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Occupational Licensing and Student Outcomes

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INTRODUCTION

In the United States, licenses are required for entry into many different occupations, such as cosmetology, massage therapy, nursing, teaching, construction contracting, medicine, and law. Requirements vary by state and by occupation: common elements include a particular level of schooling, passing an examination, a minimum number of hours of training, on-the-job experience, and/or continuing education. In this report, we consider licensing in sub-baccalaureate fields, with a particular focus on cosmetology and massage therapy programs, which require a minimum number of training hours in the largest number of states. We ask whether these requirements to become licensed pay off for students. The answer, in short, is no. We find that licensing hours in these occupations are correlated with higher levels of student debt, as students must attend more postsecondary education and pay more tuition. The increased debt and additional training that students obtain in states and programs with higher hours does not appear to be rewarded in the labor market: licensing hours requirements show no correlation with wages.

Training or instructional hours requirements are the among the most salient for higher education policy and practice. Institutions offering programs in licensed fields must ensure that they provide sufficient hours to meet state-mandated minimums to allow students to practice in that field upon graduation. These types of requirements have important implications for students. All else equal, students in states with higher training hour requirements will need to stay in school longer than their counterparts. They will not only incur more direct costs in terms of tuition and fees, but they will also incur larger indirect costs: they need more time to complete their credential and must delay the start of their career. These additional costs may be reasonable if higher required training hours translate to higher earnings post-graduation, but it is not at all clear that this is the case.

In this report, we examine the correlation between required licensing hours and student outcomes. We review the theory and literature on occupational licensure, then document training hours requirements for about 30 popular sub-baccalaureate fields across 50 states and the District of Columbia collected by the National Conference of State Legislatures. We then investigate whether required training hours are correlated with student debt and post-college earnings drawing on the two fields that have sufficient data and variation to identify correlations—cosmetology and massage therapy.

Cosmetology and massage therapy have also been the source of recent debates. News reports suggest that state cosmetology boards may be requiring an excessive number of training hours in some states¹ and data on the debt and earnings of cosmetology graduates suggest disappointing outcomes for students in this field.² There is less research on massage therapy programs and licensing, but reports of impropriety and criminal behavior in the field are not uncommon.³

We find that for both cosmetology and massage therapy, higher licensing hours requirements are associated with higher levels of student debt. The additional debt that students incur does not appear to translate to higher earnings. Rather than raise wages, as economic theory predicts, we find no correlation between licensing hours and wages in these fields. Our results suggest that the elevated hours of training required for cosmetology and massage licensure in some states may not pay off for students.

BACKGROUND

Occupational licensing requires individuals to receive government-approved licensing or certification in order to practice a profession. Economic theory on licensing dates back to Adam Smith,⁴ but the topic entered policy debates around 1962 with Milton Friedman's seminal work, *Capitalism and Freedom*. Friedman argues that occupational licensing creates barriers to entry for non-licensed individuals and increases producer protections against competition. By restricting labor supply through increased requirements, licensing places upward pressure on wages. As a result, Friedman claims that licensure increases monopoly power and sacrifices market efficiency, generating welfare losses. Further, since the benefits of licensing are concentrated for producers and the welfare losses are diffused among consumers, pushback against licensure is unlikely, allowing small well-organized trade or interest groups to institute licensing requirements for their own benefit.

Friedman's argument against licensing is predicated on the assumption that licensing requirements are imposed on perfectly competitive markets. However, licensing may be theoretically justified and reduce inefficiency in cases of market failure in the presence of asymmetric information or negative externalities. In the former case, if it is difficult for consumers to assess quality, licensing can prevent low-quality practitioners from potentially inflicting harm on consumers. This might be the case for complex tasks and those that pose great risks to health or safety, such as surgery. In the case of negative externalities, licensing may prevent harm to the public. For example, a poor electrical wiring job could burn down a neighborhood.⁵ A key question then, is for which occupations is licensing justified and which are more likely driven by political organization.

