

This is a preliminary draft.
Please do not circulate or cite
without permission.

Physicians' Insurance Limits and Malpractice Payments: Evidence from Texas Closed Claims, 1990-2003

Kathryn Zeiler,^{*} Georgetown University
Charles Silver,^{**} University of Texas
Bernard Black,^{***} University of Texas
David A. Hyman,^{****} University of Illinois
William M. Sage,^{*****} Columbia University
(draft May 2006)

* Visiting Professor of Law, New York University School of Law; Associate Professor of Law, Georgetown University Law Center Tel. 212-992-8936, email: zeiler@law.georgetown.edu

** McDonald Endowed Chair in Civil Procedure, University of Texas Law School. Tel. 512-232-1337, email: csilver@law.utexas.edu

*** Hayden W. Head Regents Chair for Faculty Excellence, University of Texas Law School, and Professor of Finance, University of Texas, Red McCombs School of Business. Tel. 512-471-4632, email: bblack@law.utexas.edu

**** Professor of Law and Medicine, University of Illinois. Tel. 217-333-0061, email: dhyman@law.uiuc.edu

***** James R. Dougherty Chair for Faculty Excellence in Law, University of Texas School of Law, and Vice-Provost for Health Affairs, University of Texas at Austin. Tel. 512-232-7806, email: wsage@law.utexas.edu

ABSTRACT

Although tort liability is supposed to encourage health care providers to reduce the risk of patient injuries, medical malpractice insurance is thought to dampen this deterrent effect by insulating physicians from the costs of claims. The degree to which malpractice insurance protects physicians from these costs has never been quantified, however, and the oft-heard claim that every physician is “one lawsuit away from financial disaster” suggests that doctors face significant exposure in malpractice lawsuits, despite being insured. This study quantifies the frequency with which insured physicians pay out of their own pockets to satisfy malpractice claims. Using Texas Department of Insurance data on closed medical malpractice claims for 1990-2003, we find that claimants frequently received the available primary coverage and rarely recovered more. Physicians almost never used personal assets to cover paid claims. In addition, we find that even though Texas physicians with paid claims purchased less real coverage over time, claim rates and average payments remained relatively stable over the period of study.

Physicians' Insurance Limits and Malpractice Payments: Evidence from Texas Closed Claims, 1990-2003

Kathryn Zeiler, Charles Silver, Bernard Black, David A. Hyman & William M. Sage*

I. INTRODUCTION

Although tort liability is supposed to exert pressure on physicians to improve patient safety, “the evidence that the [malpractice] system deters medical negligence can be characterized as limited at best.”¹ The problem may have many causes, including malpractice insurance. Because it insulates physicians from the direct costs of errors, malpractice insurance is thought to dampen their incentives to exercise reasonable care.²

The degree to which insurance protects physicians has never been quantified, however, and the oft-heard lament that every physician is “one lawsuit away from financial disaster” suggests that the protection they enjoy is far from complete.³ If physicians bear considerable personal exposure despite being insured, the liability system should generate at least some pressure to improve safety. Alternatively, if their personal exposure to malpractice claims is small, liability would have no deterrent effect unless its

* Please address correspondence to Kathryn Zeiler at zeiler@law.georgetown.edu.

We benefited greatly from helpful discussions with the Georgetown Junior Group (James Forman, Kris Henning, Greg Klass, John Mikhail, Nick Rosencrantz and David Vladeck), and received comments from Stephen Salop. We presented earlier versions of this article at the Georgetown University Law Center, New York University School of Law, the Northwestern University Law School, and the University of Texas School of Law, and are grateful for comments received on those occasions. We owe special thanks to Vicky Knox at the Texas Department of Insurance. Thanks also to JaeJoon Han, An-Shih Liu, and Rachel Miras-Wilson for excellent research assistance. Funding for this study was provided by [include funding sources here].

¹ David M. Studdert, Michelle M. Mello, and Troyen A. Brennan, Medical Malpractice, *N. Engl. J. Med.* 350:3 283, 286 (Jan. 15, 2004)

² Paul C. Weiler et al., A Measure of Malpractice: Medical Injury, Malpractice Litigation, and Patient Compensation 114 (1993). Uninsured costs of litigation, such as psychological stress and reputational loss, may nonetheless motivate physicians to protect patients from harm.

³ Robert Lowes. Protect your assets before you're sued. *Medical Economics* Feb. 21, 2003, pp. 80-82. [add additional cites]

costs were transmitted to doctors via the underwriting, pricing and monitoring practices of their insurers.

