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The Effects of Occupational Licensure on Competition, Consumers, and the Workforce

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University is dedicated to advancing knowledge about the impact of regulation on society. As part of its mission, the Mercatus Center conducts careful and independent analyses employing contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, this Mercatus on Policy piece in response to questions from the Federal Trade Commission (FTC)¹ does not represent the views of any particular affected party or special interest group. Rather, it is designed to assist the commission as it weighs the costs and benefits of occupational licensing regulations. Our comments to the commission are derived from our recent state-specific occupational licensing studies.²

OCCUPATIONAL LICENSING REQUIREMENTS ACROSS TIME AND ACROSS STATES

The commission asks, “What is the state of empirical knowledge about the extent, growth, and stringency of state licensing requirements? To what extent are such requirements uniform or varied across the states? To what extent do they vary by occupation?”

Occupational licensing has expanded significantly over the last 50 years. In 1950, 5 percent of the workforce was licensed through state laws,³ and in 2000 that number approached 20 percent. When federal licenses are also accounted for, one estimate for 2006 is that 29 percent of the workforce was licensed.⁴ This growth in licensure arises primarily from the growth in the number of occupations for which a license is required by the state, not from people switching from jobs that do not require occupational licenses to jobs that do.⁵ While there is a great deal of variation across states in the number of occupations for which a license

is required as well as in the requirements to obtain a license, every state has seen an increase in both.

Patterns in occupational licensing requirements contradict the idea that licensure is primarily used to protect public safety. Occupations that are less likely to involve risk to the public are often more highly controlled than riskier occupations. Moreover, inconsistencies across state lines undermine the argument that certain occupations pose inherent safety risks.

On average, emergency medical technicians (EMTs) in the United States must complete 33 days of training and pass two exams before being licensed to work on an ambulance team.⁶ By contrast, the average interior designer must complete 2,190 days of education and experience—66 times the amount of training required of EMTs. Cosmetologists, too, are subject to a full 11 months more training than EMTs—averaging 372 days in total.⁷ Additional regulatory mismatches for particular states are listed in table 1.

Beyond the variation across occupations, there is also significant variation in licensing requirements for the same jobs across states. For example, the average HVAC contractor must complete 891 days of education and training.⁸ In Michigan, however, these contractors face even higher barriers

Table 1. Occupational Training Mismatches, Select States		
OCCUPATION	EDUCATION/ EXPERIENCE (DAYS)	EXAMS
ARKANSAS		
Emergency medical technician	28	2
Message therapist	117	2
Makeup artist	140	2
Psychiatric technician	210	1
Cosmetologist	350	2
Teacher assistant	730	0
Fire alarm installer	1,095	1
Painting contractor	1,825	1
Preschool teacher	1,825	3

Table 1 (continued)		
OCCUPATION	EDUCATION/ EXPERIENCE (DAYS)	EXAMS
MICHIGAN		
Emergency medical technician	26	2
Cosmetologist	350	2
Barber	467	2
Veterinary technologist	730	2
Security guard	1,095	0
Athletic trainer	1,460	1
Security alarm installer	1,460	1
Preschool teacher	1,825	2
MISSOURI		
Emergency medical technician	23	2
Skin care specialist	175	2
Psychiatric aide	210	0
Barber	350	2
Pest control applicator	730	2
Athletic trainer	1,460	1
Preschool teacher	1,825	1
WISCONSIN		
Emergency medical technician	28	2
Manicurist	70	2
Makeup artist or skincare specialist	105	2
Message therapist	140	2
Cosmetologist or barber	420	2
Earth driller	730	1
Midwife	730	1
Veterinary technologist	730	3
Athletic trainer	1,460	1
Preschool teacher	1,825	2

Source: Dick M. Carpenter II et al., License to Work: A National Study of Burdens from Occupational Licensing (Arlington, VA: Institute for Justice, April 24, 2012).

