

# Raising Barriers, Not Quality

**Occupational Licensing** Fails to Improve Services

By Kyle Sweetland and  
Dick M. Carpenter II, Ph.D.

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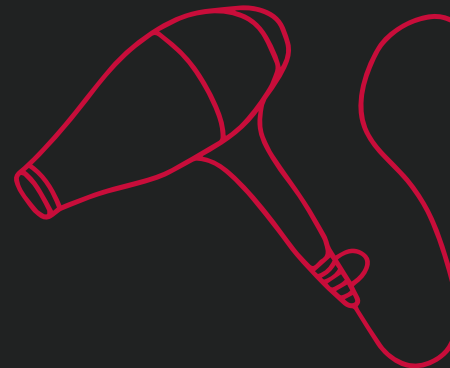
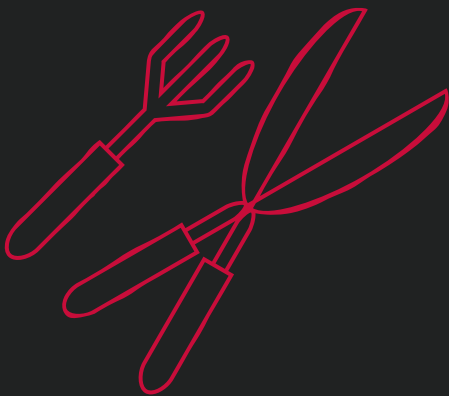
## Executive Summary

About a quarter of the American workforce must get a permission slip from the government—known as an occupational license—to legally work in their chosen occupations. Getting a license can be costly and time-consuming, requiring fees, exams and many hours—sometimes amounting to several years—of education and experience. Steep licensing requirements serve as a barrier to occupational entry, imposing costs on workers, consumers and the wider economy. But proponents claim they improve service quality by screening out workers likely to provide inferior service.

This study tests proponents' claims by comparing consumer Yelp ratings for

service providers in neighboring states with different regulatory regimes. For four types of service providers—interior designers, locksmiths, manicurists and tree trimmers—we compare quality in licensed states with that in unlicensed states. For two other types of service providers—barbers and cosmetologists, which are both universally licensed—we compare quality in states with more and less burdensome licenses. In all, across the six occupations, we look at nine sets of state pairings.

We limit our analyses to providers located within a certain narrow distance from either side of state borders, which helps ensure that the primary difference between providers is the regulatory



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regime under which they operate. This creates an apples-to-apples comparison.

Our results run counter to the theory that licensing improves service quality. Licensing, and progressively stricter forms of it, is not associated with greater service quality across any of our nine comparisons. In fact, in eight of the nine comparisons, we find no statistically significant difference in quality at all. In the ninth—our comparison of tree trimmers in licensed Maryland and unlicensed Virginia—quality is higher in unlicensed Virginia and statistically significantly so.

These results add to mounting research suggesting the benefits of licensing are overstated and licensing may even be counterproductive. In light of this research and an even larger body of evidence showing licensing's negative effects,

policymakers should be highly skeptical of occupational licensing. To ensure licenses are not needlessly shutting workers out of occupations, policymakers should carefully consider whether proposed and existing licenses are necessary to protect the public and reject or repeal those that are not. They should also ensure requirements for any licenses deemed essential are only as burdensome as necessary to protect the public. To do otherwise is only to raise barriers, not quality.







## Introduction

Until recently, Connecticut held a unique, although little-known, distinction among the 50 states: For nearly 40 years, it allowed manicurists—also known as nail technicians—to work without an occupational license.

For many years, Connecticut *did* require manicurists to obtain a government permission slip to work.<sup>1</sup> However, the state repealed its manicurist license in 1980 after a government review concluded the license was unnecessary.<sup>2</sup> Then things changed again in 2019 when the legislature voted to relicense the occupation.<sup>3</sup>

Advocates argued nail tech licensing was necessary to protect workers and consumers and ensure safe, quality service.<sup>4</sup> Opponents, meanwhile, argued the costs of licensing would outweigh any benefits.<sup>5</sup>

One opponent of relicensing was Tara Swagger, who owns a salon in Putnam and has two decades of industry experience.<sup>6</sup> In public testimony, Swagger argued the cost of licensing would add a significant burden to her and other salon owners' operations.<sup>7</sup>

Swagger, who estimates she has served more than a thousand clients over her career, also pointed out that licensing is no guarantee of customer safety or satisfaction: "Licensed trades have plenty of lousy technicians and improper work resulting in bad experiences. Many people have stories for just about any industry and beauty is no exception."<sup>8</sup>



She said that in her experience, bad experiences at nail salons are an issue “not . . . of untrained or unlicensed technicians but [of] simple mistakes or unforeseen reactions or allergies that are part of the risk in this business.”<sup>9</sup>

Swagger also noted that the state already had mechanisms in place to protect customers. “The health department is already in charge of regulating these businesses for the purpose of public health.”<sup>10</sup> She pointed out that the state’s salon inspection format already checked for proper sanitation.<sup>11</sup>

The debate over nail tech licensing in Connecticut is, in many ways, representative of the ongoing national debate over occupational licensing, which now affects about 1 in 4 American workers compared to 1 in 20 in the 1950s.<sup>12</sup>

On one side of the debate are those who argue licensing protects the public and keeps service quality high. It does this, the argument goes, by shutting out service providers who have not met certain minimum standards and who are therefore likely to provide low-quality service.<sup>13</sup> On the other side are those who argue licensing comes at too high a cost—to workers, to consumers, and to society and the economy at large.<sup>14</sup> Critics say that licensing burdens often appear arbitrary and that other, less onerous, regulations—and often just ordinary market competition—can protect the public and keep quality high without licensing’s costs.<sup>15</sup>

But which side is right? Does licensing, in fact, promote safe, quality service?

We are not, of course, the first to ask this question, but our research is unique in that we examine occupations that others have not. Specifically, we explore differences in service quality—as measured by average consumer Yelp ratings of businesses—for six occupations. For four of the occupations—interior designer, locksmith, manicurist and tree trimmer—we compare quality in an unlicensed state with that in a bordering licensed one. For example, we compare manicurists in Connecticut before they were licensed with neighboring states that have long required licenses. For the other two occupations—barber and cosmetologist—we compare quality in a licensed state with that in a bordering one with stricter licensing requirements. If licensing produces better, safer service in these occupations, we would expect to see higher Yelp ratings in licensed states or in states with more stringent licensing requirements.

Our results cast doubt on the notion that licensing increases quality. Licensing is not associated with greater service quality in any of the occupations or states we studied. In all but one of our comparisons, state licensing—and progressively stricter forms of it—fails to produce statistically significant differences in quality. And in the one comparison where we do see a significant difference, the state without licensing has *higher* consumer ratings than the neighboring state with licensing. These results suggest policymakers and the public should be skeptical of the argument that licensing is necessary to ensure service quality.

## Prior Research Findings: A Mixed Picture

Studies examining the relationship between licensing and service quality date back to the 1970s and cover occupations including physicians,<sup>16</sup> nurse practitioners,<sup>17</sup> pilots,<sup>18</sup> florists,<sup>19</sup> tour guides,<sup>20</sup> massage therapists<sup>21</sup> and many others. The results have been mixed, but most studies have found licensing to share either no relationship or a mixed relationship with service quality. Appendix C lists relevant studies since the 1970s and shows what relationship, if any, they found between licensing and quality.

Of those studies, the most relevant to the occupations we analyzed are four examining general services (florists and tour guides), home improvement services, and personal care services (barbers, cosmetologists, manicurists and massage therapists). These studies provide some indication of what we might expect to find in our own analyses.

Three of the four studies suggest licensing has no effect on service quality. The first is another Institute for Justice study. It used a field experiment to examine whether Louisiana's florist license resulted in better floral arrangements.<sup>22</sup> For the experiment, IJ procured arrangements from licensed Louisiana florists and unlicensed Texas florists. We then asked judges—randomly selected florists from both states who possessed

no knowledge of the study's purpose—to score them. The results showed no difference in quality between the states.