Using data on 9,525 Texas medical malpractice claims that closed 1990-2003 with total payments (by all defendants) exceeding \$25,000 (nominal), this study finds that physicians rarely paid out of their own pockets to satisfy malpractice claims. Claimants infrequently received more than the primary policy limits, which appear to serve as de facto caps on recoveries. Excluding cases with deductibles and payments by excess carriers,⁴ primary carriers resolved 99.4% of paid claims using only their money and provided 98.8% of the total dollars claimants received. Doctors made payments above the policy limits about 4 times per year. Usually, these payments were small, although eight exceeded \$500,000, measured in 2003 dollars.⁵ Malpractice lawsuits rarely threaten physicians with ruinous personal exposure.

This study also calls into question the conventional wisdom that most doctors carry \$1 million (nominal) in coverage. Only about one-third of physicians with paid claims purchased policies of this size. Policies with limits of \$100,000, \$200,000, and \$500,000 were collectively more common. Measured in real dollars, doctors with paid malpractice claims also carried considerably less insurance over time. We find a 31.4% decline in purchased coverage from 1988 to 1999. Because policy limits effectively cap patients' recoveries, this trend toward smaller real policies may eventually cause claim

⁴ Physicians sometimes purchase additional insurance from excess carriers to protect themselves against exposure to payments in excess of primary policy limits.

⁵ Interestingly, four of these eight payments were made in perinatal cases. In four of the cases primary limits were \$500,000 or less (nominal). Also, in four cases the primary insurer paid less than the limit, suggesting that the physician had eroded the annual aggregate limit. In two of the cases large verdicts were awarded (\$3.5M and \$4.2M (nominal)). None of the eight physicians retained personal counsel.

rates and payments to claimants to decline. Claim rates and real payments, however, remained fairly stable during the period of study.

This article proceeds as follows. Part II describes the data, provides summary statistics and details specific limitations of the study. Part III provides results related to the relationship between policy limits and recoveries, the allocation of payments between physicians and their insurers, and changes over time in coverage for physicians with paid claims and payments to claimants.⁶ Part IV offers a discussion of the results, and Part V concludes.

II. THE DATA

A. The Texas Closed-Claims Database

Texas provides a nearly ideal setting to study malpractice litigation. It is the country's second most populous state. It spends the third largest amount on health care.⁷ It has a large and growing physician population⁸ and a highly developed trial bar.⁹ It experiences soft and hard insurance markets, and was especially hard-hit by skyrocketing medical malpractice insurance premiums during the recent malpractice "crisis."¹⁰ It enacted sweeping tort reform legislation in 2003, but, with exceptions noted below, had a generally stable legal environment during the period studied here.¹¹

⁶ We also examined trends in deductibles and payments by excess insurers. The results relating to these subjects are available on request.

⁷ [cite]

⁸ [cite]

⁹ [cite]

¹⁰ [cite]

¹¹ [cite to 2003 tort reform package]

Texas also maintains the Texas Closed Claim Database (TCCD). Since 1988, the Texas Department of Insurance (TDI) has required commercial insurers¹² to file three types of reports on closed malpractice claims:¹³ brief aggregate reports of claims with total payments *by all defendants* of \$0-\$10,000; moderately detailed individual reports of claims with payments of \$10,001-\$24,999; and extensive reports on claims with payments of \$25,000 and up (all in nominal dollars). Data are currently available through 2003 and have been audited for accuracy by TDI since 1990.¹⁴ The reporting format remained substantially unchanged during the entire period, facilitating comparisons over time. A recent work describes the TCCD more fully.¹⁵

Reports of claims with total payments of \$25,000 or more identify the policyholder's business class, cause of injury, and type of insurance coverage. This study uses only claims in which (1) the policyholder is a physician, (2) the cause of injury is surgical or medical care, and (3) a medical malpractice policy provided coverage.¹⁶ The first constraint excludes health care providers like hospitals and nursing homes, the insuring habits, litigation practices, and experiences of which might differ from

¹² According to the Closed Claim Reporting Guide: "Each insurance company or other entity admitted to do business and authorized to write liability insurance in Texas, including county mutual insurance companies, Lloyd's plan companies, and reciprocal or inter-insurance exchanges, ... and each pool, joint underwriting association, or self-insurance mechanism or trust authorized by law to insure its participants, subscribers, or members against liability must submit quarterly closed claim report forms."

¹³ A "claim" is a report of a final payment (or a promise thereof when defendants will make payments over multiple years) to a patient (or a patient's estate or survivors, when a patient is deceased). The dataset used in this study excludes instances in which carriers opened files and closed them without making payments, e.g., because patients failed to pursue their claims.

¹⁴ Medical malpractice cases often involve multiple defendants and multiple insurers. When plaintiffs collect payments from multiple insurers, more than one observation in the dataset will be associated with the particular claim. We refer to these related observations as duplicates. We supplemented TDI's auditing process by identifying additional duplicate reports. See Bernard Black, Charles Silver, David A. Hyman and William M. Sage. 2005. Stability, Not Crisis: Medical Malpractice Claim Outcomes in Texas, 1988-2002, *Journal of Empirical Legal Studies*, 2(2):207-59 at 215-16. Unless otherwise stated we include duplicate reports when analyzing policy limits and payments, and exclude them when discussing trial verdicts.

