Wisconsin Institute for Law & Liberty

The Effect of Occupational Licensing Laws on Worker Injuries

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Introduction

An occupational license is essentially a government permission slip to work. The use of such licenses has grown extensively over the past fifty years. In 1950, only 1 in 20 workers needed a license to do their job. Today, that number has increased to 1 in 4 (Roth 2016). Previous research has established that extensive licensure is harmful to employment (Flanders and Roth 2017), and drives up consumer costs. However, arguments over the connection between licensure and safety remain contentious and often lack data.

Occupational licensing advocates have long argued against proposed reforms that decrease the regulatory burden as threats to the health and safety of the public as well as workers. The supposition, here, is that occupational licensing serves to improve employee safety by requiring licensed professionals to participate in trainings, apprentice for a certain number of hours, or take exams. On its face, this may seem a reasonable proposition. Better trained workers should lead to a decrease in workplace injuries. But while this talking point is often taken at face value, only a few studies have specifically sought to test the hypothesis.

TAKEAWAYS

1.) Advocates for more red tape often claim, among other things, that licensing laws and regulations ensure workplace safety.
2.) Using data on the patchwork of state licensing laws and BLS data on Non-Fatal Injuries, we conducted an econometric analysis to determine if there was a relationship between burdensome licensing laws and workplace safety.
3.) The analysis looked at EMTs and Security Guards because these two professions are widely licensed and have the most Non-Fatal Injury data.
4.) The analysis found no relationship between burdensome licensing red tape and the safety of Emergency Medical Technicians and Security Guards.

Existing Research on Occupational Licensure and Safety

In 2015, the Obama White House commissioned a comprehensive report on occupational licensing and its effects. Among the components of this research was a review of all of the existing studies on the quality, health and safety outcomes of licensure. Of the 12 studies found in this overview, only 2 reported any impacts at all on quality and safety. One of these studies – on dentistry – is extremely dated, having been published in 1978 (Holen 1978). The study on teacher licensure has to do with academic outcomes, something not directly related to safety (Larsen 2015). The White House review concludes:

> "*Overall, the empirical research does not find large improvements in quality or health and safety from more stringent licensing.*"

One of the more comprehensive existing studies on the relationship between safety and outcomes was conducted by the American Institute for Research on behalf of the Beauty

Industry Working Group, an organization of beauty industry professionals ranging from hair stylists to manufacturers of beauty products. Their research found no significant relationship between hours of training and length of time before a license had to be reviewed and safety outcomes (Simpson et. al. 2016). That said, this study was limited in data availability and had to utilize the results of a survey of state licensing boards for its safety data.

Specific to the safety of employees, there has been even less research. Once exception is the work of Kleiner and Park (2014) who examined workplace injuries among electricians. They find a "small and imprecisely estimated" impact of licensing on workplace injuries, though some licensure requirements actually had a *positive* effect on injury rates as well.

Our study takes advantage of a rare, relatively complete dataset on occupational safety at the state level to offer a more definitive answer to the relationship between onerous licensure and safety.

Our Study: Methods

We gathered data on the number of injuries incurred in two particular professions – Emergency Medical Technicians (EMT) and security guards. Injury data comes from the Bureau of Labor Statistics files on Non-Fatal Injuries and Illnesses. Data in these files comes from the aggregation of annual reports on injuries from approximately 200,000 private and public sector employers throughout the country (Bureau of Labor Statistics 2012). We choose to examine non-fatal injuries rather than fatal injuries because fatal injuries, fortunately, are generally too rare for workable rate data to be gathered at the state level.

The standardized curriculum for EMTs in Wisconsin includes at least six mentions of "personal safety," suggesting that this is an important outcome being emphasized by the state from training (Wisconsin Department of Health Services). While there are not such standards for security guards, it seems intuitively clear that protecting oneself would be important in a job whose central purpose involves protecting against criminal behavior.

These occupations were chosen for a number of reasons, the first of which was data availability. Because this data source relies on there being a sufficient number of respondents in that profession in each state, there is a significant amount of missing data in many professions. A couple exceptions to this are EMTs, for which data is available for 40 states, and security guards, for which data was available from 39 states. These figures represent the estimated number of injuries in each state per year based on

nationwide survey data. Because the index scores we use are based on 2012 data, we use injury data from 2012 as well[1].

EMTs and security guards also represent a good test case for the impact of licensure on safety because these professions consistently rank as some of the highest injury risk professions in the country (Maguire and O'Meara 2013; Bureau of Labor Statistics). The substantial number of injuries in these professions means that differences related to licensure may be more likely to show up than they would in a heavily licensed field with significantly lower risk of injury, such as auctioneers.

