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PRACTICE AND MALPRACTICE IN MISSISSIPPI: PHYSICIAN RESPONSE TO THE LIABILITY 'CRISIS'

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Abstract

Mississippi is a largely rural state with many poor and unhealthy residents who are chronically underserved by the smallest per capita physician workforce in the nation. Anecdotal reports claimed Mississippi's medical malpractice climate jeopardized patient access to health care even further. Using survey data from Mississippi physicians, we document how medical liability perceptions shaped their practices at the height of the Mississippi malpractice crisis. Our findings show that physicians' risk profiles strongly influenced the extent to which physicians reported practicing defensive medicine or considered relocating or retiring early in response to malpractice conditions. This raises the specter of further compromising access to physician care in an already underserved state.

Keywords: *Physician workforce, practice patterns, medical malpractice*

Introduction

Most population health and income indicators show that Mississippi can claim the dubious distinction of being the sickest, poorest state in the country. On many measures of public health, such as teen pregnancy, infant mortality, obesity, morbidity, and life expectancy, Mississippians rank at or very near the bottom of national league tables (Kaiser Family Foundation [KFF] 2005). With an average per capita annual (2003) income of $23,448, Mississippians rank lowest in the United States (Brown, Bernat, and Pilot 2004). Roughly one-quarter of the state population is poor enough to qualify for means-tested Medicaid coverage (KFF 2005). Mississippians trail residents of most other states on nearly all measures of health due, in part, to the complex factors sociologists have traditionally associated with health disparities (Williams and Chiquita 1995; House and Williams 2000). The combination of precarious population health, high levels of poverty, a diverse population, and preponderance of rural areas, would make ensuring routine access to health care in Mississippi a challenge, even under ideal conditions. Unfortunately, ideal conditions seldom occur.

Crises in Mississippi's health care system abound. Historically, state fiscal constraints and inadequate physician supply have plagued efforts to bolster access to adequate levels (Ginzburg and Rostow 1992; Association of American Medical Colleges [AAMC] 2006a). For example, Mississippi has the fewest physicians per capita in the U.S. (AAMC 2006b). And, Mississippi Medicaid delayed physician reimbursements in two consecutive years (2003, 2004), when the state program ran out of funds (Cossman, Ritchie, and Cosby 2006).

Mississippi's malpractice experiences—where problems peaked in 2003—were superimposed on other health system challenges the state experienced, making an arguably bad situation worse. Concerns about a malpractice crisis were nationwide and commonplace in 2002; medical malpractice was not an exclusively Mississippi concern. However, the state did appear uniquely beleaguered in the extent, if not the nature, of its malpractice problems. State and national politicians, business organizations (Chamber of Commerce 2002), liability insurers, and physicians' organizations (e.g. National College of Obstetricians and Gynecologists 2002;

American Society of Anesthesiologists 2002) alike claimed that Mississippi's tort system had run amok. This was no more evident than in the specific area of medical malpractice.

Mississippi politicians advocated measures to rein in what the national media characterized as "jackpot justice" (CBS/60 Minutes 2002). Newspapers ran accounts of Mississippi doctors fleeing the state in pursuit of practice locations less prone to lawsuits, skyrocketing malpractice premiums for physicians left behind, and women unable to find doctors willing to risk delivering their babies (for example, Buchholz 2002), signaling a perfect storm for policymakers concerned about health care access for vulnerable Mississippians. Yet beyond horror stories of physician flight, no systematic empirical data linked physician experiences relating to malpractice (e.g. being named in a lawsuit or having substantial malpractice insurance premium increases) and outcomes that might signal a "malpractice effect" (e.g. intending to retire early, finding a less active malpractice practice location, or minimizing exposure through practicing defensive medicine).

Despite the crisis rhetoric and anecdotal accounts of increasing barriers to medical care, assertions that linked medical malpractice problems and shrinking access for vulnerable Mississippians were not universal. Some critics, including lawyers' organizations and public interest groups (i.e. Center for Justice and Democracy 2002), contradicted the malpractice crisis claims, arguing instead that a well-funded rhetorical ploy by insurance and business interests was responsible for the perception of a health care crisis. They claimed the malpractice crisis was a myth, unsupported by substantive evidence signaling a genuine problem (Mencimer 2004). Other accounts contradicted reports of shrinking Mississippi physician supply (Biloxi Sun-Herald August 2002). As that paper reported:

> "Medical groups have claimed doctors are fleeing Mississippi, relocating to states with more stable legal climates. So far, the numbers don't bear that out. In fact, the state has gained 564 doctors over the past five years. The state Medical Association has said the growth in doctors lags behind the state's population growth. But while Mississippi still ranks last in the nation in the number of doctors per capita, it has made dramatic gains since 1995. Only four states have grown faster in physician population: Alabama, Alaska, Arkansas and South Dakota." (quoted in CJ&D 2002).

While we cannot determine the merits of these contradictory arguments about the extent and impact of Mississippi's medical malpractice crisis on physician supply or behavior, unique survey data are available to analyze how individual Mississippi doctors responded to their perceptions of the state's malpractice conditions.