Patterns in occupational licensing requirements contradict the idea that licensure is primarily used to protect public safety.

to entry. Prospective HVAC contractors in Detroit must undergo nearly *seven months more training* than the national average—a total of 1,095 days—before beginning work. By comparison, their counterparts in Indianapolis can get to work much sooner, since Indiana does not require a license for HVAC contractors at all.⁹ The same is true of fire alarm installers in Arkansas: while they must accumulate 1,095 days of education and experience prior to being licensed, the rest of the country averages just 486 days, and 18 states have no experience or education minimums at all.¹⁰ In other words, aspiring fire alarm contractors in Tulsa can get to work three years sooner than their counterparts in Little Rock.

Regarding the differences in licensing across state lines, the commission asks, “Can the theoretical models help explain why some occupations are licensed in nearly every state while others are rarely licensed?”

If occupational licensing were governed solely by the logic of promoting public safety, the same types of activities would be regulated in similar ways across states. In reality, there is wide variation across states in terms of occupations regulated and the stringency of those regulations. Regulatory privilege accounts for some of these differences.

Writing in the *Harvard Journal of Law & Public Policy*, Paul Larkin Jr. notes a “curious and stubborn fact: Private individuals rarely urge governments to adopt licensing regimes, but private firms often do.”¹¹ This fact conforms with the economic theory of regulation, which suggests that incumbent providers may use licensure to limit competition.¹² By limiting supply and raising prices, these rules allow incumbent providers to earn artificially high profits—what economists refer to as *rent*. Indeed, the latest

research suggests that licensure raises the wages of licensees by about 14 percent.¹³ Occupational licensing is a privilege granted by a regulatory agency to incumbent providers.¹⁴

The social costs of this privilege are shouldered, in part, by consumers who have to pay higher prices than they would pay in more competitive markets. But the social costs also include the wages not earned by potential providers who are effectively excluded from the market by these regulations. With both the high prices for consumers and the forgone wages of would-be competitors, society is likely to experience a net loss from occupational licensing—what economists call *deadweight loss*. What’s more, incumbent professionals are willing to expend scarce resources convincing policymakers to contrive and maintain these privileges, a socially wasteful endeavor known as *rent-seeking*.¹⁵ Being few in number and established in their fields, these license holders generally find it easier to get politically organized than the large number of consumers and would-be competitors who are harmed by licensure.¹⁶

EMPIRICAL EVIDENCE ON OCCUPATIONAL LICENSING

The commission asks, “What is the best available evidence upon which policymakers might rely in deciding whether to adopt a new licensing regime? What is the best available evidence upon which policymakers might rely in deciding whether to reform or eliminate an existing licensing regime?”

Occupational licensing is ostensibly intended to protect the public from unsafe and low-quality service,

but there is little evidence this intention is realized. Rather, there is a growing consensus among economists that these rules serve to protect incumbent providers from competition by creating barriers for new entrants that lead to higher prices for consumers. We discuss this literature in the following sections.

The commission asks, “What is known about the effect of licensing restrictions on price, quality, access, and innovation for services and goods associated with licensed occupations?”

The evidence suggests two things: First, licensing requirements do not improve the quality of the goods and services provided by licensed occupations, and second, they exclude potential service providers who find the hurdles too costly to overcome. These hurdles limit competition for the incumbents in these protected trades, producing a doubly negative effect: Occupational licensing requirements keep able people from entering trades they could otherwise learn quickly and perform sufficiently well, limiting employment opportunities for people without advanced skills or degrees. In addition, protected industries can charge their customers higher prices than competitive industries, requiring low-income families to pay higher bills for basic services. Low-income consumers lose in particular. In the absence of licensure, a barber, for example, might offer discounted haircuts with fewer frills to those who would otherwise not be able to afford a higher-end haircut.

