of one such test showed that it had no bearing on tour quality.²⁶

Many states also use blanket bans or “good character” provisions to deny occupational licenses to people with criminal records—even when those records are long past or irrelevant to the work aspirants would like to do. Not only do such provisions make it harder for ex-offenders to stay on the straight and narrow, but they sometimes mean ex-offenders are not able to work in the very occupations for which corrections-based vocational training programs have prepared them.²⁷ In these ways, occupational licensing reduces job and entrepreneurship opportunities within states for a vulnerable population.

Licensing also reduces worker mobility between states.²⁸ Because requirements often differ across states, workers wishing or required to move may find that their licenses are not recognized in another state or that they need to become licensed for the first time despite years of experience. In addition to making little sense—a person does not become unqualified by crossing a border—this

Until the Institute for Justice stepped in, Savannah, Georgia, was one of several American cities that required tour guides, like IJ client Dan Leger, to pass a licensing exam. Savannah’s now-defunct tour guide license also required guides to pay an annual fee, undergo a criminal background check and submit to a physical exam.

creates a significant barrier to moving to where the jobs and entrepreneurial opportunities are.

Particularly affected are military spouses, for whom becoming licensed in each new locale may be impracticable.²⁹ For example, IJ client and privately certified health coach Heather Kokesch Del Castillo did not need a license to give paid dietary advice in California, so she was surprised to learn she needed to become licensed when she moved to Florida after her military officer husband was transferred to an Air Force base there. Given the high costs of becoming licensed and the likelihood that her husband would be transferred again in the not too distant future, Heather decided that it made more sense to give up her successful practice³⁰—a loss not only for her and her family but also for her clients and the wider economy.

Licensing an occupation reduces the supply of service providers who are legally allowed to work in that occupation, often allowing them to command more for their services. Met with fewer choices, consumers must pay these monopoly prices, do it themselves or go without.

Costs to Consumers

In terms of costs to consumers, as discussed above, licensing an occupation reduces the supply of service providers who are legally allowed to work in that occupation, often allowing them to command more for their services. Met with fewer choices, consumers must pay these monopoly prices, do it themselves or go without.³¹


This is what is often known as the “Cadillac effect” by analogy to a hypothetical described by Milton Friedman in which it is illegal to sell any cars apart from luxury cars. In such a situation, many people would, by necessity, pay the cost of the Cadillac even though they

would have been perfectly happy with—and traveled just as safely from Point A to Point B in—an economy car and preferred to put their savings to other uses. Many others, unable to afford a Cadillac, would be forced to go carless. The average quality of car might go up, but consumers who could not afford the luxury cars, or who would have preferred to spend the extra funds otherwise, would still be worse off.³²

A real-world example of the Cadillac effect comes from the health care industry, where medical doctors have lobbied to prevent the use of lower-cost substitutes such as nurse practitioners. Just as economy cars can perform the same essential services as luxury ones,

nurse practitioners are competent to perform many of the same essential services as primary care physicians—and they can do it more cheaply. Research has found that more stringent restrictions on what nurse practitioners can do without a physician’s supervision do not increase quality or safety but may raise the price of well-child medical exams by between 3 and 16 percent.³³

In some cases, licensing can drastically reduce the availability of entire classes of services. Neatly illustrating this is the example of African-style hair braiding in Louisiana and Mississippi. With a substantially larger black population, Louisiana might be expected to be a better market for African-style hair braiders than neighboring Mississippi. Yet in 2012, Louisiana had just 32 braiders legally allowed to serve the whole state, while Mississippi had over 1,200. The difference likely was not one of market opportunity. Instead, licensing barriers seem to have contributed to the disparity. Louisiana demands braiders



IJ client Heather Kokesch Del Castillo had to shutter her successful health coaching business when she moved from California to Florida. Unlike California, Florida requires a license to give paid dietary advice. Heather is suing to strike down the requirement.

undergo 500 hours of training for a braiding license, while Mississippi requires only that braiders register with the state. Because they lock aspiring braiders out of work, Louisiana's steep requirements make braiding services significantly harder to find. Tellingly, Louisiana's steeper burdens do not appear to result in fewer consumer complaints against braiders compared to Mississippi's lighter burdens.³⁴

Excessively steep licensing requirements for an occupation, combined with high demand for the services provided by that occupation, can lead to a proliferation of underground service providers. Since such providers typically operate beyond the reach of even basic health and safety regimes, excessively steep licensing requirements may actually increase, rather than decrease, consumers' exposure to suboptimal services.³⁵

Licensing can also stifle innovation.³⁶ This is because licensing rewards standardization and compliance, not innovation. Aspiring workers whose innovative work upends industry practices may be shut out by law, while those who are already at work in the occupation may feel no competitive pressure to innovate. A real-world example comes from Mississippi, where the Board of Licensure for Professional Engineers and Surveyors has tried to shut down a company that uses new and innovative technologies to help small community banks assess property assets in their portfolios.³⁷ When a bank accepts a piece of property as collateral for a loan, the bank must have a survey performed if the loan is for a large enough amount (generally more than \$500,000). This means sending a licensed surveyor to take physical measurements in the field. For smaller loans, which generally have as collateral smaller, less-valuable, properties, such surveys are neither financially feasible nor required.³⁸

Recognizing that banks nevertheless need a cost-effective way of assessing such properties, entrepreneurs Brent Melton and Scott Dow created a company, Vizaline, that takes the publicly available legal description of a property and plugs it into a computer program that generates a line drawing of the property description and overlays that drawing onto satellite photographs. This activity is not surveying, but the Board still claims it requires a surveying license. It has sued to have the company cease its operations and return all of its earnings to customers—which would bankrupt the company—because neither Brent nor Scott is a licensed surveyor.³⁹ If the Board succeeds in using licensing laws to shut down Vizaline, this will be a loss for Brent and Scott and for their customers. Meanwhile, traditional surveyors will have less incentive to innovate through the use of technology.

Certification, in contrast, avoids these pitfalls of licensing because it does not restrict the freedom of occupational practice, allowing consumers to choose a certified provider or a presumably less expensive uncertified competitor based on what is important to them and what they can afford.⁴⁰

Costs to Society and the Economy

All of these costs to workers and consumers from licensing can have wider social and economic costs. Unnecessarily burdensome licensing requirements that shut people out of the occupation of their choice may mean that unemployment is higher than it would otherwise be or that more people are working in jobs that are a mismatch for their talents and skills—in economic terms, a misallocation of their human capital.



IJ client Melony Armstrong fought to exempt hair braiders from Mississippi's onerous cosmetology licensing requirements. Hair braiding in Mississippi now requires only simple registration.

Because unnecessarily burdensome licensing requirements pose particular problems for disadvantaged groups, they may also entrench social inequalities. And where ex-offenders are denied licenses for long-ago or irrelevant convictions, licensing may even contribute to recidivism with potentially negative consequences for communities.⁴¹

Licensing leads to other market distortions as well: In foreclosing other pathways into an occupation, licensing forces people to make investments in their education and skills that may be unnecessary and forgo income while they do. It may require consumers to pay higher prices than they would absent regulation without a concomitant increase in quality (or do it themselves or go without). And because licensing allows providers to command more for their services, it encourages investment in rent-seeking behavior to create and to perpetuate licensing schemes. All of these resources may have more efficient and productive uses.

In this study, we look at four economic costs of licensing: (1) the economic returns from licensing, (2) losses in jobs due to licensing, (3) losses in output due to licensing and (4) misallocated resources due to licensing. Below, we define each of these costs in turn:

(1) Economic Returns from Licensing: Also known as a wage premium, the economic returns from licensing refers to the amount licensing allows licensed service providers to earn above and beyond what they would if not for licensing—largely because being part of a smaller pool of competitors allows them to command more for their services. For example, research on the funeral services industry has found average economic returns of 11 to 12 percent from licensing of funeral service professionals.⁴²

While higher economic returns for licensees might sound like an unalloyed good, these gains are a cost that must be borne by someone—consumers and the wider economy.⁴³ Indeed, economic returns factor into estimates of each of the following three costs.

(2) Losses in Jobs Due to Licensing: Losses in jobs here refers to how many more jobs there would be if not for licensing. Research has found, for example, that states that require more training for African-style hair braiders have fewer licensed or registered braiders relative to their black populations than states with less onerous requirements.⁴⁴

(3) Losses in Output Due to Licensing: Losses in output, or deadweight loss, here is a conservative estimate of how much more value would be created in the economy if not for licensing.⁴⁵

Under a model with greater competition, the market price for a good or service is the point at which supply and demand are at equilibrium. Economic output is maximized, and there is no deadweight loss. But government interventions in a market—such as licensing—have the potential to put supply and demand into disequilibrium for periods of time.⁴⁶ Licensing does so by allowing producers to charge monopoly prices. Because licensing causes consumers to pay higher prices, and because some consumers will be unable to do so and therefore do it themselves or go without, licensing reduces overall output in society, creating a deadweight loss.

Research has found that stricter licensing for dentists and optometrists is associated with fewer practitioners and worse dental and eye health outcomes,⁴⁷ likely because people skip their dental and vision checkups when they deem them too expensive. Other research has linked stricter licensing for veterinarians to higher risks of rabies and brucellosis infections in a state,⁴⁸ suggesting that some people will go without veterinary care for their animals when the cost is too high. And in the construction trades, research has linked stricter licensing for electricians with higher rates of death by accidental electrocution as people respond to the relative scarcity of electricians by doing their own electrical work.⁴⁹

In each of these examples, some of the deadweight loss occurs due to the higher prices consumers must pay for services over and above what they would otherwise and the lower consumption of those services due to higher prices.

(4) Misallocated Resources Due to Licensing: Some economists have argued that deadweight loss is too conservative an estimate of economic losses because it fails to take into account resources that are misallocated or wasted—that is, resources that are not being put to their most highly valued use—because of a government intervention. Our discussion of costs from licensing covers a number of such items that are not captured by deadweight loss alone—the inappropriate allocation of the human capital of people who cannot, because of licensing, work in the occupation for which they are best suited, the resources wasted fulfilling licensing requirements that do not raise quality, the resources lost to rent-seeking when occupational practitioners and their industry associations push for licensure, and the resources wasted providing services of unnecessarily high quality.⁵⁰

For example, deadweight loss alone would not capture the cost to the economy of Heather Kokesch

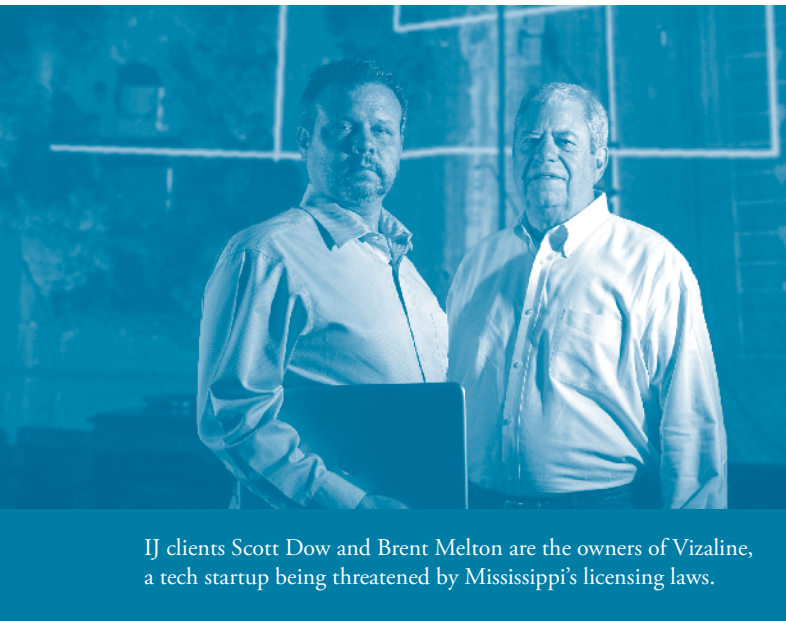
Del Castillo going back to college to be able to lawfully provide the health coaching services she was already successfully providing. Nor would it capture the cost to the economy of Heather not working in the occupation of her choice and in which her contributions to society are maximized. Deadweight loss also would not capture the cost to the economy of occupational organizations like the American Society of Interior Designers and the Academy of Nutrition and Dietetics using some of the dues they collect from their members to lobby for anticompetitive regulations instead of putting that money toward professional development and skill-building.⁵¹

Additional costs not captured by deadweight loss alone include “featherbedding,” which is when people must be paid for a job even though they are not the ones actually performing it.⁵² For example, many

states allow only licensed plumbers or electricians to connect commercial refrigerators or stoves. Unlicensed workers who have been trained to fix and install these appliances by the manufacturers are forbidden from doing the work unless supervised by a licensed plumber or electrician. Thus manufacturers and customers must pay for both the unlicensed expert’s work and the licensed practitioner’s presence.⁵³

What this means is that the actual cost of licensing to the wider economy is larger—and potentially much larger—than deadweight losses. For this reason, we consider deadweight loss to be the lower bound of plausible estimates for the costs of licensing and misallocated resources a much more realistic estimate of how much more value would be created in the economy if not for licensing.

Existing research has explored some of these costs at the national level, finding them to be substantial. For example, previous research has estimated national-level economic returns from licensing of between 10 and 15 percent,⁵⁴ at an annual cost to consumers of up to \$203 billion and a loss to the economy of 2.8 million jobs.⁵⁵ Estimates of state-level costs due to licensing have been more elusive due to data limitations, however. Taking advantage of a newly generated dataset that was large enough to be representative at the state level, we produced the first analysis of state-level licensing costs in 2017.⁵⁶ Although it was the largest then available, the sample was still relatively small, allowing us to estimate costs for only 16 states and limiting the precision of those estimates. This study builds on an even larger dataset to produce more—and more precise—state-level estimates of licensing’s costs, as well as new national estimates.



IJ clients Scott Dow and Brent Melton are the owners of Vizaline, a tech startup being threatened by Mississippi’s licensing laws.