Starting with the premise of the Thomas theorem that "Situations that are defined as real are real in their consequences" (Thomas 1966:301; orig. 1931), defining the precise empirical contours of Mississippi's malpractice conditions may be less important than determining physicians' responses to a situation they worried about and took for granted. To the extent that the Thomas theorem holds, physicians' convictions about the contemporary circumstances of Mississippi's malpractice climate would likely reinforce the types of behavior that minimized their risks of exposure in what had become, to them, a hyper-risky practice environment. Physicians know that practicing medicine is inherently risky, understanding medical risk is part of their medical training. The key point in our research is the *heightened* sense of physician risk under particular malpractice conditions. If many physicians planned to leave practice and others changed their scope of practice or practiced defensive medicine, such physician responses posed

a genuine risk of limiting already inadequate access to routine medical care for vulnerable Mississippians, regardless of other facts surrounding the circumstances of the malpractice crisis.

Medical Malpractice

Patients who are injured through negligence when they receive health care can bring malpractice suits against health care providers, typically under the tort law of the state where the injury took place. Tort law relating to medical malpractice has a dual purpose: to create a mechanism that compensates injured victims and to deter malpractice. Most health care providers deal with potential liability losses by paying premiums to buy medical malpractice insurance, thus protecting themselves against immediate financial loss from potential claims, although in the longer run, physicians who were frequently sued or who pursued 'high risk' specialties would pay higher premiums.

Medical Malpractice in Mississippi

Years of concern about an incipient statewide malpractice problem reached its peak by 2002. In an August visit to the state, President Bush delivered his administration's prescription for the 'problem' of medical malpractice lawsuits: tort reform aimed at exerting discipline on runaway jury awards, mainly by imposing damage caps to deter 'ambulance chasing' trial lawyers by severely constraining the scope of awards (Clarion Ledger 08/09/02). By fall, simmering problems of the sheer quantity of Mississippi medical liability lawsuits, coupled with some widely-reported high value malpractice damage awards, reached a full boil. Ninety percent of Mississippi obstetricians and 75 percent of general, orthopedic, and emergency surgeons had been sued at some point in their career (ACP 2002). In September, Governor Musgrove convened a special session of the Mississippi legislature to address escalating medical liability premiums (Clarion Ledger 05/24/02).

Tort reform initiatives

Advocates of medical liability reform argued that the state tort system made certain types of routine medical practice nearly impossible, stating that physicians were victimized by Mississippi's medical liability conditions in several ways. The state legal system was structured in ways that made it easy, according to reformers, for many claimants to bring frivolous suits. In response to the sheer volume of suits and doctors' risk of being sued, liability insurers sought to cover their potential losses by charging doctors usurious premiums. Even when malpractice cases were appropriate, and won or settled on their merits, reformers regarded jury awards as excessively high. Legal maneuvers and insurance premium increases drove up costs of medical practice (U.S. Department of Health and Human Services [DHSS] 2002). As costs associated with Mississippi malpractice cases and damage awards worked their way through the state liability insurance market, physicians faced not only rapidly escalating premiums, but also problems finding a malpractice insurer willing to write policies at all. This was particularly true for Mississippi physicians in high risk medical specialties, like obstetrics or neurosurgery. State malpractice insurance premiums spiked an average 45 percent from 2001 to 2002 (Government Accounting Office [GAO] 2003a: 45) and malpractice insurance losses in Mississippi (GAO 2003b: 62) appeared to outstrip losses in other malpractice 'problem' or 'crisis' states (American Medical Association [AMA] 2003).

Advocates of the Status Quo

In contrast to the consistent rhetoric of patient greed, naïve and spendthrift juries, incompetent medical providers, and scheming trial lawyers by tort reform advocates, opponents argued that high and punitive awards were appropriate for patients injured by incompetent physicians and supported the contingency fee system that sustained a network of attorneys specializing in medical liability cases. More disinterested parties noted disagreement about the causes, extent and implications of malpractice pressures in Mississippi, although they did not deny there were Mississippi-specific challenges. For example, a GAO study (2003a) on the extent and implications of the malpractice "crisis" in five bellwether states reported that anecdotal reports of provider actions in response to malpractice problems (withdrawing services or leaving states) were generally either not substantiated or had little widespread impact on access. However, the GAO did find that some doctors in Mississippi *had* reduced or eliminated some procedures in attempts to maintain affordable premiums, resulting in localized limited access to on-call emergency surgery and newborn deliveries, requiring patients to travel further for treatment. However, the GAO report noted that Mississippi's access problems were not *only* due to malpractice problems. Rather, malpractice pressures operated mainly by worsening longstanding problems of rural physician recruitment and low Medicaid—and other payer—reimbursement rates in the state (GAO 2003a: 14).

The popular media generally described the Mississippi malpractice crisis as dire, highlighting the relationship between state-level malpractice experiences and the risks they posed to physician access for Mississippians. Many Mississippi experts, particularly those associated with physicians' professional organizations and the health care industry, grumbled that the medical malpractice crisis was driving physicians out of state or out of business (e.g., American College of Surgeons [ACS] 2002a; ACS 2002b; Health Coalition on Liability and Access [HCLA] 2003; Mississippi Department of Insurance [MSDOI] 2002). The GAO countered that doctors who left practice in Mississippi due to malpractice pressure were scattered and represented only 1 percent of all physicians, with the number of physicians per capita remaining largely unchanged since 1997 (GAO 2003a: 18). However, even small losses to an inadequate base in strategically important areas of medical practice pose risks for underserved populations. Missing from both characterizations of how medical malpractice conditions shaped Mississippi's physician supply was a systematic accounting of how physicians themselves responded to the crisis. Did Mississippi physicians perceive the state malpractice crisis to be real? Did they expect to act in ways consistent with their perceptions?