Licensure and Quality

Licensure is justified by legislators and advocates as necessary to protect the public from low-quality services or potential health risks.¹⁷ It is theoretically possible that a well-designed quality screening system will ensure that only high-quality professionals join an occupation. However, limiting the supply of professionals undermines competition. Less competition means lower quality and higher prices. As Morris M. Kleiner put it, licensure ensures that “prices and wages will rise as a result of restricting the number of practitioners, which should tend to

reduce quality received by consumers.”¹⁸ High prices may even push consumers out of the market entirely, inducing them to resort to far more risky do-it-yourself behavior. For example, one study found that more restrictive electrician licensing regimes are associated with fewer electricians per capita and that this, in turn, is associated with more accidental electrocutions.¹⁹

The true effect of licensure on quality is an empirical question, since economic theory suggests that licensure can have opposing effects on quality. Licensing requirements can increase quality by restricting entry only to highly-qualified professionals, or it can decrease quality by causing less competition, higher prices, and more do-it-yourself activities. A number of studies have assessed the effect of licensure on quality and the weight of evidence suggests that the two effects roughly cancel each other out. As Kleiner summarized in his review of the literature,

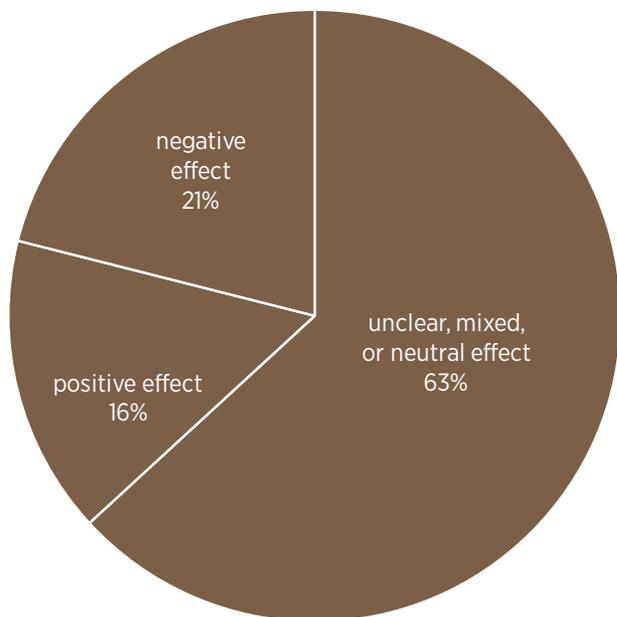
There is little to show that occupational licensure has a major effect on the quality of services received by consumers or on the demand for the services other than through potential price effects.²⁰

During the Obama administration, the Department of the Treasury, together with the Council of Economic Advisors and the Department of Labor, issued a report (henceforth referred to as the Treasury Department Report) including a review of the literature that concluded,

With the caveats that the literature focuses on specific examples and that quality is difficult to measure, most research does not find that licensing improves quality or public health and safety.²¹

Patrick McLaughlin, Jerry Ellig, and Dima Yazji Shamoun recently surveyed 19 studies assessing the effect of occupational licensure on quality.²² Figure 1 presents the results of their survey. As in the surveys by Kleiner and the Treasury Department Report, McLaughlin, Ellig, and Shamoun found that the