The second study, also from IJ, used a measure of quality similar to the one we use here—consumer reviews.<sup>23</sup> Exploiting a change in a licensing law, the research compared Tripadvisor reviews of tour guides in the District of Columbia before and after the city repealed its mandatory licensing exam. The results showed no significant difference in quality after the exam requirement ended.

The third study used consumer hiring decisions to examine licensing and perceived service quality in home improvement occupations (e.g., painters and interior designers).<sup>24</sup> Using data from an online platform that allows consumers to find home improvement service providers, the study measured quality based on whether a consumer hired a tradesperson for a job. The platform does not require service providers to provide proof of licensure, but consumers can use the platform to verify licensure. Exploiting this verification tool, the study compared (1) the number of consumers who hired a provider after verifying their license to (2) the number of consumers who hired a provider without verifying their license. If licensure really mattered to con-



sumers, it would be reasonable to expect more consumers to hire service providers after verifying their license. Yet this was not the case—licensure appeared to play no significant role in consumers' hiring decisions. The study did, however, find that positive reviews had a significant influence on consumers' decisions. The researchers conducted an independent survey of recent consumers of home improvement services, which confirmed both findings. When the researchers asked consumers to list up to three reasons why they selected a particular service provider, 13% mentioned reviews, while less than 1% mentioned licensing.

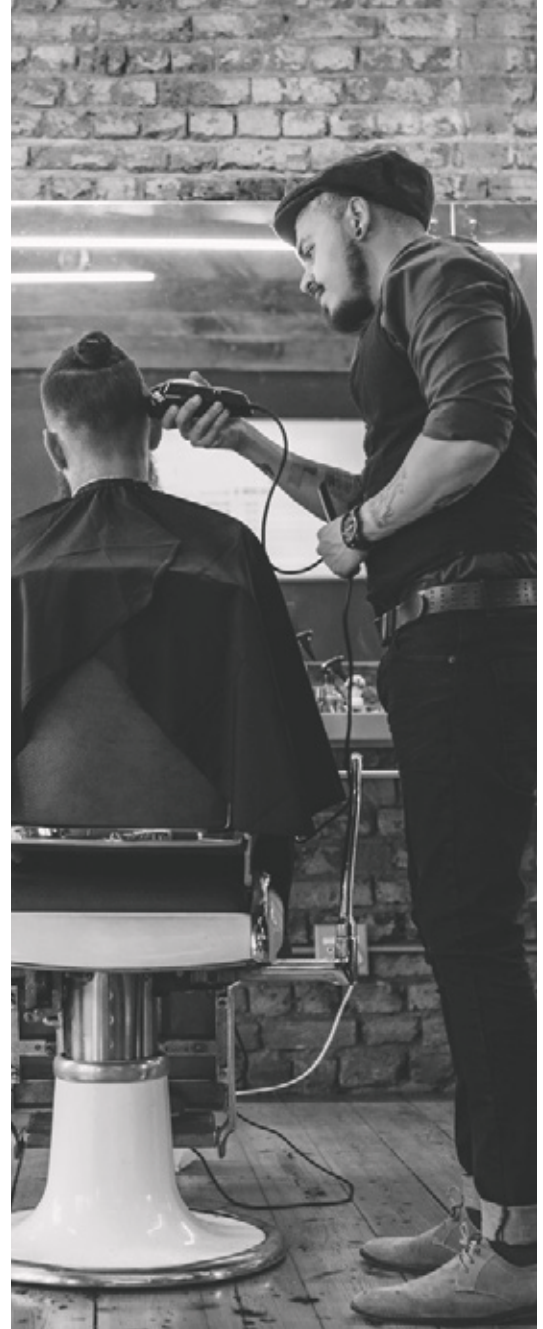
Unlike the first three studies, the fourth yielded mixed results.<sup>25</sup> The study used the same measure of quality as our analyses here—consumer Yelp ratings—and examined whether more stringent licensing requirements (fees, minimum education and experience, minimum age, minimum grade, exams, and the sum of all these) produced greater service quality among barbers, cosmetologists, manicurists and massage therapists. The effects of the licensing requirements were considered separately and then together. Some requirements—specifically fees, minimum education and experience, and minimum age—appeared associated with greater quality when

studied in isolation. Conversely, minimum grade and mandatory exams—the requirements with the greatest influence—were associated with lower quality. With all the requirements considered together, stricter licensing was related to lower Yelp ratings.<sup>26</sup> (The study did not present results for each occupation separately.)

Thus, among occupations similar to those we studied, licensing and service quality more often appear unrelated, whether quality is measured by practitioners, consumer reviews or consumer hiring decisions. To the extent there is a relationship, licensing appears to produce lower service quality except where requirements like minimum education and experience are the primary drivers of licenses' stringency.

These earlier studies suggest that, in our analyses of states with and without licensing, we might find no difference in Yelp ratings across states. Such results would contradict licensing proponents' claims.

On the other hand, in our analyses of states with more stringent and less stringent licensing requirements—especially minimum education and experience requirements—the past studies suggest we might see greater quality in states with stricter requirements. Those results would align with licensing proponents' assertions.



## Methods

To study licensing's impact on quality, we used regressions to compare average consumer Yelp ratings for individual businesses in bordering states with different licensing schemes. More specifically, for each set of comparison states, we looked at Yelp ratings for businesses located within a certain narrow distance, or “bandwidth,” from either side of the border.<sup>27</sup>

Because such businesses are geographically close, they should be similar, with the primary difference being that they operate under different regulatory regimes. However, to further ensure the similarity of the communities in which the businesses operate, we controlled for total population, percentage of the population with a bachelor's degree or higher, and median household income, three variables similar studies have found to be important controls.<sup>28</sup> This allowed us to attribute differences in Yelp ratings to the regulatory regime as strongly as possible.

We used businesses' Yelp ratings in our regressions because they represent a widely known and

used measure of service quality. Because Yelp's platform relies on consumer input, it harnesses the power of crowdsourcing. In addition, the five-point rating scale is an easy-to-understand measure of quality, and its quantitative nature makes it ideal for analyses like ours. Finally, past studies have shown Yelp ratings to be a valid measure of quality.<sup>29</sup>

We chose occupations and states with widely divergent regulatory regimes to have the best chance of uncovering the relationship—if any—between licensing and quality. We compared ratings across nine sets of state pairings and six occupations. The specific occupations and states we studied, as well as the licensing requirements for each state, are presented in Table 1.<sup>30</sup> The ratings spanned October 2004 through October 2020 for locksmiths and October 2004 through June/July 2019 for the other five occupations. (For more details on our methodology, including the number of businesses in each comparison, see Appendix A.)



**Table 1: Licensing Requirements for States Observed in Comparisons**

Occupation/State	Fees	Estimated Days Lost to Education and Experience	Exams	Min Grade	Min Age
<b>Barber</b>					
NJ (less burdensome)	\$80	210	2	12	17
PA (more burdensome)	\$150	292	2	8	16
<b>Cosmetologist</b>					
NY (less burdensome)	\$70	233	2	0	17
CT (more burdensome)	\$100	350	1	9	0
NJ (more burdensome)	\$119	280	2	12	17
<b>Interior Designer</b>					
CA (unlicensed)*	--	--	--	--	--
NV (licensed)	\$1,215	2,190	1	0	0
<b>Locksmith</b>					
PA (unlicensed)	--	--	--	--	--
NJ (licensed)	\$217	732	1	12	18
<b>Manicurist</b>					
CT (unlicensed)†	--	--	--	--	--
MA (licensed)	\$188	23	2	0	0
NY (licensed)	\$70	58	2	0	17
<b>Tree Trimmer</b>					
NV (unlicensed)	--	--	--	--	--
CA (licensed)	\$529	1,460	2	0	18
VA (unlicensed)	--	--	--	--	--
MD (licensed)	\$30	1,095	1	0	18

\* Though California does not license interior designers, it does offer title protection to those who hold certification with the California Council for Interior Design Certification. Cal. Bus. & Prof. Code §§ 5800–12.

† As of January 1, 2021, Connecticut licenses manicurists. H.B. 7424, 2019 Gen. Assemb., Reg. Sess. (Conn. 2019); Connecticut State Department of Public Health. (n.d.). *Nail technician*. <https://portal.ct.gov/DPH/Practitioner-Licensing--Investigations/Nailtechs/Nail-Technician>. However, it did not do so during our study period.