How Physicians Respond to Malpractice Conditions

Doctors can respond to malpractice issues in a variety of ways. For example, even when they are not plaintiffs in malpractice suits, local medical malpractice conditions shape the way physicians approach their practices. Further, public attention drawn to medical errors by the recent Institute of Medicine report (Kohn, Corrigan, and Donaldson 2000), combined with recent attempts to identify and minimize medical errors, added to the already high levels of insecurity physicians experienced due to fear of litigation (Fox quoted in Zuger 2004). Physicians in Mississippi and counterparts in 43 other states experienced problems associated with finding malpractice insurance, or steeply escalating premiums, or both in 2002, according to physician organizations (AMA 2004; Mello, Studdert, and Brennan 2003).

Physicians confronted with what they regard as a malpractice 'crisis' –either a rising tide of malpractice litigation or exploding insurance premiums—can deploy several strategies to

cope. Doctors can minimize exposure to lawsuits by practicing medicine defensively (Zuger 2004). Because physicians may perceive the medical malpractice system as biased against them (Liang 2003), pursuing a positive or negative defensive medicine strategy, even unconsciously, represents a coping strategy. Doctors can change treatment and prescribing procedures, for example, ordering more tests to minimize patient injury (positive defensive medicine) or they can choose to limit the number or types of patients they see and/or avoid doing 'risky' procedures such as delivering babies or treating trauma cases (negative defensive medicine) (Liang, 2003). More than half of physicians in one study reported making clinical decisions motivated by a strong desire to avoid lawsuits, even among physicians who have not been sued (Glassman, Rolph, Peterson et al. 1996). Some physicians who have been sued exhibit long-term defensive medical practices (Kereiakes and Willerson 2004; Perlman 1994) and other distorted behavior (Novack, Dettering, Arnold et al. 2004).

Even such defensive individual behavior, however, does not inoculate physicians against the effects of *generalized* insurance market problems. Regardless of whether a particular physician has been sued, if their primary practice is in a geographic area with significant recent lawsuit activity, premiums will almost certainly rise rapidly or insurers may stop writing policies altogether. Because judicial and insurance-related malpractice experiences are often localized (GAO 2003a; Zuger 2004)—some physicians may decide their best course of action is to relocate their practice to a friendlier practice venue. Still others may decide to leave the profession altogether, either for another line of work or to retire (MS DOI 2002).

Anecdotes abounded about Mississippi physicians declining to provide high risk services. Mississippi was the poster child of medical malpractice crises in editorials and speeches by the AMA President (Palmisano 2004); other stakeholders wrote about oppressive, insurmountable malpractice insurance rates (Cline and Pepine 2004). The proverbial canary in the malpractice coal mine, Mississippi was characterized as the harbinger of what could happen in other states—physicians would flee to less litigious climes (Kereiakes and Willerson 2004)—unless state-specific malpractice problems were fixed. Harrowing characterizations and plausible predictions of the impact of malpractice conditions on physician behavior aside, how Mississippi physicians actually were influenced by malpractice conditions is analyzed for the first time in this study.

Mississippi Physician Responses to Medical Malpractice Climate

How exactly did Mississippi physicians respond to their state's malpractice crisis? Some research suggests that specialists and women may behave differently from generalists and men in their usual practices and they may also respond differently to malpractice issues. Further, having direct malpractice-related experiences (being named in a lawsuit or having problems finding or affording liability insurance) may also shape physician responses. And, characteristics of doctors' practices, such as whether they are in group or solo practice or in rural or urban settings may also influence their response to Mississippi's recent malpractice conditions.

Physician Demographic Characteristics

Women physicians tend to specialize in lower risk specialties than men (McFarland and Rhoades 1998), but once a specialty area is chosen, men's and women's treatment practices may not differ. Women physicians tend to be as satisfied with patient and colleague relationships (McMurray, et al. 2000) and with their practices (Frank, McMurray, Linzer et al. 1999) as their male counterparts; however, women are more likely to burn out (McMurray et al. 2000) and older women physicians are more satisfied than younger ones (Frank, et al. 1999). Women in

practice for fewer years may consequently prefer to relocate or leave practice rather than dealing with what they regard as a sub-optimal medical malpractice climate. We found no studies that identified differences in response to medical malpractice among doctors of different race/ethnicities, nor did we expect to find any in our analyses. We expect physicians with life-long attachment to the state, native-born Mississippians (regardless of race or gender) to be less likely to consider relocating out of state and to rather be more likely to say they will retire early or practice defensive medicine regardless of the circumstances of the perceived malpractice crisis.

Practice Circumstances

Some studies indicate that state-level medical malpractice problems may contribute to decreases in the supply of rural physicians (Baicker and Chandra 2005; Menachemiet al. 2005). Rural physicians, whose practices are generally smaller, have fewer opportunities to 'spread' the cost of increased malpractice insurance premiums than their urban counterparts with larger practices. Particularly in Mississippi, where nearly two thirds of the population is rural and almost every rural county is medically underserved (Cossman, Ritchie and James 2005) rural physicians may be at particularly high risk of exposure to malpractice suits. They may have to provide treatments or procedures for which they have less than optimal experience and/or training, particularly in emergencies, because there is no nearby alternative.