Figure 1. Studies Assessing the Effect of Occupational Licensure on Quality



Sources: **Positive:** Arlene Holen, *The Economics of Dental Licensing* (Washington, DC: Public Research Institute, Center for Naval Analysis, 1978); Samuel Claude Martin, "An Examination of the Economic Side Effects of the State Licensing of Pharmacists" (doctoral dissertation, University of Tennessee, 1982); Roger Feldman and James W. Begun, "The Effects of Advertising: Lessons from Optometry," *Journal of Human Resources* 13 supplement (1978): 247-62. **Unclear, mixed, or neutral:** Kathryn Healey, "The Effect of Licensure on Clinical Laboratory Effectiveness" (doctoral dissertation, University of California, Los Angeles, 1973); John J. Phelan, *Regulation of the Television Repair Industry in Louisiana and California: A Case Study*, *Federal Trade Commission*, 1974; John F. Cady, *Restricted Advertising and Competition: The Case of Retail Drugs* (Washington, DC: American Enterprise Institute, 1976); Robert J. Thornton and Andrew R. Weintraub, "Licensing in the Barbering Profession," *Industrial and Labor Relations Review* 32, no. 2 (1979): 242-49; Ronald Bond et al., *Effects of Restrictions of Advertising and Commercial Practice in the Professions: The Case of Optometry*, *Federal Trade Commission*, 1980; Chris Paul, "Physician Licensure Legislation and the Quality of Medical Care," *Atlantic Economic Journal* 12, no. 4 (1984): 18-30; David S. Young, *The Rule of Experts: Occupational Licensing in America* (Washington, DC: Cato Institute, 1987); Morris M. Kleiner and Daniel L. Petree, "Unionizing and Licensing of Public School Teachers: Impact on Wages and Educational Output," in *When Public Sector Workers Unionize*, ed. R. B. Freeman and C. Ichniowski (Chicago: University of Chicago Press, 1988), 305-19; D. D. Goldhaber and D. J. Brewer, "Does Teacher Certification Matter? High School Teacher Certification Status and Student Achievement," *Educational Evaluation and Policy Analysis* 22, no. 2 (2000): 129-45; Morris M. Kleiner and Robert T. Kudrle, "Does Regulation Affect Economic Outcomes? The Case of Dentistry," *Journal of Law and Economics* 43, no. 2 (2000): 547-82; David Blau, "Unintended Consequences of Child Care Regulations," *Labour Economics* 14, no. 3 (2007): 513-38; Joshua Angrist and Jonathan Guryan, "Does Teacher Testing Raise Teacher Quality? Evidence from State Certification Requirements," *Economics of Education Review* 27, no. 5 (2008): 483-503. **Negative:** Timothy Muris and Fred McChesney, "Advertising, Consumer Welfare, and the Quality of Legal Services: The Case of Legal Clinics" (Working Paper 78-5, Law and Economics Center, University of Miami, Miami, FL, 1978); Sidney Carroll and Robert Gaston, "Occupational Restrictions and the Quality of Service Received: Some Evidence," *Southern Economic Journal* 47, no. 4 (1981): 959-76; John E. Kwoka, "Advertising and the Price and Quality of Optometric Services," *American Economic Review* 74, no. 1 (1984): 211-16; Mark C. Berger and Eugenia F. Toma, "Variation in State Education Policies and Effects on Student Performance," *Journal of Policy Analysis and Management* 13, no. 3 (1994): 477.

most common finding was neutral, mixed, or unclear. Three studies found that occupational licensure positively affects quality while four found that it negatively affects quality.

Licensure and Prices

Economic theory predicts that a restriction in supply will result in higher prices. And, indeed, the empirical research consistently finds this to be the case. According to the Treasury Department Report,

The evidence on licensing's effects on prices is unequivocal: many studies find that more restrictive licensing laws lead to higher prices for consumers. In 9 of the 11 studies we reviewed . . . significantly higher prices accompanied stricter licensing.²³

Similarly, McLaughlin, Ellig, and Shamoun found that licensure increased prices in all 19 of the studies they surveyed, ranging from optometry and law to dentistry and cosmetology.²⁴

The effects of these increased prices are not trivial. For example, state nurse practitioner licensing is estimated to increase the price of a well-child checkup by 3 to 16 percent,²⁵ dental hygienist and dental assistant licensing is estimated to increase the price of a dental visit by 7 to 11 percent,²⁶ and optometry licensing is estimated to increase the price of eye care by 5 to 13 percent.²⁷ What's more, none of these studies found that licensing increased quality.

Licensing and Access to Employment

The commission asks, "What is known about the connection between labor market research and competition research?"

Industry domination of licensing boards creates high barriers to employment. Tables 2 and 3 provide a snapshot of Michigan and Wisconsin board composition. Boards in both states are required by statute to have a majority of members who are license holders.²⁸ When industry members create the standards for

entry into their professions, they have an incentive to implement burdensome entry requirements to protect themselves from competition. In effect, licensing makes entry into a profession more difficult without necessarily making the public safer.²⁹

On some boards, membership shrinks to the lowest statutorily-mandated number of professionals,

leaving public seats vacant. Wisconsin’s boards in particular demonstrate this problem.

