The Effects of Medical Malpractice Laws in the American States on Healthcare Expenditures

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Abstract

The relationship between medical malpractice laws and healthcare has been an issue battling since the early 1980s. The relationship differs among states because some states have stricter malpractice laws and others have less strict laws, which ultimately affects the healthcare costs within that state. It is argued that because of the risks of lawsuits against doctors, they tend to practice more defensive medicine, affecting health costs and lawsuit rewards. I analyze data from The National Conference of State Legislatures, The Court Statistics Project, and The Kaiser Family Foundation to assess the correlation between state tort laws and their effect on healthcare costs. Preliminary results are mixed showing a variety of causal factors that influence healthcare costs.

Introduction

For many years, the topic of "tort reform" has been present in policy discussions. It is the modification to the civil justice system that successfully lowers the likelihood that victims will file lawsuits or lowers the number of damages they can recover. In the 1990s, tort reform became more popular as a means of reducing inflated jury awards. For instance, lawmakers can alter joint and several responsibilities, which enables the plaintiff to recover money from anyone held liable, regardless of their level of liability. Lawmakers can also focus exclusively on the consequences of tort law relating to medical malpractice and in determining the effects of each state's policies on healthcare costs.

Proposals for tort reforms have often gotten bipartisan support. During Obama's presidency, he advocated for the idea to "scale back the excessive defensive medicine and instead we switch over to a different system that provides better care rather than more treatment" (Batkins and Varas, 2016). This idea was very important at the time because 2007 saw the last big wave of tort reform. The first waves were in the 1970's, 1980's, and 2000's. These tort reform waves were the first efforts at trying to reduce the incentives to practice.

Since the reforms of 1970-2000, a lot has changed in the medical industry including the skyrocketing prices of healthcare. For example, over the past 10 years healthcare premiums for family health insurance plans increased 55%, as compared to 17% increase for all prices between 2008 and 2018. (Kasier Family Foundation, 2018). States that advocate or rather have a lot of tort reform put medical malpractice lawsuits to blame for this increase. Because of this, states have taken action to pass legislation limiting damages awarded to the plaintiffs in medical malpractice cases. While the hope with this strategy is to reduce the practice of defensive medicine while providing better care and that it would ultimately end up lower medical

malpractice cases and increasing healthcare cost (Hellinger and Encinosa, 2006). States that have reforms are more likely to impact the prices of healthcare. The question of how reforms may impact malpractice premiums and expenses has been studied. They haven't, however, considered the significant diversity within tort reform categories. For instance, some states impose restrictions on recoverable damages or none, but the extent and severity of these restrictions varies greatly. Others limit damages but keep significant exceptions, while more limit noneconomic damages.

Review of Literature

Tort Reforms

In terms of medical malpractice, tort reform refers to legislation that has been implemented in several states with the goal of lowering the cost of malpractice insurance by reducing the number of frivolous lawsuits against medical professionals and it serves three purposes. The first is to compensate plaintiffs who are injured by a defendant's conduct. The second is to deter persons from acting in ways that may cause injury to others. A third purpose is to punish people who wrongfully injured others. When the defendant's activities are disproportionately risky, negligent torts occurred. In states where caps have been implemented, tort reform has mainly been successful in reducing medical malpractice litigation. Average malpractice insurance premiums have decreased in states with medical malpractice lawsuit restrictions due to a decline in litigation. For personal injuries, tort reform has had little success. In most states, a plaintiff who can establish liability may recover any amount of economic or non-economic damages. According to Morton even damages caps are prohibited by some state constitutions, including those of Arkansas, Kentucky, Pennsylvania, and Wyoming (Morton,

2021). Non-economic damages are however limited in some states, and punitive damages are often limited as well.

In 1970 tort reforms kicked off with the first medical malpractice act that was passed in California was the Medical Injury Compensation Reform Act (MICRA). This set a $250,000 cap on economic damages such as pain and suffering in any lawsuit brought against a healthcare provider for malpractice (U.S. Chamber of Commerce). In medical liability claims, more than half of the states now have adopted a cap on damages for pain and suffering. The next major reform happened in the 1980's when the states started to gain a lot of ground in tort reforms and purposely pushed towards more limits on punitive damages. Punitive damages are sought when a medical professional injures a patient due to negligent behaviors. Thus, if the damages exceed simple compensation, the defendant may be awarded. This push for this type of damage did not see a lot of attention until 1991 when the U.S. Supreme Court shot down any state from just awarding compensation to a defendant and instead the courts must decide in the specific punitive damage case.

Sloan and Shadle (2009) studied the difference in effect between indirect and direct reforms. The "direct" reforms were those that truncate the upper tail of the distribution of payments per claim. These included caps on damages, abolition of punitive damages, eliminating mandatory prejudgment interest, and modifications of the common law collateral source offset rule. The "indirect" reforms were other reforms that may affect pressure from tort on care provision, but only affect awards indirectly, such as limitations on plaintiff attorney contingency fees, which may make it more difficult for injury victims to file medical malpractice claims. They found that with one exception, neither direct nor indirect improvements significantly changed the health outcomes. The overall finding is that tort changes have no discernible impact

on medical choices including defensive medicine or consistent results for patients. This could lead to the theory of whether the reforms increased healthcare costs still after if having no effect on medical choices or results with patients.