¹⁵ Black et al., *supra* note _____, at 213-22.

¹⁶ Using the language set out in Black et al., *supra* note _____, this dataset is the NAR dataset limited to physicians.

physicians'. The second and third constraints eliminate claims that might involve allegations other than medical malpractice.

As mentioned, the TCCD contains information about the cause of injury only for claims with total payments by all defendants above \$25,000 (nominal). Claims with total payments below this level are included in the TCCD but lack information about injury cause and are excluded from the subset of the data we examine. In robustness checks, the results reported below varied little when run on a larger dataset including claims with payments of \$10,001-\$25,000 (nominal).¹⁷ Some reports of claims with total payments by all defendants above \$25,000 (nominal) contain information about payments below \$25,000 (nominal) by individual physicians. The dataset includes these reports.

TDI has never adjusted the \$25,000 reporting threshold for inflation. Counting claims above the reporting threshold without adjusting for inflation would convey misleading information about frequencies and payments. We address this problem of “bracket creep” by including in our analysis only claims with total payments of \$25,000 or more measured in 1988 dollars.¹⁸ The adjustment eliminated 572 claims, 6% of the claims but only 1% of dollars paid; the final sample size is 9,525 insured payments on 8,400 distinct claims. After refining the dataset, we converted our real dollar findings to 2003 dollars when making cross-year comparisons.

To determine the total payment for a particular physician, we summed the deductible payment, the primary carrier’s payment, the excess carrier’s payment, and the physician’s payment above the primary policy limit. The dataset contains reports for each defendant when payments were made on behalf of multiple defendants. We include all

¹⁷ [provide details regarding robustness checks here]

¹⁸ \$25,000 in 1988 has the same buying power as \$38,884 in 2003.

reports when analyzing policy limits and payments. We exclude duplicate reports when discussing trial verdicts.

Malpractice policies contain “per occurrence” limits and aggregate annual limits. TDI’s reporting form requires insurers to state the “per occurrence” limit. We used this to measure policy size when available (8,657 claims). Instead of reporting a “per occurrence” limit, carriers sometimes indicated a “combined single limit.”¹⁹ Following TDI’s practice, we used this to measure policy size for 868 claims for which “per occurrence” limits were not reported. Our results do not change when we limit our analyses to only claims with reported “per occurrence” limits. When comparing payments to limits, we exclude 136 claims with payments by an excess carrier because we lack information on excess policy limits.

Some policies are “claims-made” and cover claims made during a coverage year; others are “occurrence” and cover claims for harm stemming from services rendered during a coverage year. The TDI data reports policy type but not purchase year. We set the purchase year as the year a claim was reported for claims-made policies (5,911 claims) and as the year an injury occurred for occurrence policies (3,614 claims). While this approach is generally accurate, individual insurance contracts determine which claims are covered, and their terms may vary. Our choice of trigger dates corresponds to the language found in most policies, but perhaps not in all. In robustness checks on relationships between payments and limits and on purchasing trends, we analyzed

¹⁹ Liability policies usually offer separate limits that apply to bodily injury claims and to claims for other types of damages. A combined single limit policy covers all damages per occurrence regardless of injury type.

occurrence policies and claims-made policies separately. No significant differences emerged.²⁰

When performing our analyses, we use data from several non-TCCD sources. The table in the Appendix identifies the sources and the variables drawn from them, and indicates how the variables enter into our analyses.

B. Summary Statistics

Table 1 presents summary statistics on the closed medical malpractice claim dataset used in this study. As can be seen, small paid claims greatly outnumber large paid claims, but large paid claims are disproportionately important. Eighty-five percent of the reported claims had payments of \$500,000 or less (in 2003 dollars), but these claims accounted for only 52% of total payments. The 15% of claims with payments exceeding \$500,000 accounted for 48% of total payments.

Table 1: Summary Statistics

Payment Range (in 2003\$)	Number of		Total Payments	
	Closed Claims	% of Total	(in millions of 2003\$)	% of Total
\$0 – 100,000	2,968	31%	\$ 178	7%
\$100,001 - 500,000	5,184	54%	\$ 1,163	45%
\$500,001 - 1,000,000	1,021	11%	\$ 686	27%
Over \$1,000,000	352	4%	\$ 542	21%
Total	9,525	100%	\$ 2,569	100%

Note: Number of medical malpractice claims from 1990-2003 with payments in various size ranges in 2003 dollars. “Total Payments” is the sum of all payments reported by insurers as having been made by or on behalf of their insured physicians. “Total Payments” excludes amounts reported as having been made by other defendants or their insurers.