Research suggests that these barriers built by occupational licensing boards impact particular communities. For example, military spouses are more likely to be in licensed professions and more likely to relocate from one licensing regime to another.³⁰

Table 2. Composition of Select Michigan Boards

BOARD	INDUSTRY MEMBERS	TOTAL	PERCENTAGE INDUSTRY
Michigan Board of Veterinary Medicine ^a	6	9	67%
Michigan Board of Cosmetology ^b	6	9	67%
Michigan Board of Barber Examiners ^c	6	9	67%
Michigan Board of Social Work ^d	6	9	67%
Michigan Board of Massage Therapy ^e	7	11	64%
Michigan Board of Athletic Trainers ^f	6	11	54%

Note: The Board of Cosmetology currently has only two public members, meaning 75 percent of its positions are filled by industry members. The Board of Barber Examiners currently has one vacant professional member position, meaning that 56 percent of the board is filled by industry members.

Sources: ^a Michigan Department of Licensing and Regulatory Affairs, “LARA—Michigan Board of Veterinary Medicine,” accessed October 6, 2017, http://www.michigan.gov/lara/0,4601,7-154-72600_72603_27529_27555-59195--,00.html.

^b Michigan.gov, “Board of Cosmetology,” accessed October 6, 2017, http://www.michigan.gov/snyder/0,4668,7-277-57738_57679_57726-250079--,00.html.

^c Michigan.gov, “Board of Barber Examiners,” accessed October 6, 2017, http://www.michigan.gov/snyder/0,4668,7-277-57738_57679_57726-249981--,00.html.

^d Michigan Department of Licensing and Regulatory Affairs, “LARA—Michigan Board of Social Work,” accessed October 6, 2017, http://www.michigan.gov/lara/0,4601,7-154-72600_72603_27529_27554-70397--,00.html.

^e Michigan.gov, “Michigan Board of Massage Therapy,” accessed October 6, 2017, http://www.michigan.gov/snyder/0,4668,7-277-57738_57679_57726-250624--,00.html.

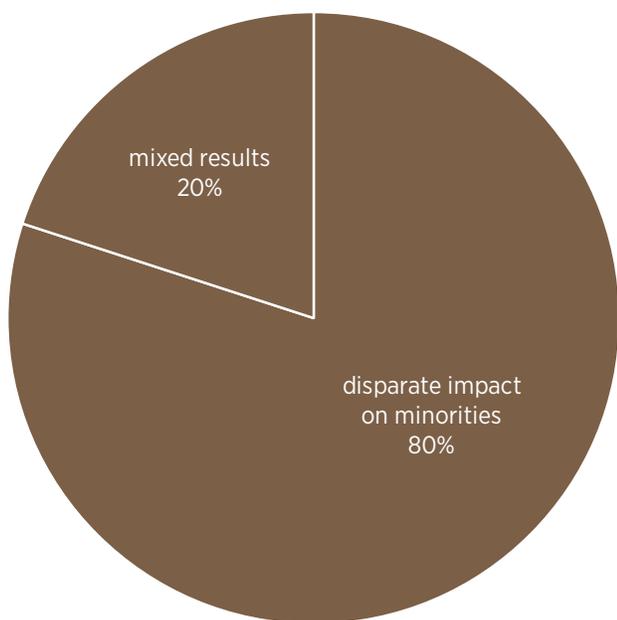
^f Michigan Department of Licensing and Regulatory Affairs, “LARA—Michigan Board of Athletic Trainers,” accessed October 6, 2017, http://www.michigan.gov/lara/0,4601,7-154-72600_72603_27529_45355-170067--,00.html.

Table 3. Composition of Select Wisconsin Boards

BOARD OR COUNCIL	STATUTORY BOARD COMPOSITION			ACTUAL BOARD COMPOSITION		
	INDUSTRY MEMBERS	TOTAL MEMBERS	PERCENTAGE INDUSTRY	INDUSTRY MEMBERS	TOTAL MEMBERS	PERCENTAGE INDUSTRY
Respiratory Care Practitioners Examining Council	3	5	60%	3	3	100%
Athletic Trainers Affiliated Credentialing Board	4	6	67%	4	4	100%
Occupational Therapists Affiliated Credentialing Board	5	7	71%	4	4	100%
Hearing and Speech Examining Board	8	10	80%	7	7	100%
Dentistry Examining Board	9	11	82%	9	9	100%

Source: Wisconsin Department of Safety and Professional Services, “License/Permit/Registrations,” accessed October 30, 2017, <http://dps.wi.gov/Licenses-Permits/Credentialing>.