Healthcare Expenditures

The results of tort reform have been the subject of numerous studies. They have looked at several outcomes, such as the availability of doctors, healthcare costs, insurance premiums, and damage awards and claims. Mixed results are obtained. It does not appear that tort reform consistently influences these factors. However, Kessler and McClellan (2002) demonstrate that direct reforms increase medical productivity. This is primarily by lowering the frequency of malpractice claims and the amount of compensation that is contingent upon a claim. This raises the possibility that other measures that decrease the time and conflict involved in defending against claims can also lower defensive practices and possibly healthcare costs. More recent studies have updated these estimates of the effects of tort reforms. Hellinger and Encosina (2006) find that states that have adopted noneconomic damages have 3-4 percent lower overall health spending as compared to states that did not. Baiker, Fisher and Chandra (2007) also find that states that award higher awards and premiums are also states associated with higher Medicare spending.

Anderson, Hussey, Frogner, & Waters (2005) show that the U.S. has highest healthcare spending in 2001. In 2002 the U.S. healthcare spending as compared to other countries, was the highest per capita. They found that the number of malpractice claims against physicians and the awards resulting from those claims, and from the anticipated cost of defending malpractice claims in the United States was $6.5 billion, or 0.46 percent of all health expenditures.

Defensive Medicine

One of the main contributions to health care spending is the doctors use of defensive medicine. Hellinger and Encinosa (2016) find no one had studied how defensive medicine practice could affect physicians in the sense that they would be less likely to order tests, prescribe medications, and provide services to reduce the likelihood of being sued in states with a law limiting their exposure to damages. There are two types of defensive medicine. The first one is positive defensive medicine, which is when physicians provide excess diagnostic testing, treatment, hospitalization, or consultation. For example, although Kessler and McClellan (2011) found that implementation of direct changes considerably reduced Medicare hospital spending per beneficiary, some have questioned whether these results represent reliable estimates of the causal impact of reforms. The Congressional Budget Office, however, updated this evaluation of the impacts of tort reform and concluded that "The weight of the empirical evidence now demonstrates a relationship between tort reforms and the use of healthcare services" (Elmendorf, 2009, pg.7).

On the other hand, the evidence of negative defensive medicine is more mixed. Negative defensive medicine occurs when physicians curtail services to avoid high-risk patients or procedures. Kessler (2011) used the methodology developed by Kessler and McClellan (1996) to evaluate the effects of reforms on physician supply in Kessler, Sage, and Becker (2005). They compared legislative reforms and information on the healthcare markets with data from the American Medical Association's Physician Masterfile on the number of practicing doctors in each state for each year between 1985 and 2001. After adjusting for fixed differences across states and other state factors that change over time, they found that direct reforms boost physician supply by 3.3 percent three years after adoption. Encinosa and Hellinger (2005) reported even bigger benefits using comparable techniques. In return if physicians were to

practice negative defensive medicine it would increase the frequency and severity of malpractice claims, and most also indicate more healthcare expenditures within that state.

Avraham, Dafny & Schanzenbach (2012) used a dataset of health plans representing over 10 million Americans annually between 1998 and 2006. Within their samples they were mostly composed of Health Maintenance Organizations (HMOs). They found that HMOs reduce "defensive medicine". This finding is the first concrete proof that tort reform lowers overall healthcare expenditures; earlier research has mostly concentrated on specific medical conditions. Yu (2017) studied numerous substantial tort reforms, such as limits on noneconomic damage and found that had no appreciable impact on health care costs. For instance, Hellinger and Encinosa reported that restrictions on noneconomic harm decreased the cost of medical care (Hellinger and Encinosa 2006). However, compared to Yu's analysis, which looked at 10 reforms, their study only focused on 4 reforms.

Research Question

For more than 30 years, medical malpractice tort reform has been a significant political issue. The majority of the adjustments have been made to procedures and non-economic damage caps. Defensive medicine techniques continue, despite these improvements. Empirical research on the effect of tort reforms on the healthcare system and costs suggest two main findings. First, doctors do practice defensive medicine. According to research on the impact of malpractice pressure on positive defensive medicine, reductions in malpractice pressure cause a drop in the amount of care provided, which has a large and beneficial benefits on patient outcomes and raises healthcare costs. The expense of defensive medicine is decreased by tort changes, too. Reforms that directly affect awards, including damages caps and collateral source offsets, which in turn discourages defensive medicine. Second, the results from studies done show that states

that have adopted noneconomic damages have a 3-4 percent lower overall health spending as compared to states that did not. That is a significant result that leads to my central research question. Does state tort reform increase healthcare expenditures or not. Because of overuse and inefficiency, healthcare prices remain frighteningly high. It is time for the United States to consider new and innovative medical malpractice tort reforms to give providers predictability and control costs and inefficiencies, given the failure of successful changes to address the issues partially related to malpractice lawsuits.