Injuries for paramedics are generally what would be expected when one considers the hazards of the occupation for EMTs. A study of New England paramedics (Schwartz, Benson and Jacobs 1993) included the calculation of injury rates[2]. Among the most common injuries for paramedics are back injuries (11.2 per 100 EMTs), injuries to extremities (10.5 per 100), injuries in car collisions (8.4 per 100 EMTs), and hearing loss (4.1 per 100 EMTs). Any of these injuries could theoretically be related to the training that a paramedic receives.

Similarly, a 2009 fact sheet by the Bureau of Labor Statistics (BLS 2009) includes data on the causes of non-fatal injuries to security guards. Among the most common injuries were falls on the same level (26% of all injuries), transportation accidents (14% of all injuries), contact with equipment (8% of all injuries), and falls to a lower level (8% of all injuries).

In order to test the existence of a relationship between occupational licensing and safety, we combine this data with "Red Tape Index" scores from our previous licensing research (Flanders and Roth 2016). The Red Tape Index utilizes the Institute for Justice's (IJ) data on the burdens of licensure in a variety of categories, (Carpenter, Knepper, Erickson, and Ross 2012) and combines this data into an index – a single rating for each state and profession. The factors we found to be important in creating our Red Tape Index were experiential requirements, the number of exams required for licensure, the amount of the fees for licensure, and whether there were age requirements. A more detailed explanation of the creation of the index can be found in our original report. Because security guards were not included in our original report, we calculated the Red Tape Index scores for that profession based on the IJ data.

A number of other control variables that could plausibly relate to the number of injuries among EMTs are also included in the model. To account for the obvious relationship

[1] The state of Hawaii is missing employment data for 2012 in the BLS files. We supplement with 2013 data. The inclusion or exclusion of Hawaii does not impact our major findings.

[2] Note that EMTs and paramedics are not the same job – EMTs are an entry level position while paramedics are more advanced. However, the injury risks should be similar between the two.

between the number of potential injuries and the number of actual injuries, a count of the number of EMTs in the state is included. To account for the increase in injury risk that is inherent in working in more populous areas, a control variable for the urbanicity of the state is included. Because rates of injury have been found to be higher for African Americans than for whites (Shannon et. al. 2009), the percentage of African Americans in the state was included in the model. Finally, a control variable is added to account for the possibility that states in which our professions of interest earn higher pay have fewer injuries than those with lower pay.[3]

The number of injuries in a state is regressed on the variables mentioned above:

$$Injuries = \alpha + \beta_1(Red\ Tape\ Index) + \beta_2(Urbanicity) + \beta_3(Employment) + \beta_4(Wages)$$

The coefficient of interest is β_1. A negative coefficient on this variable would suggest that more difficult licensure rules create a work environment with fewer injuries for EMTs and security guards. In contrast, an insignificant coefficient would indicate that more burdensome licensure has no effect on the number of injuries experienced.

Because the dependent variable is a count of injuries, a negative binomial model is potentially more appropriate (Hilbe 2011). Because the results are functionally the same on our key variables, the regression results are included in the text for ease of interpretability. The results from a negative binomial model are included in appendix Figures A1 and A2.

Descriptive Statistics

EMTs are licensed in all 50 states, but there is significant variation in the requirements to obtain an EMT license by state. For example, fees range from as low as $0 to more than $200. Experiential requirements range from as low as 0 days to 140 days. The figure below identifies states in four categories based on how burdensome their EMT licensing procedures, from least burdensome (dark blue) to most burdensome (dark red).

One may note the similarity of this map to the map that contains the average of ten occupations together in our previous research (Flanders and Roth 2016). Perhaps surprisingly, many traditionally conservative states have some of the most onerous licensing restrictions for EMTs.

[3] Previous research has found that licensing creates a wage premium (Kleiner and Krueger 2013). It is possible that the inclusion of this variable could create confounding with the Red Tape Index. However, the significance of our key variable is not changed by the inclusion or exclusion of annual pay from the model.