Methods

To examine the costs of licensing at the state and national levels, this study relies on a large new dataset of survey information about Americans' licensing status, labor force activity, and demographic and social characteristics. To achieve a dataset that is representative of the U.S. population at the state level, we combined data from a survey conducted by Harris Interactive on behalf of the Institute for Justice in early 2013 and data from Wave 13 of the Survey of Income and Program Participation (SIPP), conducted in late 2012. (See Appendix A for details of the constituent datasets and how we combined them.)

As a first step, we used this dataset to estimate how many American workers are licensed, certified or neither at the state and national levels (see Tables 1 and 2 on pages 15 and 16) and to identify their demographic and economic characteristics: gender, educational attainment, average hourly earnings, race, age, union status and sector of employment (see Table A3 in Appendix A).

Our next step was to use these results to estimate the influence of licensing on hourly earnings—that is, the economic returns from licensing or wage premiums. But first we needed to rule out the possibility that licensing prevalence is correlated with other factors that might affect licensed workers' earnings and thus cloud the analysis. Previous research has tested whether a change in the occupational mix affects licensing prevalence across states and found that it does not.⁵⁷ And we tested for regional patterns in licensing and found that licensing prevalence

is not correlated with geographical location. (See Appendix A for fuller details.)

These findings suggest that our estimates of licensing prevalence allow us to make statistically valid inferences about licensing's influence on earnings. We therefore proceeded to estimate the economic returns from licensing at both the state and national levels, finding statistically significant results for 36 states and nationally (see Table 3 on page 17 for state-level results and Appendix A for the full national-level regression results).

Our estimates of the economic returns from licensing in turn served as part of the calculations for state- and national-level estimates of potential losses to the economy due to licensing in terms of jobs, output and misallocated resources.⁵⁸ At the state level, we estimated losses to the economy due to licensing for the 36 states where licensing's effect on earnings was statistically significant. We also summed the 36 state-level estimates to create one estimate of licensing's costs to the national economy. (See Table 4 on page 18.)

At the national level, we calculated two sets of estimated costs (see Table 5 on page 19). They use, respectively, our estimate of the national average economic returns from licensing (13.88 percent) and the analogous figure from an earlier study (15 percent)⁵⁹ for all licensed workers in the country, regardless of state. The advantage of doing these two analyses is that the returns from licensing act as a range where 13.88 percent represents the lower end, and 15 percent the upper end. The two analyses thus provide an estimate of effects at the lower and upper end of estimates for national average economic returns.

Results

The percentage of workers licensed varies widely across the 50 states and District of Columbia. Nevada has the highest percentage of licensed workers—almost 27 percent. Georgia has the lowest at around 14 percent. Table 1 shows the state-level results, providing both the percentage of licensed workers and the rank order of each state relative to the other states by percentage of licensed workers. (Full state-by-state results, including percentages of licensed and certified workers and estimated costs, are presented in the State Profiles starting on page 23.)

Table 1. States Ranked by Percentage of Licensed Workers

Rank	State	Licensed†	Rank	State	Licensed†
1	Nevada	26.6%	27	North Carolina	18.9%
2	Iowa	24.3%	28	District of Columbia	18.9%
3	Maine	24.2%	29	Texas	18.9%
4	Idaho	23.6%	30	Mississippi	18.7%
5	Wyoming	22.8%	31	Maryland	18.6%
6	North Dakota	22.6%	32	Michigan	18.6%
7	Louisiana	22.4%	33	Vermont	18.5%
8	West Virginia	22.0%	34	Alaska	18.4%
9	Minnesota	21.8%	35	New Mexico	18.4%
10	Connecticut	21.5%	36	Nebraska	18.2%
11	Washington	21.5%	37	Ohio	18.1%
12	Tennessee	21.3%	38	Alabama	18.1%
13	Hawaii	21.3%	39	Wisconsin	18.0%
14	Florida	21.1%	40	Indiana	17.9%
15	Missouri	21.0%	41	South Carolina	17.8%
16	South Dakota	20.9%	42	Massachusetts	17.8%
17	New York	20.7%	43	Illinois	17.7%
18	Arkansas	20.1%	44	Colorado	17.6%
19	Virginia	20.1%	45	Rhode Island	17.4%
20	Oregon	19.8%	46	California	17.2%
21	New Jersey	19.6%	47	Utah	16.3%
22	Kentucky	19.4%	48	New Hampshire	16.0%
23	Montana	19.2%	49	Kansas	16.0%
24	Arizona	19.1%	50	Delaware	15.2%
25	Pennsylvania	19.1%	51	Georgia	14.4%
26	Oklahoma	19.0%			

† Average margin of error is 3.4% at 95% confidence.

Nationally, we find that over 19 percent of workers have a license to work (see Table 2). This figure is lower than the widely cited 29 percent I (Kleiner) found with Alan Krueger in 2013. It is also lower than the 22 percent we (Kleiner and Vorotnikov) found in our 2017 analysis of the Harris data alone.⁶⁰

Table 2. Percentage of Workers Nationally Who Are Licensed, Certified or Neither

	Percent
Licensed Workers	19.09%
Certified Workers	5.57%
Workers Neither Licensed Nor Certified	75.34%
Total	100.00%

This difference could stem from the specific demographic and economic characteristics of the individuals in our combined dataset. For example, several groups that are more likely to be licensed have higher representation in the Harris data than in the combined data: people with at least a bachelor’s degree, whites, older people and people who work in the public sector. Another possibility is that the difference reflects the sample selection criteria or the method of data collection (an online survey for the Harris data and personal visits and telephone calls for the SIPP data). It is also important to note that estimates produced from various studies are just that—estimates. Multiple studies of any social phenomenon are bound to produce different estimates, due to different types of samples and data collection as described above.

Although somewhat lower than previous estimates, 19 percent is still significantly higher than the 5 percent of workers who were licensed in the 1950s,⁶¹ confirming

the substantial growth of licensing in recent decades. It seems fair to say that between one-fifth and one-third of American workers now have a license to work.

But what are the costs of all this licensing? Our results suggest they are high, at both the state and national levels.

Licensing raises the earnings of licensed workers

Licensing barriers impede the flow of workers into licensed occupations, effectively giving licensed workers a monopoly—and theoretically allowing them to command more in wages, and potentially consumer prices, for their services. We would therefore expect licensing to raise the earnings of licensed workers. And, indeed, in 36 states, we found that licensing has a substantial and statistically significant positive influence on hourly earnings. We found no significant influence in the other 14 states or in the District of Columbia. In no state did licensing reduce earnings by a statistically significant amount. It is important to note that nonsignificant findings in those states do not necessarily mean licensing has no influence. Rather, it could be that licensing has some effect, but we could not detect it due to small sample sizes in those states, too much statistical “noise” or other measurement phenomena.



When Arizona told IJ client Celeste Kelly she had to become a licensed veterinarian if she wished to continue working as an equine massage therapist, she sued—and the state backed down.

Table 3. Economic Returns from Licensing, 50 States and the District of Columbia

State	Returns	State	Returns
Alabama	12.30%*	Missouri	13.77%*
Alaska	11.96%	Montana	20.92%*
Arizona	12.41%*	Nebraska	17.94%*
Arkansas	7.79%	Nevada	22.88%*
California	15.84%*	New Hampshire	15.84%*
Colorado	28.27%*	New Jersey	21.17%*
Connecticut	27.25%*	New Mexico	22.26%*
Delaware	23.00%*	New York	11.85%*
District of Columbia	-15.30%	North Carolina	11.29%*
Florida	16.53%*	North Dakota	10.63%
Georgia	3.05%	Ohio	14.45%*
Hawaii	63.23%*	Oklahoma	2.12%
Idaho	14.80%*	Oregon	10.52%
Illinois	16.88%*	Pennsylvania	16.30%*
Indiana	12.19%*	Rhode Island	17.23%*
Iowa	26.36%*	South Carolina	10.30%*
Kansas	27.12%*	South Dakota	10.30%
Kentucky	3.67%	Tennessee	15.95%*
Louisiana	4.39%	Texas	14.00%*
Maine	17.94%*	Utah	19.36%*
Maryland	9.97%*	Vermont	16.42%
Massachusetts	22.02%*	Virginia	13.09%*
Michigan	21.41%*	Washington	4.29%
Minnesota	7.68%	West Virginia	8.00%
Mississippi	12.52%*	Wisconsin	14.80%*
		Wyoming	4.19%

*Statistically significant results.

Note: The economic returns reported in this table and in the text are adjusted estimates of licensing coefficients. See Appendix A for details.

As shown in Table 3, the economic returns from licensing, or wage premium, in the 36 states where it is statistically significant range from about 10 percent in Maryland to more than 63 percent in Hawaii.⁶² Licensing has the same effect on earnings nationally, where we estimate that licensing regulations raise mean hourly earnings by 12.5 to 14.1 percent (see Tables A4 and A5 in Appendix A),⁶³ a range that captures our 13.88 percent estimate of national average economic returns from licensing.

One might expect states that rank high on percentage of licensed workers to also have high economic returns. However, this is not necessarily the case. While higher percentages of licensed workers are driven primarily by higher numbers of licensed occupations, higher returns are driven more by higher barriers to entry. Usually, though not always, the more effort, time and money a person must invest in the process of obtaining a license, the higher economic returns will be.

We also estimate that licensing has a four to six times larger effect on earnings than certification nationally. This is what we would expect given that certification is a less restrictive occupational regulation that does not give certified providers a clear monopoly for their services.

Together, then, these results suggest licensing inflates earnings significantly above what workers would make absent licensing. It may be tempting to see this positive effect on earnings as a social good. However, someone is bearing the cost of economic returns from licensing: consumers and the wider economy.

As discussed above, licensing proponents think that licensing monopolies raise the quality of services and protect the public and that any resulting higher wages, or consumer prices, are therefore justified. Consumers may pay more, but they are getting better, safer services in return, or so the argument goes.⁶⁴ But there is little evidence in support of this argument, with most research suggesting that higher prices from licensing do not redound to the benefit of consumers.⁶⁵

Instead, economic returns from licensing are better thought of as a monopoly wealth transfer from consumers to licensees. And these gains imply wider costs to the economy, including in terms of losses in jobs, losses in output and misallocated resources. Indeed, for the 36 states where we found a statistically significant impact on earnings from licensing, as well as nationally, we were also able to model each of these costs to the economy from licensing. These results are shown in Tables 4 and 5.

Table 4. Job Losses, Deadweight Losses and Misallocated Resources Due to Licensing, Nationally and in 36 States

State	Economic Returns from Licensing	Total Workers Employed	Average Annual Earnings of Licensed Workers	Number of Licensed Workers	Job Losses Due to Licensing	Deadweight Losses Due to Licensing (in \$M)	Misallocated Resources Due to Licensing (in \$M)
National Estimate	13.88%	133,739,000	\$57,130	25,525,038	1,771,800	\$6,170	\$183,935
Alabama	12.30%	1,882,600	\$48,823	340,939	20,967	\$56.1	\$1,879.2
Arizona	12.41%	2,460,300	\$52,812	470,901	29,224	\$85.2	\$2,831.2
California	15.84%	14,394,500	\$62,753	2,474,415	195,917	\$840.4	\$22,067.5
Colorado	28.27%	2,310,000	\$59,223	406,098	57,410	\$374.7	\$5,675.9
Connecticut	27.25%	1,639,000	\$78,530	353,041	48,105	\$404.5	\$6,341.9
Delaware	23.00%	418,500	\$93,405	63,403	7,291	\$63.7	\$1,171.0
Florida	16.53%	7,400,100	\$50,163	1,563,641	129,254	\$459.9	\$11,587.8
Hawaii	63.23%	605,300	\$103,611	128,626	40,666	\$816.1	\$5,978.7
Idaho	14.80%	622,000	\$49,318	146,792	10,861	\$34.5	\$967.7
Illinois	16.88%	5,744,400	\$62,607	1,018,482	85,973	\$388.7	\$9,598.9
Indiana	12.19%	2,902,100	\$46,591	518,315	31,584	\$79.9	\$2,703.3
Iowa	26.36%	1,508,400	\$56,822	366,994	48,378	\$286.8	\$4,637.6
Kansas	27.12%	1,357,800	\$62,961	216,841	29,409	\$197.5	\$3,110.6
Maine	17.94%	597,600	\$58,941	144,739	12,983	\$58.2	\$1,355.8
Maryland	9.97%	2,574,500	\$73,443	479,114	23,874	\$79.5	\$3,268.4
Massachusetts	22.02%	3,273,600	\$71,035	583,356	64,222	\$411.6	\$7,889.2
Michigan	21.41%	4,024,200	\$57,447	746,892	79,953	\$405.0	\$7,971.3
Mississippi	12.52%	1,103,400	\$51,409	206,667	12,942	\$37.0	\$1,219.6
Missouri	13.77%	2,669,400	\$50,574	560,040	38,556	\$118.0	\$3,545.9
Montana	20.92%	440,500	\$65,342	84,664	8,858	\$50.1	\$1,007.4
Nebraska	17.94%	960,300	\$55,536	174,487	15,651	\$66.1	\$1,540.1
Nevada	22.88%	1,142,700	\$60,575	303,730	34,740	\$195.9	\$3,621.0
New Hampshire	15.84%	633,200	\$56,781	101,439	8,032	\$31.2	\$818.6
New Jersey	21.17%	3,895,500	\$67,072	764,297	80,890	\$473.9	\$9,429.2
New Mexico	22.26%	804,100	\$58,561	147,713	16,442	\$87.7	\$1,662.8
New York	11.85%	8,799,900	\$65,793	1,823,339	108,045	\$376.6	\$13,087.3
North Carolina	11.29%	3,988,100	\$51,855	753,751	42,562	\$112.0	\$4,078.2
Ohio	14.45%	5,171,000	\$49,028	937,502	67,752	\$209.7	\$6,014.3
Pennsylvania	16.30%	5,729,700	\$58,840	1,096,092	89,330	\$368.3	\$9,407.4
Rhode Island	17.23%	465,000	\$54,561	80,678	6,952	\$27.9	\$675.0
South Carolina	10.30%	1,858,200	\$49,336	331,317	17,057	\$39.3	\$1,565.2
Tennessee	15.95%	2,714,300	\$54,587	577,603	46,068	\$173.0	\$4,510.5
Texas	14.00%	10,879,800	\$48,893	2,054,106	143,754	\$431.5	\$12,762.6
Utah	19.36%	1,249,200	\$55,084	203,120	19,665	\$87.9	\$1,902.9
Virginia	13.09%	3,727,000	\$61,125	747,636	48,927	\$173.1	\$5,462.1
Wisconsin	14.80%	2,784,600	\$55,835	500,114	37,002	\$133.2	\$3,732.5
Total of 36 States				21,470,882	1,759,295	\$8,234	\$185,078

Note: The economic returns reported in this table and in the text are adjusted estimates of licensing coefficients. See Appendix A for details.