Methods and Analysis

Data for this analysis comes from four sources. One of them is the Court Statistic Project (CSP). The CSP collects and publishes state court caseload data from the courts of the fifty states, District of Columbia, Puerto Rico, Northern Mariana Islands, and Guam. Then data specialists from each state fill out the CSP Matrix and submit data to CSP. Also used is data from the "ABA's National Lawyer Population by State" (NLPS) for state population figures from the U.S. Census Bureau. The data helped me analyze if attorney employment had a relationship with how restrictive malpractice tort laws are within states. The third dataset that I used was from The Kasier Family Foundation (KFF). This was the key data set in reaching my main research question. The KFF provided data on health expenditures by state of residence and health expenditures by state of provider every five years. This was a substantial because the expenditure on all privately and publicly financed personal health care services and goods included hospital care, physician services, nursing home care, and prescription pharmaceuticals, according to state of residency. This is important because, hospital expenses are considered and reflect total net revenue, less contractual adjustments, bad debts, and charity care.

My last source of data was from the National Conference of State Legislatures (NCSL). NCSL represents the legislatures in the states, territories, and commonwealth of the U.S. Its goal is to increase the efficiency, impartiality, and integrity of legislators, promote interstate collaboration, and simplify information sharing between legislatures. In civil cases, including medical liability/malpractice cases, damages may be awarded, and those damages may include economic, noneconomic, or punitive damages. Economic damages may include past and future medical expenses, past and future lost wages, household services, vocational rehabilitation, property damages, out-of-pocket expenses, and lost earning capacity. For noneconomic damages you may see physical pain and discomfort, loss of enjoyment of life, emotional distress, mental anguish, and trauma, decrease in quality of life and scarring and disfigurement. Lastly for punitive damages it includes injuring someone else due to negligent behavior. Examples of this would be drunk driving or distracted driving or a surgeon dissecting a wrong organ. Because the NCSL did not provide a complete dataset on each state's medical malpractice damage caps, rather it is summarized what each state has in their malpractice statutes, I created my own key and recorded which states had the most caps and how many damages they award. As the scale goes from 1-5, one is least restrictive with patient friendly and at five it is most restrictive and favors the medical industry. This puts each state into a rank from 1-5 in the following:

1- Low restriction: no limits
2- Medium to Low Restriction: high limits
3- Moderate Restriction: damages with 500,000 or below
4- Medium to High Restriction: lots of damages and many limits
5- High Restriction: lots of caps, strict rules, and no recoveries

Below you can see that the chart explains why these states are in their category. For example, a state may have all four damage caps, but the caps may be less restrictive or more restrictive. A state that represents this is Virginia because they have all 4 caps, and they are all restrictive giving it a high restrictive categorization.

Chart two and three the individually singled out and reordered states within the restriction categories per damage laws. You can see that when all the states are categorized by all four malpractice damage laws they are evenly distributed in the restrictive category. That is why I decided to further recategorize each state by each individual malpractice damage laws. As you can observe there is a similarity with economic and wrongful death malpractice damage laws because they have most states in the less restrictive category making those states patient friendly and not favoring the medical industry.

			Damages and the Caps			
			Economic	Noneconomic	Wrongful Death	Punitive
	Strictness code	States				
LOW RESTRICTIVENESS	1	Alabama		$375,000		
		Delware				$250,000
		Georgia		$150,000		
		Kentucky			No cap	
		Missouri		No Cap		No cap
		New Hampshire		No cap		
		New York	*	*	*	*
		Oklahoma		No cap		
		Rhode Island	*	*	*	*
		Vermont	*	*	*	*
		Washington	$75,000	$75,000		x
		Wyoming			No cap	
	2	Arizona			$300,000	
		California		$400,000		
		Connecticut		1 Million ~		
		Hawaii		$375,000		
		Idaho		$250,000		$250,000
		Kansas		No cap	$250,000	No Cap
		Maine			$750,000	$250,000
		Ohio			1 Million +	
		Oregon		No Cap		x
MODERATE	3	Alaska		$400,000	$750,000	
		Arkansas				$300,000
		Louisiana		$500,000		
		Maryland		$650,000		
		Massachusetts		$500,000		
		Mississippi		$500,000		Award Based on Wage
		Montana		$250,000		Award Based on Wage
		New Jersey				Not Liable
		North Carolina		$500,000		$250,000
		North Dakota		$500,000		~
		South Dakota		$500,000		~
		Texas		$250,000		~
		Wisconsin		$750,000		$250,000
HIGH RESTRICTIVENESS	4	Colorado	1 Million ~	$500,000		
		Indiana		/		
		Iowa	x	$250,000		
		Michigan		$500,000		
		Minnesota				~
		Nevada		$375,000		$100,000
		Pennsylvania		No Cap		Award Based on Wage
		Utah	~	~	~	x
		West Virgina		$250,000		$500,000
	5	Florida		$250,000	$300,000	$500,000
		Illinois				x
		Nebraska		$500,000		
		New Mexico	$600,000	$600,000	$600,000	$750,000
		South Carolina		$375,000		$500,000
		Tennessee		$750,000		No cap
		Virginia	x	x	x	$400,000

Key
* Not applicable
"~" reviewed by courts
"+" or more
"/" insurnace pays
"x" not recoverable