Figure 2. Studies Assessing the Effect of Occupational Licensure on Minorities



Sources: **Disparate impact:** Stuart Dorsey, “The Occupational Licensing Queue,” *Journal of Human Resources* 15, no. 3 (1980): 424–34; Maya Federman, David Harrington, and Kathy Krynski, “The Impact of State Licensing Regulations on Low-Skilled Immigrants: The Case of Vietnamese Manicurists,” *American Economic Review* 96, no. 2 (2006): 237–41; Joshua Angrist and Jonathan Guryan, “Does Teacher Testing Raise Teacher Quality? Evidence from State Certification Requirements,” *Economics of Education Review* 27, no. 5 (2008): 483–503; David E. Harrington and Jaret Treber, *Designed to Exclude* (Arlington, VA: Institute for Justice, February 2009). **Mixed results:** Marc Law and Mindy Marks, “Effects of Occupational Licensing Laws on Minorities: Evidence from the Progressive Era,” *Journal of Law and Economics* 52, no. 2 (2009): 351–66.

Licensure also presents a higher barrier to immigrants since many states require domestic work experience. For ex-offenders, occupational licensure is particularly burdensome as most states make it impossible for those with a past conviction to obtain an occupational license.

As shown in figure 2, McLaughlin, Ellig, and Shamoun’s survey of the literature shows that licensure was found to disparately affect ethnic minorities in four of five studies.³¹

REFORM

Lastly, the commission asks, “What are the alternatives to occupational licensure? Are there other

forms of government regulation—such as certification, registration, or mandatory bonding—that might serve some of the consumer protection goals of licensure? What types of private initiatives or market-based solutions might be adequate substitutes for licensure? What is known about the comparative advantages and disadvantages of such alternatives, either generally, for certain types of occupations, or for individual occupations?”

Licensure is not the only or the most effective way to ensure quality.³² While occupational licensure is intended to protect consumers from harm, there are many other less-burdensome mechanisms to promote public safety. For instance, liability law and civil and criminal laws against fraud protect consumers.³³ In addition, a host of private mechanisms ensure that market providers are accountable.³⁴ These include private certifications, insurance, bond-posting, brand reputation, customer review platforms like Yelp and Google reviews, and the third-party validation of organizations like Angie’s List, Consumer Reports, and Underwriters Laboratories. Competition itself may be the best alternative to licensure. As the economist Alfred Kahn put it after decades of extensive work as a regulator and researcher, “Whenever competition is feasible, it is, for all its imperfections, superior to regulation as a means of serving the public interest.”³⁵

Policymakers wishing to reduce the social costs of their state’s occupational licensure could take the following steps:

- 1) Pass legislation that sets an ambitious goal for the elimination of licenses and the reduction in licensing burdens.
- 2) Establish an independent commission charged with examining the state’s licensing laws. Its first task should be to identify each license the state requires as well as the burdens associated with each license (fees, exams, required training, education, experience, and other limitations). The

Table 4. Guiding Principles for Occupational Licensing Reform	
BEGIN WITH A BLANK SLATE	Tastes, technology, and prices change. So analysts should not be beholden to past practices and should approach their task as if they were starting anew.
DEFINE THE NATURE OF THE PROBLEM	Is there a systematic market failure that needs to be addressed? If not, occupational regulation is probably not the answer. Keep in mind that entrepreneurs have an incentive to come up with their own solutions to market failures.
IDENTIFY ALTERNATIVE SOLUTIONS TO OCCUPATIONAL REGULATION	This should include the alternative of deregulation. It should also include reliance on both private governance (competition, bond-posting, reputation feedback mechanisms, third-party evaluation, etc.) and public governance (deceptive trade practice law, registration, certification, etc.).
IDENTIFY THE POTENTIAL COSTS OF REGULATION	These include higher consumer prices; inconveniences such as diminished access to products and services; higher entrance fees, exam costs, education costs, etc.; rent-seeking waste; productive inefficiencies that arise when firms and providers are protected from competition; and dynamic losses that accrue over time as protected firms and providers are less likely to adapt and innovate.
IDENTIFY THE POTENTIAL BENEFITS OF REGULATION	What systematic market failure is the regulation intended to address? Remember that the profits of incumbent firms and their employees are not legitimate benefits of regulation since these gains come at the expense of consumers and would-be competitors.
MEASURE COSTS AND BENEFITS	Whenever possible, an objective measure of costs and benefits should be produced. When that is impossible, analysts should acknowledge that certain judgements are subjective.