Note: Any education captured in estimated days lost to education and experience is postsecondary education, or training, required for licensure. Estimated days lost does not include any minimum K–12 grade requirement for licensure.



## Findings: Licensing Consistently Has No Positive Effect on Service Quality

The primary findings from this study are two-fold.

First, across the multiple occupations and states, licensing (or stricter forms of it) consistently does not appear to produce greater service quality. In eight of the comparisons, there are no statistically significant differences in Yelp ratings. Quality in unlicensed or less burdensomely licensed states is essentially equivalent to that in licensed or more burdensomely licensed states.

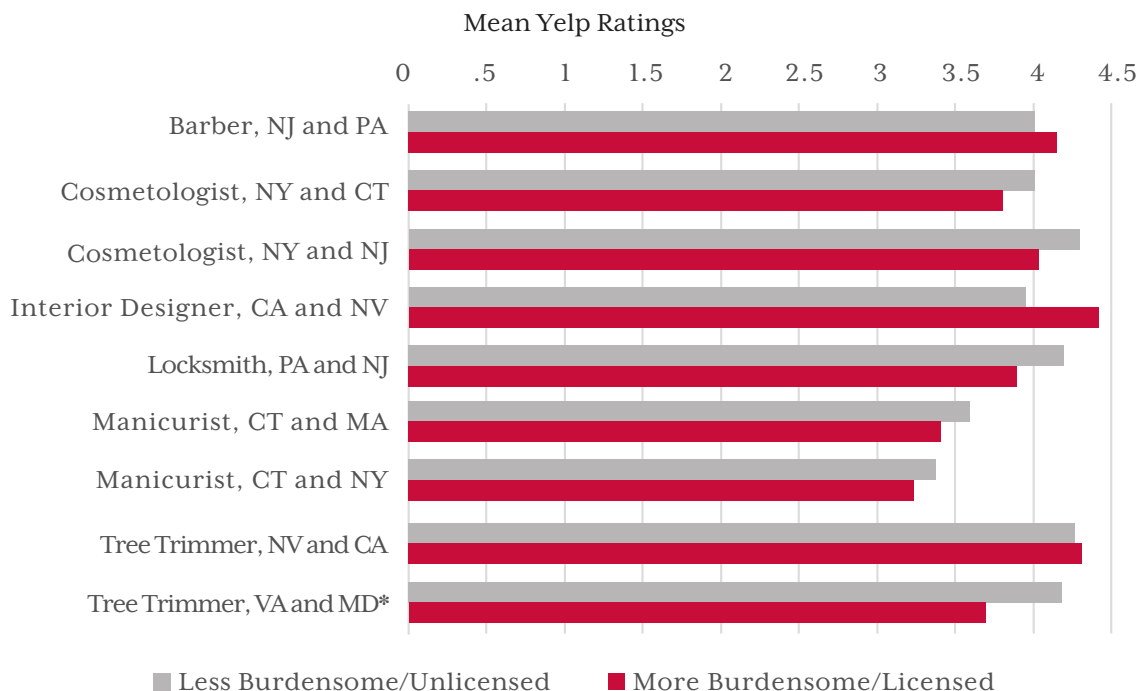
Second, where there is a measurable difference between states as indicated by statistical significance, the state with no regulation has *higher* quality. Specifically, tree trimmers in unlicensed Virginia receive higher Yelp ratings than those in licensed Maryland.

If we look at the results in more detail, based on the average Yelp ratings for businesses on either side of state borders, licensing regime does not appear to make a meaningful difference in service quality. As Figure 1 illustrates,

the differences are small, never exceeding a half point in the five-point Yelp scale. On average, the absolute difference in businesses' ratings between unlicensed or less burdensomely licensed states and their licensed or more burdensomely licensed counterparts comes to approximately 0.25 points.

We also observe no consistent patterns in the states with higher or lower Yelp ratings. In six of the nine comparisons, businesses in unlicensed or less burdensomely licensed states receive higher ratings, while in the other three comparisons, businesses in licensed or more burdensomely licensed states do. If licensing, or stricter forms of it, truly produces greater service quality, we would expect businesses in licensed, or more burdensomely licensed, states—the red bars in Figure 1—to consistently receive higher Yelp ratings. Yet our results show no such consistent pattern.

**Figure 1: Across Nine Comparisons, Licensing Never Produces Statistically Greater Quality**



\*Difference is statistically significant at  $p < 0.05$ .

Even stronger evidence comes from our statistical analysis. All but one of the differences shown in Figure 1 are no greater than what we might expect to see through random chance. Across eight of nine comparisons in which businesses were effectively alike, save for their regulatory environments, licensing is not associated with differences in quality that exceed what we would expect from chance alone. And because the nine comparisons cover six occupations and nine states, our findings are unlikely to be an artifact of any particular occupation, type of occupation or state.

Where we do find a statistically significant difference—the comparison with an asterisk in Figure 1—the state with no license requirement has *higher* quality. After controlling for communi-

ty characteristics such as population, percentage of the population with a bachelor's degree or higher, and median household income, we find tree trimmer ratings in unlicensed Virginia are, on average, approximately 1.2 points higher than those in licensed Maryland. (Appendix B provides our full results.)

If licensing proponents are right and licensing leads to greater service quality, we should see higher tree trimmer ratings in Maryland—and with a clear, statistically significant difference. That we find precisely the opposite—plus no statistically significant differences in our eight other comparisons—strongly suggests licensing's purported benefits for consumers are overstated for at least the occupations we studied and perhaps for others.



## Discussion: Why Licensing Fails

Our finding that licensing has no effect on quality is similar to results from other studies of licensing and service quality that looked at different states and occupations, including the studies of florists,<sup>31</sup> tour guides<sup>32</sup> and home improvement occupations<sup>33</sup> discussed above.

One area of difference between our study and many others is that, in one of our comparisons—Virginia and Maryland tree trimmers—we find quality to be higher in the unlicensed state than in the licensed one. To our knowledge, only one other study, of barbers, cosmetologists, manicurists and massage therapists, has found similar results. As described above, that study, which also measured service quality by consumer Yelp ratings, found licensing, and stricter licensing requirements, were related to lower quality.<sup>34</sup>

All of our findings run counter to licensing proponents' argument that licensing improves service quality. There are several plausible reasons why licensing and progressively stricter forms of it might fail to generate better quality—and, in some cases, produce lower quality.

First, licensing could produce muted effects on service quality because other voluntary (i.e., non-regulatory) factors are already working to promote quality. For example, strong market competition can give businesses incentives to improve service quality as they seek to differentiate themselves and win customers.<sup>35</sup> Consumer reviews also keep companies accountable, helping promote safe, quality service.<sup>36</sup>

A second plausible explanation is that licensing can shut out aspiring workers of all quality levels—not just ones who are likely to provide low-quality service. Licensing proponents argue licensing keeps quality high by weeding out people who cannot meet minimum standards. But not everyone shut out by licensing barriers is shut out for lack of ability. The high costs in time

and money of fulfilling licensing requirements may deter some aspirants from even trying to become licensed—and this includes high-ability aspirants as well as low. High-ability aspirants are likely to have an abundance of other opportunities open to them such that the opportunity cost of pursuing a license is high and deterrent.

An example of this can be found in the accounting industry, where research has found a 15% reduction in first-time candidates for certified public accountant exams when licensure requires an additional year of education but no difference in CPA quality as measured by time to promotion and duration of employment.<sup>37</sup> The researcher found the additional year of education deterred both low-ability candidates and high-ability ones (as measured by exam passage rates) from pursuing the career path. The researcher also noted that the additional education “appears costly to high-ability candidates, potentially because of their higher opportunity cost.”<sup>38</sup>

Similarly, in the teaching industry, more stringent education requirements for teachers may negatively affect students' performance. One study found students' SAT scores were lower in states that required a master's degree for teachers.<sup>39</sup> On the other hand, giving teachers alternative pathways to licensure over the traditional education degree appears to bring in higher-quality teachers as measured by licensure exam scores.<sup>40</sup>

Finally, licensing and progressively restrictive forms of it might fail to produce higher quality because, in at least some cases, licensing requirements simply are not attuned to quality. Required training may not help aspirants acquire the knowledge and skills necessary to do a job or to do it well.