		Damage and the Caps	
			Economic
	Strictness code	States	
LOW RESTRICTIVENESS	1	Alabama	
		Alaska	
		Arizona	
		Arkansas	
		California	
		Connecticut	
		Delware	
		Florida	
		Georgia	
		Hawaii	
		Idaho	
		Illinois	
		Indiana	
		Kansas	
		Kentucky	
		Louisiana	
		Maine	
		Maryland	
		Massachusetts	
		Michigan	
		Minnesota	
		Mississippi	
		Missouri	
		Montana	
		Nebraska	
		Nevada	
		New Hampshire	
		New Jersey	
		New York	*
		North Carolina	
		North Dakota	
		Ohio	
		Oklahoma	
		Oregon	
		Pennsylvania	
		Rhode Island	*
		South Carolina	
		South Dakota	
		Tennessee	
		Texas	
		Vermont	*
		West Virgina	
		Wisconsin	
		Wyoming	
	2	Colorado	1 Million ~
MODERATE	3	Utah	~
	4	New Mexico	$600,000
HIGH RESTRICTIVENESS	5	Iowa	x
		Virginia	x
		Washington	$75,000

		Damage and the Caps	
			Noneconomic
	Strictness code	States	
LOW RESTRICTIVENESS	1	Arizona	
		Arkansas	
		Delware	
		Illinois	
		Kansas	No cap
		Kentucky	
		Maine	
		Minnesota	
		Missouri	No Cap
		New Hampshire	No cap
		New Jersey	
		New York	*
		Ohio	
		Oklahoma	No cap
		Oregon	No Cap
		Pennsylvania	No Cap
		Rhode Island	*
		Vermont	*
		Wyoming	
	2	Connecticut	1 Million ~
		Tennessee	$750,000
		Wisconsin	$750,000
MODERATE	3	Alabama	$375,000
		Alaska	$400,000
		California	$400,000
		Colorado	$500,000
		Florida	$250,000
		Hawaii	$375,000
		Idaho	$250,000
		Iowa	$250,000
		Louisiana	$500,000
		Maryland	$650,000
		Massachusetts	$500,000
		Michigan	$500,000
		Mississippi	$500,000
		Montana	$250,000
		Nebraska	$500,000
		Nevada	$375,000
		New Mexico	$600,000
		North Carolina	$500,000
		North Dakota	$500,000
		South Carolina	$375,000
		South Dakota	$500,000
		Texas	$250,000
		West Virgina	$250,000
HIGH RESTRICTIVENESS	4	Georgia	$150,000
		Indiana	/
		Utah	~
	5	Virginia	x
		Washington	$75,000

		Damage and the Caps	
			Wrongful Death
	Strictness code	States	
LOW RESTRICTIVENESS	1	Alabama	
		Arkansas	
		California	
		Colorado	
		Connecticut	
		Delware	
		Georgia	
		Hawaii	
		Idaho	
		Illinois	
		Indiana	
		Iowa	
		Kentucky	No cap
		Louisiana	
		Maryland	
		Massachusetts	
		Michigan	
		Minnesota	
		Mississippi	
		Missouri	
		Montana	
		Nebraska	
		Nevada	
		New Hampshire	
		New Jersey	
		New York	*
		North Carolina	
		North Dakota	
		Oklahoma	
		Oregon	
		Pennsylvania	
		Rhode Island	*
		South Carolina	
		South Dakota	
		Tennessee	
		Texas	
		Vermont	*
		Washington	
		West Virgina	
		Wisconsin	
		Wyoming	No cap
	2	Ohio	1 Million +
MODERATE	3	Alaska	$750,000
		Maine	$750,000
		New Mexico	$600,000
HIGH RESTRICTIVENESS	4	Utah	~
		Arizona	$300,000
		Florida	$300,000
		Kansas	$250,000
	5	Virginia	x

		Damage and the Caps	
			Punitive
	Strictness code	States	
LOW RESTRICTIVENESS	1	Alabama	
		Alaska	
		Arizona	
		California	
		Colorado	
		Connecticut	
		Georgia	
		Hawaii	
		Indiana	
		Iowa	
		Kansas	No Cap
		Kentucky	
		Louisiana	
		Maryland	
		Massachusetts	
		Michigan	
		Missouri	No cap
		Nebraska	
		New Hampshire	
		New York	*
		Ohio	
		Oklahoma	
		Rhode Island	*
		Tennessee	No cap
		Vermont	*
		Wyoming	
	2	Florida	$500,000
		New Mexico	$750,000
		South Carolina	$500,000
		Virginia	$400,000
		West Virgina	$500,000
MODERATE	3	Arkansas	$300,000
		Delware	$250,000
		Idaho	$250,000
		Maine	$250,000
		North Carolina	$250,000
		Wisconsin	$250,000
HIGH RESTRICTIVENESS	4	Nevada	$100,000
		Minnesota	~
		Mississippi	Award Based on Wage
		Montana	Award Based on Wage
		North Dakota	~
		Pennsylvania	Award Based on Wage
		South Dakota	~
		Texas	~
	5	Illinois	x
		New Jersey	Not Liable
		Oregon	x
		Utah	x
		Washington	x

This study focuses on the variables involving MDs in each state, economic damages, noneconomic damages, wrongful death damages, punitive damages, population rate, region, lawyers employed per capita, health expenditures per capita, and damage restrictiveness. Many of the variables are interval based upon percentages and others are binned variables. Due to the

nature of the tests I ran to evaluate the variables, the interval variables were broken down into ordinal variables to make the results more straightforward to analyze.