commission should be charged with evaluating all licenses, should not be dominated by members of the licensed professions, should include consumer representatives and representatives from organizations devoted to assist job-seekers, and should include third-party experts such as academics who have no financial stake in licensure. Furthermore, the commission should be guided by a set of criteria for evaluating regulations, as listed in table 4.

- 3) The commission should be charged with performing a comprehensive review of all occupations, with the goal of identifying licensure requirements that can be eliminated or reformed. The authorizing legislation should commit elected officials to accepting the commission’s recommendations in their entirety or not at all.

The last provision is designed to overcome the public choice problems that plague licensure reform. In particular, whenever any individual license is evaluated,

concentrated members of the industry are typically able to organize in defense of the license, while diffuse consumers and would-be competitors are unable to organize in opposition. The institutional structure that we recommend borrows elements from other reforms that have succeeded in eliminating favoritism.³⁶ In particular, it allows elected officials to cast conspicuous votes in the public interest while giving them some degree of “cover” from the special interests that will inevitably be harmed by the elimination of their regulatory privilege.

NOTES

1. Federal Trade Commission, “The Effects of Occupational Licensure on Competition, Consumers, and the Workforce: Empirical Research and Results” (event, Federal Trade Commission), November 2017.
2. Patrick A. McLaughlin, Matthew D. Mitchell, Anne Philpot, and Thomas Snyder, “The State of Occupational Licensure in Arkansas” (Mercatus on Policy, Mercatus Center at George Mason University, Arlington, VA, September 2017); Patrick A. McLaughlin, Matthew D. Mitchell, Anne Philpot, and Tamara Winter, “The State of Occupational Licensure in Wisconsin” (Mercatus on Policy, Mercatus Center at George Mason University, Arlington, VA, August 2017); Patrick A. McLaughlin, Matthew D. Mitchell, and Andrew M. Baxter, “The State of Occupational Licensure in Illinois” (Mercatus on Policy, Mercatus