Table 5. Two Scenarios of Licensing’s Potential Annual Costs to the National Economy

	Job Losses Due to Licensing	Deadweight Losses Due to Licensing (in \$M)	Misallocated Resources Due to Licensing (in \$M)
13.88% National Average Returns from Licensing	1,771,800	\$6,170	\$183,935
15.00% National Average Returns from Licensing	1,914,378	\$7,133	\$197,337

Licensing could cost the economy hundreds of thousands of jobs

Licensing barriers limit some people’s ability to work in licensed occupations, reducing employment opportunities for many Americans. Our results suggest there would be hundreds of thousands more jobs—most of them in the service economy, the most highly regulated occupational sector—if not for licensing. Using our estimated state-level economic returns from licensing, we find the number of jobs lost to licensing ranges from 6,952 in Rhode Island (17.23% returns), one of the smallest states by population, to 195,917 in California (15.84% returns), the largest. Our state-level estimates add up to 1,759,295 jobs lost across the 36 states for which we found statistically significant economic returns.

We also estimated national job losses in separate analyses assuming the 13.88 percent national average returns found in this study and the 15 percent national returns found in an earlier study for all licensed workers in the country, regardless of state. As shown in Table 5, these analyses resulted in estimates of 1,771,800 and 1,914,378 jobs lost, respectively.

Licensing could cost the economy billions of dollars in lost output

Licensing barriers reduce the supply of service providers and make services more costly with the result that some consumers must go without. They might decide to postpone that dental or vision checkup, skip their pet’s rabies booster, or even try to do their own electrical work. This is a drag on economic production. Our results suggest that the cost to the economy in terms of these losses in output, or deadweight loss, is potentially in the billions of dollars. Using our estimates of state-level economic returns from licensing, we find the state with the highest deadweight losses due to licensing is California (\$840.4 million, 15.84% returns), likely due in part to its large population. Rhode Island’s deadweight losses are the lowest (\$27.9 million, 17.23% returns), in part due to the state’s relatively small population. Our state-level estimates add up to over \$8.2 billion in deadweight losses across the 36 states for which we found statistically significant economic returns.

In separate analyses, we assumed the 13.88 percent national average returns from licensing we found in this study and the 15 percent found in an earlier study for every licensed worker in the country to estimate national-level deadweight losses. As reported in Table 5, these analyses found deadweight losses of about \$6.2 billion and \$7.1 billion, respectively.


These figures are substantial. However, we think they tell only part of the story for two reasons. First, they may be conservative in light of our state-level estimates of deadweight losses, which, as stated above, sum to over \$8.2 billion. Second, and more importantly, they do not take into account resources that are misallocated or wasted due to licensing. We therefore consider our \$6.2 billion figure to be only the lower bound for the cost of licensing to the national economy in terms of reduced economic activity.

Licensing could cost the economy more than a hundred billion dollars in misallocated resources

As discussed above, licensing is frequently wasteful. In preventing people from working in the occupations for which they are best suited, licensing misallocates people's human capital. In forcing people to fulfill burdensome licensing requirements that do not raise quality, licensing misallocates people's human capital, money and time. And with its promise of economic returns over and above what can be had absent licensing, licensing encourages occupational practitioners and their occupational associations to invest resources in rent-seeking instead of more productive activity. Taking these misallocated resources into account, we find potential costs to the economy that far exceed those from deadweight losses and that likely provide a more complete picture of the extent to which licensing reduces economic activity.

Using our estimates of state-level economic returns from licensing, we find the state with the most misallocated resources is, again, California (\$22.1 billion, 15.84% returns). Its total is far ahead of that of the next closest state, New York (\$13.1 billion, 11.85% returns). The state with the least is, again, Rhode Island (\$675 million, 17.23% returns). Our state-level estimates add up to over \$185 billion in misallocated resources across the 36 states for which we found statistically significant economic returns.

In a separate analysis assuming our estimate of 13.88 percent national average returns for all licensed workers in the country, we find licensing costs the American economy \$183.9 billion in misallocated resources, as shown in Table 5. Assuming the 15 percent national returns, we find licensing costs the American economy \$197.3 billion in misallocated resources. We consider our \$183.9 billion figure to be a much more realistic estimate than our \$6.2 billion figure of the overall costs of licensing to the nation's economy.



IJ client Lata Jagtiani successfully sued the state of Louisiana to exempt eyebrow threaders from onerous cosmetology licensing requirements.

Conclusion

This study offers new evidence that licensing barriers are widespread across the United States and that they impose substantial economic costs at both the state and national levels.

In line with previous research, this study confirms that licensing is large and has grown substantially since the early 1950s, with about one-fifth of U.S. workers now having a government-mandated license to work and state-level licensing rates ranging from 14 to 27 percent. Also in line with previous research, this study confirms that the costs of licensing—to workers, to consumers and to the wider economy—are likewise large.

Because licensing barriers shut some aspirants out, they may cost the national economy upwards of 1.8 million jobs. And aspiring workers are not the only ones who lose with licensing. Licensing barriers also cost consumers and the wider economy billions of dollars—\$6.2 billion in lost output and \$183.9 billion in misallocated resources. This is because occupational licenses restrict competition, effectively giving licensed workers a monopoly—and allowing them to command higher economic returns for their services than they could absent licensing.

Higher economic returns for workers with licenses might sound like a social good. However, it is important to remember that they do not reflect additional value created in a competitive market, with most research finding no relationship between licensing and service quality. Instead, higher returns reflect licensed workers' government-granted monopoly. These gains, in short, are a transfer of wealth from consumers to licensees. And, as our results show, they add up, potentially reducing growth in economic activity at both the state and national levels.

It is impossible to forecast precisely what effect reforming occupational licensing would have on the economy. However, given our estimates of the costs of licensing and ample research showing that licensing rarely improves outcomes for consumers, it seems likely that eliminating needless licensing burdens—and, if necessary, replacing them with less restrictive alternatives such as certification that do not give regulated workers a monopoly⁶⁶—would translate into higher employment, higher economic output, and a more efficient and equitable allocation of resources. By and large, when markets are more competitive, both workers and consumers win.

State Profiles



Alabama



18% of workers licensed
38th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.11%
Workers Certified	3.36%
Workers Unionized	9.48%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	20,967
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$56.1
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,879.2
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	12.30%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.6%	2.9%	78.4%	262
Female	17.5%	3.9%	78.6%	311
Education Level				
Less than High School	6.3%	0.0%	93.7%	33
High School	10.4%	1.6%	88.0%	149
Some College	17.7%	4.1%	78.2%	210
College	22.3%	3.8%	73.9%	114
College+	36.8%	6.2%	57.0%	67
Earnings				
Average Hourly Earnings	\$23.47	\$19.96	\$17.81	573
Race				
White	20.5%	3.4%	76.1%	368
Hispanic	4.8%	4.8%	90.3%	20
Black	10.7%	3.3%	86.0%	151
Other	25.2%	3.1%	71.7%	34
Age				
≤25	8.6%	2.9%	88.5%	61
26–54	19.6%	4.1%	76.2%	359
55+	19.0%	1.5%	79.6%	153

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Alaska



18% of workers licensed
34th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.40%
Workers Certified	7.15%
Workers Unionized	14.28%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	19.2%	10.5%	70.3%	105
Female	17.5%	3.3%	79.2%	141
Education Level				
Less than High School	0.0%	0.0%	100.0%	5
High School	4.8%	3.6%	91.6%	31
Some College	11.8%	9.2%	79.0%	80
College	36.5%	7.4%	56.0%	72
College+	43.5%	7.3%	49.2%	58
Earnings				
Average Hourly Earnings	\$32.82	\$24.26	\$23.89	246
Race				
White	21.1%	8.0%	70.9%	185
Hispanic	34.8%	0.0%	65.2%	5
Black	39.1%	0.0%	60.9%	3
Other	10.2%	5.9%	83.8%	53
Age				
≤25	2.7%	2.7%	94.6%	24
26–54	23.9%	7.8%	68.3%	154
55+	16.9%	8.9%	74.2%	68

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Arizona



19% of workers licensed
24th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.14%
Workers Certified	5.35%
Workers Unionized	5.83%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	29,224
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$85.2
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$2,831.2
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	12.41%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.6%	5.2%	77.2%	440
Female	21.0%	5.5%	73.5%	432
Education Level				
Less than High School	4.6%	0.0%	95.4%	64
High School	9.3%	7.7%	83.0%	181
Some College	18.0%	4.1%	77.9%	331
College	22.6%	5.7%	71.7%	197
College+	39.2%	8.3%	52.6%	99
Earnings				
Average Hourly Earnings	\$25.39	\$21.82	\$21.10	872
Race				
White	22.2%	5.9%	71.9%	537
Hispanic	12.7%	4.3%	83.0%	230
Black	20.6%	5.1%	74.3%	43
Other	17.6%	4.8%	77.6%	62
Age				
≤25	8.8%	4.6%	86.7%	127
26–54	20.0%	5.0%	74.9%	568
55+	23.5%	6.9%	69.6%	177

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Arkansas



20% of workers licensed
18th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	20.07%
Workers Certified	5.75%
Workers Unionized	3.69%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.8%	3.7%	78.4%	197
Female	22.6%	8.0%	69.3%	227
Education Level				
Less than High School	20.8%	0.0%	79.2%	29
High School	11.6%	3.5%	84.9%	100
Some College	17.3%	6.6%	76.1%	137
College	23.0%	7.2%	69.8%	94
College+	53.0%	10.2%	36.8%	64
Earnings				
Average Hourly Earnings	\$22.32	\$19.53	\$17.84	424
Race				
White	20.0%	6.3%	73.8%	323
Hispanic	27.1%	6.6%	66.3%	18
Black	15.4%	4.8%	79.9%	60
Other	25.5%	0.0%	74.5%	23
Age				
≤25	12.7%	1.9%	85.3%	52
26–54	21.7%	6.2%	72.1%	280
55+	21.3%	7.4%	71.2%	92

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

California



17% of workers licensed
46th highest percentage

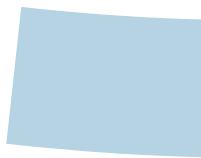
Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.19%
Workers Certified	4.82%
Workers Unionized	17.27%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	195,917
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$840.4
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$22,067.5
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	15.84%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.1%	4.2%	79.7%	1,594
Female	18.5%	5.6%	75.9%	1,480
Education Level				
Less than High School	3.0%	1.5%	95.5%	336
High School	7.3%	2.0%	90.7%	637
Some College	17.7%	5.6%	76.7%	1,048
College	20.5%	5.9%	73.6%	680
College+	35.5%	7.1%	57.3%	373
Earnings				
Average Hourly Earnings	\$30.17	\$25.47	\$21.08	3,074
Race				
White	22.0%	6.3%	71.7%	1,322
Hispanic	10.9%	3.5%	85.6%	1,110
Black	16.6%	5.8%	77.6%	156
Other	18.1%	3.3%	78.6%	486
Age				
≤25	6.6%	2.9%	90.5%	460
26–54	17.4%	4.9%	77.7%	2,019
55+	24.5%	5.9%	67.6%	595

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Colorado



18% of workers licensed
44th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.58%
Workers Certified	5.41%
Workers Unionized	5.87%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	57,410
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$374.7
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$5,675.9
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	28.27%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.4%	6.5%	77.1%	303
Female	18.9%	4.2%	76.9%	316
Education Level				
Less than High School	5.9%	2.7%	91.4%	30
High School	10.1%	0.8%	89.1%	103
Some College	18.1%	8.0%	73.9%	207
College	16.9%	4.5%	78.6%	164
College+	29.9%	6.8%	63.3%	115
Earnings				
Average Hourly Earnings	\$28.47	\$33.44	\$21.54	619
Race				
White	19.0%	6.6%	74.4%	494
Hispanic	10.7%	2.3%	87.0%	59
Black	14.3%	3.7%	82.0%	27
Other	17.5%	0.0%	82.5%	39
Age				
≤25	7.5%	5.9%	86.5%	78
26–54	18.1%	4.9%	76.9%	384
55+	22.3%	6.6%	71.2%	157

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Connecticut



22% of workers licensed
10th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.54%
Workers Certified	6.65%
Workers Unionized	16.78%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	48,105
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$404.5
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$6,341.9
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	27.25%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	21.8%	7.0%	71.1%	263
Female	21.2%	6.3%	72.5%	286
Education Level				
Less than High School	4.9%	0.0%	95.1%	16
High School	13.1%	6.0%	80.9%	102
Some College	18.8%	9.1%	72.1%	170
College	18.4%	5.0%	76.6%	146
College+	41.7%	6.1%	52.2%	115
Earnings				
Average Hourly Earnings	\$37.75	\$35.12	\$25.35	549
Race				
White	22.9%	5.9%	71.2%	438
Hispanic	14.2%	14.0%	71.7%	46
Black	13.1%	6.3%	80.5%	37
Other	27.0%	4.1%	68.9%	28
Age				
≤25	11.0%	7.5%	81.5%	67
26–54	23.0%	6.7%	70.3%	335
55+	22.7%	6.1%	71.2%	147