Empirical work in economics has generated evidence on many of the theoretical arguments for and against occupational licensing. Overall, the research demonstrates that licensing has had little effect on health and safety, but does increase wages for licensed practitioners. At the same time, it reduces employment, inhibits geographic mobility, lowers the wages of excluded workers, and increases prices for consumers.⁶

Kleiner and Krueger (2013) show that the wage premium (i.e., additional wages) for licensed occupations is around 18%.⁷ Nunn (2018) further finds evidence that the license wage premium increases with age, that licensed workers have longer job tenure and lower rates of part-time work, but that they face higher wage inequality than in the unlicensed sector. The costs of licensing, all of which restrict the supply of workers, lead to wage premiums that are larger for low-income workers.⁸ Blair and Chung (2018) quantify the barrier to entry created by licensing. They find evidence that licensing reduces equilibrium labor supply by 17-27%.⁹ In their more recent paper, Blair and Chung (2020) find some promising evidence that licensing causes firms to rely less on observable characteristics in determining wages, leading to smaller wage gaps.¹⁰ Finally, Johnson and Kleiner (2020) explores another margin of restriction licensing requirements can cause. They find that licensing reduces interstate migration by 7%.¹¹

A few studies have focused on specific fields that require licensing. Kleiner and Park (2010)¹² and Dillender et al. (2022)¹³ study the easing of licensing requirements for health care assistants¹⁴ ability to perform certain tasks, and they find that the assistants' earnings increase. More relevant for this report, Timmons and Thornton (2019) study the changing licensing laws for barbers in Alabama and find that—consistent with economic theory—de-licensing decreased barbers' average annual

earnings and increased the number of cosmetologists in the state.¹⁵ Wheelan (2010) seeks to explain why cosmetology requires licensing but electrical work does not.¹⁶ He finds that the size and budget of professional associations is a better predictor of whether an occupation requires licensing than the level of public risk that it poses.

Public debate over cosmetology licensing has been ongoing since roughly 2012. A high-profile court case questioned whether Jestina Clayton, a Utah resident from Sierra Leone who started an African-style hair braiding business, needed a cosmetology license that would require 2,000 hours of schooling (which was unlikely to cover hair braiding) and cost roughly \$16,000 in tuition.¹⁷ The federal judge sided with Ms. Clayton, writing:

“Utah’s cosmetology/barbering licensing scheme is so disconnected from the practice of African hairbraiding, much less from whatever minimal threats to public health and safety are connected to braiding, that to premise Jestina’s right to earn a living by braiding hair on that scheme is wholly irrational and a violation of her constitutionally protected rights.” *Clayton*, 855 F. Supp. 2d at 1215-1216.

In 2018, the *New York Times* reported on the high debt incurred by cosmetology students due to high licensing hours requirements in some states. It further noted that these programs require students to pay tuition for their hours working in salons—often in excess of 2,000 hours—while at the same time generating revenue from paying customers.¹⁸ For example, at the time, Iowa required 2,100 hours to become a cosmetologist—more than a full year of 40-hour workweeks. In contrast, emergency medical technicians in Iowa require just 132 hours.¹⁹ Below, we seek to address some of the questions raised by the research and anecdotal evidence. We investigate the extent to which higher hours requirements for cosmetologists and massage therapists are correlated with debt and earnings.

DATA

Data on state licensing requirements come from the National Conference of State Legislatures (NCSL). NCSL collects data on about 30 occupations that are commonly licensed in the United States and require less than a bachelor’s degree.²⁰ The data include whether or not each state (and the District of Columbia) requires a license, an exam, and minimum training hours, among other items.

We combine the state-level licensing data with data on federal student loan debt at both the state and program level from the Integrated Postsecondary Education Data System (IPEDS). Debt is measured as mean and/or median cumulative federal student loan debt at the time of exit at the program-level based on the most closely-related 4-digit Classification of Instructional Program (CIP) code (e.g., cosmetology is code #1204). We note that only programs participating in federal student aid programs are counted in the IPEDS²¹ and only federal student debt is included in our debt measures, so our analysis represents a lower bound if students take on private debt to cover college expenses.

Earnings data comes from the 2016 American Community Survey (ACS) by occupation and state. We consider hourly wages, approximated by average annual earnings divided by number of weeks worked and average hours of work per week. We identify occupations using NAICS codes that most closely match the names of the 4-digit CIP codes for cosmetology and massage therapy (e.g., cosmetologists have an NAICS code of #81211 which we match to CIP code #1204). We note that average wages are calculated for all individuals in the given occupation and we cannot distinguish between different ages and experience levels, so our earnings measures represent an upper bound on the earnings of early career cosmetologists.