With support from previous research and analyses, I hypothesize the following:

1. In comparison of states by region, Southern states will be more likely to have more MD's and more cap restrictiveness than non-southern states.
2. In comparison of state, those having more restrictive damage caps are less likely to have MD's than states with non-restrictive damage caps.
3. In comparison of states, those having more restrictive damage caps are likely to have more healthcare expenditures than states with non-restrictive damage caps.
4. In Comparison of States, those having high Restrictive Punitive Damage Laws will be more likely to have Lower Healthcare Spending than those with Low Restrictions

To test these hypotheses, I first recoded the interval variables into ordinal variables for the differing tort laws, MD's populations per capita and damage restrictiveness. For the MD's per capita, I used the visual binning tool to evenly split this variable into four groups that include: low MD's, medium to low MD's, medium to high MD's and high MD's. The restrictiveness range discussed, was recoded, and made into a range for 1-2 as 1; low restrictiveness, 3; moderate restriction and then did a range from 4-5 and labeled that high restrictiveness. So, I took a 6-categorical variable and put it into three categories.

For my analysis I had to take in consideration that my results are going to have significance but in a different manner because to have significance is to make sure your getting significant statistics for a desired population. However, in my case my sample is the entire population, all 50 states, so significance tests are less critical to the interpretation of the results.

Hypothesis One: In comparison of States by Region, Southern States will be More likely to have More MD's and More Cap Restrictiveness than Non-Southern States.

The tests of the hypothesis showed a decrease in MD's and restriction in damage caps in non-southern states. To test this, I conducted a cross tabulation of the nominal variable region as the control variable, restrictiveness_recode as the dependent variable and All_MDs_State_level binned as the independent variable. In order to do this cross tabs I had to bin All_MDs_State_level from a interval to ordinal variable.

(Table 1)

It was not a surprise that the south did not hold a high employment of MDs because there is less support for healthcare there. The south mostly holds medium to low employment with the addition of them being evenly distributed among amounts of restrictiveness. However, I looked more into the state that has low MD's and low restriction and that was Wyoming. A news article by the Abby Boomerang in the *Wyoming Tribune* "Doing the Minimum: Many Wyoming Workers Earn Low Wages" showed that Wyoming is the lowest paying states as far as wage and that is why there's a low employment of doctors is because they can find a higher paying job in another state (Boomerang, 2022). Because of this I decided to further analyze the restrictiveness in each region for a more accurate result for analysis if other states in the south or non-south do the same.

(Table 2 & 3)

In these tables I used only restrictiveness and region to try and emphasize the percentage of the south holding a high amount of damage law restrictiveness. With the cross tabulation the results show that the south holds 37.5% moderate restrictive damage caps. Which is more than

the non-south. However, if you look at the row with high restriction the non-south holds more MDs by 1.1%. With addition of table 3 the south holds .4% more high employed MD's than the non-south, which supports my hypothesis.

Hypothesis Two: In comparison of States, those having More Restrictive Damage Laws are less likely to have more MD's than States with Non-Restrictive Damage Laws.

The results of the tests should show a greater decrease in medical malpractice damage laws with states with higher MD's as compared to states with lesser damage caps. The medium to higher employed MD states has only 1-2 damage caps favoring the patient rather than the medical industry.

(Table 4, Figure 1)

The results are not parallel to the expected outcome. In states with one damage cap show the turnout of MD's employment in the medium to low category is 43.6%. The results show that the amount of medical malpractice damage caps does not influence the employment of MD's. However, something that comes as a surprise is figure 1 that show most of the liberal states like Minnesota, Michigan, New York, and Pennsylvania have a high amount of restrictiveness not favoring the patient, rather the medical industry which can result in more MD's employed. Also, liberal states also tend to favor patients rather than the medical industry. Yet, New York does not come as a surprise as much with their restrictiveness because according to Sarah Weiss in her analysis "Medical Malpractice Suits by State", New York is reported to be one of the top three states with the highest malpractice lawsuits per capita (Weiss, 2023). So, this would be why the restriction would be high and their MD employment is high.

Hypothesis Three: In Comparison of States, those having High Restrictive Damage Laws are likely to have Lower Healthcare Expenditures than States with Less Restrictive Damage Laws.

The results for these statistical tests should show a positive effect of restrictiveness with the increase on healthcare expenditures for states with less restrictions.

(Table 5)

The results are even across the board and do not show a strong correlation in the increase of healthcare spending. Because of this null effect I attempted to determine the specific medical malpractice damage cap effects are on the possible increases in healthcare expenditures. I decided to look at which states have high spending but have low restrictions to compare, to see if Virginia, Wyoming, Minnesota, Michigan, New York, and Pennsylvania are any of the states making my hypothesis true.

The states that fall under the low restriction and high spending are Connecticut, Delaware, Maine, New Hampshire, New York, Rhode Island, Vermont, and Wyoming. I was glad to see that New York and Wyoming had high restrictions and high spending because that shows that my theories show that these states are significant to look at and take in consideration for further analysis. Because Wyoming has low wages for MD's that create high restrictions and in return, they have a high healthcare spending amount of $10,989 per capita. With New work they are the third highest state in the U.S. for the malpractice lawsuits and more restrictions which contradicts my hypothesis in the sense that the states with more restriction show an increase in spending more than the low restrictive states.