Illustrating this possibility, a study compared the licensing wage premiums for CPAs forced



to complete an additional year of education for licensure and CPAs grandfathered into the new licensing scheme.<sup>41</sup> A licensing wage premium is the amount licensed workers can earn over and above what they would if they did not need a license to work. Licensing proponents often attribute licensing wage premiums to higher quality. But there is another competing, or possibly complementary, explanation: In reducing the supply of workers in an occupation, licensing allows licensees to charge higher prices, whether or not they provide higher quality.<sup>42</sup> If stricter licensing leads to higher quality, CPAs with an additional year of education should have a higher wage premium than their grandfathered counterparts. Yet the study found the two groups of CPAs enjoyed the same wage premium, suggesting the premium comes from reduced supply rather than improved quality owing to additional education.<sup>43</sup>

Likewise, licensing exams may not adequately assess whether an aspirant is likely to provide quality service. For example, following IJ's exper-

iment testing whether Louisiana's florist license produced better floral arrangements, IJ invited the florists who blind-judged the arrangements to participate in focus groups. After IJ revealed the "floral design competition" was actually an experiment and the arrangements were from licensed Louisiana and unlicensed Texas, the judges were unsurprised to learn that the ratings did not differ by state or, for that matter, regulatory regime. In fact, the 10 judges from Louisiana—all state-licensed florists—derided their state's licensing test as outdated and irrelevant.<sup>44</sup>



## Implications and Policy Recommendations

Our findings offer no reason to believe licensing, and progressively stricter forms of it, promotes safe, quality service. Instead, in the occupations and states we studied, licensing appears to force workers to fulfill various requirements while fencing others out needlessly, imposing costs not only on workers but also on consumers and on society and the economy at large. In light of these findings—including our finding of no difference in manicurist quality between unlicensed Connecticut and licensed Massachusetts and New York—Connecticut’s decision to relicense manicurists seems particularly unwise.<sup>45</sup>

And it is unlikely the occupations we studied are the only occupations to which our findings apply. The diversity of the occupations we studied—representing general services, home improvement

services and personal care services—means it would be surprising if licensing failed to produce quality only in these occupations.

Moreover, licensing likely fails to produce higher quality in other states that regulate the occupations we studied. This is because the states we compared had some of the starkest differences in licensing burdens. As Figure 2 illustrates, while some of the occupations we studied are licensed by fewer than half the states, others are universally licensed. For example, interior designers are licensed by only two states and the District of Columbia, while barbers and cosmetologists are licensed by every state and the District. In recent years, states have delicensed some of these occupations,<sup>46</sup> suggesting they realized their licenses were not in the public interest.

**Figure 2: Licensing Likely Fails to Produce Higher Quality in Other States That License the Occupations Studied Here**

 State Requires License to Practice       State Examined in This Study

State	Interior Designer	Barber	Cosmetologist	Manicurist	Locksmith	Tree Trimmer
Alabama						
Alaska						
Arizona						
Arkansas						
California						
Colorado						
Connecticut						
Delaware						
D.C.						
Florida						
Georgia						
Hawaii						
Idaho						
Illinois						
Indiana						
Iowa						
Kansas						



State	Interior Designer	Barber	Cosmetologist	Manicurist	Locksmith	Tree Trimmer
Kentucky						
Louisiana						
Maine						
Maryland						
Massachusetts						
Michigan						
Minnesota						
Mississippi						
Missouri						
Montana						
Nebraska						
Nevada						
New Hampshire						
New Jersey						
New Mexico						
New York						
North Carolina						
North Dakota						
Ohio						
Oklahoma						
Oregon						
Pennsylvania						
Rhode Island						
South Carolina						
South Dakota						
Tennessee						
Texas						
Utah						
Vermont						
Virginia						
Washington						
West Virginia						
Wisconsin						
Wyoming						

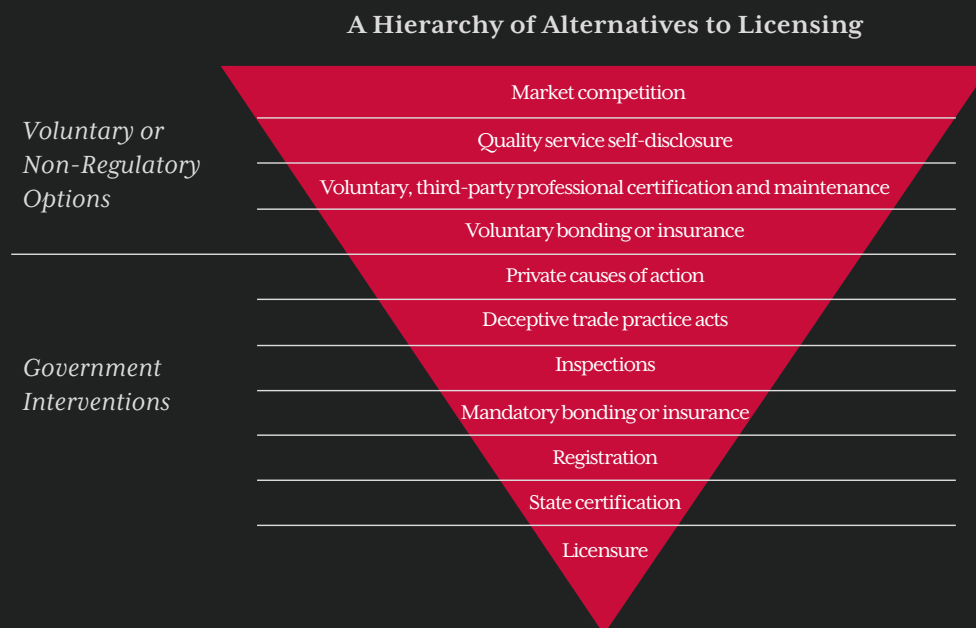
Note: Most of the data for this figure come from Carpenter, D. M., Knepper, L., Sweetland, K., McDonald, J. (2017). *License to work: A national study of burdens from occupational licensing* (2nd Ed.). Arlington, VA: Institute for Justice. See, specifically, the complete updated dataset here: <https://ij.org/report/license-work-2/tw2-data/>. However, since the publication of that report, some states have either licensed or delicensed the relevant occupations. Specifically, while Connecticut did not license manicurists at the time of that report, or during our study period here, it has done so since January 1, 2021. H.B. 7424, 2019 Gen. Assemb., Reg. Sess. (Conn. 2019); Connecticut State Department of Public Health. (n.d.). Nail technician. <https://portal.ct.gov/DPH/Practitioner-Licensing--Investigations/Nailtechs/Nail-Technician>. In addition, Florida has delicensed interior designers. H.B. 1193, 2020 Leg., Reg. Sess. (Fla. 2020). and Nebraska and Tennessee have delicensed locksmiths. L.B. 169, 2021 Leg., Reg. Sess. (Neb. 2021) and S.B. 0012, 2021 Gen. Assemb., Reg. Sess. (Tenn. 2021). We also discovered that we erred in counting tree trimmers as unlicensed in Minnesota. S.F. 905, 2003 Leg., Reg. Sess. (Minn. 2003). This figure reflects these updates and corrections.

All of this suggests our findings apply to other occupations and states not included in our analyses. If this is true, the benefits of licensing may be exaggerated, particularly compared to the costs as cataloged by others. This may mean there are many licenses that serve as nothing more than needless barriers to work and consumer choice.

Moreover, although lawmakers, and others, often assume licensing is the only way to pro-

tect the public from occupational harms, there exists a whole range of alternatives between no regulation and licensing (see Figure 3), including voluntary measures and less restrictive government interventions.<sup>47</sup> Depending on the harms presented by an occupation—if any—one or a combination of some of these alternatives may be adequate to protect the public without all of licensing’s costs.

**Figure 3: The Inverted Pyramid Offers Many Less Burdensome Alternatives to Licensing**



Many occupations may not require any government intervention. If there is no threat to public health or safety, the government should not get involved. Not only is poor, though safe, service—a bad haircut or an ugly floral arrangement, say—an illegitimate reason for government intervention, but, as our results and the results of other research show, government intervention may not even work to promote quality.<sup>48</sup> In fact, the costs of government intervention are likely to outweigh any benefits where there is no threat to public health or safety.