DESCRIPTIVE STATISTICS

Table 1 describes the NCSL state-level data on licensing and training hours required, sorted alphabetically, by occupation. There are 9 occupations for which all 50 states and the District of Columbia require licenses (see column 6)—but not all of these require a minimum number of training hours (see column 5). The nine most commonly licensed fields are barbers, cosmetologists, dental hygienists, insurance agents, licensed practical nursing, physical therapy assistant, pre-school teachers, real estate appraisers, and bus drivers. However, in many states these fields do not require a minimum number of training

hours, but rely on other requirements for licensure, such as examinations. For example, dental hygienists have minimum training hours in just one state and real estate appraisers have them in 28. Cosmetology, barbering, manicurist, and skin care specialists (all offered by cosmetology schools and broadly in the same field) each have required training hours in 50 or 51 states and massage therapy has required hours in 46 states.

Of course, as noted above, cosmetology has been the center of ongoing public debate around the value of licensure and is among the fields with the highest mean and median hours at 1550 and 1500, respectively. The minimum hours are 500 and maximum at 2,100, among the highest in our data. Massage therapy requires roughly a third of those hours, with a mean and median of 500 hours, but may have a stronger case for licensing on public safety grounds, relative to cosmetology, given allegations of human-trafficking, prostitution, and sexual abuse in the industry.²²

Outside of cosmetology and massage therapy, other occupations show variation in the number of states that require licensing and in training hours. For example, 32 states require licenses for electricians with just 7 of them requiring minimum training hours. Plumbers have high mean hours at 1,541 and a maximum of 8,048, but median hours are zero, since more than half of the states that require licensing for these occupations require no training hours.

In the analysis that follows, we examine the relationship between required training hours and student outcomes—notably, debt and earnings. We draw on variation in required training hours across states to assess correlations. Since our data on debt is aggregated at the 4-digit CIP code level we must combine some similar programs from Table 1. We focus on the two occupations that require licensing and have non-zero training hours in the highest number of states when we aggregate: cosmetology and massage therapy. These two occupations also have the benefit of having clear links to a particular CIP code in our education data for accurate debt measurement.²³

COSMETOLOGY LICENSING HOURS AND STUDENT OUTCOMES

We consider the relationship between required training hours and student outcomes for the particular case of cosmetology programs in Figures 1 through 3. Figure 1 shows the correlation between mean licensing hours for cosmetology and median debt at the state level. The figure shows a strong upward sloping relationship. Higher licensing hours in a state are associated with higher median debt, with a correlation coefficient of 0.5118.²⁴ On the low end of licensing hours and debt are Massachusetts and New York, while Oregon, Nebraska, and Iowa are among the states with the highest hours and debt.

Rather than aggregating by state, Figure 2 shows the correlation between hours requirements and debt at the program level. By construction, programs are bunched at particular licensing hours values that correspond to the hours required in their state, but the program-level data are more dispersed across debt levels (note that the y-axis also shows a larger range of debt values), but we see the same general pattern of a positive correlation between debt and licensing hours, with a coefficient of 0.286.

In Figure 3, we examine whether the higher debt associated with cosmetology licensing hours might pay off in the form of higher wages, using the ACS data by state. Licensing hours do not appear to be correlated with wages. The line of best fit between hours and wages is flat—around just \$20 per hour—with a correlation coefficient close to zero, just -0.0047. While we caution that these estimates are not causal, the pattern suggests that licensing hours requirements in this field raise debt without generating additional productivity gains.

MASSAGE THERAPY LICENSING HOURS AND STUDENT OUTCOMES

We examine the extent to which the patterns for cosmetology hold for massage therapy in Figures 4-6. Figure 4 reveals some similarities and some differences when considering the correlation between licensing hours and debt for massage. First, there is much less variation in hours across states in massage therapy than for cosmetology. Most states require 500 hours and all but two require 750 hours or less. The outliers are Utah and Nebraska, which require 1,000 hours each. Nonetheless, we still see a slight upward trend in debt with a correlation coefficient of 0.168.