²⁰ [add robustness check details]

Table 2: Additional Summary Statistics by Closing Year

Statistics General Health Care				Payments on Liability Claims			Payment per Paid Claim			Policy Limits		
Closing year	Number of practicing TX physicians	Number of paid claims per 100 practicing TX physicians ^{1,2}	Health care expenditures for all TX payors (2003\$; in millions)	Number of claims ^{1,2}	Total payments (2003\$) ^{1,2}	Total payments per billion dollars of health care expenditures ^{1,2}	Average payment per practicing TX physician (2003\$) ^{1,2}	Mean (2003\$) ^{1,2}	Median (2003\$) ^{1,2}	Standard deviation (2003\$) ^{1,2}	Mean (2003\$) ^{1,2}	Median (2003\$) ^{1,2}
1990	22,711	2.70	68,778	613	199,407,048	2,899,273	8,780	325,297	140,845	508,600	1,320,693	1,056,338
1991	23,119	2.40	70,913	555	159,384,289	2,247,606	6,894	287,178	135,135	388,939	1,064,097	675,676
1992	23,609	3.18	73,165	751	220,028,488	3,007,276	9,320	292,980	144,737	344,360	948,736	657,895
1993	23,666	2.77	73,945	656	174,356,801	2,357,939	7,367	265,787	158,861	351,046	789,954	632,911
1994	24,993	2.52	74,016	629	182,693,150	2,468,295	7,310	290,451	166,667	343,315	776,512	617,284
1995	25,683	2.77	76,142	712	176,032,603	2,311,884	6,854	247,237	150,602	305,361	792,364	602,410
1996	25,963	2.50	78,656	649	179,293,159	2,279,460	6,906	276,261	160,353	374,383	843,469	588,235
1997	28,007	2.58	81,367	723	180,729,207	2,221,164	6,453	249,971	158,046	330,250	767,634	574,713
1998	28,778	2.16	83,921	623	155,333,945	1,850,963	5,398	249,333	161,798	289,923	760,790	561,798
1999	30,348	2.35	85,686	713	196,051,207	2,288,019	6,460	274,967	166,322	487,738	832,507	549,451
2000	31,769	2.27	89,313	722	168,571,070	1,887,420	5,306	233,478	159,574	256,642	797,246	531,915
2001	32,281	2.23	93,765	719	192,496,766	2,052,977	5,963	267,728	182,292	362,835	758,700	520,833
2002	33,094	1.99	98,978	660	177,333,956	1,791,652	5,358	268,688	183,673	354,705	761,966	561,224
2003	34,432	2.32	103,457	800	206,668,108	1,997,620	6,002	258,335	195,000	295,001	688,494	500,000
				<u>9,525</u>								

¹ after adjusting for bracket creep (see note 18 and accompanying text)

² including duplicates (see note 14 and accompanying text)

Table 2 provides additional summary statistics by closing year on general indices, payments on liability claims, and policy limits covering closed claims.

C. Data Limitations

The methods by which TDI collects policy characteristics and claim information create particular data limitations for our study. In addition, when analyzing the findings one should consider Texas' legal environment.

Policy Characteristics

The method TDI uses to collect information about policy characteristics results in three significant limitations. First, the TCCD does not contain a representative sample of the insured physician population. It over-represents doctors who experienced claims and under-represents doctors who did not. For this reason, the average policy limit reported in the TCCD might be higher or lower than the average limit for all insured Texas physicians. If doctors with paid claims anticipate larger expected losses than other doctors, they might purchase more coverage than physicians in general.²¹

Because the TCCD is not a representative sample, one cannot reliably generalize from our findings to the larger population of physicians practicing in Texas. This includes findings about coverage levels and changes in them over time. It would be especially perilous to generalize these findings to physicians practicing elsewhere in the United States. Damages caps, patient compensation funds, lawsuit screening panels, and other variations in tort regimes might affect liability insurance purchasing patterns significantly.

²¹ We attempted to evaluate the representativeness of the TCCD by requesting data on policy limit size from Physicians Insurance Association of America, an association of malpractice insurers, and the American Physicians Insurance Exchange, a liability carrier that sells malpractice coverage in Texas. Both efforts failed.

Second, the TCCD does not allow us to determine whether aggregate policy limits were eroded by payments of previous claims on behalf of the insured. The dataset includes the per occurrence limit specified in the insurance contract but not the remaining aggregate coverage. Therefore we cannot identify cases where resolution occurred below the indicated per occurrence limit but at the remaining aggregate limit.²² This limitation might be problematic because evidence suggests that a few “bad doctors” account for a disproportionate number of paid malpractice claims.²³

If payments on behalf of doctors with multiple claims in Texas are commonly constrained by aggregate limits, the impact of policy limits on recoveries will be misestimated.²⁴ We might also fail to identify the causes of payments by the insured due to an award in excess of policy limits.²⁵ A payment smaller than the per occurrence limit by a primary carrier combined with a payment by the insured due to an award in excess of the policy limits (or combined with a payment by an excess carrier²⁶) might reflect an exhausted aggregate limit, but could also reflect a deal struck to get a case settled when

²² For example, suppose a physician with policy limits of \$100,000 per occurrence and \$300,000 aggregate had four claims pending. If three claims settled for a total of \$250,000, only \$50,000 would remain to cover the fourth. If the plaintiff settled for \$50,000, the dataset would record a \$50,000 payment and a \$100,000 per occurrence policy limit. We have no way of knowing the relationship between the payment and the aggregate limit.