Occupations that the government does not regulate are not “unregulated.” Indeed, ordinary market competition gives businesses incentives to provide safe, quality service. Businesses that fail to provide such service will suffer loss of reputation—and customers.<sup>49</sup> This has always been the case, but it is truer now than ever thanks to the ease with which modern telecommunications and consumer review platforms such as Yelp and Tripadvisor allow consumers to share information, not just with people they know but with complete strangers.<sup>50</sup>

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Alone, or in tandem with other voluntary alternatives, market competition may be enough to ensure safe, quality service in many occupations. For example, service providers who want to assure prospective consumers of their commitment to safety and quality can proactively share prior consumer feedback, such as by linking to their Yelp or Tripadvisor pages from their websites or other marketing materials. Such quality self-disclosures can send a powerful signal to consumers.

Service providers can also signal their commitment to safety and quality by voluntarily obtaining and maintaining third-party professional certifications, or pursuing other training, or becoming bonded or insured. Tara Swagger, the Connecticut salon owner from our introduction, for example, can boast numerous credentials that she obtained voluntarily. As she put it, her clients are “very happy to know [her] long list of credentials and commitment to education has them in safe hands.”<sup>51</sup>

If these fully voluntary measures are not enough to protect the public, consumers can bring lawsuits against service providers under private causes of action. And all 50 states and the District of Columbia have consumer protection laws called deceptive trade practice acts that allow both attorneys general and consumers to sue service providers engaged in certain practices deemed false, misleading or deceptive.<sup>52</sup>

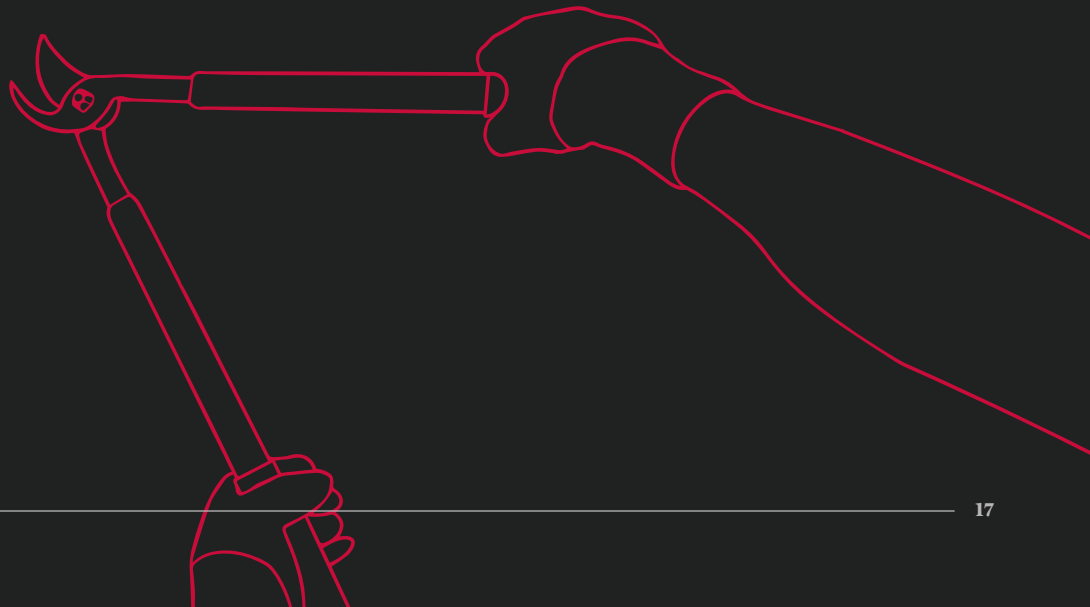
Governments should consider more restrictive alternatives if and only if there is systematic, em-

pirical evidence of a significant threat to public health and safety not adequately addressed by voluntary alternatives or less restrictive preexisting government interventions such as those described above. Where they find real evidence of such threats, governments should adopt the least restrictive intervention (or combination of interventions) that would address the problem, with licensing being their last resort.

They may well find that inspections, mandatory bonding or insurance, registration requirements, or state certification as a condition for using a particular title are adequate to protect the public. And if governments determine licensing is the only way to protect the public, they should ensure licensing requirements are no more restrictive than necessary.<sup>53</sup>

Following this approach would help ensure any new licenses or other occupational regulations are both necessary and no more restrictive than necessary to protect the public. But as this and other research suggests,<sup>54</sup> many unnecessary licenses are already on the books. And many requirements of existing licenses seem dubiously related to health and safety. For example, a recent study found that, on average, only about 25% of barber and cosmetologist curricula and 40% of manicurist curricula cover health and safety.<sup>55</sup>

Governments should therefore review existing licenses and other occupational regulations to determine whether they are necessary and properly targeted to protect the public.





## Conclusion

Our study adds to the mounting evidence that licensing does not promote safe, quality service—one of its major purported benefits. It also suggests licensing may actually decrease service quality in some cases. Given licensing's growth over the past several decades and copious prior research finding licensing imposes significant costs, it is time to question whether licensing's expansion has been wise. To rein in ever-expanding licensing and its high costs, governments should carefully consider whether proposed and existing licenses are necessary to protect public health and safety and reject or repeal those that are not. They should also ensure requirements for any licenses deemed necessary are narrowly targeted to health and safety. In so doing, governments can transform licenses into liberty to the benefit of workers, consumers, and society and the economy at large.







## Appendix A: Methods

The following question guided this study: Is there a significant difference in service quality between providers in states with no or lighter license requirements and those in neighboring states with more burdensome requirements?

### Data

To measure quality, we relied on Yelp business ratings, which others have found to accurately reflect service quality.<sup>56</sup> These ratings spanned October 2004 through October 2020 for locksmiths and October 2004 through June/July 2019 for all other occupations. The first year in our study is 2004 because Yelp started collecting ratings on October 12 of that year.<sup>57</sup> All ratings are on a five-star scale, with one star being the worst rating a business can receive and five stars the best. Each rating also has a written review associated with it, but our analysis used only the numerical rating. For each business, we averaged the ratings across the entire time span.

Control variables included population, percentage of the population with a bachelor's degree or higher, and median household income. Prior studies similar in design to ours have shown these to be important control variables.<sup>58</sup> We collected these data from the Census Bureau's 2019 five-year American Community Survey estimates at the block group level—the lowest geographic level for which data were available.

### Sample

The sampling unit (and the unit of analysis) was businesses within specific occupations. To determine the sample of occupations and states in our study, we used data from the second edition of the Institute for Justice's *License to Work* report to

identify occupations with stark licensing differences across neighboring states.<sup>59</sup> Because IJ released the second edition of *License to Work* in 2017, we checked relevant licensing requirements to ensure nothing significant had changed in the intervening years.

Licensing is not limited to state laws. Counties and cities can and often do enact their own licensing laws.<sup>60</sup> Failing to account for such laws, where they exist, would produce spurious analytical results. We therefore also examined a small sample of cities in border counties in our states of interest to determine whether local licensing was present (it was not). We also examined salon/shop licensing at the state and local levels for barbering- and cosmetology-related occupations as this, too, can sometimes affect licensing requirements for workers. However, such requirements had no impact on our analyses.

We limited the businesses in our sample to those within narrow bandwidths on either side of state borders. For each occupation-state comparison, we used a bandwidth that would result in a sample size sufficiently large for analysis. Consequently, bandwidths differ by occupation-state comparison (see Table A1). We had to modify two sets of comparisons that used the CA-NV border (interior designer and tree trimmer) due to a lack of businesses along the states' shared border. Instead of using bandwidths, we selected businesses located in border counties in the Lake Tahoe region.<sup>61</sup> These counties provided a sufficient number of firms for our analyses, while other regions along the CA-NV border were too rural to do so. Final sample sizes for businesses by occupation-state comparisons are presented in Table A2.