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Delaware



15% of workers licensed
2nd lowest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	15.15%
Workers Certified	8.73%
Workers Unionized	12.96%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	7,291
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$63.7
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,171.0
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	23.00%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	14.4%	9.9%	75.7%	98
Female	15.9%	7.6%	76.5%	151
Education Level				
Less than High School	0.0%	0.0%	100.0%	7
High School	15.3%	0.0%	84.7%	45
Some College	6.3%	10.6%	83.1%	70
College	10.1%	5.1%	84.9%	76
College+	23.1%	14.3%	62.6%	51
Earnings				
Average Hourly Earnings	\$44.91	\$23.19	\$25.78	249
Race				
White	16.0%	10.0%	74.0%	181
Hispanic	6.2%	11.6%	82.3%	16
Black	12.2%	8.0%	79.9%	41
Other	29.9%	0.0%	70.1%	11
Age				
≤25	0.0%	13.7%	86.3%	20
26–54	16.0%	7.8%	76.2%	169
55+	20.0%	10.2%	69.7%	60

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

District of Columbia

19% of workers licensed
28th highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.89%
Workers Certified	4.52%
Workers Unionized	8.83%

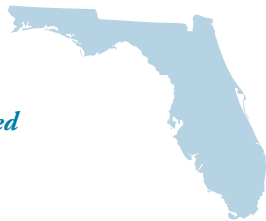
Note: Economic costs were not calculated for the District of Columbia as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.9%	5.7%	76.4%	31
Female	19.9%	3.3%	76.8%	41
Education Level				
Less than High School	0.0%	25.8%	74.2%	2
High School	0.0%	0.0%	100.0%	10
Some College	22.7%	9.8%	67.5%	24
College	26.9%	0.0%	73.1%	23
College+	28.0%	1.9%	70.2%	13
Earnings				
Average Hourly Earnings	\$34.17	\$25.87	\$33.62	72
Race				
White	16.9%	0.4%	82.7%	32
Hispanic	0.0%	0.0%	100.0%	1
Black	5.4%	16.5%	78.2%	35
Other	93.4%	0.0%	6.6%	4
Age				
≤25	0.0%	0.0%	100.0%	16
26–54	24.5%	6.0%	69.5%	41
55+	21.4%	4.5%	74.1%	15

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Florida

21% of workers licensed
14th highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.13%
Workers Certified	4.39%
Workers Unionized	6.56%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	129,254
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$459.9
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$11,587.8
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	16.53%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.7%	4.6%	76.7%	737
Female	23.7%	4.2%	72.1%	828
Education Level				
Less than High School	10.1%	0.0%	89.9%	94
High School	9.4%	2.0%	88.6%	367
Some College	21.5%	5.4%	73.1%	581
College	26.7%	3.9%	69.4%	345
College+	39.7%	9.2%	51.1%	178
Earnings				
Average Hourly Earnings	\$24.12	\$19.63	\$17.88	1,565
Race				
White	23.1%	5.1%	71.7%	936
Hispanic	16.7%	4.1%	79.2%	305
Black	20.5%	2.9%	76.7%	256
Other	19.1%	0.0%	80.9%	68
Age				
≤25	9.9%	4.2%	85.9%	173
26–54	22.8%	4.2%	73.0%	1,011
55+	22.5%	5.0%	72.5%	381

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Georgia



14% of workers licensed
Lowest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	14.40%
Workers Certified	4.15%
Workers Unionized	5.10%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	12.4%	3.2%	84.4%	470
Female	16.5%	5.2%	78.3%	565
Education Level				
Less than High School	4.4%	0.0%	95.6%	66
High School	6.6%	1.5%	91.9%	236
Some College	10.7%	5.8%	83.5%	362
College	19.1%	4.8%	76.1%	227
College+	37.0%	4.0%	59.0%	144
Earnings				
Average Hourly Earnings	\$23.47	\$24.33	\$19.41	1,035
Race				
White	15.6%	4.8%	79.6%	613
Hispanic	12.2%	1.4%	86.4%	61
Black	12.5%	4.3%	83.2%	303
Other	13.4%	0.0%	86.6%	58
Age				
≤25	4.7%	3.4%	91.9%	130
26–54	15.6%	4.5%	79.9%	694
55+	16.6%	3.4%	80.0%	211

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Hawaii



21% of workers licensed
13th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.25%
Workers Certified	9.05%
Workers Unionized	25.18%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	40,666
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$816.1
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$5,978.7
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	63.23%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	22.1%	11.0%	66.9%	114
Female	20.3%	7.1%	72.6%	145
Education Level				
Less than High School	0.0%	0.0%	100.0%	4
High School	12.2%	0.0%	87.8%	23
Some College	21.7%	16.4%	62.0%	88
College	19.2%	8.4%	72.3%	105
College+	47.7%	5.8%	46.5%	39
Earnings				
Average Hourly Earnings	\$49.81	\$28.15	\$22.17	259
Race				
White	19.3%	15.1%	65.6%	58
Hispanic	45.1%	3.1%	51.7%	18
Black	74.4%	0.0%	25.6%	6
Other	19.6%	7.7%	72.7%	177
Age				
≤25	1.9%	5.2%	92.8%	27
26–54	27.6%	10.6%	61.7%	156
55+	19.4%	7.9%	72.7%	76

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Idaho

24% of workers licensed
4th highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	23.60%
Workers Certified	5.66%
Workers Unionized	6.55%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	10,861
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$34.5
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$967.7
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	14.80%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	21.3%	5.5%	73.3%	165
Female	26.5%	5.9%	67.6%	179
Education Level				
Less than High School	5.6%	0.0%	94.4%	16
High School	14.3%	2.9%	82.8%	68
Some College	23.7%	7.4%	68.8%	122
College	20.9%	7.0%	72.1%	93
College+	54.8%	3.8%	41.4%	45
Earnings				
Average Hourly Earnings	\$23.71	\$26.75	\$19.06	344
Race				
White	26.5%	5.3%	68.2%	293
Hispanic	9.6%	5.5%	84.9%	33
Black	0.0%	0.0%	100.0%	1
Other	7.5%	11.7%	80.8%	17
Age				
≤25	13.7%	3.4%	82.9%	44
26–54	23.5%	7.3%	69.2%	213
55+	29.6%	2.6%	67.8%	87

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Illinois

18% of workers licensed
43rd highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.73%
Workers Certified	6.71%
Workers Unionized	15.57%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	85,973
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$388.7
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$9,598.9
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	16.88%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	14.9%	6.7%	78.5%	762
Female	20.9%	6.8%	72.4%	767
Education Level				
Less than High School	4.8%	2.0%	93.2%	100
High School	9.4%	2.9%	87.6%	359
Some College	17.6%	7.0%	75.3%	519
College	20.1%	8.5%	71.4%	362
College+	33.2%	11.1%	55.7%	189
Earnings				
Average Hourly Earnings	\$30.10	\$27.02	\$20.57	1,529
Race				
White	19.8%	7.5%	72.7%	1,029
Hispanic	9.1%	5.7%	85.2%	246
Black	16.9%	3.1%	80.0%	144
Other	16.0%	7.4%	76.6%	110
Age				
≤25	8.7%	2.6%	88.7%	260
26–54	18.5%	7.5%	74.0%	968
55+	21.8%	7.2%	71.0%	301

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Indiana



18% of workers licensed
40th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.86%
Workers Certified	6.48%
Workers Unionized	10.86%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	31,584
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$79.9
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$2,703.3
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	12.19%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.5%	6.6%	76.9%	637
Female	19.4%	6.4%	74.2%	650
Education Level				
Less than High School	7.1%	1.5%	91.4%	75
High School	11.2%	4.1%	84.7%	416
Some College	16.0%	8.7%	75.3%	453
College	21.4%	6.7%	71.9%	242
College+	44.2%	5.4%	50.4%	101
Earnings				
Average Hourly Earnings	\$22.40	\$18.11	\$17.05	1,287
Race				
White	18.6%	7.0%	74.4%	1,088
Hispanic	1.2%	1.1%	97.7%	81
Black	16.7%	1.9%	81.5%	81
Other	23.9%	9.0%	67.1%	37
Age				
≤25	4.5%	3.2%	92.2%	175
26–54	20.7%	6.8%	72.5%	821
55+	17.7%	7.6%	74.7%	291

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Iowa



24% of workers licensed
2nd highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	24.33%
Workers Certified	6.47%
Workers Unionized	9.95%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	48,378
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$286.8
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$4,637.6
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	26.36%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	25.8%	6.1%	68.1%	256
Female	22.7%	6.9%	70.4%	317
Education Level				
Less than High School	14.1%	4.1%	81.7%	16
High School	16.4%	1.2%	82.4%	111
Some College	25.0%	8.9%	66.1%	179
College	27.2%	10.2%	62.7%	184
College+	41.3%	1.5%	57.2%	83
Earnings				
Average Hourly Earnings	\$27.32	\$18.59	\$17.95	573
Race				
White	24.8%	5.9%	69.3%	510
Hispanic	29.2%	5.1%	65.8%	26
Black	0.0%	26.0%	74.0%	6
Other	19.3%	10.5%	70.2%	31
Age				
≤25	7.7%	2.2%	90.1%	81
26–54	27.9%	7.5%	64.7%	378
55+	26.8%	6.9%	66.3%	114

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Kansas



16% of workers licensed
49th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	15.97%
Workers Certified	7.25%
Workers Unionized	5.66%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	29,409
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$197.5
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$3,110.6
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	27.12%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	13.2%	5.1%	81.7%	188
Female	18.9%	9.5%	71.6%	249
Education Level				
Less than High School	0.0%	0.0%	100.0%	19
High School	3.8%	4.8%	91.4%	80
Some College	16.5%	10.0%	73.6%	142
College	13.9%	6.0%	80.1%	131
College+	39.6%	7.8%	52.7%	65
Earnings				
Average Hourly Earnings	\$30.27	\$22.17	\$19.82	437
Race				
White	17.5%	7.2%	75.2%	365
Hispanic	7.1%	14.8%	78.2%	27
Black	8.2%	4.2%	87.6%	20
Other	12.7%	0.0%	87.3%	25
Age				
≤25	7.1%	9.8%	83.1%	44
26–54	18.3%	7.7%	74.0%	288
55+	14.3%	5.0%	80.8%	105

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Kentucky



19% of workers licensed
22nd highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.43%
Workers Certified	5.37%
Workers Unionized	10.20%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.4%	7.1%	75.5%	227
Female	21.6%	3.6%	74.9%	297
Education Level				
Less than High School	0.0%	0.0%	100.0%	27
High School	8.0%	2.7%	89.3%	130
Some College	19.2%	4.5%	76.3%	198
College	29.0%	11.2%	59.7%	92
College+	44.7%	8.0%	47.3%	77
Earnings				
Average Hourly Earnings	\$26.18	\$32.96	\$17.24	524
Race				
White	20.1%	6.2%	73.7%	457
Hispanic	0.0%	0.0%	100.0%	10
Black	13.2%	0.0%	86.8%	41
Other	29.1%	0.0%	70.9%	16
Age				
≤25	12.5%	4.4%	83.1%	60
26–54	21.4%	5.2%	73.4%	357
55+	17.3%	6.6%	76.1%	107

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Louisiana



22% of workers licensed

7th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	22.37%
Workers Certified	6.15%
Workers Unionized	6.88%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	19.5%	6.6%	73.8%	281
Female	25.8%	5.6%	68.6%	335
Education Level				
Less than High School	9.2%	1.4%	89.5%	38
High School	14.1%	2.9%	83.0%	156
Some College	21.0%	7.9%	71.1%	219
College	28.1%	7.2%	64.7%	136
College+	50.2%	9.4%	40.4%	67
Earnings				
Average Hourly Earnings	\$23.40	\$30.27	\$17.97	616
Race				
White	21.9%	6.5%	71.6%	398
Hispanic	16.8%	9.1%	74.1%	12
Black	22.8%	5.1%	72.1%	182
Other	33.4%	3.8%	62.8%	24
Age				
≤25	15.0%	3.9%	81.1%	97
26–54	24.5%	7.6%	67.9%	367
55+	21.5%	3.8%	74.7%	152

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Maine



24% of workers licensed

3rd highest percentage

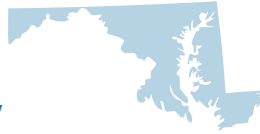
Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	24.22%
Workers Certified	5.61%
Workers Unionized	11.19%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	12,983
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$58.2
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,355.8
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	17.94%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.4%	4.2%	77.4%	127
Female	30.0%	7.0%	63.0%	179
Education Level				
Less than High School	0.0%	17.0%	83.0%	4
High School	11.8%	5.7%	82.5%	67
Some College	25.3%	4.8%	69.9%	118
College	33.9%	3.7%	62.4%	85
College+	37.4%	10.6%	51.9%	32
Earnings				
Average Hourly Earnings	\$28.34	\$18.63	\$17.54	306
Race				
White	25.0%	5.9%	69.2%	285
Hispanic	25.5%	17.1%	57.4%	5
Black	0.0%	0.0%	100.0%	4
Other	13.2%	0.0%	86.8%	12
Age				
≤25	12.4%	0.0%	87.6%	29
26–54	27.4%	6.6%	66.0%	196
55+	21.5%	5.9%	72.5%	81

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Maryland



19% of workers licensed
31st highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.61%
Workers Certified	5.15%
Workers Unionized	13.80%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	23,874
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$79.5
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$3,268.4
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	9.97%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.9%	5.9%	76.2%	408
Female	19.3%	4.4%	76.3%	451
Education Level				
Less than High School	2.6%	0.0%	97.4%	32
High School	11.5%	2.5%	86.0%	170
Some College	17.9%	3.7%	78.4%	259
College	18.6%	8.4%	73.1%	231
College+	31.6%	7.9%	60.5%	167
Earnings				
Average Hourly Earnings	\$35.31	\$43.87	\$25.28	859
Race				
White	18.9%	4.5%	76.6%	559
Hispanic	14.3%	7.6%	78.1%	25
Black	19.0%	6.7%	74.3%	206
Other	19.2%	2.3%	78.6%	69
Age				
≤25	8.2%	2.6%	89.3%	120
26–54	21.5%	5.7%	72.8%	546
55+	17.3%	5.3%	77.4%	193