²³ See, e.g., Public Citizen, *Medical Misdiagnosis in Texas: Challenging the Medical Malpractice Claims of the Doctors’ Lobby* (Feb. 2003), <http://www.citizen.org/documents/Texas%20Report.pdf>; Frank A. Sloan, *Experience Rating: Does It Make Sense for Medical Malpractice Insurance?*, 80 *American Economic Review* 2: 128-133 (May 1990) (reporting that 6% of Florida anesthesiologists and ob/gyns accounted for 87% of the losses, and that “[l]osses for internists and other surgical specialties were similarly concentrated”).

²⁴ See *infra* Part III for a discussion of the observed relationship between policy limits and payments.

²⁵ Indeed, four of the eight above-limit payments by physicians in excess of \$500,000 (measured in 2003 dollars) were made in cases in which the primary insurer made a payment that was below the stated per occurrence limit.

²⁶ An excess carrier provides a layer of coverage above the primary insurance policy which applies when the primary limits are exhausted.

the primary carrier wished to try the case and the insured or excess carrier did not. These cases make up a small fraction of our dataset, however.²⁷

Third, multiple liability policies might cover a single claim, such as when a doctor treats a patient over several years and acts performed in different years trigger different policies. We have not measured the frequency of multiple coverage or its effects.

Claim Information

A prior study sets out the claim-related limitations of the TCCD.²⁸ We therefore highlight only certain limitations here. First, the TCCD contains information about injury type but not injury severity. Therefore, except when the injury is death, we cannot directly assess the degree of harm patients sustained. Second, the dataset contains no information about the insured's specialty; thus, we cannot directly determine whether our results and reported trends over time are similar across physician specialties. Throughout the study, we attempt to isolate perinatal cases by separately analyzing claims with patients aged 0-1 month at time of injury.

Evidence suggests that plaintiffs sometimes agree to drop doctors from malpractice cases in return for payments from hospitals or other defendants.²⁹ This strategy spares doctors from having reports filed against them with the National Practitioner Data Bank (NPDB), which began collecting reports of paid malpractice claims against physicians in the early 1990s. Hospitals agree to the strategy to curry favor with physicians, especially those who are sources of lucrative patient referrals. We cannot determine how often this strategy was employed or whether the frequency of its use

²⁷ The data set includes only 112 cases (out of 9,525) of this sort. This is just over 1% of the dataset.

²⁸ See Black et al., *supra* note _____, at 218-222.

²⁹ [cite]

changed over time. Such changes could affect the number of reports in the TCCD as well as doctors' insurance purchases.

Legal Environment

Texas enacted caps on compensatory damages in medical malpractice cases in 1977. As applied to negligence actions, the Texas Supreme Court struck down these caps in 1988.³⁰ In 1990, the first year for which closed claims are included in this study, the Court upheld the caps as applied to wrongful death claims.³¹ The wrongful death cap was indexed for inflation but otherwise did not change during our sample period. It equaled about \$1,500,000 in 2003.³² 3,363 cases in our dataset (35%) involved wrongful death claims.

Texas also enacted a variety of other reforms,³³ including caps on punitive damages, which varied depending on whether a case was filed before September 1, 1995. For earlier cases, the punitive damages cap was the greater of four times compensatory

³⁰ Lucas v. U.S. 757 S.W.2d 687 (Tex., 1988).

³¹ The damages cap on wrongful death applies to all medical malpractice cases in which the plaintiff died. Rose v. Doctors Hosp., 801 S.W.2d 841, Tex., 1990 ("Like all actions based upon theories of negligence, the Roses' cause of action was a common law claim. It would have died with Rex Rose had it not been preserved by the legislature in the wrongful death statute.")

³² Tex. Rev. Civ. Stat. Ann. art. 4590i, §§ 11.02, 11.04 (West Supp. 1998).