Time in practice may sort physicians into 'relocate' versus 'retire' strategies if malpractice concerns are problematic. We expect physicians whose practices are well-established would be more likely to plan to retire early, perhaps pushing up an impending retirement date, if they perceive generalized malpractice conditions as adverse. A study of final year medical residents found that 62 percent were concerned about medical malpractice and 24 percent would not choose medicine as a profession if they had it to do over again (Merritt, Hawkins, and Associates 2003). If such perceptions are widespread, recently established doctors seem more likely to relocate than longer practicing ones in a problematic malpractice climate. To the extent that recent medical education addresses issues of medical malpractice, newer physicians may be particularly sensitive to malpractice concerns or exposed to training in the use of defensive medicine techniques to minimize their risk of injuring patients.

Malpractice Experiences

The theoretical and empirical links between the risk level of a physician's practice and malpractice experiences (presumptions of risk levels linked to higher malpractice premiums, having difficulty locating malpractice insurance, sizing up chances of being sued for malpractice) seem obvious. Malpractice insurers risk-adjust premiums to maximize profit so that, physicians in high risk specialties (like surgeons) routinely pay higher premiums than physicians in lower risk ones (such as dermatologists). Physicians who have been sued pay higher premiums than those who have not, much like automobile drivers who are accident prone pay higher premiums than "safe" drivers. Further, in states where liability laws create a low bar for filing malpractice lawsuits or have patterns of high awards to plaintiffs, insurers can charge higher premiums because their generalized exposure to risk is escalated; the steepest increases still go to high risk specialties but a localized malpractice climate drives premium increases across all specialties. Or, if insurer profits decline too much, insurers can decide to exit a localized market entirely. All of these conditions occurred in Mississippi, impacting both how physicians perceived and experienced the malpractice climate.

Consequently, we expect doctors who have been sued, or whose malpractice premiums have skyrocketed, to more aggressively practice defensive medicine and/or to consider relocating or retiring early. While generalist physicians treat a wider variety of patient ailments than their specialist counterparts, specialists in high risk specialties are at greater risk of being sued and, therefore, at greater risk for rapidly escalating malpractice insurance premiums. We expect these characteristics of doctors' specialties and risk profiles to also influence a doctor's practice of defensive medicine and their longer-term practice intentions (retiring/relocating).

Data and Methods

The 2002 Mississippi Physician Workforce Survey (2002 MSMD) collected data between November 2002 and February 2003 from a sample of Mississippi physicians in fulltime practice. In addition to items replicated from the Community Tracking Survey physician component (a biannual survey of physicians, patients, and employers conducted since 1996 by the Robert Wood Johnson Foundation), the 2002 MSMD survey also included a module of items created to gauge physician perspectives on state-specific medical practice issues of critical concern to Mississippi physicians, particularly responses relating to medical malpractice. The presumed effects of medical malpractice on physician practices and the risks of their potentially limiting effects on Mississippians' health care access were hot-button issues at the time of the survey, making a statewide assessment of physician's perspectives particularly salient.

The sampling frame for full-time, actively-practicing Mississippi physicians was derived in a multi-step process. Physician contact information from four databases, including the AMA Masterfile data for Mississippi; the Mississippi State Medical Association membership list, the Mississippi State Board of Medical Licensure 2001-2002 mailing list, and the Mississippi Academy of Family Physicians membership list were used to create the sampling frame. Eliminating duplicates, subjects with no instate address or contact information, and individuals over 90 years of age yielded a final roster of 4,464 individuals. A sample of 2,500 physicians was randomly selected for the 2002 MSMD study. Full-time employees of federal agencies, residents or fellows, and physicians who provided patient care less than 20 hours per week were screened out of the sample. Of the remaining 1,804 eligible participants in the final sample, 616 active full-time physicians responded to the survey. The 34.2% response rate is similar to response rates from similar state-specific physician workforce surveys (Congressional Budget Office [CBO] 2006, Massachusetts Medical Society [MMS] 2003; Oregon Medical Professional Review Organization [OMPRO] 2005). Characteristics of 2002 MSMD respondents were consistent with the spatial distribution of the Mississippi physician workforce and its basic demographic characteristics (specialization, race, gender, age), indicating that the sample was broadly representative of Mississippi physicians in active full-time practice in 2002/2003.

Independent variables

Individual variables: Controls include *gender* (male=1) and *race* (white=1, all other=0); Mississippi *native* (born in MS=1, other=0).

Practice variables: Practice *location* (urban=1, rural=0); and *time in practice* (reference group=fewer than 10 years of practice; dummies=10-19 years, 20-29 years and 30 years or more).

Malpractice variables: Malpractice experience includes two measures: whether the physician has ever been *sued* (yes=1, no=0) and the *malpractice premium ratio.* The *malpractice premium ratio* is calculated from the premium paid in 2001 and the estimated premium for 2002.

Malpractice premium ratio categories were no increase (premium decrease or zero increase), increase up to 25 percent, 25 to 50 percent increase, 51-99 percent increase, 100 percent or more increase. Data were imputed for the *malpractice premium ratio* variable for cases with missing values, using eight different group means (generalists and specialists who had been sued/not sued [4 groups] and low and high risk practitioners who had been sued/not sued [4 groups]) to assign respondents with missing premium change data into one of the five *malpractice premium ratio* groups. The no increase category of the *malpractice premium ratio* serves as the reference category in all regression models. The sample was split into generalists, physicians whose primary specialties were general practitioners, family physicians, OB-GYNs, pediatricians and internists and specialists, all others [generalist=1, specialist=0]). Physicians who reported practicing obstetrics, surgery of any kind, radiology and/or anesthesia among their top three practice areas were categorized high risk, all other were low risk (high risk=1, low risk=0). Because malpractice experiences may differ substantially between the two risk groups, we split the sample to make interpretation of findings more intuitive, considering high and low risk groups separately.