Figure 5 shows the program-level correlation between licensing hours and debt. Again, the pattern is upward sloping with a weak positive relationship of 0.078 with high variance in debt for the large number of programs with requirements of 500 hours.

The correlation between hours and massage therapist wages is presented in Figure 6. Here, as for cosmetology, we see a virtually flat line with a slight negative slope, indicating almost no correlation between hours and earnings: the coefficient is about -0.0655. Average wages are notably low in this field, around \$15 per hour regardless of the training hours that students obtain.

CONCLUSION

This study examines occupational licensure in the context of higher education, assessing the correlation between the number of training hours required for licensing and student outcomes. We document the mean and median required training hours by occupation and state and consider in detail the two occupations that have non-zero minimum required licensing hours in the largest number of states—cosmetology and massage therapy. We show that higher licensing hours in these fields are correlated with higher levels of student debt, as students must attend more postsecondary education—and pay more tuition—to complete licensing requirements. The increased debt and additional training that students obtain does not appear to be rewarded in the labor market: licensing hours requirements show no correlation with wages.

The associations we document are only suggestive and more research is needed to explore the causal relationship between licensing hours and student outcomes. Nonetheless, the correlations we observe generate striking patterns and suggests that training hours requirements can have significant consequences for students. We recommend that policymakers concerned about student outcomes in higher education carefully consider the role of state-mandated training hour requirements as they formulate regulations to protect students and taxpayers.

Table 1. Licensing and Training Hours, by Occupation

	Mean	Median	Minimum	Maximum	Number of states requiring training hours	Number of states requiring licensing
Barber	1417	1500	1000	2100	50	51
Certified Nursing Assistant	98	90	75	180	51	51
Cosmetologist	1550	1500	500	2100	51	51
Dental Hygienist	1600	1600	1600	1600	1	51
EMT	154	160	0	315	25	24
Electrician	98	0	0	1000	7	32
General Contractor	2	0	0	60	4	22
HVAC Contractor	28	0	0	1000	3	32
Home Inspector	43	0	0	180	24	30
Licensed Practical Nurse	0	0	0	0	0	51
Manicurist	377	350	0	750	50	50
Massage Therapist	500	500	0	1000	46	46
Occupational Therapist Assistant	0	0	0	0	0	46
Pharmacy Technician	22	0	0	480	4	36
Physical Therapy Assistant	0	0	0	0	0	51
Pipe-Fitter	1471	0	0	8048	14	35
Plumber	1541	0	0	8048	13	34
Pre-School Teacher	0	0	0	0	0	51
Radiologic Technologist	185	0	0	1850	1	42
Real Estate Agent	73	60	0	180	44	46
Real Estate Appraiser	19	20	0	60	28	51
Respiratory Therapist	0	0	0	0	0	50
Security-Fire Alarm Installer	26	0	0	576	13	16
Skin Care Specialist	621	600	260	1000	50	50
Transit City or School Bus Driver	1	0	0	26	2	51
Veterinary Technician	0	0	0	0	0	37

NOTES: Mean, median, minimum, and maximum required training hours are calculated for all states that have licensing requirements for the occupation, including those that have no training hours requirement (coded as 0 hours), but have other requirements, such as an examination. The number of states requiring non-zero training hours are listed in column (5) and the number of states requiring any license are in column (6). Licenses are coded in the NCSL data and include variations in definitions across occupations and states. Values not coded in hours were coded as missing.

Figure 1. State-Level Correlation Between Licensing Hours and Mean Debt, Cosmetology Certificate Programs