Hypothesis Four: In Comparison of States, those having More Restrictive Punitive Damage Laws will be more likely to have Lower Healthcare Spending than those with Low Restrictions

The results for these statistical tests should show higher restrictions on punitive damages within the states will show a decrease in healthcare expenditures. This is a more precise analysis at how one medical malpractice damage cap effects the healthcare spending within the states.

(Table 6)

The results are not supportive of my hypothesis because states with high restrictions have 9.5% more spending than states with low restrictions so as far as punitive damages goes the spending is more in states with more restrictions. There is also no difference between states with more restrictions and low spending and high spending they have both 35.8% of low and high spending. As far as the narrowed down analysis goes, punitive damages did not indicate a substantive effect of restrictions on healthcare expenditures.

Discussion

All these statistical test gives insight into answering the question of how state medical malpractice damage caps effect healthcare expenditures. As one might expect the south has not significantly affected MD employments or damage caps when comparing by regions. However, as you can see in my chart below that as you go from the non-south to the south, healthcare spending is more in southern states by $250.40 which makes the South have an effect on high healthcare expenditures.

It is also interesting to me that both New York and Wyoming were two significant states that were important in adding to consideration of the effect on MD's employed and healthcare expenditures. When considering the geographical size of Wyoming to New York, I found that

Wyoming is about 2.1 times bigger than New York. The population is about an 18.8 million difference with fewer people living in Wyoming. However, Wyoming has the least employed MDs because of their low wages yet they have the most healthcare spending per capita, likely because they have no adequate doctors employed because of their low wages of $128,365 a year. Whereas New York has the highest malpractice lawsuits per capita with the addition of the yearly salary of $193,781 for MDs, making them a targeted state by citizens for the increase in healthcare expenditures. The one state that comes closest to my ideal theory was Virginia because it proved more restrictive and less spending. Virginia has a low healthcare spending of $ 9,195.00 per capita, but they have high restrictions making it harder for patients to recover medical malpractice damages, which makes for less defensive medicine that lowers the healthcare spending in Virginia.

One area that had the most effect in the increase in healthcare expenditures was answered in my multiple regression, and it shows that MD employed per capita, and employment of attorneys have the most direct effect on the increase in healthcare expenditures rather than the level of medical malpractice damage cap restrictions. For every MD employed per capita, healthcare spending increases by $6.09 per capita and for every lawyer employed per capita it increases spending by $3.62 per capita. Surprisingly the more restrictions increase the healthcare spending by $217.05 which I hypothesized to be the opposite of that.

Multiple Regression Analysis of Healthcare Expenditures

	Coefficient
MD's Per Capita	6.09
	(3.179)
Region	- 250.4
	(404.54)
Level of Restriction	- 217.05
	(215.80)
Lawyers Employed Per Capita	3.62
	(2.20)
N	50
Adjusted R^2	.315

Notes: Dependent variable is the amount of Healthcare Expenditures per state per capita; standard errors are reported in parentheses

Appendix

Table 1: Level of Restrictiveness by MD's Per Capita controlled by the South or Non-South

Region				Level of Restriction: Low Restriction	Moderate Restriction	High Restriction	Total
Nonsouth	All the MD's at State Level	Low MD's	Count	1	0	0	1
			Percent	6.3%	0.0%	0.0%	2.9%
		Med low MD's	Count	12	6	9	27
			Percent	75.0%	85.7%	81.8%	79.4%
		Med High MD's	Count	1	1	2	4
			Percent	6.3%	14.3%	18.2%	11.8%
		High MD's	Count	2	0	0	2
			Percent	12.5%	0.0%	0.0%	5.9%
	Total		Count	16	7	11	34
			Percent	100.0%	100.0%	100.0%	100.0%
South	All the MD's at State Level	Med low MD's	Count	5	5	4	14
			Percent	100.0%	83.3%	80.0%	87.5%
		Med High MD's	Count	0	0	1	1
			Percent	0.0%	0.0%	20.0%	6.3%
		High MD's	Count	0	1	0	1
			Percent	0.0%	16.7%	0.0%	6.3%
	Total		Count	5	6	5	16
			Percent	100.0%	100.0%	100.0%	100.0%
Total	All the MD's at State Level	Low MD's	Count	1	0	0	1
			Percent	4.8%	0.0%	0.0%	2.0%
		Med low MD's	Count	17	11	13	41
			Percent	81.0%	84.6%	81.3%	82.0%
		Med High MD's	Count	1	1	3	5
			Percent	4.8%	7.7%	18.8%	10.0%
		High MD's	Count	2	1	0	3
			Percent	9.5%	7.7%	0.0%	6.0%
	Total		Count	21	13	16	50
			Percent	100.0%	100.0%	100.0%	100.0%

Nonsouth Chi = 4.294, South Chi = 4.000, P>.001, Nonsouth Phi and Cramer's V = .355, South Phi and Cramer's V = .500

Table 2: Level of Restrictiveness Effected by Region

			Region		
			Nonsouth	South	Total
Level of Restriction	Low Restriction	Count	16	5	21
		Percent	47.1%	31.3%	42.0%
	Moderate Restriction	Count	7	6	13
		Percent	20.6%	37.5%	26.0%
	High Restriction	Count	11	5	16
		Percent	32.4%	31.3%	32.0%
Total		Count	34	16	50
		Percent	100.0%	100.0%	100.0%