Dependent Variables

We conducted confirmatory factor analyses to establish goodness of fit for the five survey items used to construct a *defensive medicine* scale (items include: I have considered limiting the TYPES of patients I see; I have been cautious with accepting difficult patients; I have changed some treatment practices; I have changed some prescribing practices; I have considered limiting the NUMBERS of patients I see). These items are measured on a five point scale from strongly disagree=1 to strongly agree=5 (Cronbach's alpha=.83). We calculated the *defensive medicine* scale for the entire sample and separately for the two risk categories (analysis not shown); the scale is a stable measure for the entire sample and both groups. The *defensive medicine* scale was then dichotomized, designating respondents scoring four or greater on the averaged scale (reflecting a mean response of "agree") into a high level of defensive medicine category (high=1, otherwise=0) to create a conservative measure of high levels of defensive medicine. Assuming most physicians practice some level of defensive medicine, the dichotomous measure permitted us to distinguish physicians who reported particularly high levels of defensive medicine practices compared to other doctors.

Two other dependent variables assessed whether the respondent planned either to leave the state or to retire early due to the malpractice climate in Mississippi. There is no direct way to use the 2002 MSMD data to verify anecdotal accounts that the malpractice environment had driven doctors out of state or out of practice, but two survey items asked whether the respondent intended to *relocate* within five years due to malpractice climate (yes=1, no=0), or to *retire early* due to malpractice climate (yes=1, no=0). We ran a series of regression models for the entire sample and for the split sample of two risk groups, testing influences of physician demographic, practice characteristics, and malpractice experiences on defensive medicine and intent to relocate or retire early. (See Table 1)

Findings

Logistic regression results for *defensive medicine* are presented in Table 2. The first panel shows results for the entire sample; the second and third panels predict defensive medicine for low risk and high risk physicians respectively. Urban physicians are less likely than their rural counterparts to engage in defensive medical practices. Compared to physicians in practice for 10

Table 1. Sample Characteristics.*

Characteristics		PERCENT OF SAMPLE IN CATEGORY		
		Entire Sample N=616	Low Risk N=417	High Risk N=199
Independent Variables				
Sex				
	Male	86.0	83.9	90.5
	Female	13.3	15.6	8.5
Race				
	White	90.3	89.7	91.5
	Non White	8.0	8.6	6.5
MS Native				
	Yes	43.7	45.0	41.7
	No	56.3	55.4	58.3
Urban/Rural Practice Location				
	Urban	49.7	50.1	48.7
	Rural	49.7	49.4	50.3
Time in Practice (Mean/Range)				
	Under 10	27.4	25.9	30.7
	10-19	29.4	30.5	27.1
	20-29	26.9	26.9	27.1
	30+	15.1	15.8	13.6
Named in Lawsuit				
	Yes	47.9	44.1	55.8
	No	51.1	55.4	42.2
Change in Malpractice Premium				
	No Increase	9.6	9.8	9.0
	Increase up to 25%	12.2	11.8	13.1
	25-50% Increase	37.2	37.4	36.7
	51-99% Increase	28.1	24.9	34.7
	100% or more	12.3	15.8	5.0
Generalists				
	Yes	48.7	54.2	37.2
	No	51.3	45.8	62.8
Dependent Variables				
Defensive Medicine				
	Yes	43.5	42.7	45.2
	No	48.4	50.1	44.7
Intend to Relocate				
	Yes	14.1	11.3	20.1
	No	71.1	73.6	65.8
Intend to Retire Early				
	Yes	57.8	54.0	65.8
	No	42.2	46.0	34.2

* - Cells may not total to 100 due to rounding errors in some cases and missing values in other cases (e.g., particularly for the measure of relocation, valid N=525).

Table 2. Logistic Regression Results Predicting Defensive Medicine.

	Entire Sample (N=616)				Low Risk Physicians (N=417)				High Risk Physicians (N=199)			
	Odds Ratio	95.0% C.I.		Sig.	Odds Ratio	95.0% C.I.		Sig.	Odds Ratio	95.0% C.I.		Sig.
		Lower	Upper			Lower	Upper			Lower	Upper	
Sex (Male=1/Female=0)	1.70	0.96	2.98		1.99	1.03	3.82	*	1.12	0.31	4.12	
Race (White=1/Other=0)	1.99	0.99	4.02	*	2.08	0.90	4.80		2.21	0.57	8.57	
Urban (Urban=1/Rural=0)	0.62	0.43	0.89	**	0.74	0.47	1.16		0.41	0.21	0.81	**
Mississippi Native (Yes=1/No=0)	0.88	0.61	1.26		0.95	0.61	1.48		0.67	0.34	1.32	
Time in Practice												
Under 10 Years (Referent)												
10-19 Years	0.98	0.61	1.57		1.34	0.75	2.39		0.51	0.21	1.21	
20-29 Years	0.91	0.56	1.48		1.02	0.56	1.87		0.68	0.28	1.63	
30+ Years	0.43	0.24	0.79	**	0.35	0.16	0.76	**	0.71	0.24	2.10	
Named in Lawsuit (Yes=1/No=0)	1.58	1.09	2.30	*	1.95	1.21	3.13	**	1.14	0.58	2.24	
Change in Malpractice Premium												
No Increase (referent)												
Increase from 1-25%	1.36	0.64	2.90		0.96	0.37	2.50		2.51	0.65	9.70	
Increase from 26-50%	0.80	0.42	1.53		0.62	0.27	1.43		1.57	0.51	4.89	
Increase from 51-99%	1.02	0.52	2.00		0.86	0.36	2.03		1.60	0.50	5.10	
Increase from 100% and higher	0.59	0.26	1.31		0.62	0.23	1.62		0.34	0.05	2.37	
Generalist (Yes=1/No=0)	0.96	0.66	1.40		0.88	0.54	1.44		0.85	0.44	1.66	
High Risk (Yes=1/No=0)	0.97	0.66	1.43									
Constant	0.44				0.33				0.76			
Nagelkerke R2	0.11				0.15				0.12			