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Massachusetts



18% of workers licensed
42nd highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.82%
Workers Certified	4.89%
Workers Unionized	12.70%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	64,222
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$411.6
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$7,889.2
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	22.02%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	14.5%	4.5%	81.0%	569
Female	21.3%	5.3%	73.4%	654
Education Level				
Less than High School	7.3%	3.8%	88.9%	42
High School	8.4%	3.7%	87.9%	274
Some College	15.7%	4.5%	79.9%	374
College	18.9%	3.6%	77.5%	326
College+	29.4%	8.5%	62.1%	207
Earnings				
Average Hourly Earnings	\$34.15	\$28.75	\$24.79	1,223
Race				
White	18.4%	5.0%	76.5%	1,047
Hispanic	10.1%	2.5%	87.4%	43
Black	18.0%	5.1%	76.9%	73
Other	19.9%	6.6%	73.6%	60
Age				
≤25	6.1%	2.4%	91.4%	191
26–54	19.7%	5.1%	75.2%	780
55+	19.3%	5.7%	74.9%	252

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Michigan



19% of workers licensed
32nd highest percentage

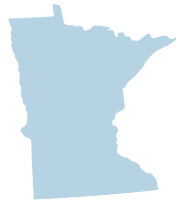
Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.56%
Workers Certified	5.54%
Workers Unionized	14.80%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	79,953
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$405.0
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$7,971.3
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	21.41%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.6%	4.8%	77.6%	440
Female	19.6%	6.4%	74.1%	466
Education Level				
Less than High School	9.2%	6.7%	84.2%	32
High School	10.1%	2.4%	87.5%	208
Some College	13.6%	6.4%	79.9%	326
College	27.6%	5.2%	67.2%	210
College+	35.8%	7.8%	56.4%	130
Earnings				
Average Hourly Earnings	\$27.62	\$19.12	\$19.30	906
Race				
White	18.8%	5.4%	75.8%	746
Hispanic	17.8%	0.0%	82.2%	34
Black	16.5%	7.2%	76.2%	86
Other	19.7%	8.8%	71.5%	40
Age				
≤25	6.1%	5.0%	88.9%	122
26–54	20.8%	5.2%	74.1%	566
55+	20.5%	6.8%	72.7%	218

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Minnesota



22% of workers licensed
9th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.78%
Workers Certified	5.84%
Workers Unionized	14.43%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	19.7%	7.5%	72.8%	391
Female	24.0%	4.0%	71.9%	417
Education Level				
Less than High School	0.0%	3.0%	97.0%	30
High School	7.0%	2.1%	91.0%	158
Some College	23.5%	7.4%	69.1%	283
College	22.4%	5.5%	72.1%	231
College+	42.1%	6.7%	51.2%	106
Earnings				
Average Hourly Earnings	\$27.27	\$23.09	\$22.40	808
Race				
White	22.0%	6.1%	71.9%	711
Hispanic	2.2%	0.0%	97.8%	39
Black	26.1%	7.6%	66.4%	20
Other	28.1%	4.4%	67.4%	38
Age				
≤25	10.6%	3.2%	86.2%	93
26–54	22.3%	7.1%	70.6%	518
55+	26.4%	4.1%	69.5%	197

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Mississippi

19% of workers licensed
30th highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized

Workers Licensed	18.73%
Workers Certified	6.70%
Workers Unionized	5.07%

State-Level Economic Costs of Licensing

Estimated Jobs Lost	12,942
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$37.0
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,219.6
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	12.52%

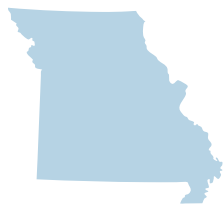
Characteristics of Workers Who Are Licensed, Certified or Neither

	Licensed	Certified	Neither	Obs.
Gender				
Male	20.7%	8.2%	71.0%	217
Female	16.3%	4.8%	78.9%	266
Education Level				
Less than High School	6.0%	10.1%	83.9%	39
High School	11.1%	2.0%	86.9%	106
Some College	15.0%	7.7%	77.4%	179
College	31.9%	6.7%	61.4%	102
College+	37.7%	11.3%	51.0%	57
Earnings				
Average Hourly Earnings	\$24.72	\$23.66	\$17.56	483
Race				
White	19.1%	7.6%	73.4%	310
Hispanic	0.0%	16.1%	83.9%	8
Black	18.5%	5.0%	76.5%	155
Other	28.6%	0.0%	71.4%	10
Age				
≤25	8.0%	3.3%	88.7%	75
26–54	20.2%	5.9%	73.9%	284
55+	21.0%	10.5%	68.6%	124

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Missouri

21% of workers licensed
15th highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized

Workers Licensed	20.98%
Workers Certified	8.12%
Workers Unionized	10.48%

State-Level Economic Costs of Licensing

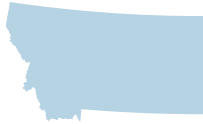
Estimated Jobs Lost	38,556
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$118.0
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$3,545.9
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	13.77%

Characteristics of Workers Who Are Licensed, Certified or Neither

	Licensed	Certified	Neither	Obs.
Gender				
Male	19.2%	8.4%	72.4%	527
Female	22.9%	7.8%	69.3%	563
Education Level				
Less than High School	13.2%	9.8%	77.0%	45
High School	11.2%	4.6%	84.2%	292
Some College	18.8%	10.4%	70.8%	424
College	21.8%	6.9%	71.3%	213
College+	45.6%	8.0%	46.4%	116
Earnings				
Average Hourly Earnings	\$24.31	\$18.44	\$18.34	1,090
Race				
White	20.5%	8.2%	71.3%	946
Hispanic	22.9%	0.0%	77.1%	20
Black	23.7%	5.6%	70.7%	88
Other	24.7%	18.1%	57.2%	36
Age				
≤25	8.6%	6.5%	84.9%	185
26–54	23.8%	9.1%	67.1%	677
55+	20.3%	6.4%	73.3%	228

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Montana



19% of workers licensed
23rd highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.22%
Workers Certified	7.02%
Workers Unionized	11.77%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	8,858
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$50.1
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,007.4
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	20.92%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	25.0%	4.8%	70.3%	117
Female	13.8%	9.1%	77.0%	169
Education Level				
Less than High School	0.0%	0.0%	100.0%	11
High School	13.1%	3.4%	83.5%	36
Some College	14.0%	7.7%	78.3%	101
College	29.2%	8.3%	62.4%	91
College+	39.1%	12.5%	48.5%	47
Earnings				
Average Hourly Earnings	\$31.41	\$23.52	\$18.28	286
Race				
White	19.6%	7.3%	73.1%	247
Hispanic	27.2%	0.0%	72.8%	11
Black	0.0%	0.0%	100.0%	1
Other	13.8%	6.3%	79.9%	27
Age				
≤25	8.1%	4.3%	87.5%	19
26–54	22.1%	6.4%	71.5%	186
55+	17.0%	9.3%	73.7%	81

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Nebraska



18% of workers licensed
36th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.17%
Workers Certified	4.18%
Workers Unionized	6.88%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	15,651
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$66.1
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,540.1
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	17.94%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.4%	4.7%	79.0%	173
Female	20.2%	3.6%	76.1%	195
Education Level				
Less than High School	7.4%	0.0%	92.6%	14
High School	9.5%	1.9%	88.6%	46
Some College	18.0%	4.7%	77.3%	148
College	14.4%	7.0%	78.6%	102
College+	49.6%	2.1%	48.3%	58
Earnings				
Average Hourly Earnings	\$26.70	\$31.57	\$20.22	368
Race				
White	19.1%	4.3%	76.6%	334
Hispanic	16.3%	5.4%	78.3%	20
Black	0.0%	0.0%	100.0%	5
Other	10.7%	0.0%	89.3%	9
Age				
≤25	12.4%	1.6%	86.0%	45
26–54	18.2%	6.2%	75.7%	225
55+	21.3%	0.7%	78.0%	98

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Nevada



27% of workers licensed
Highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	26.58%
Workers Certified	6.08%
Workers Unionized	10.55%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	34,740
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$195.9
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$3,621.0
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	22.88%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	28.6%	6.6%	64.7%	155
Female	24.3%	5.5%	70.3%	183
Education Level				
Less than High School	20.9%	0.0%	79.1%	16
High School	20.1%	4.8%	75.2%	63
Some College	22.7%	7.8%	69.5%	139
College	30.2%	7.2%	62.6%	80
College+	61.0%	3.7%	35.3%	40
Earnings				
Average Hourly Earnings	\$29.12	\$22.54	\$18.57	338
Race				
White	28.7%	5.7%	65.6%	221
Hispanic	21.6%	5.3%	73.2%	56
Black	15.9%	11.5%	72.5%	23
Other	32.3%	6.8%	60.9%	38
Age				
≤25	10.8%	6.8%	82.4%	33
26–54	27.7%	6.4%	65.9%	227
55+	33.2%	4.5%	62.3%	78

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

New Hampshire



16% of workers licensed
48th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	16.02%
Workers Certified	7.24%
Workers Unionized	10.14%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	8,032
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$31.2
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$818.6
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	15.84%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	11.7%	7.3%	81.0%	149
Female	20.7%	7.1%	72.1%	212
Education Level				
Less than High School	0.0%	0.0%	100.0%	3
High School	8.3%	3.2%	88.5%	68
Some College	17.1%	7.9%	75.1%	125
College	13.2%	10.1%	76.7%	98
College+	36.2%	6.6%	57.2%	67
Earnings				
Average Hourly Earnings	\$27.30	\$20.38	\$24.40	361
Race				
White	16.1%	7.6%	76.4%	336
Hispanic	26.5%	7.7%	65.8%	12
Black	0.0%	0.0%	100.0%	2
Other	14.4%	0.0%	85.6%	11
Age				
≤25	6.5%	7.8%	85.7%	36
26–54	18.2%	8.0%	73.9%	213
55+	15.5%	5.3%	79.2%	112

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

New Jersey



20% of workers licensed
21st highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.62%
Workers Certified	5.70%
Workers Unionized	17.34%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	80,890
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$473.9
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$9,429.2
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	21.17%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.3%	5.7%	78.0%	649
Female	23.3%	5.7%	71.0%	731
Education Level				
Less than High School	9.4%	0.0%	90.6%	61
High School	7.2%	2.8%	90.0%	308
Some College	20.1%	5.5%	74.4%	459
College	19.5%	7.7%	72.8%	375
College+	40.2%	8.5%	51.3%	177
Earnings				
Average Hourly Earnings	\$32.25	\$29.78	\$24.08	1,380
Race				
White	23.4%	5.6%	71.0%	905
Hispanic	11.6%	5.1%	83.3%	141
Black	18.1%	6.3%	75.6%	159
Other	15.2%	6.3%	78.5%	175
Age				
≤25	9.5%	3.0%	87.5%	213
26–54	20.7%	5.6%	73.6%	865
55+	23.0%	7.5%	69.5%	302

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

New Mexico



18% of workers licensed
35th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.37%
Workers Certified	6.42%
Workers Unionized	8.98%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	16,442
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$87.7
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,662.8
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	22.26%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.1%	6.6%	75.3%	179
Female	18.6%	6.2%	75.2%	184
Education Level				
Less than High School	0.0%	0.0%	100.0%	21
High School	6.0%	5.2%	88.8%	61
Some College	15.7%	6.7%	77.7%	129
College	31.6%	6.6%	61.8%	80
College+	37.9%	11.0%	51.1%	72
Earnings				
Average Hourly Earnings	\$28.15	\$19.61	\$19.13	363
Race				
White	22.1%	7.7%	70.1%	215
Hispanic	13.4%	5.7%	80.8%	122
Black	30.6%	0.0%	69.4%	3
Other	19.6%	0.0%	80.4%	23
Age				
≤25	12.8%	0.0%	87.2%	27
26–54	18.6%	7.2%	74.2%	230
55+	20.1%	7.1%	72.9%	106

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

New York



21% of workers licensed
17th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	20.72%
Workers Certified	5.32%
Workers Unionized	23.98%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	108,045
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$376.6
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$13,087.3
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	11.85%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	20.6%	5.5%	73.9%	819
Female	20.9%	5.1%	74.1%	882
Education Level				
Less than High School	3.9%	0.0%	96.1%	80
High School	12.7%	3.6%	83.7%	391
Some College	16.1%	6.7%	77.3%	547
College	19.7%	5.4%	74.9%	411
College+	47.4%	6.9%	45.7%	272
Earnings				
Average Hourly Earnings	\$31.63	\$26.10	\$21.35	1,701
Race				
White	21.2%	5.8%	73.0%	1,167
Hispanic	14.8%	4.8%	80.4%	147
Black	23.8%	5.0%	71.2%	240
Other	23.9%	3.2%	72.9%	147
Age				
≤25	5.2%	3.8%	91.0%	264
26–54	21.7%	6.1%	72.2%	1,070
55+	27.7%	3.9%	68.4%	367

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

North Carolina



19% of workers licensed
27th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.90%
Workers Certified	4.17%
Workers Unionized	2.80%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	42,562
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$112.0
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$4,078.2
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	11.29%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	15.7%	4.2%	80.1%	452
Female	22.4%	4.1%	73.5%	541
Education Level				
Less than High School	5.7%	1.9%	92.4%	69
High School	8.5%	2.8%	88.7%	252
Some College	18.6%	4.8%	76.6%	323
College	22.7%	4.4%	72.9%	217
College+	43.1%	6.0%	50.9%	132
Earnings				
Average Hourly Earnings	\$24.93	\$24.31	\$18.22	993
Race				
White	21.8%	4.4%	73.8%	689
Hispanic	2.7%	0.0%	97.3%	78
Black	14.0%	5.5%	80.5%	177
Other	20.4%	1.9%	77.7%	49
Age				
≤25	4.8%	2.8%	92.4%	138
26–54	21.2%	3.5%	75.3%	605
55+	21.9%	6.9%	71.3%	250