Chi = 1.848, P>.001, Phi and Cramer's V = .192

Table 3: Region Effecting the Employment of MD's at State Level

			Region		
			Nonsouth	South	Total
All the MD's at State Level	Low MD's	Count	1	0	1
		Percent	2.9%	0.0%	2.0%
	Med low MD's	Count	27	14	41
		Percent	79.4%	87.5%	82.0%
	Med High MD's	Count	4	1	5
		Percent	11.8%	6.3%	10.0%
	High MD's	Count	2	1	3
		Percent	5.9%	6.3%	6.0%
Total		Count	34	16	50
		Percent	100.0%	100.0%	100.0%

Chi = .891, P>.001, Phi and Cramer's V = .133

Table 4: Number of Malpractice Damage Laws Per State Affecting MD Employment

			Number of Malpractice Damage Laws Each State Has				
			1 Damage Cap	2 Damage Caps	3 Damage Caps	4 Damage Caps	Total
All the MD's at State Level	Low MD's	Count	1	0	0	0	1
		Percent	4.8%	0.0%	0.0%	0.0%	2.1%
	Med low MD's	Count	17	17	2	3	39
		Percent	81.0%	85.0%	66.7%	100.0%	83.0%
	Med High MD's	Count	2	2	1	0	5
		Percent	9.5%	10.0%	33.3%	0.0%	10.6%
	High MD's	Count	1	1	0	0	2
		Percent	4.8%	5.0%	0.0%	0.0%	4.3%
Total		Count	21	20	3	3	47
		Percent	100.0%	100.0%	100.0%	100.0%	100.0%

Chi = 3.557, P>.001, Phi and Cramer's V = .275

Figure 1

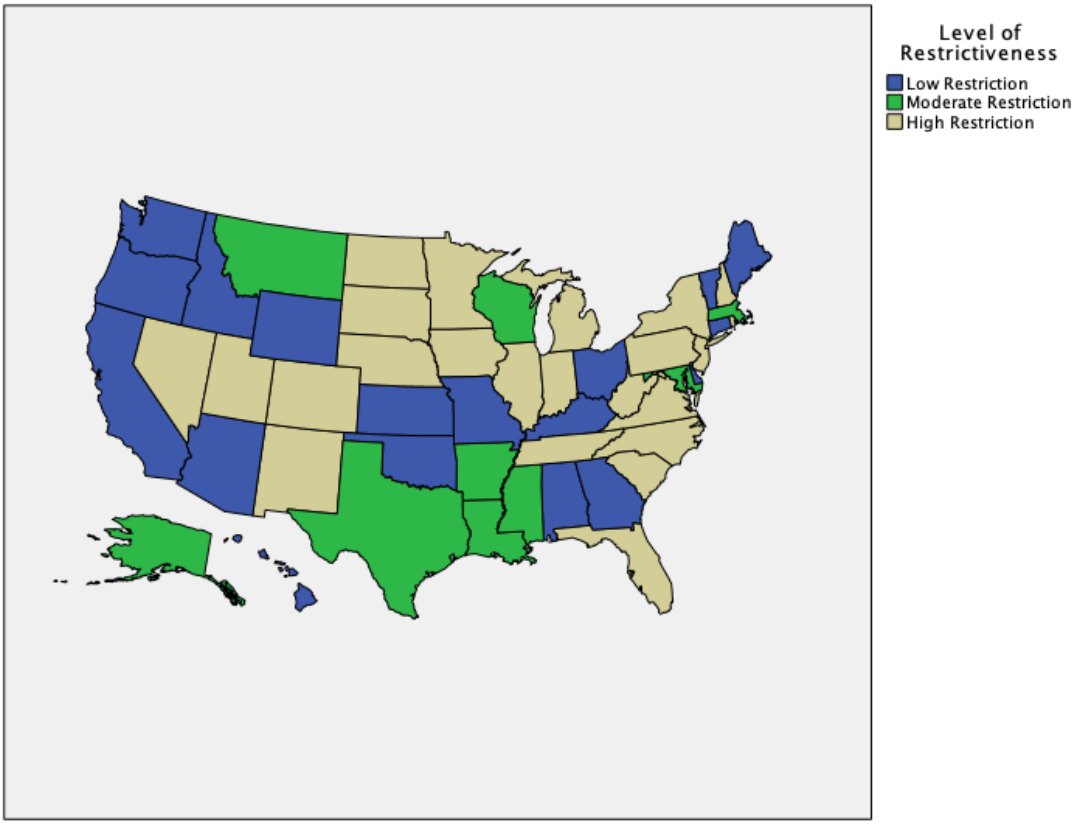

Table 5: Level Restrictiveness Affecting the Amount of Healthcare Spending

			Level of Restriction			
			Low Restriction	Moderate Restriction	High Restriction	Total
Healthcare Expenditures Per Capita	Low Spending	Count	6	4	7	17
		Percent	28.6%	30.8%	43.8%	34.0%
	Moderate Spending	Count	7	4	6	17
		Percent	33.3%	30.8%	37.5%	34.0%
	High Spending	Count	8	5	3	16
		Percent	38.1%	38.5%	18.8%	32.0%
Total		Count	21	13	16	50
		Percent	100.0%	100.0%	100.0%	100.0%