Figure 1. Burdens of EMT Licensure by State

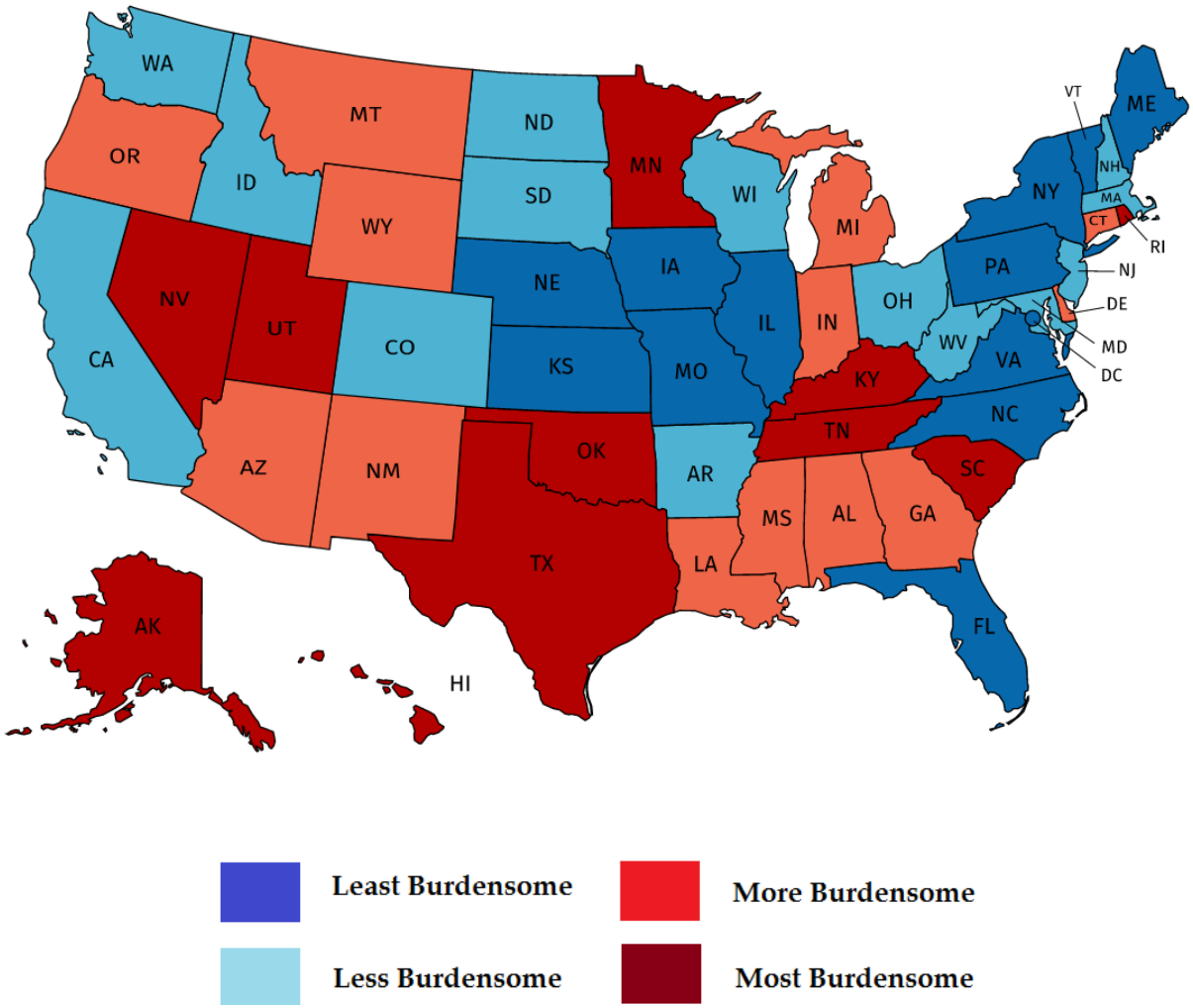
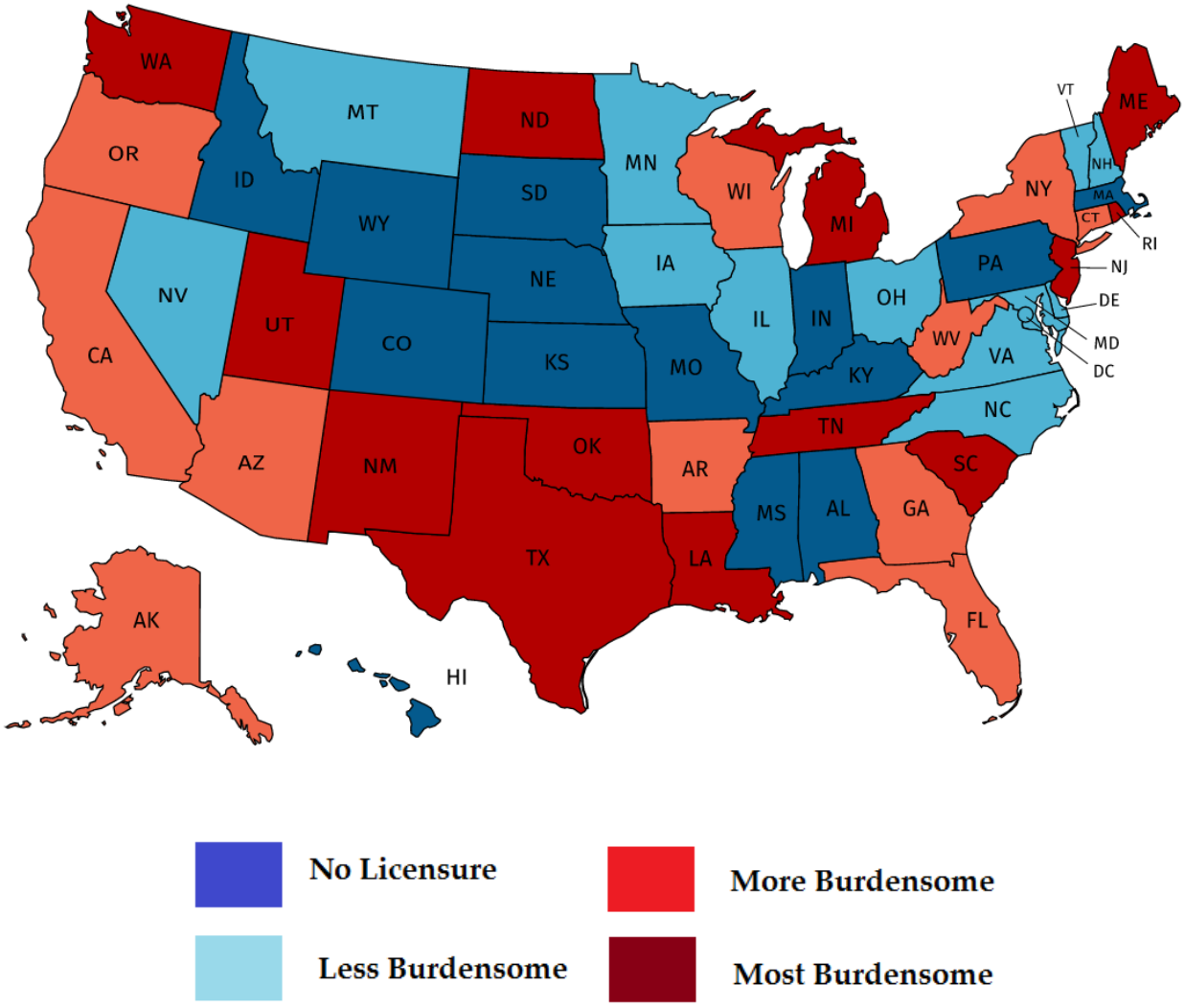