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

North Dakota



23% of workers licensed

6th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	22.60%
Workers Certified	4.18%
Workers Unionized	3.27%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	20.0%	7.8%	72.2%	53
Female	25.6%	0.0%	74.4%	50
Education Level				
Less than High School	0.0%	0.0%	100.0%	3
High School	0.0%	0.0%	100.0%	21
Some College	27.5%	1.5%	71.0%	48
College	30.2%	13.8%	56.0%	25
College+	33.0%	0.0%	67.0%	6
Earnings				
Average Hourly Earnings	\$22.12	\$20.58	\$15.99	103
Race				
White	25.2%	4.6%	70.2%	95
Hispanic	0.0%	0.0%	0.0%	-
Black	0.0%	0.0%	0.0%	-
Other	0.0%	0.0%	100.0%	8
Age				
≤25	0.0%	0.0%	100.0%	12
26–54	25.9%	3.6%	70.5%	60
55+	26.8%	7.4%	65.8%	31

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Ohio



18% of workers licensed

37th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.13%
Workers Certified	6.42%
Workers Unionized	11.24%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	67,752
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$209.7
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$6,014.3
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	14.45%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	15.7%	6.8%	77.5%	608
Female	20.8%	6.0%	73.1%	656
Education Level				
Less than High School	2.9%	0.0%	97.1%	75
High School	8.6%	4.2%	87.1%	351
Some College	17.2%	7.7%	75.1%	438
College	27.4%	7.2%	65.4%	263
College+	41.3%	9.7%	49.0%	137
Earnings				
Average Hourly Earnings	\$23.57	\$18.36	\$17.78	1,264
Race				
White	19.3%	6.0%	74.7%	1,079
Hispanic	5.0%	12.7%	82.3%	17
Black	13.0%	8.7%	78.4%	115
Other	14.6%	6.3%	79.1%	53
Age				
≤25	9.3%	4.2%	86.5%	182
26–54	18.0%	7.0%	75.0%	818
55+	24.3%	6.3%	69.4%	264

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Oklahoma



19% of workers licensed
26th highest percentage

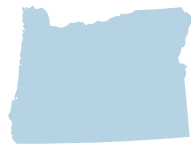
Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.00%
Workers Certified	7.30%
Workers Unionized	5.94%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.5%	8.8%	72.6%	240
Female	19.5%	5.5%	74.9%	282
Education Level				
Less than High School	6.1%	2.6%	91.3%	25
High School	9.2%	5.2%	85.5%	99
Some College	19.4%	7.4%	73.2%	201
College	21.3%	9.1%	69.6%	127
College+	39.6%	9.8%	50.6%	70
Earnings				
Average Hourly Earnings	\$22.05	\$19.31	\$18.13	522
Race				
White	22.0%	5.7%	72.3%	375
Hispanic	9.0%	5.3%	85.7%	34
Black	5.3%	18.2%	76.5%	22
Other	12.1%	11.7%	76.2%	91
Age				
≤25	13.2%	5.2%	81.6%	72
26–54	19.1%	8.3%	72.6%	314
55+	22.0%	6.0%	72.0%	136

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Oregon



20% of workers licensed
20th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.83%
Workers Certified	5.83%
Workers Unionized	14.49%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	20.1%	5.8%	74.1%	255
Female	19.5%	5.9%	74.6%	287
Education Level				
Less than High School	13.3%	0.0%	86.7%	18
High School	21.1%	3.0%	75.9%	105
Some College	18.0%	5.1%	76.9%	187
College	15.8%	6.7%	77.5%	154
College+	31.1%	11.8%	57.1%	78
Earnings				
Average Hourly Earnings	\$26.96	\$33.02	\$20.64	542
Race				
White	19.4%	6.4%	74.2%	478
Hispanic	25.8%	2.5%	71.7%	29
Black	22.0%	39.2%	38.7%	4
Other	14.9%	0.0%	85.1%	31
Age				
≤25	9.2%	2.2%	88.6%	53
26–54	20.2%	6.5%	73.3%	365
55+	24.8%	6.0%	69.2%	124

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Pennsylvania



19% of workers licensed

25th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	19.13%
Workers Certified	5.58%
Workers Unionized	15.70%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	89,330
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$368.3
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$9,407.4
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	16.30%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.0%	5.3%	76.6%	646
Female	20.4%	5.8%	73.7%	694
Education Level				
Less than High School	7.8%	4.5%	87.7%	65
High School	10.3%	3.9%	85.7%	368
Some College	19.1%	5.7%	75.1%	467
College	21.4%	5.2%	73.4%	282
College+	38.3%	9.8%	51.9%	158
Earnings				
Average Hourly Earnings	\$28.29	\$21.60	\$19.21	1,340
Race				
White	21.0%	5.9%	73.1%	1,140
Hispanic	9.1%	0.0%	90.9%	40
Black	12.1%	7.3%	80.7%	112
Other	5.6%	0.0%	94.4%	48
Age				
≤25	8.4%	2.5%	89.1%	209
26–54	22.3%	5.6%	72.1%	810
55+	18.9%	7.9%	73.2%	321

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Rhode Island



17% of workers licensed

45th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.35%
Workers Certified	11.17%
Workers Unionized	17.18%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	6,952
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$27.9
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$675.0
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	17.23%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.8%	11.7%	71.5%	136
Female	17.9%	10.6%	71.5%	150
Education Level				
Less than High School	0.0%	25.0%	75.0%	9
High School	9.2%	15.0%	75.7%	52
Some College	18.9%	12.3%	68.8%	96
College	16.2%	4.1%	79.6%	76
College+	38.6%	8.5%	52.9%	53
Earnings				
Average Hourly Earnings	\$26.23	\$30.16	\$23.16	286
Race				
White	17.8%	9.1%	73.1%	254
Hispanic	3.9%	19.2%	76.9%	13
Black	27.7%	19.4%	52.9%	7
Other	19.5%	23.5%	57.0%	12
Age				
≤25	19.3%	9.4%	71.3%	35
26–54	15.5%	13.8%	70.6%	164
55+	20.7%	5.6%	73.6%	87

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

South Carolina

18% of workers licensed
41st highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.83%
Workers Certified	4.93%
Workers Unionized	1.53%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	17,057
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$39.3
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,565.2
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	10.30%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.7%	4.2%	78.1%	232
Female	18.0%	5.6%	76.4%	320
Education Level				
Less than High School	8.2%	0.0%	91.8%	25
High School	13.3%	1.2%	85.5%	109
Some College	15.8%	7.4%	76.8%	211
College	14.8%	1.3%	83.9%	126
College+	43.8%	11.6%	44.7%	81
Earnings				
Average Hourly Earnings	\$23.72	\$21.44	\$18.14	552
Race				
White	19.3%	5.5%	75.2%	392
Hispanic	2.2%	2.9%	94.9%	24
Black	14.5%	4.5%	81.1%	117
Other	34.4%	0.0%	65.6%	19
Age				
≤25	10.3%	1.1%	88.6%	69
26–54	19.3%	4.8%	75.9%	357
55+	18.2%	7.7%	74.0%	126

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

South Dakota

21% of workers licensed
16th highest percentage



Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	20.94%
Workers Certified	5.07%
Workers Unionized	6.83%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	23.3%	5.1%	71.6%	105
Female	18.3%	5.0%	76.7%	157
Education Level				
Less than High School	0.0%	0.0%	100.0%	3
High School	12.2%	6.6%	81.2%	37
Some College	22.2%	4.7%	73.1%	89
College	23.8%	4.1%	72.2%	91
College+	34.3%	7.6%	58.1%	42
Earnings				
Average Hourly Earnings	\$25.74	\$17.52	\$19.84	262
Race				
White	21.9%	4.4%	73.7%	237
Hispanic	8.4%	46.8%	44.8%	6
Black	0.0%	0.0%	100.0%	1
Other	17.5%	0.0%	82.5%	18
Age				
≤25	16.4%	5.2%	78.4%	32
26–54	22.8%	4.5%	72.7%	142
55+	19.8%	6.2%	74.0%	88

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Tennessee



21% of workers licensed

12th highest percentage

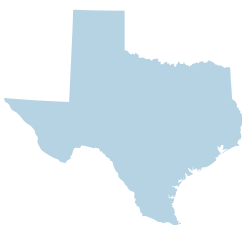
Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.28%
Workers Certified	5.34%
Workers Unionized	9.83%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	46,068
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$173.0
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$4,510.5
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	15.95%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.7%	5.2%	76.1%	413
Female	24.3%	5.5%	70.2%	421
Education Level				
Less than High School	12.7%	0.0%	87.3%	36
High School	11.8%	3.7%	84.5%	251
Some College	21.1%	7.4%	71.5%	314
College	19.5%	2.9%	77.6%	150
College+	51.3%	9.2%	39.5%	83
Earnings				
Average Hourly Earnings	\$26.24	\$20.64	\$18.33	834
Race				
White	22.3%	6.0%	71.7%	653
Hispanic	20.3%	0.0%	79.7%	25
Black	15.1%	3.9%	81.0%	128
Other	24.0%	3.0%	73.1%	28
Age				
≤25	11.0%	2.9%	86.1%	121
26–54	22.9%	4.8%	72.4%	504
55+	23.7%	8.3%	67.9%	209

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Texas



19% of workers licensed

29th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.88%
Workers Certified	4.99%
Workers Unionized	4.83%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	143,754
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$431.5
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$12,762.6
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	14.00%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	17.0%	4.8%	78.1%	1,304
Female	21.2%	5.2%	73.6%	1,270
Education Level				
Less than High School	4.4%	1.5%	94.2%	293
High School	10.9%	3.5%	85.6%	687
Some College	18.3%	5.9%	75.8%	875
College	27.5%	6.3%	66.2%	487
College+	39.4%	6.1%	54.4%	232
Earnings				
Average Hourly Earnings	\$23.51	\$21.54	\$17.86	2,574
Race				
White	23.2%	6.2%	70.6%	1,266
Hispanic	14.0%	2.9%	83.1%	849
Black	16.3%	5.8%	77.8%	339
Other	17.0%	6.2%	76.8%	120
Age				
≤25	9.9%	3.7%	86.4%	427
26–54	20.4%	5.2%	74.4%	1,653
55+	20.5%	5.3%	74.1%	494

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Utah



16% of workers licensed
47th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	16.26%
Workers Certified	6.74%
Workers Unionized	6.60%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	19,665
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$87.9
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$1,902.9
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	19.36%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	16.6%	4.9%	78.5%	224
Female	15.8%	9.0%	75.2%	230
Education Level				
Less than High School	0.0%	0.0%	100.0%	7
High School	11.6%	6.1%	82.3%	62
Some College	14.8%	8.9%	76.4%	190
College	16.0%	3.8%	80.2%	127
College+	36.4%	5.2%	58.4%	68
Earnings				
Average Hourly Earnings	\$26.48	\$17.19	\$21.32	454
Race				
White	17.0%	6.8%	76.2%	395
Hispanic	6.1%	8.2%	85.7%	26
Black	66.7%	0.0%	33.3%	2
Other	20.4%	4.2%	75.4%	31
Age				
≤25	10.2%	8.8%	80.9%	85
26–54	17.9%	7.0%	75.1%	290
55+	16.9%	3.4%	79.6%	79

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Vermont



19% of workers licensed
33rd highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	18.52%
Workers Certified	7.78%
Workers Unionized	9.29%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	14.1%	9.2%	76.7%	98
Female	23.1%	6.3%	70.6%	159
Education Level				
Less than High School	0.0%	22.4%	77.6%	4
High School	7.1%	0.0%	92.9%	50
Some College	22.0%	13.4%	64.6%	63
College	15.5%	9.9%	74.6%	86
College+	43.0%	4.4%	52.5%	54
Earnings				
Average Hourly Earnings	\$26.33	\$21.52	\$20.89	257
Race				
White	18.9%	8.1%	73.0%	242
Hispanic	0.0%	0.0%	100.0%	2
Black	18.0%	0.0%	82.0%	4
Other	11.7%	0.0%	88.3%	9
Age				
≤25	11.5%	2.9%	85.6%	28
26–54	17.6%	11.1%	71.3%	137
55+	22.8%	3.5%	73.7%	92

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Virginia



20% of workers licensed
19th highest percentage

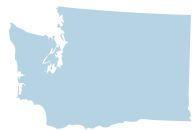
Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	20.06%
Workers Certified	5.99%
Workers Unionized	5.37%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	48,927
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$173.1
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$5,462.1
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	13.09%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	18.8%	5.3%	75.9%	667
Female	21.5%	6.7%	71.8%	763
Education Level				
Less than High School	9.6%	0.0%	90.4%	49
High School	11.8%	2.2%	86.0%	325
Some College	21.7%	6.6%	71.7%	476
College	21.0%	6.0%	72.9%	345
College+	28.5%	10.9%	60.6%	235
Earnings				
Average Hourly Earnings	\$29.39	\$30.93	\$25.08	1,430
Race				
White	22.3%	6.4%	71.3%	912
Hispanic	14.8%	2.6%	82.6%	49
Black	14.3%	5.8%	79.8%	352
Other	17.0%	5.8%	77.2%	117
Age				
≤25	10.6%	5.9%	83.5%	188
26–54	21.7%	5.4%	73.0%	919
55+	21.1%	7.6%	71.3%	323

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Washington



21% of workers licensed
11th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.46%
Workers Certified	7.55%
Workers Unionized	19.92%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	21.5%	7.4%	71.1%	593
Female	21.4%	7.7%	70.9%	584
Education Level				
Less than High School	12.0%	1.5%	86.5%	62
High School	17.1%	2.6%	80.2%	235
Some College	19.5%	8.6%	71.9%	445
College	21.7%	9.0%	69.3%	297
College+	36.1%	10.9%	53.0%	138
Earnings				
Average Hourly Earnings	\$25.67	\$27.70	\$22.87	1,177
Race				
White	23.0%	8.6%	68.4%	916
Hispanic	14.5%	4.4%	81.1%	93
Black	32.0%	10.2%	57.9%	25
Other	14.9%	2.6%	82.5%	143
Age				
≤25	12.6%	4.2%	83.2%	168
26–54	21.9%	8.1%	70.0%	729
55+	25.9%	8.1%	66.0%	280