**Table A1: Final Comparisons and Bandwidths**

Occupation	States	Bandwidth
Barber	NJ to PA	15 miles
Cosmetologist	NY to CT	5 miles
Cosmetologist	NY to NJ	5 miles
Interior Designer*	CA to NV	Counties in the Lake Tahoe region
Locksmith	PA to NJ	5 miles
Manicurist†	CT to MA	15 miles
Manicurist	CT to NY	15 miles
Tree Trimmer	NV to CA	Counties in the Lake Tahoe region
Tree Trimmer	VA to MD	10 miles

\* Though California does not license interior designers, it does offer title protection to those who hold certification with the California Council for Interior Design Certification. Cal. Bus. & Prof. Code §§ 5800–12.

† As of January 1, 2021, Connecticut licenses manicurists. H.B. 7424, 2019 Gen. Assemb., Reg. Sess. (Conn. 2019); Connecticut State Department of Public Health. (n.d.). *Nail technician*. <https://portal.ct.gov/DPH/Practitioner-Licensing--Investigations/Nailtechs/Nail-Technician>. However, it did not do so during our study period.

**Table A2: Number of Businesses for Each Occupation-State Comparison**

Occupation	Lower Burden/Unlicensed		Higher Burden/Licensed		Total
	State	# of Firms	State	# of Firms	# of Firms
Barber	NJ	206	PA	420	626
Cosmetologist	NY	45	CT	49	94
Cosmetologist	NY	940	NJ	319	1,259
Interior Designer	CA	63	NV	36	99
Locksmith	PA	100	NJ	94	194
Manicurist	CT	45	MA	44	89
Manicurist	CT	144	NY	262	406
Tree Trimmer	NV	32	CA	92	124
Tree Trimmer	VA	58	MD	33	91

## Analysis

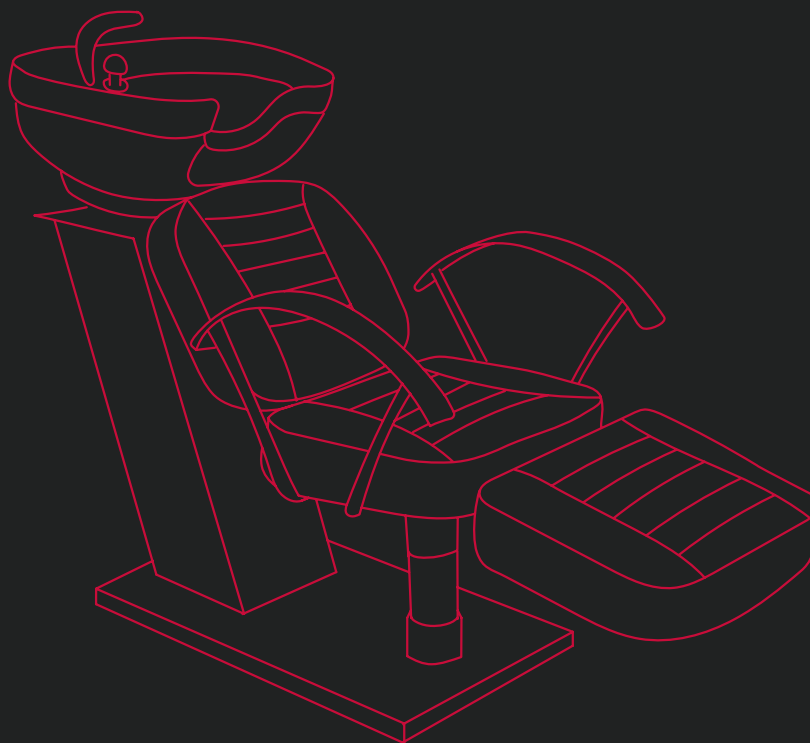
We analyzed these data using regression models, treating individual businesses as the unit of analysis. In the analyses, we employed a geographic regression discontinuity design to isolate the potential effect of high licensing burdens in counties bordering either unlicensed or less burdensomely licensed states. The areas in which these businesses are located should be similar except for variation in state licensing requirements. Nevertheless, we included community characteristics as covariates to improve the estimates' precision.

We ran separate regressions for each occupation-state comparison. This allowed for a clear interpretation of a specific license's effect rather than the general effect of all the licenses captured in our models, which vary in their burden.<sup>62</sup>

In geographic discontinuity, if a license were

an important determinant of service quality, we would expect to find a measurable difference in service quality between states when comparing businesses across borders, but—for reasons described above—we would not expect to find differences in community characteristics such as population, percentage of the population with a bachelor's degree or higher, and median household income. We tested this in a series of regressions in which the community characteristics, instead of the Yelp ratings, were the dependent variables.

Results showed almost no significant differences in community characteristics across states, but because there were a few, we included the community characteristics as covariates in the regressions. Table A3 provides the descriptive statistics for these covariates in each of our comparisons.



**Table A3: Descriptive Statistics for Each Comparison's Covariates**

	Population per Block Group		Education (Percentage BA or Higher)		Household Income (Median Dollars)	
Occupation/State	Mean	SD	Mean	SD	Mean	SD
<b>Barber</b>						
NJ (less burdensome)	1,612	759	0.252	0.142	80,253	36,323
PA (more burdensome)	1,408	711	0.307	0.201	68,258	33,926
<b>Cosmetologist</b>						
NY (less burdensome)	1,266	501	0.419	0.158	105,941	64,626
CT (more burdensome)	1,405	752	0.486	0.214	111,226	43,677
<b>Cosmetologist</b>						
NY (less burdensome)	1,449	843	0.573	0.181	109,303	56,695
NJ (more burdensome)	1,701	989	0.424	0.199	95,657	43,179
<b>Interior Designer</b>						
CA (unlicensed)	2,113	2,630	0.245	0.100	80,545	33,899
NV (licensed)	1,428	977	0.183	0.140	54,983	27,838
<b>Locksmith</b>						
PA (unlicensed)	1,650	821	0.280	0.200	66,795	38,874
NJ (licensed)	1,344	561	0.301	0.153	82,518	41,414
<b>Manicurist</b>						
CT (unlicensed)	1,612	677	0.340	0.097	78,797	30,448
MA (licensed)	1,728	769	0.227	0.101	76,204	32,104
<b>Manicurist</b>						
CT (unlicensed)	1,590	701	0.398	0.137	108,573	49,221
NY (licensed)	1,390	580	0.326	0.150	92,781	50,110
<b>Tree Trimmer</b>						
NV (unlicensed)	1,186	441	0.253	0.124	59,947	26,459
CA (licensed)	1,837	2,141	0.243	0.105	68,037	30,698
<b>Tree Trimmer</b>						
VA (unlicensed)	2,120	1,008	0.400	0.146	133,486	57,237
MD (licensed)	1,720	606	0.346	0.142	109,468	39,188

Note: We report all covariates at the block group level.

Our general model took the form:

$$Y = \beta_0 + \beta_1(state) + \beta_2(distance) + \beta_3(\Theta) + \beta_4(X) + \varepsilon$$

Where Y refers to a business's average Yelp rating; *state* represents whether a business is in a more burdensomely licensed, less burdensomely licensed or unlicensed state; *distance* represents the number of miles a business is from the state border;  $\Theta$  represents a series of dummy variables that identify counties directly opposite the state border from each other; and *X* represents a vector of control variables, as defined above.

A researcher who completed a similar analysis filtered out businesses with fewer than 10 Yelp reviews to avoid skew.<sup>63</sup> Had we done so, there would have been too few businesses for the analyses. As a contingency, however, we ran a second set of all models with the number of reviews per business included as a covariate. Results of those models indicated the number of reviews made only trivial differences in the results. Consequently, we present the results without the number of reviews.

## Appendix B: Results

This appendix presents detailed findings from the analyses described in Appendix A. Table B1 presents descriptive statistics from each of the occupation-state comparisons.