³³ In mid-1990s Texas enacted a handful of reforms, some of which possibly apply to medical malpractice cases including changes in the applicability of contributory negligence to punitive damages (TX CIV PRAC & REM § 33.002), general contributory negligence reform (TX CIV PRAC & REM § 33.001), penalties for frivolous lawsuits (TX CIV PRAC & REM § 10.001- 10.006), protection for good Samaritans (V.T.C.A., Civil Practice & Remedies Code § 84.004 , TX CIV PRAC & REM § 84.003), joint and several liability reform (TX CIV PRAC & REM § 33.013), reform to arbitration rules in medical malpractice cases (Vernon's Ann.Civ.St. art. 4590i, § 15.01 (before sept 1 2003); V.T.C.A., Civil Practice & Remedies Code § 74.451 (after 2003); (1993 Tex. Sess. Law Serv. Ch. 625 (S.B. 1409) (VERNON'S)) (for original session law)), general medical liability reform related to pretrial procedures (V.T.C.A., Civil Practice & Remedies Code § 74.351; TX LEGIS 140 (1995)/ (TX CIV ST Art. 4590i) and expert witness testimony (TX CIV ST Art. 4590i , V.T.C.A., Civil Practice & Remedies Code § 74.401 (after 9/1/03)), prejudgment interest reform (TX LEGIS 140 (1995) / (TX CIV ST Art. 4590i); V.T.C.A., Civil Practice & Remedies Code § 41.006, § 41.007 since sept 1, 1995), changes to burden of proof rules regarding punitive damages (TX CIV PRAC & REM § 41.003), statute of limitations for minors (Weiner v. Wasson, 900 S.W.2d 316 (Tex. 1995), and venue reform (TX LEGIS 138 (1995)/ TX CIV PRAC & REM § 15.002, TX CIV PRAC & REM § 15.003). See Ronen Avraham. "Database of State Tort Law Reforms" (Northwestern University School of Law, NSF grant # 0452221).

damages or \$200,000 (nominal). For later cases, the punitive cap was the greater of \$200,000 (nominal) or two times economic damages plus the greater of non-economic damages or \$750,000.³⁴ In our dataset, 2.6% of malpractice cases with jury verdicts contained punitive awards. For settled claims, we cannot confidently estimate the punitive component.³⁵

III. RESULTS

In this Section we report on the relationship between policy limits and recoveries and the break down of payments by primary insurers and physicians. We find that policy limits seem to cap recoveries and primary insurers make the vast majority of payments to claimants. These findings suggest that the direct deterrent impact of malpractice liability falls upon insurers and is transmitted to physicians, if at all, through insurers' underwriting, pricing, and monitoring practices.

A. Policy Limits Cap Recoveries

To determine the relationship between payment amounts and policy limits, we began by computing payment-to-limit (PTL) ratios for all closed claims. A \$500,000 payment on a \$1 million policy produces a PTL ratio of 0.5. The ratio equals 1 when the payment equals the primary policy limit.

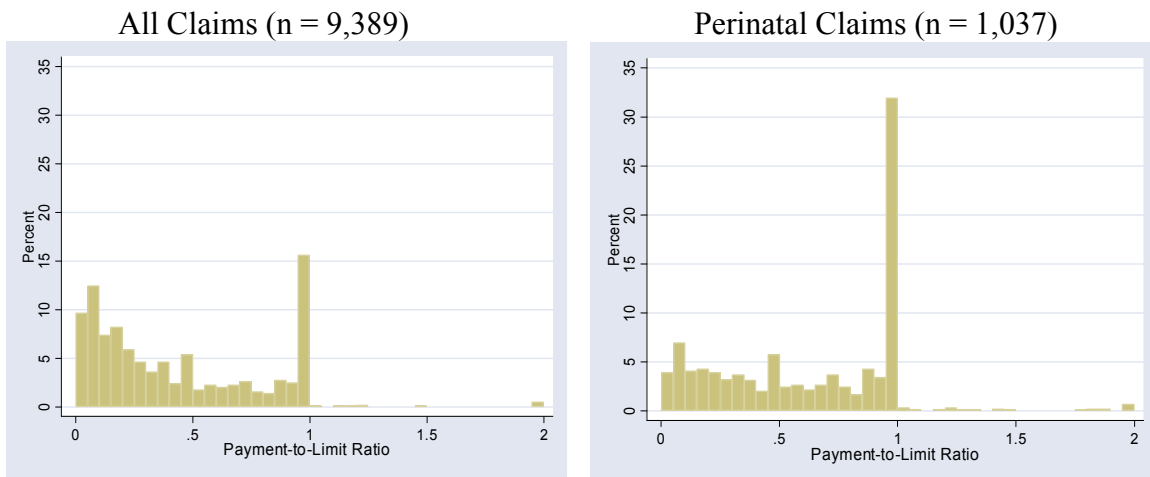
Figure 1 shows the distribution of PTL ratios for all claims and for claims against physicians involved in perinatal cases (i.e., patients aged 0-1 month at time of injury).

³⁴ Tex. Civ. Prac. & Rem. Code Ann. § 41.008 (West 1997) (post-September, 1995 cap). The pre-September, 1995 was found in Tex. Civ. Prac. & Rem. Code Ann. § 41.007 (West 1991) (repealed 1995). The cap does not apply in cases of certain felonies, including fraudulent destruction or concealment of written records. Tex. Civ. Prac. & Rem. Code Ann. § 41.008 (West 1997).