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

West Virginia



22% of workers licensed
8th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	21.95%
Workers Certified	8.42%
Workers Unionized	12.67%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	23.4%	8.3%	68.3%	163
Female	20.3%	8.6%	71.1%	225
Education Level				
Less than High School	31.4%	0.0%	68.6%	8
High School	18.0%	7.1%	74.9%	97
Some College	16.1%	7.7%	76.2%	147
College	27.1%	11.3%	61.6%	90
College+	46.5%	12.6%	40.8%	46
Earnings				
Average Hourly Earnings	\$24.33	\$21.86	\$19.66	388
Race				
White	23.4%	8.2%	68.5%	358
Hispanic	100.0%	0.0%	0.0%	1
Black	0.0%	0.0%	100.0%	10
Other	4.2%	18.1%	77.7%	19
Age				
≤25	11.1%	5.2%	83.7%	48
26–54	23.1%	10.1%	66.9%	252
55+	23.5%	5.2%	71.4%	88

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Wisconsin



18% of workers licensed
39th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	17.96%
Workers Certified	6.26%
Workers Unionized	11.55%

State-Level Economic Costs of Licensing	
Estimated Jobs Lost	37,002
Estimated Deadweight Losses (in \$M) <i>Conservative measure of economic value lost</i>	\$133.2
Estimated Misallocated Resources (in \$M) <i>Broader measure of economic value lost</i>	\$3,732.5
Estimated Economic Returns from Licensing <i>Increase over what licensees would make if not for licensing—a cost borne by consumers and the wider economy</i>	14.80%

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	14.8%	6.6%	78.6%	584
Female	21.4%	5.9%	72.7%	665
Education Level				
Less than High School	0.0%	3.5%	96.5%	58
High School	6.6%	2.4%	90.9%	337
Some College	15.9%	6.8%	77.3%	477
College	23.1%	7.6%	69.4%	251
College+	44.8%	10.1%	45.2%	126
Earnings				
Average Hourly Earnings	\$26.84	\$18.68	\$18.20	1,249
Race				
White	19.5%	6.6%	73.9%	1,095
Hispanic	5.8%	4.5%	89.7%	56
Black	1.8%	3.9%	94.3%	50
Other	13.3%	3.8%	82.9%	48
Age				
≤25	5.5%	2.7%	91.8%	187
26–54	19.6%	6.4%	73.9%	754
55+	20.6%	7.7%	71.7%	308

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Wyoming

23% of workers licensed

5th highest percentage

Percentage of Workers Who Are Licensed, Certified or Unionized	
Workers Licensed	22.82%
Workers Certified	9.31%
Workers Unionized	5.64%

Note: Economic costs were not calculated for this state as the estimated economic returns from licensing were not statistically significant.

Characteristics of Workers Who Are Licensed, Certified or Neither				
	Licensed	Certified	Neither	Obs.
Gender				
Male	27.0%	10.8%	62.2%	118
Female	18.0%	7.6%	74.5%	144
Education Level				
Less than High School	0.0%	0.0%	100.0%	3
High School	23.2%	5.7%	71.1%	41
Some College	21.9%	12.5%	65.6%	104
College	21.3%	7.3%	71.4%	70
College+	34.9%	6.6%	58.4%	44
Earnings				
Average Hourly Earnings	\$21.94	\$26.13	\$20.48	262
Race				
White	22.8%	8.5%	68.7%	231
Hispanic	14.8%	28.6%	56.6%	12
Black	15.7%	0.0%	84.3%	4
Other	33.4%	0.0%	66.6%	15
Age				
≤25	19.4%	10.2%	70.4%	20
26–54	24.6%	7.4%	68.0%	162
55+	19.9%	13.6%	66.5%	80

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Appendix A: Methods

Data

In early 2013, the Institute for Justice (IJ), with funding from the John Templeton Foundation, employed Harris Interactive to conduct a state-level survey of all 50 states and the District of Columbia that yielded around 10,000 usable observations. We used those data to perform the first-ever analysis of occupational licensing at the state level.⁶⁷ The sample was the largest then available for within- and cross-state analyses, but it was still relatively small. In particular, the sample sizes within some states limited the ability to detect potential effects from licensing.

In this study, we build on our previous analysis by combining the Harris dataset with data from Wave 13 (gathered in late 2012) of the 2008 Survey of Income and Program Participation (SIPP) and analyzing the resulting larger dataset. In combining the two datasets, we did lose some detail: The Harris survey collected more detailed regulatory, income and labor skill data than SIPP. However, SIPP collected data for a much larger population. This tradeoff of less information for more observations was worthwhile because it allowed us to improve the precision of our state-level estimates and increase the statistical power of the tests. Altogether and after all the necessary data filters were applied, the combined dataset comprised 39,808 observations and is representative of the U.S. population at the state and national levels.

The Harris Data

For the Harris survey, IJ provided Harris Interactive with a draft of a questionnaire that was patterned after the Princeton Data Improvement Initiative, which was used in earlier studies of licensing. IJ and Harris collaborated in finalizing the questions' order and wording. Several questions regarding the respondents' employers, job activities and demographics were taken from the Current Population Survey. Harris staff pretested the survey with dozens of volunteer respondents from their regular representative sample of the United States.

Harris conducted the survey in early 2013. Individuals aged 18 or older who were in the labor force were eligible for the survey. We have limited our analysis to those who were employed at the time of the survey or who had held a job during the previous 12 months.⁶⁸

The SIPP Data

Data for Wave 13 of the 2008 SIPP were collected in 2012 and cover September through December 2012. The survey excludes individuals under 15 years of age and individuals living in institutions and military barracks. Similar to the Harris survey, it collects data about individuals' licensing status, labor force activity, and demographic and social characteristics.

Combining the Harris and SIPP Data

We combined the Harris and SIPP data in three steps as follows:

- Step 1** was to compare the questions the two surveys used to collect data about the licensing status of the population. The key questions in the Harris survey were:
- A. "Do you have a license or certification that is required by a federal, state or local government agency to do your job?"**
 1. Yes
 2. No
 3. In process/Working on it
 - B. "Would someone who does not have a license or certificate be legally allowed to do your job?"**
 1. Yes
 2. No
 - C. "Is everyone who does your job eventually required to have a license or certification by a federal, state or local government agency?"**
 1. Yes
 2. No

The corresponding SIPP questions were very similar:

- A. "Did you have a professional certification or state or industry license?"**
 1. Yes
 2. No
 3. Refused
 4. Don't know
 5. Not answered

B. “Is this certification or license required for your current or most recent job?”

1. Yes
2. No
3. Refused
4. Don’t know
5. Not answered
6. Not applicable (Never worked)

These questions collected very similar information that allowed us to identify and differentiate between individuals who were licensed or certified. Having a dataset that allowed us to distinguish between licensed individuals and certified ones was crucial to ensuring precision of our estimates.

Step 2 was to apply data filters to the datasets to make them more comparable and then check whether both datasets would provide similar state-level estimates of licensing prevalence. Since the Harris and SIPP datasets had slightly different population distributions by demographic and social characteristics correlated with licensing prevalence (e.g., race, age, educational attainment and sector of employment), a simple comparison of state-level licensing prevalence was inappropriate. Instead, we used a logistic regression analysis to compare licensing prevalence across states. This approach allowed us to compare licensing levels between the datasets controlling for differences in the demographic and social variables’ distributions. The functional form of the regression is shown below:

$$\text{Licensed}_i = \beta_1 \text{Harris}_i + \beta_2 X_i + e_i$$

The variable *Licensed* is a dummy variable that indicates whether a person (“i”) is licensed. The dummy variable *Harris* indicates whether the data come from the Harris dataset or the SIPP dataset. The vector *X* is a set of individual-level control variables that includes individuals’ gender, race, age, union status, sector of employment and a two-digit Standard Occupational Classification (SOC) code.⁶⁹

A statistically insignificant gradient of the *Harris* variable would indicate that there is no difference in licensing prevalence between the Harris and SIPP datasets and that the existing observable differences in levels, if any, could be explained by differences in the distributions of the explanatory variables. The shortcoming of this approach is that a statistically significant gradient of the *Harris* variable would not necessarily indicate that there was a difference in licensing prevalence and could instead indicate that we detected some other unobserved differences between the two datasets.

We estimated one regression for each state. The *Harris* variable gradient was only significant at the 5 percent significance level in three states and at the 10 percent level in another four states. The similarity of the Harris survey and SIPP in both the data they collected and the licensing prevalence estimates they provided indicated the two datasets could be combined successfully.

Step 3 was to have Nielsen Holdings, which acquired Harris Interactive in 2014, reweight the combined dataset to make it representative of the population at the state level. Unless otherwise noted, all analyses were conducted with those weights applied.

The results of the combined dataset showing the percentages of workers licensed in each state and nationally are presented in Tables A1 and A2.

Table A1. State Percentages Licensed or Certified, With Ranks

State	Licensed†	Rank	Certified††	Rank
Alabama	18.1%	38	3.4%	51
Alaska	18.4%	34	7.2%	12
Arizona	19.1%	24	5.4%	36
Arkansas	20.1%	18	5.8%	28
California	17.2%	46	4.8%	44
Colorado	17.6%	44	5.4%	34
Connecticut	21.5%	10	6.7%	17
Delaware	15.2%	50	8.7%	4
District of Columbia	18.9%	28	4.5%	45
Florida	21.1%	14	4.4%	46
Georgia	14.4%	51	4.2%	50
Hawaii	21.3%	13	9.1%	3
Idaho	23.6%	4	5.7%	30
Illinois	17.7%	43	6.7%	15
Indiana	17.9%	40	6.5%	18
Iowa	24.3%	2	6.5%	19
Kansas	16.0%	49	7.3%	10
Kentucky	19.4%	22	5.4%	35
Louisiana	22.4%	7	6.2%	23
Maine	24.2%	3	5.6%	31
Maryland	18.6%	31	5.2%	39
Massachusetts	17.8%	42	4.9%	43
Michigan	18.6%	32	5.5%	33
Minnesota	21.8%	9	5.8%	26
Mississippi	18.7%	30	6.7%	16
Missouri	21.0%	15	8.1%	6
Montana	19.2%	23	7.0%	13
Nebraska	18.2%	36	4.2%	47
Nevada	26.6%	1	6.1%	24
New Hampshire	16.0%	48	7.2%	11
New Jersey	19.6%	21	5.7%	29

State	Licensed†	Rank	Certified††	Rank
New Mexico	18.4%	35	6.4%	20
New York	20.7%	17	5.3%	38
North Carolina	18.9%	27	4.2%	49
North Dakota	22.6%	6	4.2%	47
Ohio	18.1%	37	6.4%	20
Oklahoma	19.0%	26	7.3%	9
Oregon	19.8%	20	5.8%	27
Pennsylvania	19.1%	25	5.6%	32
Rhode Island	17.4%	45	11.2%	1
South Carolina	17.8%	41	4.9%	42
South Dakota	20.9%	16	5.1%	40
Tennessee	21.3%	12	5.3%	37
Texas	18.9%	29	5.0%	41
Utah	16.3%	47	6.7%	14
Vermont	18.5%	33	7.8%	7
Virginia	20.1%	19	6.0%	25
Washington	21.5%	11	7.6%	8
West Virginia	22.0%	8	8.4%	5
Wisconsin	18.0%	39	6.3%	22
Wyoming	22.8%	5	9.3%	2

† Average margin of error is 3.4% at 95% confidence.

†† Average margin of error is 2.1% at 95% confidence.

Table A2. Percentage of Workers Nationally Who Are Licensed, Certified or Neither

Variable	%	S.D.
Licensed Workers	19.09%	0.213%
Certified Workers	5.57%	0.124%
Workers Neither Licensed Nor Certified	75.34%	0.234%
Total	100.00%	

The demographic and economic characteristics of workers nationally who are licensed, certified or neither are presented in Table A3. They reveal that licensing rates increase with educational attainment: Nearly 39 percent of workers with post-college education have licenses compared to less than 6 percent of workers with less than a high school education. We also find that union members (36.5 percent) are more than twice as likely to be licensed as non-union members (16.8 percent). This finding no doubt reflects in part the large number of people working in occupations such as teacher and nurse that are frequently both licensed and unionized.

Public-sector workers (31.7 percent) are also more likely to be licensed than private-sector workers (16.6 percent), a finding that likely carries a link to heavy unionization in the public sector.⁷⁰ Women (20.7 percent) are slightly more likely to be licensed than men (17.6 percent), and whites (20.9 percent) are more likely to be licensed than Hispanics (12.7 percent), blacks (16.6 percent) or “other” races (18.4 percent). Finally, we find that licensing rises with age before flattening over age 55. The similar state-level results are presented in the State Profiles starting on page 23.

Table A3. Characteristics of Workers Nationally Who Are Licensed, Certified or Neither

Variable	Licensed	S.D.	Certified	S.D.	Neither Licensed Nor Certified	S.D.	Total %	Obs.	% Obs.
Gender									
Male	17.6%	38.1%	5.5%	22.9%	76.9%	42.2%	100%	18,941	48%
Female	20.7%	40.5%	5.6%	23.0%	73.6%	44.1%	100%	20,867	52%
Education Level									
Less than High School	5.6%	23.1%	1.6%	12.4%	92.8%	25.8%	100%	2,219	6%
High School	10.2%	30.3%	3.1%	17.4%	86.6%	34.0%	100%	9,031	23%
Some College	18.2%	38.6%	6.5%	24.7%	75.3%	43.1%	100%	13,902	35%
College	22.1%	41.5%	6.1%	23.9%	71.8%	45.0%	100%	9,382	24%
College+	38.8%	48.7%	8.1%	27.2%	53.2%	49.9%	100%	5,274	13%
Earnings									
Average Hourly Earnings	\$27.47	\$22.53	\$24.26	\$21.53	\$20.11	\$17.78	-	-	-
Race									
White	20.9%	40.7%	6.1%	23.9%	73.0%	44.4%	100%	28,463	72%
Hispanic	12.7%	33.3%	3.9%	19.4%	83.4%	37.2%	100%	4,361	11%
Black	16.6%	37.2%	5.4%	22.6%	78.0%	41.4%	100%	4,127	10%
Other	18.4%	38.8%	4.3%	20.3%	77.3%	41.9%	100%	2,857	7%
Age									
≤25	8.4%	27.8%	3.7%	18.9%	87.9%	32.6%	100%	5,522	14%
26–54	20.4%	40.3%	5.8%	23.4%	73.8%	44.0%	100%	25,180	63%
55+	22.0%	41.4%	6.1%	23.9%	71.9%	44.9%	100%	9,106	23%
Union Status									
Union	36.5%	48.2%	5.6%	23.1%	57.8%	49.4%	100%	4,501	11%
Non-Union	16.8%	37.4%	5.6%	22.9%	77.6%	41.7%	100%	35,307	89%
Sector of Employment									
Private	16.6%	37.2%	5.5%	22.7%	77.9%	41.5%	100%	33,006	83%
Public	31.7%	46.5%	6.2%	24.1%	62.1%	48.5%	100%	6,802	17%

Note: The Obs. column shows the actual number of observations in the dataset. Percentages were calculated using those observations with weights applied.