**Table B1: Descriptive Statistics of Yelp Ratings for Each Occupation-State Comparison**

Occupation	Lower Burden/Unlicensed			Higher Burden/Licensed		
	State	Mean	SD	State	Mean	SD
Barber	NJ	4.0	1.1	PA	4.2	1.0
Cosmetologist	NY	4.0	0.7	CT	3.8	0.8
Cosmetologist	NY	4.3	0.5	NJ	4.0	0.7
Interior Designer	CA	4.0	1.4	NV	4.4	0.9
Locksmith	PA	4.2	1.3	NJ	3.9	1.5
Manicurist	CT	3.6	0.8	MA	3.4	0.9
Manicurist	CT	3.4	0.7	NY	3.2	0.8
Tree trimmer	NV	4.3	1.1	CA	4.3	1.0
Tree trimmer	VA	4.2	1.0	MD	3.7	1.5

Tables B2 through B10 provide detailed regression results for each of the occupation-state comparisons. County fixed effects are omitted from the tables. Robust standard errors are used throughout.

**Table B2: Barbers in Less Burdensome New Jersey and More Burdensome Pennsylvania**

	Coeff	SE	t	p
NJ	0.047	0.121	0.390	0.697
Distance	-0.007	0.012	-0.620	0.532
Household Income	0.000	0.000	-1.280	0.202
Population	0.000	0.000	-1.580	0.114
Education	0.696	0.292	2.390	0.017
Intercept	4.340	0.175	24.870	0.000

n = 623; R<sup>2</sup> = 0.04



**Table B3: Cosmetologists in Less Burdensome New York and More Burdensome New Jersey**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
NJ	-0.048	0.147	-0.330	0.741
Distance	-0.004	0.022	-0.170	0.864
Household Income	0.000	0.000	-1.340	0.182
Education	0.264	0.116	2.290	0.022
Population	0.000	0.000	-2.650	0.008
Intercept	4.141	0.106	38.940	0.000

n = 1,257; R<sup>2</sup> = 0.09

**Table B4: Cosmetologists in Less Burdensome New York and More Burdensome Connecticut**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
CT	-0.279	0.162	-1.720	0.089
Distance	-0.004	0.058	-0.080	0.940
Household Income	0.000	0.000	0.250	0.801
Education	0.979	0.471	2.080	0.041
Population	0.000	0.000	-0.190	0.852
Intercept	3.251	0.536	6.070	0.000

n = 93; R<sup>2</sup> = 0.11

**Table B5: Interior Designers in Unlicensed California and Licensed Nevada**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
CA	-0.584	0.415	-1.410	0.163
Distance	0.004	0.010	0.450	0.653
Household Income	0.000	0.000	-0.950	0.342
Population	0.000	0.000	1.220	0.224
Education	-0.965	1.450	-0.670	0.508
Intercept	5.033	0.452	11.150	0.000

n = 95; R<sup>2</sup> = 0.09

**Table B6: Locksmiths in Unlicensed Pennsylvania and Licensed New Jersey**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
PA	0.465	0.298	1.560	0.120
Distance	0.007	0.082	0.080	0.936
Household Income	0.000	0.000	0.160	0.872
Population	0.000	0.000	1.360	0.176
Education	-1.163	0.765	-1.520	0.130
Intercept	3.777	0.373	10.130	0.000

n = 191; R<sup>2</sup> = 0.07

**Table B7: Manicurists in Unlicensed Connecticut and Licensed Massachusetts**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
MA	-0.013	0.231	-0.050	0.957
Distance	-0.006	0.027	-0.210	0.837
Household Income	0.000	0.000	1.000	0.318
Population	0.000	0.000	-0.790	0.434
Education	-1.404	1.135	-1.240	0.219
Intercept	4.487	0.527	8.520	0.000

n = 89; R<sup>2</sup> = 0.08

**Table B8: Manicurists in Unlicensed Connecticut and Licensed New York**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
NY	-0.103	0.083	-1.230	0.218
Distance	-0.005	0.011	-0.470	0.640
Household Income	0.000	0.000	-0.120	0.908
Population	0.000	0.000	0.590	0.556
Education	0.256	0.341	0.750	0.453
Intercept	3.254	0.196	16.600	0.000

n = 405; R<sup>2</sup> = 0.01

**Table B9: Tree Trimmers in Unlicensed Nevada and Licensed California**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
NV	-0.311	0.534	-0.580	0.562
Distance	-0.003	0.006	-0.410	0.681
Household Income	0.000	0.000	-0.110	0.916
Population	0.000	0.000	-0.430	0.669
Education	-0.381	1.058	-0.360	0.719
Intercept	4.487	0.437	10.270	0.000

n = 114; R<sup>2</sup> = 0.01

**Table B10: Tree Trimmers in Unlicensed Virginia and Licensed Maryland**

	<b>Coeff</b>	<b>SE</b>	<b>t</b>	<b>p</b>
VA	1.150	0.430	2.670	0.009
Distance	0.027	0.055	0.490	0.623
Household Income	0.000	0.000	0.620	0.535
Population	0.000	0.000	-0.430	0.667
Education	-0.348	1.284	-0.270	0.787
Intercept	3.556	0.659	5.390	0.000

n = 87; R<sup>2</sup> = 0.11

## Appendix C: Relevant Prior Literature

Study	Occupation(s)	Measure(s) of Quality	Relationship of Licensing to Quality
Anderson, D. M., Brown, R., Charles, K. K., & Rees, D. I. (2020). Occupational licensing and maternal health: Evidence from early midwifery laws. <i>Journal of Political Economy</i> , 128(11), 4337–4383. <a href="https://doi.org/10.1086/710555">https://doi.org/10.1086/710555</a>	Midwife	Maternal mortality	Positive
Barrios, J. M. (2022). Occupational licensing and accountant quality: Evidence from the 150-hour rule. <i>Journal of Accounting Research</i> , 60(1), 3–43. <a href="https://doi.org/10.1111/1475-679X.12408">https://doi.org/10.1111/1475-679X.12408</a>	Accountant	Time to promotion and tenure at a firm	No effect
Berger, M. C., & Toma, E. F. (1994). Variation in state education policies and effects on student performance. <i>Journal of Policy Analysis and Management</i> , 13(3), 477–491. <a href="https://doi.org/10.2307/3325387">https://doi.org/10.2307/3325387</a>	Teacher	SAT scores	Negative
Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wycoff, J. (2008). <i>The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools</i> (NBER Working Paper No. 14021). Cambridge, MA: National Bureau of Economic Research. <a href="https://www.nber.org/papers/w14021">https://www.nber.org/papers/w14021</a>	Teacher	Student test scores	Positive
Carpenter, D. M. (2010). <i>Blooming nonsense: Experiment reveals Louisiana's florist licensing scheme as pointless and anti-competitive</i> . Arlington, VA: Institute for Justice. <a href="https://ij.org/report/blooming-nonsense-2/">https://ij.org/report/blooming-nonsense-2/</a>  Carpenter, D. M. (2012). Testing the utility of a licensing policy: Evidence from a field experiment on occupational regulation. <i>Journal of Applied Business and Economics</i> , 13(2), 28–41. <a href="http://m.www.na-businesspress.com/JABE/CarpenterDM_Web13_2_.pdf">http://m.www.na-businesspress.com/JABE/CarpenterDM_Web13_2_.pdf</a>	Florist	Judges' scores	No effect
Deyo, D. (2017, January 8). <i>Licensing and service quality: Evidence using Yelp consumer reviews</i> [Paper presentation]. Barriers to Entry or Improving Consumer Welfare: An Assessment of Occupational Regulation, American Economic Association Annual Meeting, Chicago, IL. <a href="https://www.aeaweb.org/conference/2017/preliminary/paper/efy2hraQ">https://www.aeaweb.org/conference/2017/preliminary/paper/efy2hraQ</a>	Barber, cosmetologist, manicurist, massage therapist	Yelp ratings	Mixed
Erickson, A. C. (2016). <i>Putting licensing to the test: How licenses for tour guides fail consumers—and guides</i> . Arlington, VA: Institute for Justice. <a href="https://ij.org/report/putting-licensing-test/">https://ij.org/report/putting-licensing-test/</a>	Tour guide	Tripadvisor ratings	No effect
Farronato, C., Fradkin, A., Larsen, B., & Brynjolfsson, E. (2020). <i>Consumer protection in an online world: An analysis of occupational licensing</i> (NBER Working Paper No. 26601). Cambridge, MA: National Bureau of Economic Research. <a href="https://doi.org/10.3386/w26601">https://doi.org/10.3386/w26601</a>	Home improvement (e.g., painter, interior designer)	Consumer satisfaction and hiring decisions	No effect