Chi = 2.061, P>.001, Somers' d= .207

Table 6: Punitive Damage Restrictiveness Affecting States Healthcare Expenditures Per Capita

			Punitive Damage Restriction			
			Less Restrictive	Restrictive	More Restrictive	Total
Healthcare Expenditures Per Capita	Low Spending	Count	9	3	5	17
		Percent	29.0%	50.0%	38.5%	34.0%
	Moderate Spending	Count	13	1	3	17
		Percent	41.9%	16.7%	23.1%	34.0%
	High Spending	Count	9	2	5	16
		Percent	29.0%	33.3%	38.5%	32.0%
Total		Count	31	6	13	50
		Percent	100.0%	100.0%	100.0%	100.0%

Chi = 2.572, P>.001, Somers' d= .888

References

Anderson, G. F., Hussey, P. S., Frogner, B. K., & Waters, H. R. (2005). Health Spending in The United States And The Rest Of The Industrialized World. *Health Affairs*, *24*(4), 903–914. https://doi.org/10.1377/hlthaff.24.4.903

Avraham, R., Dafny, L., & Schanzenbach, M. (2009). The impact of tort reform on employer-sponsored health insurance premiums. *Working Paper 15371*. https://doi.org/10.3386/w15371

Batkins, S. & Varas, J. (2016) Tort Reform's Impact on Health Care Costs. *American Action Forum*. https://www.americanactionforum.org/research/tort-reforms-impact-health-care-costs/

Boomerang, Abby Vander Graaff Laramie. "Doing the Minimum: Many Wyoming Workers Earn Low Wages." *Wyoming Tribune Eagle*, 9 Aug. 2022, https://www.wyomingnews.com/news/local_news/doing-the-minimum-many-wyoming-workers-earn-low-wages/article_d47521d9-9505-504b-a647-974cf2fa7af1.html.

Elmendorf. (2009). Expanding health insurance coverage and controlling costs for health care statement of Douglas W. Elmendorf, director, before the Committee on the Budget, United States Senate. U.S. Congressional Budget Office.

Encinosa, & Hellinger, F. J. (2005). Have State Caps On Malpractice Awards Increased The Supply Of Physicians?: Data from U.S. counties indicate that rural areas feel the effects of caps most acutely and that the amount of the cap matters. Health Affairs, 24(Suppl1), W5–W5–258. https://doi.org/10.1377/hlthaff.W5.250

Hellinger, F. J., & Encinosa, W. E. (2006). The Impact of State Laws Limiting Malpractice Damage Awards on Health Care Expenditures. *American Journal of Public Health*, *96*(8), 1375–1381. https://doi.org/10.2105/AJPH.2005.077883

Kasier Family Foundation, (2018) Employer Health Benefits Survey—Summary of Findings. *KFF*. https://www.kff.org/report-section/2018-employer-health-benefits-survey-summary-of-findings/

Kasier Family Foundation "Health Care Expenditures per Capita by State of Residence." *KFF*, 13 Sept. 2022, https://www.kff.org/other/state-indicator/health-spending-per-capita/?currentTimeframe=0&sortModel=%7B%22colId%22%3A%22Location%22%2C%22sort%22%3A%22asc%22%7D.

Kessler, & McClellan, M. (1996). Do Doctors Practice Defensive Medicine? The Quarterly Journal of Economics, 111(2), 353–390. https://doi.org/10.2307/2946682

Kessler, & McClellan, M. B. (2002). How liability law affects medical productivity. Journal of Health Economics, 21(6), 931–955. https://doi.org/10.1016/S0167-6296(02)00076-0

Kessler, Daniel P., William Sage, and David Becker. (2005). "Impact of Malpractice Reforms on the Supply of Physician Services." JAMA, 293(21): 2618–25.

Kessler, D. P. (2011). Evaluating the Medical Malpractice System and Options for Reform. *Journal of Economic Perspectives*, *25*(2), 93–110. https://doi.org/10.1257/jep.25.2.93

Morton, Heather. (2021) Medical Liability/Medical Malpractice Laws. *National Conference Of State Legislatures.* Retrieved December 4, 2022, from https://www.ncsl.org/research/financial-services-and-commerce/medical-liability-medical-malpractice-laws.aspx

Sloan, & Shadle, J. H. (2009). Is there empirical evidence for "Defensive Medicine"? A reassessment. Journal of Health Economics, 28(2), 481–491. https://doi.org/10.1016/j.jhealeco.2008.12.006

U.S Chamber of Commerce (2019). History of Tort Reform. *Institute for Legal Reform.* Retrieved December 4, 2022, from https://instituteforlegalreform.com/history-of-tort-reform/

Weiss, Sarah. "Medical Malpractice Suits by State: An Analysis." *Weiss & Paarz*, 17 Jan. 2023, https://www.weisspaarz.com/medical-malpractice-suits-analysis/.

Yu, H., Greenberg, M., & Haviland, A. (2017). The Impact of State Medical Malpractice Reform on Individual-Level Health Care Expenditures. *Health Services Research*, *52*(6), 2018–2037. https://doi.org/10.1111/1475-6773.12789