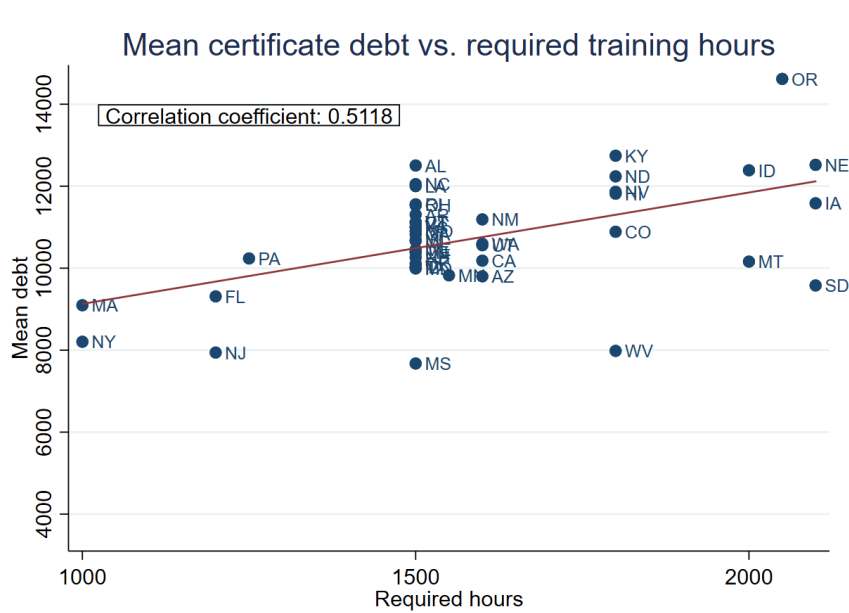


Figure 2. Program-Level Correlation Between Licensing Hours and Mean Debt, Cosmetology Certificate Programs

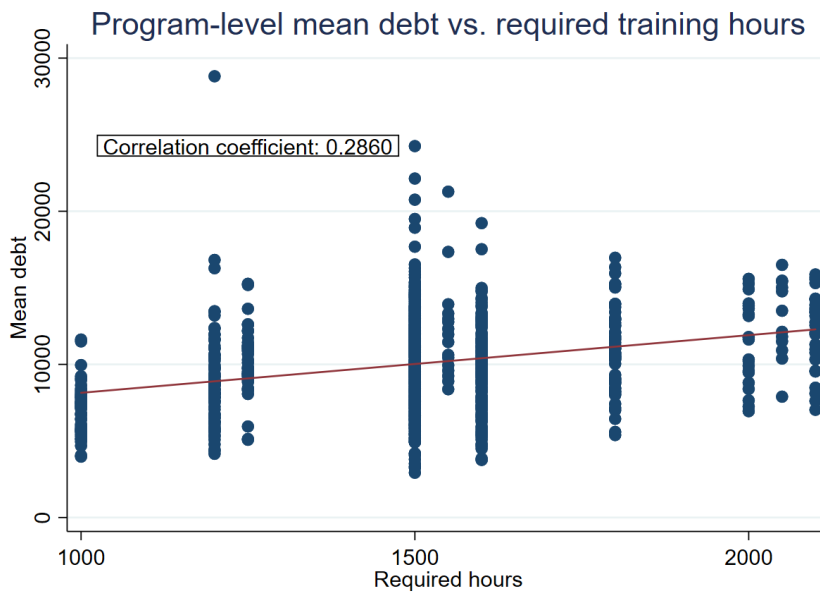


Figure 3. State-Level Correlation Between Licensing Hours and Hourly Wages, Cosmetology Certificate Programs

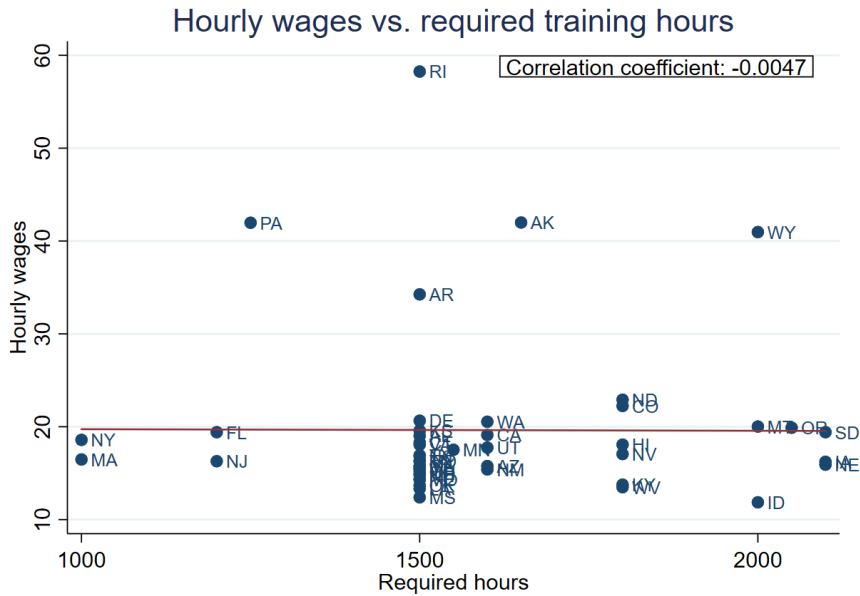


Figure 4. State-level Correlation between Licensing Hours and Mean Debt, Massage Therapy Certificate Programs