* --- p < .05

** --- p < .01

or fewer years, physicians in practice thirty years or more are less than half as likely to practice defensive medicine. Respondents who had ever been sued were more than twice as likely to report high levels of defensive medicine compared to those who had not been sued. There were no significant differences related to magnitude of a one-year malpractice insurance premium increase, or among native versus non-native born Mississippians, being a generalist or specialist, or having high versus low risk profiles for the entire sample.

In the split sample, three statistically significant variables predict high levels of defensive medicine for the low risk group. Men were twice as likely to report high levels of defensive medicine compared to women; physicians in practice longest were only one third as likely to practice high levels of defensive medicine compared to those in practice fewer than ten years; and low risk profile physicians who had been named in a lawsuit were nearly twice as likely as low risk physicians who had not been sued to report high levels of defensive medicine. For the high risk sample, the only significant predictor of high levels of defensive medicine was a difference between rural and urban practitioners, with urban physicians 60 percent less likely to report high levels of defensive medicine compared to respondents in rural practices.

Models predicting physicians' plans to relocate out of state due to Mississippi's malpractice climate are shown in Table 3. Considering the entire sample in the first panel, urban physicians were half as likely as rural doctors to have planned to relocate. Physicians practicing 20-29 years and doctors with 30+ years in practice were one-third as likely to plan to relocate, compared to physicians in practice fewer than ten years. Time in practice is the only relationship that remains statistically significant when the sample is split according to risk profile. Among doctors in the entire sample, compared to those whose premiums did not increase, doctors experiencing increases in the 51 to 99 percent range were more than 5 times more likely, and physicians whose premiums doubled or more were 7 times more likely to say they planned to relocate out of state. Generalists in the entire sample were half as likely to plan to relocate compared to specialists. Physicians with high risk profiles in the entire sample were more than twice as likely to plan to relocate as were physicians with low risk profiles.

The model for intentions to retire early (shown in Table 4) in the entire sample (Panel 1), shows that urban doctors were less likely than rural physicians and Mississippi natives were 1.5 times more likely than non-natives to plan to retire early. Physicians in practice from 10 to 29 years were significantly more likely to plan early retirement compared to newer professional counterparts. Although there is no significant *time in practice* effect on intent to retire early for physicians in practice for 30 years or more, this may reflect that retirement plans, whenever they occur, are not perceived as "early" after that length of time in practice. Physicians who had been named in a lawsuit were 68 percent more likely to plan early retirement compared to physicians who had not been sued and those whose malpractice premiums increased in the 51-99 percent range were more than twice as likely to express early retirement plans compared to doctors with no premium rate increases. Finally, physicians with high risk practice profiles were 1.5 times more likely to intend to retire early compared to those with low risk practice profiles.

Models for the split sample of high and low risk profile physicians also show substantial differences. Among low risk profile physicians (Table 4, panel 3), urban practitioners were about 40 percent less likely to plan early retirement compared to rural physicians. Mississippi natives were significantly more likely to say they intended to retire early (but not relocate, see Table 3 above), probably reflecting lifelong commitment to residence in the state. Physicians in practice 20-29 years were three times likelier to plan early retirement compared to doctors in

Table 3. Logistic Regression Results Predicting Intent to Relocate.

	Entire Sample (N=616)				Low Risk Physicians (N=417)				High Risk Physicians (N=199)			
	Odds Ratio	95.0% C.I.		Sig.	Odds Ratio	95.0% C.I.		Sig.	Odds Ratio	95.0% C.I.		Sig.
		Lower	Upper			Lower	Upper			Lower	Upper	
Sex (Male=1/Female=0)	0.76	0.36	1.60		0.79	0.30	2.10		0.63	0.16	2.48	
Race (White=1/Other=0)	0.51	0.21	1.19		0.24	0.08	0.70		1.57	0.28	8.78	
Urban (Urban=1/Rural=0)	0.44	0.25	0.75	**	0.42	0.20	0.90		0.48	0.21	1.14	
Mississippi Native (Yes=1/No=0)	0.75	0.44	1.28		1.11	0.54	2.30		0.52	0.21	1.25	
Time in Practice												
Under 10 Years (Referent)												
10-19 Years	0.86	0.47	1.59		1.03	0.45	2.37		0.76	0.28	2.08	
20-29 Years	0.33	0.16	0.67	**	0.35	0.13	0.97	*	0.32	0.11	0.94	*
30+ Years	0.08	0.02	0.37	**	0.00	0.00	.	*	0.16	0.03	0.83	*
Named in Lawsuit (Yes=1/No=0)	1.34	0.78	2.31		3.14	1.40	7.02		0.66	0.29	1.51	
Change in Malpractice Premium												
No Increase (referent)												
Increase from 1-25%	4.35	0.88	21.60		3.08	0.30	31.78		4.85	0.49	47.94	
Increase from 26-50%	3.58	0.79	16.28		4.98	0.58	42.35		3.27	0.36	29.42	
Increase from 51-99%	5.42	1.20	24.56	*	5.89	0.68	50.89		5.20	0.58	46.86	
Increase from 100% and higher	7.48	1.48	37.84	**	11.09	1.15	106.59		8.37	0.64	110.14	
Generalist (Yes=1/No=0)	0.56	0.32	0.98	*	0.34	0.15	0.76		0.86	0.36	2.03	
High Risk (Yes=1/No=0)	2.11	1.24	3.61	**								
Constant	0.25				0.26				0.31			
Nagelkerke R2	0.21				0.26				0.20			