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3. Morris M. Kleiner and Alan B. Krueger, "The Prevalence and Effects of Occupational Licensing" (NBER Working Paper No. 14308, National Bureau of Economic Research, Cambridge, MA, September, 2008), 2.
 4. *Ibid.*, 3.
 5. *Ibid.*
 6. Dick M. Carpenter II et al., *License to Work: A National Study of Burdens from Occupational Licensing* (Arlington, VA: Institute for Justice, April 24, 2012), 13.
 7. *Ibid.*
 8. *Ibid.*, 16.
 9. *Ibid.*, 64.
 10. *Ibid.*, 153.
 11. Paul J. Larkin Jr., "Public Choice Theory and Occupational Licensing," *Harvard Journal of Law & Public Policy* 39, no. 1 (n.d.): 226.
 12. George J. Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science* 2, no. 1 (1971): 3–21; Sam Peltzman, "Toward a More General Theory of Regulation," *Journal of Law and Economics* 19, no. 2 (1976): 211–40.
 13. Kleiner and Krueger, "Prevalence and Effects."
 14. Matthew D. Mitchell, *The Pathology of Privilege: The Economic Consequences of Government Favoritism* (Arlington, VA: Mercatus Center at George Mason University); Patrick A. McLaughlin, Matthew Mitchell, and Ethan Roberts, "Regulatory Subsidies: How Regulations Can Become Privileges for Firms and Burdens for Consumers" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, forthcoming).
 15. Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft," *Western Economic Journal [Economic Inquiry]* 5, no. 3 (1967): 224–32; Anne O. Krueger, "The Political Economy of the Rent-Seeking Society," *American Economic Review* 64, no. 3 (1974): 291–303; Roger Congleton, Arye Hillman, and Kai Konrad, eds., *40 Years of Research on Rent Seeking 1—Theory of Rent Seeking* (Berlin, DE: Springer-Verlag GmbH, 2008).
 16. Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups*, rev. ed. (1971; Cambridge, MA: Harvard University Press, 1965); Robert E. McCormick and Robert D. Tollison, *Politicians, Legislation, and the Economy: An Inquiry into the Interest-Group Theory of Government* (Boston, MA: Springer, 1981).
 17. Kleiner, *Reforming Occupational Licensing Policies*, 4.
 18. Morris M. Kleiner, "Occupational Licensing," *Journal of Economic Perspectives* 14, no. 4 (2000): 189–202.
 19. Sidney L. Carroll and Robert J. Gaston, "Occupational Restrictions and the Quality of Service Received: Some Evidence," *Southern Economic Journal* 47 (1981): 959–76.
 20. Morris M. Kleiner, *Licensing Occupations: Ensuring Quality or Restricting Competition?* (Kalamazoo, MI: W.E. Upjohn Institute, 2006), 56.
 21. US Department of the Treasury, Council of Economic Advisers, and US Department of Labor, *Occupational Licensing: A Framework*, July 2015, 13.
 22. Patrick A. McLaughlin, Jerry Ellig, and Dima Yazji Shamoun, "Regulatory Reform in Florida: An Opportunity for Greater Competitiveness and Economic Efficiency," *Florida State University Business Review* 13, no. 1 (Spring 2014): 95–130.
 23. Department of the Treasury et al., *Occupational Licensing: A Framework*, 14.
 24. McLaughlin, Ellig, and Shamoun, "Regulatory Reform in Florida," 14–15.
 25. Morris M. Kleiner et al., "Relaxing Occupational Licensing Requirements: Analyzing Wages and Prices for a Medical Service," (NBER Working Paper No. 19906, National Bureau of Economic Research, Cambridge, MA, February 2014).
 26. Federal Trade Commission, *Restrictions on Dental Auxiliaries: An Economic Policy Analysis*, 1987.
 27. Deborah Haas-Wilson, "The Effect of Commercial Practice Restrictions: The Case of Optometry," *Journal of Law and Economics* 29, no. 1 (1986): 165–68.
 28. Rebecca Haw Allensworth, "Foxes at the Henhouse: Occupational Licensing Boards Up Close," *California Law Review* 105, forthcoming 2017).
 29. Carroll and Gaston, "Occupational Restrictions and the Quality of Service Received."
 30. Department of the Treasury et al., *Occupational Licensing: A Framework*, 4–5.
 31. The fifth study, which only found a disparate effect of licensure in one profession (barbering), has been criticized. See Daniel Klein, Benjamin Powell, and Evgeny Vorotnikov, "Was Occupational Licensing Good for Minorities? A Critique of Marc Law and Mindy Marks," *Econ Journal Watch* 9, no. 3 (September 2012): 210–33.

32. For a hierarchy of alternatives to occupational licensure, see Thomas A. Hemphill and Dick M. Carpenter II, "Occupations: A Hierarchy of Regulatory Options," *Regulation* 39, no. 3 (Fall 2016): 20–24.
33. For the benefits of ex-post sanctions as opposed to ex-ante sanctions, see Adam Thierer, *Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom*, 2nd ed. (Arlington, VA: Mercatus Center at George Mason University, 2016).
34. Thierer et al., "How the Internet, the Sharing Economy, and Reputational Feedback Mechanisms Solve the 'Lemons Problem.'"
35. Quoted in Richard Adams, "Alfred Kahn Obituary," *Guardian*, January 12, 2011. See also Alfred Kahn, *The Economics of Regulation: Principles and Institutions* (Cambridge, MA: Massachusetts Institute of Technology, 1988).
36. Jerry Brito, "Running for Cover: The BRAC Commission as a Model for Federal Spending Reform," *Georgetown Journal of Law & Public Policy* 9 (2010): 131–56.

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