Figure 2 below contains the same information for security guards. In this case, there are a number of states that do not license security guards at all.[4] These states appear as the dark blue category in this map. But even among the states with some form of licensure, there is a great deal of variation. Experiential requirements range from as low as 1 day to as high as 1,095 days in the case of Michigan. The vast majority of states require no exams to become a security guard, but 3 states require two exams. Some states that are particularly burdensome on our overall Red Tape Index across professions, such as Mississippi and Alabama, do not have security guard licenses.

[4] The data makes no distinction between armed and unarmed security guard licenses.

Figure 2. Burdens of Security Guard Licensure by State



Results: Descriptive Statistics

Table 1 below contains the descriptive statistics for each variable in our model.

Table 1. Summary Statistics for Key Variables

Variable	Mean	SD
Red Tape Index (Security)	0.767	0.625
Red Tape Index (EMT)	2.53	0.379
Injuries (Security)	180.27	273.805
Injuries (EMT)	182	180.34
Total Employed (EMT)	4,723	4345.26
Total Employed (Security)	20,518.82	26,605.50
Annual Mean Salary (Security)	27,586.27	3102.749
Annual Mean Salary (EMT)	36,052.55	7,019.422

Urbanicity	0.7353	0.1452
Percent African American	0.1056	0.1077

In general, EMTs face far more burdensome licensure than security guards. The Red Tape Index score for EMTs is 2.53, whereas it is only .767 for security guards[5]. A far larger average number of people are employed as guards (approximately 20,518 per state) than as EMTs (approximately 4,723 per state). Rates of injury between the two professions are similar in the data, with 180.27 injuries reported for guards and 182 reported for EMTs for the year of data that we utilize. EMTs earn a significantly higher average annual salary by approximately $7,000.