* --- p < .05

Table 4. Logistic Regression Results Predicting Intent to Retire Early.

	Entire Sample (N=616)				Low Risk Physicians (N=417)				High Risk Physicians (N=199)			
	Odds Ratio	95.0% C.I. Lower	95.0% C.I. Upper	Sig.	Odds Ratio	95.0% C.I. Lower	95.0% C.I. Upper	Sig.	Odds Ratio	95.0% C.I. Lower	95.0% C.I. Upper	Sig.
Sex (Male=1/Female=0)	1.42	0.83	2.43		1.25	0.67	2.31		2.09	0.62	7.06	
Race (White=1/Other=0)	1.52	0.77	2.98		1.31	0.58	2.94		2.20	0.60	8.00	
Urban (Urban=1/Rural=0)	0.69	0.48	0.99	*	0.60	0.39	0.93	*	1.02	0.51	2.05	
Mississippi Native (Yes=1/No=0)	1.43	1.00	2.05	*	1.60	1.03	2.48	*	1.30	0.64	2.64	
Time in Practice												
Under 10 Years (Referent)												
10-19 Years	1.94	1.22	3.09	**	1.61	0.91	2.85		2.79	1.18	6.59	*
20-29 Years	3.70	2.25	6.11	**	3.13	1.69	5.77	**	5.70	2.28	14.30	**
30+ Years	1.28	0.74	2.24		0.98	0.49	1.97		2.32	0.84	6.39	
Named in Lawsuit (Yes=1/No=0)	1.68	1.16	2.43	**	2.18	1.36	3.51	**	0.93	0.46	1.87	
Change in Malpractice Premium												
No Increase (referent)												
Increase from 1-25%	1.88	0.90	3.93		1.48	0.60	3.65		3.61	0.89	14.60	
Increase from 26-50%	1.73	0.93	3.22		1.55	0.72	3.31		2.48	0.80	7.69	
Increase from 51-99%	2.24	1.17	4.28	**	2.12	0.95	4.76		2.44	0.77	7.76	
Increase from 100% and higher	1.81	0.83	3.91		1.61	0.65	4.02		3.16	0.55	18.31	
Generalist (Yes=1/No=0)	0.81	0.55	1.18		0.72	0.44	1.17		0.90	0.45	1.79	
High Risk (Yes=1/No=0)	1.50	1.01	2.23	*								
Constant	0.17			**	0.28			*	0.08			*
Nagelkerke R2	0.17				0.18				0.20			

* --- p < .05
** --- p < .01

practice less than ten years, while doctors in the low risk group who had been sued were twice as likely to plan to retire early compared to doctors who had not been sued. In contrast, among high risk profile physicians in the split sample (panel 3 of Table 4) the only statistically significant effects predicting early retirement plans were related to time in practice. Physicians in practice between 10-19 years (2.79) and those in practice for 20-29 years (5.70) were far more likely to say they planned to retire early due to Mississippi's medical malpractice climate compared to physicians with fewer than ten years in practice.

Limitations

Our findings should be interpreted conservatively. The 2002 MSMD focus on the malpractice climate may have made it more salient to doctors whose malpractice experiences or concerns were greatest, making them more likely to respond to the survey than Mississippi physicians more generally. If this is the case, results could overstate the pervasiveness of high levels of defensive medicine or intentions to relocate or retire early. If, however, Mississippi physicians shared broad and common concerns (regardless of practice type or malpractice experiences) due to the pervasiveness of the state's malpractice climate and ubiquity of lawsuits, our findings can be generalized to the Mississippi physician workforce. Although we do not know precisely the proportion of the state physician population named in lawsuits or with large premium increases, most physicians in particular specialties had been sued and nearly all doctors experienced insurance premium spikes in the years immediately before the survey. Key demographic characteristics and spatial distribution indicates that on all other characteristics, 2002 MSMD sample was very similar to the Mississippi physician workforce overall.

A second limitation reflects the non-specific nature of items comprising the dependent variable *defensive medicine*. On its face, more specific items may appear desirable, but many physicians are uncomfortable directly acknowledging defensive medicine practices (Anderson 1999) rendering general questions, like the ones in the MSMD survey, more likely to be answered than more specific ones. Respondents may be willing to acknowledge a generalized practice of defensive medicine but be less likely to report specific instances or types of defensive medicine even when they practice them. Since some items comprising the defensive medicine factor could be regarded as suggestive rather than directly indicating defensive medicine practices, our results should be interpreted as indicative but not necessarily determinative.