³⁵ Although TDI asks insurers to categorize settlement amounts into compensatory damages and non-compensatory damages, we have no reason to rely on the insurer's assessment of reported categorizations given that insurers have no incentive to accurately report the perceived breakouts.

The spikes at the policy limits are obvious and large. 15.6% (31.9%) of all claims (perinatal claims) have ratios between 0.95 and 1 (inclusive),³⁶ 13.6% (29.0%) have ratios of 1.³⁷ We obtain similar distributions using various subsets of the data (e.g., claims involving only single or only multiple physicians, claims involving brain damage or death). A logit regression using all claims finds no statistically significant increase over time in the likelihood of a payment at the policy limit (OR=1.004; 95% confidence interval (CI)=[0.99,1.019]), but did find a statistically significant increase over time for perinatal cases (OR=1.06; 95% CI=[1.026,1.096]).

FIGURE 1: Distributions of Payment-to-Limit Ratios



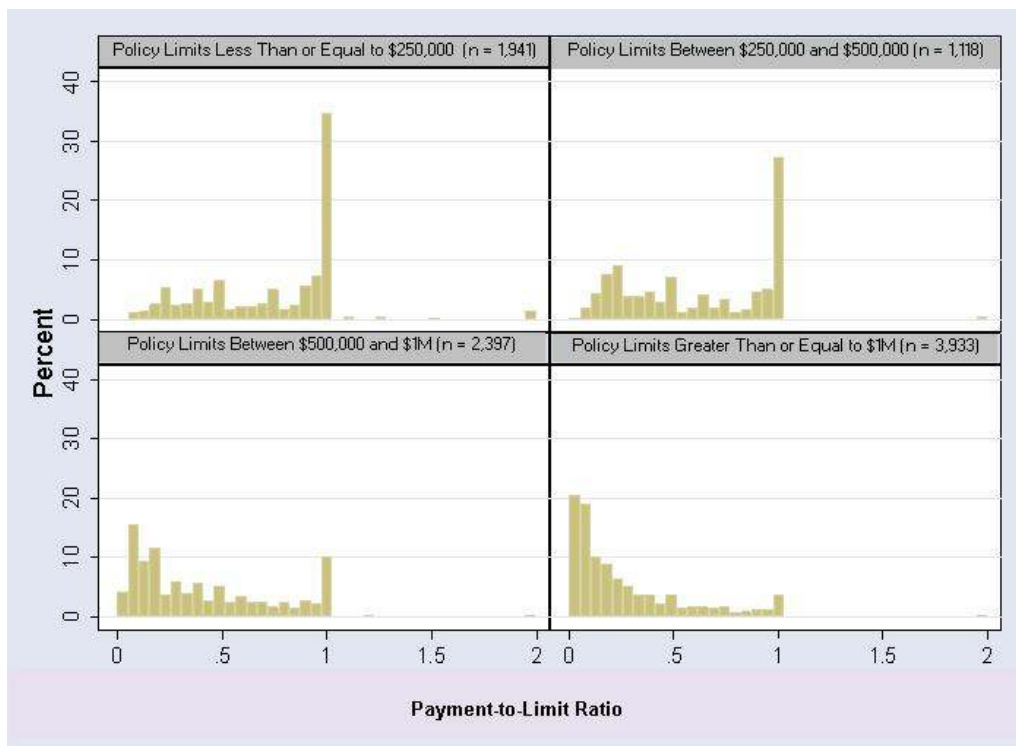
Note: Each bar represents a 0.05 increment in PTL ratio. All claims with ratios greater than 2 were set equal to 2. Claims with payments by excess carriers are excluded.

³⁶ The percentage of non-perinatal claims with ratios between 0.95 and 1 is 13.6% (n = 1,134). This percentage is statistically significantly lower than the percentage of perinatal claims in this range (z = 7.7; p = 0.00).

³⁷ These figures may understate the spike in payments at available policy limits. When prior payments on behalf of the defendant erode the aggregate annual limit, a payment equal to the remaining coverage will produce an apparent PTL ratio below 1. Studies suggest that many physicians experience multiple claims against the same policy and hence may have eroded limits. Massachusetts Board of Registration in Medicine. *Medical Malpractice Analysis*. November 2004; Public Citizen. *Medical Misdiagnosis in Texas: Challenging the Medical Malpractice Claims of the Doctors' Lobby*. February 2003.