Results: EMTs and Injury

The table below contains the results for our main analysis.

VARIABLES	Injuries Reported
Red Tape Index	-81.23
	(59.01)
Annual Median Salary	-0.000876
	(0.00353)
Total Employed	0.0244***
	(0.00572)
Urbanicity	1.921
	(1.958)
Percent African American	-245.8
	(209.6)
Constant	176.4
	(187.3)
Observations	39
R-squared	0.526

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Stars are indicative of a statistically significant finding. For example, in the case of the Total Employed variable, the three stars mean that we are 99% certain that the relationship observed between that variable and injuries is not the product of chance. In the case of our key variable, *Red Tape Index,* is not significantly related to injuries. In

[5] Note that this figure includes '0' in the index for states that have no licensure whatsoever of security guards. The removal of these states would make the average index score 1.05, still far lower than for EMTs.

other words, we observe no relationship between heavier licensure requirements and safety in the case of one of the most dangerous professions in the United States.

Results: Security Guards

The results for our second analysis of data on security guard injuries are depicted on the following page. Similar to the results in Table 1, the only variable that is significantly related to the number of workplace injuries by security guards is the number of individuals employed as security guards in the state.

VARIABLES	Injuries Reported
Red Tape Index	-1.811
	(30.49)
Annual Median Salary	0.00641
	(0.00665)
Total Employed	0.00873***
	(0.000687)
Urbanicity	1.324
	(1.512)
State Racial Makeup	-236.0
	(174.6)
Constant	-276.5
	(186.2)
Observations	37
R-squared	0.860

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The *Red Tape Index* is not significantly related to injuries in this occupation.

Limitations

As this report utilizes snapshot data, the results are correlational. Future versions of this research should look to combine data from IJ's updated occupational licensing study (Carpenter, Knepper, Sweetland and McDonald 2017) with updated data on employment injuries. This would allow for a pre- post- measurement of effects that would help us gain more leverage on causality.

A second limitation is in that we only examine two professions. While these professions do have a relatively high risk of injury, it is possible that differing results would be found if different professions were examined. Future research should look for ways to extend this analysis to other occupations for which the injury data were not readily available.

Conclusions

The decades-long growth of occupational licensing laws has been aided by a number of very specific claims about the benefits of licensing for various occupations. First and foremost, and perhaps least studied, are the claims made by licensing advocates that these laws and regulations improve health and public safety. Unfortunately, despite the natural experiment with different laws and regulations across the country, measuring the exact effect of licensing on health and public safety has been elusive.

Due to the availability of data for EMTs and Security Guards, this study scrutinizes claims that licensing red tape serves to improve the safety and welfare of workers in two widely licensed professions. The clear finding of no relationship between burdensome licensing laws and worker safety for these two professions is significant, and ought to add to a litany of other research that chips away at the sweeping claims of licensing advocates. Of course, the question of the impact on licensing on *consumer* safety is a question that this research is not able to address.

The public deserves an honest and objective debate on the merits and costs of occupational licensing laws. For too long, that debate has been colored by broad assertions about the importance of licensing. And for too long, those assertions have gone without objective scrutiny. But that debate is changing. Existing research has widely documented the tangible costs to burdensome licensing laws in terms of wages (Kleiner and Krueger 2013), employment (Flanders and Roth 2017), and as a barrier to interstate migration (Johnson and Kleiner, 2017). Others, like those cited by the Obama Administration, have found little or no relationship between licensing and quality. This study of licensing's impact (or lack thereof) on the safety of EMTs and Security Guards, ought to spur further research about the public health and safety claims of licensing advocates. Only with a greater body of objective research can an honest debate occur.

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Appendix Table A1. Negative Binomial Regression of Occupational Injury Counts

VARIABLES	Security Guard Injury	EMT injury
Red Tape Index	0.0148	-0.393
	(0.146)	(0.456)
Median Salary	5.50e-05*	-0.0755
	(3.33e-05)	(0.0509)
Total Employed	2.59e-05***	0.000143***
	(3.86e-06)	(4.86e-05)
Urbanicity	0.0177**	0.0138
	(0.00767)	(0.0152)
Percent African American	-0.832	-2.535
	(0.986)	(1.758)
Constant	1.344	5.720***
	(0.901)	(1.563)
Observations	37	39

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The data here are over dispersed, which means that a negative binomial regression is more appropriate than a traditional Poisson model (Hilbe 2011). In the case of both occupations, we see no effect of the Red Tape Index on injury rates, similar to the findings in the OLS models reported in text.