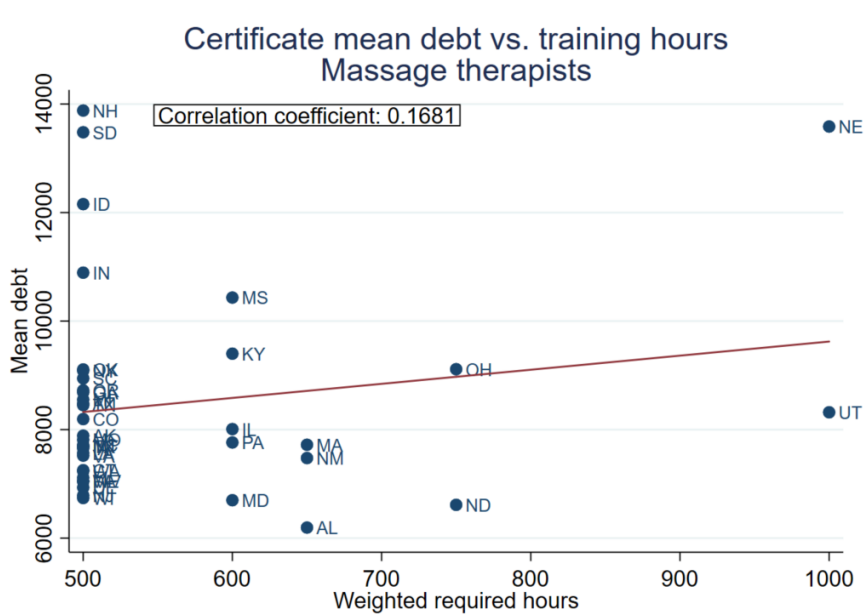


Figure 5. Massage Therapy Certificate Programs: Program-level Correlation between Licensing Hours and Mean Debt

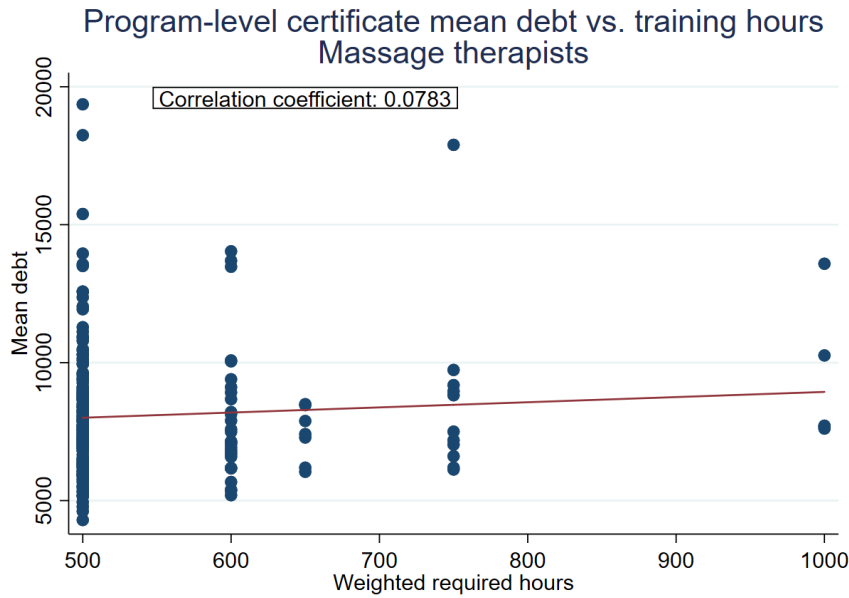
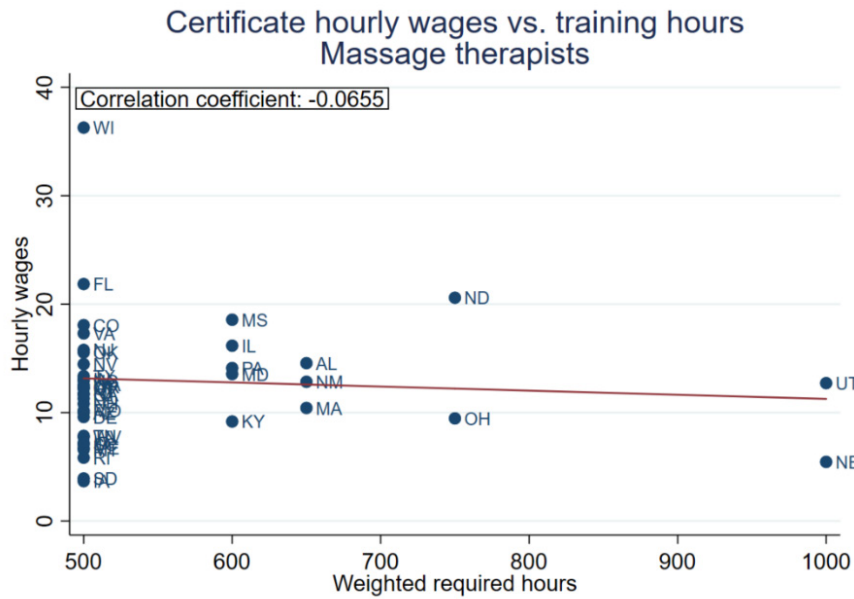