Study	Occupation(s)	Measure(s) of Quality	Relationship of Licensing to Quality
Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. <i>Educational Evaluation and Policy Analysis</i> , 22(2), 129–145. <a href="https://doi.org/10.2307/1164392">https://doi.org/10.2307/1164392</a>	Teacher	Student test scores	Mixed
Guntermann, K. L., & Smith, R. L. (1988). Licensing requirements, enforcement effort and complaints against real estate agents. <i>The Journal of Real Estate Research</i> , 3(2), 11–20. <a href="https://www.jstor.org/stable/44095230">https://www.jstor.org/stable/44095230</a>	Real estate agent	Consumer complaints	No effect
Holen, A. (1978). <i>The economics of dental licensing</i> . Alexandria, VA: Public Research Institute. <a href="https://apps.dtic.mil/sti/pdfs/ADA075961.pdf">https://apps.dtic.mil/sti/pdfs/ADA075961.pdf</a>	Dentist	Malpractice insurance premium and dental health	Mixed
Johnson, L. L., & Loucks, C. (1986). The effect of state licensing regulations on the real estate brokerage industry. <i>Real Estate Economics</i> , 14(4), 567–582. <a href="https://doi.org/10.1111/1540-6229.00404">https://doi.org/10.1111/1540-6229.00404</a>	Real estate broker	Consumer complaints	Positive
Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2008). What does certification tell us about teacher effectiveness? Evidence from New York City. <i>Economics of Education Review</i> , 27(6), 615–631. <a href="https://doi.org/10.1016/j.econedurev.2007.05.005">https://doi.org/10.1016/j.econedurev.2007.05.005</a>	Teacher	Student test scores	No effect
Kleiner, M. M., & Kudrle, R. T. (2000). Does regulation affect economic outcomes? The case of dentistry. <i>The Journal of Law and Economics</i> , 43(2), 547–582. <a href="https://doi.org/10.1086/467465">https://doi.org/10.1086/467465</a>	Dentist	Dental health	No effect
Kleiner, M. M., Marier, A., Park, K. W., & Wing, C. (2016). Relaxing occupational licensing requirements: Analyzing wages and prices for a medical service. <i>The Journal of Law and Economics</i> , 59(2), 261–291. <a href="https://doi.org/10.1086/688093">https://doi.org/10.1086/688093</a>	Nurse practitioner	Mortality rates and malpractice lawsuits	No effect
Kleiner, M. M., & Petree, D. L. (1988). Unionism and licensing of public school teachers: Impact on wages and educational output. In R. B. Freeman & C. Ichniowski (Eds.), <i>When public sector workers unionize</i> (pp. 305–321). University of Chicago Press. <a href="http://www.nber.org/chapters/c7914">http://www.nber.org/chapters/c7914</a>	Teacher	SAT and ACT scores and graduation rates	Mixed
Kleiner, M. M., & Todd, R. M. (2009). Mortgage broker regulations that matter: Analyzing earnings, employment, and outcomes for consumers. In D. H. Autor (Ed.), <i>Studies of labor market intermediation</i> (pp. 183–231). University of Chicago Press. <a href="https://doi.org/10.7208/chicago/9780226032900.003.0007">https://doi.org/10.7208/chicago/9780226032900.003.0007</a>	Mortgage broker	Foreclosure rates	Negative



Study	Occupation(s)	Measure(s) of Quality	Relationship of Licensing to Quality
Larsen, B. (2015). <i>Occupational licensing and quality: Distributional and heterogeneous effects in the teaching profession</i> . Stanford University and NBER. <a href="https://web.stanford.edu/~bjlarsen/Larsen%20(2015)%20Occupational%20licensing%20and%20quality.pdf">https://web.stanford.edu/~bjlarsen/Larsen%20(2015)%20Occupational%20licensing%20and%20quality.pdf</a>	Teacher	Student test scores	Mixed
Law, M. T., & Kim, S. (2005). Specialization and regulation: The rise of professionals and the emergence of occupational licensing regulation. <i>The Journal of Economic History</i> , 65(3), 723–756. <a href="https://www.jstor.org/stable/3875015">https://www.jstor.org/stable/3875015</a>	Physician	Mortality rates and malpractice lawsuit	Mixed
Maurizi, A. R. (1980). The impact of regulation on quality: The case of California contractors. In S. Rottenberg (Ed.), <i>Occupational licensure and regulation</i> (pp. 26–35). Washington, DC: American Enterprise Institute for Public Policy Research.	Contractor	Consumer complaints	Mixed
Meehan, B. J., & Stephenson, E. F. (2020). Reducing a barrier to entry: The 120/150 CPA licensing rule. <i>Journal of Labor Research</i> , 41, 382–402. <a href="https://doi.org/10.1007/s12122-020-09313-4">https://doi.org/10.1007/s12122-020-09313-4</a>	Accountant	License exam pass rates and scores	No effect
Pancak, K. A., & Sirmans, C. F. (2006). The effect of agency reform on real estate service quality. <i>Journal of Housing Research</i> , 15(1), 41–54. <a href="https://www.jstor.org/stable/24861106">https://www.jstor.org/stable/24861106</a>	Real estate agent	Disciplinary actions	Positive
Paul, C. (1984). Physician licensure legislation and the quality of medical care. <i>Atlantic Economic Journal</i> , 12(4), 18–30. <a href="https://doi.org/10.1007/BF02304510">https://doi.org/10.1007/BF02304510</a>	Physician	Mortality rates	No effect
Powell, B., & Vorotnikov, E. (2012). Real estate continuing education: Rent seeking or improvement in service quality? <i>Eastern Economic Journal</i> , 38(1), 57–73. <a href="https://www.jstor.org/stable/41408845">https://www.jstor.org/stable/41408845</a>	Real estate agent	Consumer complaints and disciplinary actions	No effect
Rupp, N. G., & Tan, K. M. (2022). <i>An evaluation of legislation designed to improve airline pilots' safety and performance</i> . SSRN Paper. <a href="https://dx.doi.org/10.2139/ssrn.3617370">https://dx.doi.org/10.2139/ssrn.3617370</a>	Pilot	Flight delays	Mixed
Sass, T. R. (2015). Licensure and worker quality: A comparison of alternative routes to teaching. <i>The Journal of Law &amp; Economics</i> , 58(1), 1–35. <a href="https://doi.org/10.1086/682904">https://doi.org/10.1086/682904</a>	Teacher	Student test scores	Mixed
Shilling, J. D., & Sirmans, C. F. (1988). The effects of occupational licensing on complaints against real estate agents. <i>The Journal of Real Estate Research</i> , 3(2), 1–9. <a href="https://www.jstor.org/stable/44095229">https://www.jstor.org/stable/44095229</a>	Real estate agent	Consumer complaints	Positive
Shuls, J. V., & Trivitt, J. R. (2015). Teacher effectiveness: An analysis of licensure screens. <i>Educational Policy</i> , 29(4), 645–675. <a href="https://doi.org/10.1177/0895904813510777">https://doi.org/10.1177/0895904813510777</a>	Teacher	Student test scores and licensing exam scores	Mixed
Young, S. D. (1986). Accounting licensure, quality, and the “Cadillac effect.” <i>Journal of Accounting and Public Policy</i> , 5(1), 5–19. <a href="https://doi.org/10.1016/0278-4254(86)90003-7">https://doi.org/10.1016/0278-4254(86)90003-7</a>	Accountant	Insurance premiums	No effect

# Endnotes

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**Kyle Sweetland** is a former researcher at the Institute for Justice, where he provided research and analysis on issues central to the Institute's mission. He is a co-author of IJ's *Food Truck Truth: Why Restaurants—and Cities—Have Nothing to Fear from Mobile Food Businesses*, *The Price of Taxation by Citation*, and *License to Work*, 2nd ed. His work has appeared in academic journals such as *Economic Affairs*, *Journal of Entrepreneurship and Public Policy*, and *Criminal Justice Policy Review*, as well as in *Spotlight on Poverty and Opportunity*. He holds a bachelor's in business economics and public policy from Indiana University Southeast and is currently pursuing a master's in data informatics at Middle East Technical University.

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## About IJ

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