Analysis

Pre-Analysis Data Quality Screening

Before estimating the effect of licensing on licensed workers' hourly earnings—that is, the economic returns from licensing or wage premium—at the national level, we probed whether licensing prevalence is correlated with other factors that might influence licensed workers' earnings, thereby clouding the analysis.

As a check for the presence of regional patterns in occupational licensing, we used information on states' geographical location and their percentage population of licensed workers to calculate the global Moran's I statistic. This allowed us to check whether there were any clusters of states with statistically similar levels of licensed populations. The premise being tested, or null hypothesis, was that levels of licensing prevalence were randomly distributed. We used the permutation procedure to estimate the test's pseudo-significance level. Using 9,999 permutations, we estimated the pseudo p-value to equal 0.46. This p-value did not allow us to reject the null hypothesis.⁷¹ In other words, we found no indication of geographical clustering.

Licensing prevalence is not correlated with geographical location, but it could be correlated with other factors that could affect our results, such as occupational mix. We did not perform a check for this ourselves. However, the U.S. Department of the Treasury's Office of Economic Policy, the Council of Economic Advisers and the Department of Labor did test for the presence of occupational mix patterns in licensing using the Harris survey estimates of licensing prevalence and data from SIPP. They found that “variation in licensing prevalence appears not to be driven by differences in occupational

mix across States.”⁷²

The results of these checks for data quality issues suggest that the estimated models allow us to make statistically valid inferences about the effects of licensing on licensed workers' hourly earnings.

Estimating the Economic Returns from Licensing

Tables A4 and A5 provide the results of our ordinary least squares regressions. The dependent variable in all of the regressions is a log of individual-level hourly earnings. The independent variables include a variable of interest—a *Licensing* dummy variable that is equal to 1 if a practitioner is licensed and to 0 otherwise—and other individual-level and state-level control variables. Some model specifications also include occupation fixed effects (based on SOC) and state fixed effects. In Table A5, we also add a *Certification* dummy control variable to the regressions. All reported standard errors were robust standard errors clustered at the state level. Tables A4 and A5 show the national-level effects on hourly earnings of, respectively, licensing alone and both licensing and certification. (Because the dependent variable was in logs, we make the appropriate adjustments in the text whenever we discuss the magnitude of the dummy variables' economic impact.⁷³ Tables A4, A5 and A6 report unadjusted coefficients.) The estimates suggest that licensing is associated with average economic returns of 13.88 percent even after accounting for human capital, labor market characteristics and two-digit occupation controls. The influence of other variables such as age, education level, union status and race on hourly earnings is consistent with the economic and policy literature.

Table A4. National Estimates of the Influence of Licensing on Hourly Earnings (log)

Variables	(1)		(2)		(3)		(4)	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
Constant	2.800***	0.018	-3.709***	0.539	-2.125***	0.084	-0.822***	0.077
Licensed	0.310***	0.024	0.115***	0.009	0.118***	0.008	0.130***	0.007
Female			-0.187***	0.005	-0.188***	0.005	-0.161***	0.005
Hispanic			-0.098***	0.022	-0.109***	0.017	-0.083***	0.016
Black			-0.109***	0.014	-0.112***	0.012	-0.089***	0.010
Other			-0.039**	0.018	-0.062**	0.024	-0.059***	0.021
Education			0.090***	0.002	0.089***	0.002	0.064***	0.002
Age			0.051***	0.002	0.050***	0.002	0.042***	0.002
Age ²			-0.0005***	0.000	-0.0005***	0.000	-0.0004***	0.000
Union Member			0.109***	0.010	0.098***	0.010	0.162***	0.010
Public-Sector Worker			0.024	0.015	0.025**	0.015	0.045***	0.013
Self-Employed			0.240***	0.037	0.234***	0.037	0.219***	0.036
Private-Sector Worker			0.038***	0.010	0.040***	0.010	0.033***	0.009
Children			0.023***	0.007	0.020***	0.006	0.022***	0.005
Divorced			0.033***	0.009	0.040***	0.009	0.029***	0.009
Married			0.134***	0.007	0.140***	0.007	0.110***	0.007
Log of Real GDP			0.384***	0.050	0.234***	0.006	0.190***	0.006
Occupation Fixed Effects	No		No		No		Yes	
State Fixed Effects	No		No		Yes		Yes	
R ²	0.039		0.350		0.358		0.440	
Observations	39,808		39,808		39,808		39,808	

*** p-value < 0.01, ** p-value < 0.05, * p-value < 0.10.
Note: Robust standard errors clustered at the state level are reported.

Table A5. National Estimates of the Influence of Licensing and Certification on Hourly Earnings (log)

Variables	(1)		(2)		(3)		(4)	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
Constant	2.789***	0.018	-3.708***	0.539	-2.083***	0.089	-0.791***	0.081
Licensed	0.321***	0.012	0.118***	0.008	0.121***	0.008	0.132***	0.007
Certified	0.170***	0.016	0.030**	0.013	0.030**	0.012	0.023**	0.011
Female			-0.187***	0.005	-0.188***	0.005	-0.161***	0.005
Hispanic			-0.097***	0.022	-0.109***	0.017	-0.083***	0.015
Black			-0.109***	0.014	-0.112***	0.012	-0.089***	0.010
Other			-0.038**	0.018	-0.061**	0.023	-0.059***	0.021
Education			0.089***	0.002	0.088***	0.002	0.064***	0.002
Age			0.051***	0.002	0.050***	0.002	0.041***	0.002
Age ²			-0.0005***	0.000	-0.0005***	0.000	-0.0004***	0.000
Union Member			0.109***	0.010	0.098***	0.010	0.162***	0.010
Public-Sector Worker			0.024	0.015	0.025*	0.015	0.045***	0.013
Self-Employed			0.239***	0.037	0.233***	0.037	0.218***	0.036
Private-Sector Worker			0.039***	0.010	0.041***	0.010	0.034***	0.009
Children			0.024***	0.007	0.020***	0.006	0.022***	0.005
Divorced			0.032***	0.009	0.040***	0.009	0.029***	0.009
Married			0.134***	0.007	0.140***	0.007	0.110***	0.007
Log of Real GDP			0.384***	0.050	0.231***	0.007	0.187***	0.007
Occupation Fixed Effects	No		No		No		Yes	
State Fixed Effects	No		No		Yes		Yes	
R ²	0.043		0.350		0.359		0.440	
Observations	39,808		39,808		39,808		39,808	

*** p-value < 0.01, ** p-value < 0.05, * p-value < 0.10.

Note: Robust standard errors clustered at the state level are reported.

We estimated human capital models similar to that shown in Table A4 (the models did not include any state-level controls) for all 50 states and the District of Columbia, finding a positive and statistically significant influence from licensing on licensed workers' hourly earnings for 36 states. The unadjusted results of these regressions are shown in Table A6.

Table A6. State-Level Estimates of the Influence of Licensing on Hourly Earnings (log)

State	Licensing Coefficient	S.E.	R ²	Observations
Alabama	0.116**	0.048	0.502	573
Alaska	0.113	0.083	0.503	246
Arizona	0.117**	0.051	0.457	872
Arkansas	0.075	0.059	0.468	424
California	0.147***	0.028	0.477	3,074
Colorado	0.249***	0.066	0.421	619
Connecticut	0.241***	0.059	0.468	549
Delaware	0.207*	0.123	0.564	249
District of Columbia	-0.166	0.184	0.960	72
Florida	0.153***	0.036	0.385	1,565
Georgia	0.030	0.052	0.417	1,035
Hawaii	0.490**	0.197	0.473	259
Idaho	0.138*	0.075	0.451	344
Illinois	0.156***	0.039	0.451	1,529
Indiana	0.115***	0.038	0.437	1,287
Iowa	0.234***	0.049	0.457	573
Kansas	0.240***	0.080	0.408	437
Kentucky	0.036	0.071	0.424	524
Louisiana	0.043	0.054	0.455	616
Maine	0.165**	0.068	0.510	306
Maryland	0.095*	0.054	0.510	859
Massachusetts	0.199***	0.049	0.446	1,223
Michigan	0.194***	0.051	0.437	906
Minnesota	0.074	0.047	0.425	808
Mississippi	0.118*	0.069	0.424	483
Missouri	0.129***	0.042	0.417	1,090
Montana	0.190**	0.095	0.400	286

State	Licensing Coefficient	S.E.	R ²	Observations
Nebraska	0.165*	0.088	0.447	368
Nevada	0.206***	0.078	0.426	338
New Hampshire	0.147**	0.067	0.544	361
New Jersey	0.192***	0.041	0.481	1,380
New Mexico	0.201***	0.072	0.482	363
New York	0.112***	0.038	0.426	1,701
North Carolina	0.107**	0.052	0.455	993
North Dakota	0.101	0.094	0.620	103
Ohio	0.135***	0.040	0.430	1,264
Oklahoma	0.021	0.069	0.389	522
Oregon	0.100	0.069	0.462	542
Pennsylvania	0.151***	0.042	0.454	1,340
Rhode Island	0.159*	0.081	0.408	286
South Carolina	0.098*	0.059	0.461	552
South Dakota	0.098	0.089	0.461	262
Tennessee	0.148***	0.051	0.467	834
Texas	0.131***	0.027	0.462	2,574
Utah	0.177***	0.067	0.436	454
Vermont	0.152	0.095	0.369	257
Virginia	0.123***	0.039	0.484	1,430
Washington	0.042	0.038	0.475	1,177
West Virginia	0.077	0.078	0.352	388
Wisconsin	0.138***	0.045	0.456	1,249
Wyoming	0.041	0.096	0.354	262

*** p-value < 0.01, ** p-value < 0.05, * p-value < 0.10.
Note: Robust standard errors are reported.

Endnotes

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About the Authors

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Morris M. Kleiner is a professor at the Humphrey School of Public Affairs, and he teaches at the Center for Human Resources and Labor Studies, both at the University of Minnesota Twin Cities. He has received many university teaching awards for classes in public affairs, business and economics. He is a research associate in labor studies with the National Bureau of Economic Research in Cambridge, Massachusetts, and he serves as a senior scholar at the Opportunity and Inclusive Growth Institute at the Federal Reserve Bank of Minneapolis. He has published extensively in the top academic journals in labor economics and industrial relations, and is the author, co-author or co-editor of eight books, including three on occupational regulation. He has been an associate in employment policy with the Brookings Institution, a visiting scholar in the Harvard University economics department, a visiting researcher in the Industrial Relations Section at Princeton University, a visiting scholar at the W.E. Upjohn Institute for Employment Research, and a visiting professor and research fellow at the London School of Economics. He received a doctorate in economics from the University of Illinois at Urbana-Champaign.

Professor Kleiner began his research on occupational licensing at the U.S. Department of Labor in 1976 while working for the Brookings Institution. His work has been supported by the National Science Foundation, the U.S. Department of Labor, the U.S. Department of Health and Human Services, the United Kingdom Commission for Employment and Skills, the Smith Richardson Foundation, the Ewing Marion Kauffman Foundation, the Russell Sage Foundation, and the W.E. Upjohn Institute for Employment Research. In the United States, Professor Kleiner has provided advice on occupational regulation policy to both houses of the U.S. Congress, the Federal Trade Commission, the Council of Economic Advisers, the National Economic Council, the U.S. Department of the Treasury, the U.S. Department of Justice, the Board of Governors of the Federal Reserve System, federal interagency statistical panels, the U.S. Census Bureau and state licensing associations. Internationally, he has provided testimony on occupational regulation to United Kingdom cabinet officers and their parliamentary committees, to cabinet officials responsible for occupational regulation in Australia and Israel, and to senior officials of the European Union.

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Evgeny S. Vorotnikov is a senior economist at Fannie Mae, where he models loans' delinquency and default risks. He specializes in econometrics, applied microeconomics, labor economics and research in developmental projects.

Dr. Vorotnikov has performed extensive research in the fields of labor economics and occupational licensing regulations. His studies on the effects of licensing regulations have been published in multiple academic journals. He has also played an important role in dealing with labor unions' abuse of labor regulations. In 2015 and 2016, he served as an economic expert representing the U.S. Postal Service. In that role, he estimated the costs of negotiated contracts in the last rounds of the American Postal Workers Union, National Rural Letter Carriers' Association, National Association of Letter Carriers and National Postal Mail Handlers Union contract negotiations and presented the case to the arbitrator that the Postal Service's unionized employees were seriously overpaid compared to their nonunionized counterparts of similar education and skill levels in nonregulated industries.

Dr. Vorotnikov has completed national and international research in countries including the United States, Sierra Leone, Tanzania, Mauritania and Uganda while consulting for different branches of World Vision. In one recent study, he conducted quantitative data analysis to evaluate the social and economic effects of the Ebola virus disease outbreak on local communities in Sierra Leone.

Dr. Vorotnikov received a doctorate in economics from Suffolk University in 2011. He became interested in investigating the effects of occupational licensing regulations while doing his Ph.D. research and wrote his thesis on the effects of regulations on real estate agents in Massachusetts and minorities across the United States. After graduation, he became a postdoctoral fellow at the Humphrey School of Public Affairs and the Department of Applied Economics at the University of Minnesota, as well as a visiting scholar at the University's Department of Human Resources and Industrial Relations and Minnesota Population Center. He continued his research into occupational licensing regulations during his postdoctoral program and remains an active contributor to this field of research.

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