Figure 6. State-level Correlation between Licensing Hours and Hourly Wages, Massage Therapy Certificate Programs



ENDNOTES

- 1 <https://www.nytimes.com/2018/12/26/business/cosmetology-school-debt-iowa.html>.
- 2 Cellini, S. and K.J. Blanchard, 2022. "Hair and Taxes: Cosmetology Programs, Accountability Policy, and the Problem of Underreported Income" PEER Research Project.
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- 4 See Kleiner, M.M. and A.B. Krueger (2013), "Analyzing the Extent and Influence of Occupational Licensing on the Labor Market," *Journal of Labor Economics*, 31(2): S173-S202.
- 5 C. Wheelan (2002), *Naked Economics*, p. 143.
- 6 For a helpful summary, see U.S. Department of Treasury Office of Economic Policy, Council of Economic Advisers and Department of Labor. Occupational Licensing: A Framework for Policymakers (Washington, D.C.: The White House, 2015), 7, https://obamawhitehouse.archives.gov/sites/default/files/docs/licensing_report_final_nonembargo.pdf.
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- 14 The medical assistants they study are nurse practitioners and dental hygienists.
- 15 Timmons, Edward J., and Robert J. Thornton. "There and Back Again: The De-Licensing and Re-Licensing of Barbers in Alabama." *British Journal of Industrial Relations* 57, no. 4 (2019): 764-90. <https://doi.org/10.1111/bjir.12438>.
- 16 C. Wheelan (2010). *Naked Economics*, Norton. p. 183.
- 17 See for example, New York Times and National Public Radio. The case was *Clayton v. Steinagel*, 885 F. Supp. 2d 1212 (D. Utah 2012).
- 18 <https://www.nytimes.com/2018/12/26/business/cosmetology-school-debt-iowa.html>.
- 19 <https://www.nytimes.com/2018/12/26/business/cosmetology-school-debt-iowa.html>.
- 20 Interviews with NCSL staff suggest that the 30 occupations were a convenience sample based on occupations with readily available data.
- 21 See Cellini and Goldin (2014) for counts of cosmetology programs not participating in Title IV programs.
- 22 E.g., Dallas Morning News, AZ Central, and NBC News.
- 23 Cosmetology at the 4-digit level includes barbers, cosmetologist, manicurists, and skin care specialists. We weight the hours by the proportion of awards in each category. In contrast, massage therapy is the only program in its 4-digit CIP code.
- 24 Debt results are nearly identical when using median debt, rather than mean. Available on request.