Discussion

Were physicians concerned that a self-fulfilling prophecy—that the Mississippi malpractice climate had become so toxic that physicians in general were impacted—borne out in their MSMD responses? Did what physicians perceive as real in the state's malpractice circumstances impact how they practiced medicine? Our analysis underscores the applicability of the Thomas theorem to physicians' perspectives in Mississippi, although physicians practicing in different circumstances used varying strategies to cope with the widespread perception of a malpractice crisis. Controlling for physicians' demographic characteristics, our analyses show that several practice and malpractice variables played significant roles in determining physicians' reports of practicing defensive medicine and their plans to either relocate to another state or retire early. *Time in practice* had considerable effects on all three dependent variables—and in the ways we expected. Physicians in practice the longest were the least likely to practice defensive medicine, to plan relocating or retiring early. A long career in Mississippi medical practice likely reflects a commitment to stay despite adverse practice conditions; perceptions of

retirement timing (whether early or on-time) may not seem early by doctors whose next career move under any circumstances would be retirement. Physicians early in their careers were most likely to consider relocation, while early retirement intentions were highest among mid-career physicians, reflecting how time in practice shaped choices physicians perceived they had when deciding how to deal with the Mississippi malpractice crisis. Generalists were less likely than specialists to have planned relocation, but only among low risk generalists.

The most obvious influence on physicians' defensive medicine experiences and planning was having a history of being named in a malpractice suit. Advocates of malpractice reform and state physician groups argued that physicians fled Mississippi during the malpractice crisis because they were being sued. However, the relationships between being named in a lawsuit and planning to relocate, retire early, or practice high levels of defensive medicine were more nuanced than we predicted, demonstrated best by comparing significant effects in the high and low risk split sample models. While a history of being named in malpractice lawsuits was consistently and positively related to each of the three dependent variables for physicians with low risk profiles, they were not statistically significant in the models restricted to high risk physicians. Physicians with high risk profiles have already *chosen* practices prone to high risk of malpractice suits and may have already incorporated strategies to deal with that level of litigation risk into their usual approach to practice. Physicians with traditionally low risk profiles, however, may not have anticipated much in the way of malpractice concern, given the intrinsically less risky nature of their chosen specialties. If low risk profile physicians were less likely to expect and plan for problems associated with malpractice, their ad hoc responses to the Mississippi malpractice crisis are no surprise and were shown more clearly in the split sample models. This finding is particularly disconcerting because an exodus of low risk primary care providers would intensify existing Mississippi physician shortages and jeopardize residents' access to care in a rural and poor state.

Some national research suggests that problems of the medical malpractice system may be exaggerated (see Bovbjerg, Dubay, Kenney, and Norton 1996) and studies exploring physician satisfaction provide little evidence that doctors are retiring earlier or leaving the profession at higher rates over the past 25 years (Kletke, Polsky, Wozniak, and Escarce 2000; Zuger 2004). Nonetheless, the GAO report indicated that Mississippi seemed to have systemic malpractice problems that were more widespread than in other so-called crisis states. Whatever the merits of arguments and anecdotes on either side of state medical liability tort reform, this research demonstrates that many Mississippi physicians regarded the malpractice climate as so toxic that they could no longer practice medicine as usual. For many, individual malpractice experiences led physicians to practice higher levels of defensive medicine or to plan to leave practice in Mississippi, either by relocating or retiring early. These coping mechanisms arose in the context of a malpractice climate many physicians perceived as inimical to their professional interests.

Despite registering some skepticism about the depth or extent of the problem in at least several states' medical malpractice systems they studied, the GAO (2003a) also sounded a cautionary note that physician responses to rising malpractice premiums were evolving and bore watching. Our findings showed that increasing malpractice premiums shaped Mississippi physicians' practice experiences and future plans. While it is uncertain that medical liability insurance rate increases were directly linked to Mississippi's medical malpractice litigation experiences, that view was widely held in the state's health care industry. Before 1960, only one in 7 US doctors were sued in their careers, more recent estimates show that one in 7 physicians are sued each year (Curran 1998). Among physicians responding to the 2002 MSMD survey,

nearly half reported they had been sued (48 percent), with more than one in five respondents sued in the single year (2001) before the survey.

It is intuitive to expect that physicians with high risk profiles would bear the brunt of a malpractice crisis, but in Mississippi it was physicians with low risk profiles who were particularly responsive to the medical malpractice climate. In fact, physicians with low risk profiles who were sued or experienced large annual malpractice insurance rate increases were significantly more likely to respond by reporting that they were planning to relocate or retire early from practice. Rural physician were also more likely than their urban counterparts to plan to relocate or retire early. When the physicians whose practices should be least exposed to malpractice experiences are unusually affected by a localized medical malpractice climate like Mississippi's, or rural physicians are more likely to plan to leave Mississippi practice, the stage is set for new distortions in the state's physician workforce and access to care. Such findings are ominous for Mississippi, which already faced primary care physician shortages in areas populated by its most vulnerable residents. Policymakers responded to these and other malpractice related concerns with tort reforms in 2004. Research underway may provide more definitive answers about which physicians acted on their plans and whether the legislative reforms turned the tide of the Mississippi malpractice crisis.

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