The magnitude of the at-limit spike is also sensitive to real policy size. As Figure 2 shows, it shrinks as real policy size increases and almost disappears with real limits of at least \$1 million. For claims covered by policies of at least \$1 million, only 4.2% closed with ratios between 0.95 and 1. By comparison, for policies between \$500,000 and \$1 million, 10.9% of closed claims fell into the spike; for policies between \$250,000 and \$500,000, 28.4% fell into the spike; and for policies less than \$250,000, 37.1% fell into the spike. Tests of equal proportions indicate that the percentages of claims with ratios between 0.95 and 1 are statistically significantly higher for each step up in policy limit size (i.e., 37.1% > 28.4% ($z = 4.866$; $p = 0.00$); 28.4% > 10.9% ($z = 13.026$; $p = 0.00$); 10.9% > 4.2% ($z = 10.353$; $p = 0.00$)).

Figure 2: Distribution of Payment-to-Limit Ratios by Real Policy Size



Note: Each bar represents a 0.05 increment in PTL ratio. All claims with ratios greater than 2 were set equal to 2.

Only 1.5% of all claims (2.4% of perinatal claims) have PTL ratios > 1 . These payments are more frequent when policies are small, occurring in 3.97% of cases with real limits \leq \$250,000. Of 6,332 closed claims with real limits of \$500,000 or more, 43 (0.68%) have PTL ratios > 1 .

B. Who Pays?

The low frequency of payments in excess of policy limits suggests that primary carriers bear most of the indemnity risk associated with paid malpractice claims. Ignoring deductibles (present in 263 cases),³⁸ Table 3 shows that almost 98% of claims were resolved with primary carriers' money alone. This includes 101 claims with PTL ratios > 1 , the costs of which insurance carriers may have borne to avoid bad faith claims. Doctors contributed funds in excess of limits in 0.65% of the cases (an average of 4 such payments per year), with no apparent time trend in frequency. Measured in 2003 dollars, primary carriers paid \$2.5 billion, physicians paid \$11.8 million above the policy limits, and excess carriers paid \$58.3 million.

³⁸ The mean (median) real deductible was \$39,000 (\$25,000). Physicians paid deductibles of \$100,000 or more (real) in 20 cases, probably pursuant to self-insured retentions.

Table 3: Sources of Funds Paid on Claims, 1990-2003

Payment by Primary Insurer?	Payment by Excess Carrier?	Payment Above Limit by Physician?	N	%
Y	N	N	9,322*	97.87%
Y	Y	N	128	1.34%
Y	N	Y	55	0.58%
Y	Y	Y	7	0.07%
Other [†]			13	0.14%
Total			9,525	100.00%

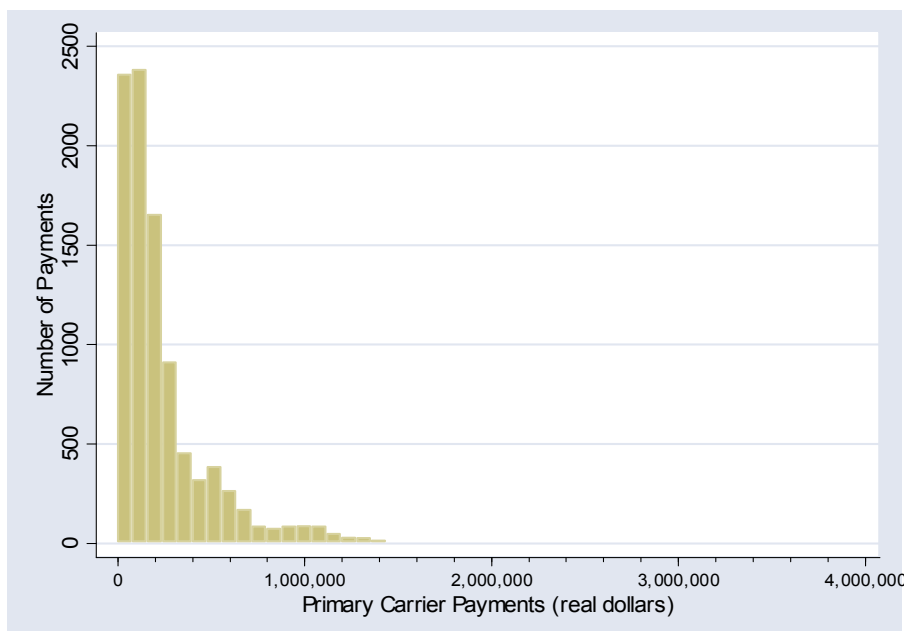
* Deductibles paid in 263 cases.

[†] Includes claims paid using only physician deductible (n = 12) or excess carrier funds and physician deductible (n = 1).

1. Payments by Primary Carriers

Primary carriers made payments in 9,512 of the 9,525 claims and contributed 97% of all dollars paid. Their payments varied considerably in size. Figure 3 shows the distribution of payments by primary carriers in real dollars. Primary carriers paid \$500,000 or less, measured in 2003 dollars, in 86.0% of the cases to which they contributed. The real mean (median) primary carrier payment was \$261,000 (\$161,000). A claims-level regression of ln(real primary carrier payment) on year found no significant time trend in payment size (estimate=0.04%; 95% CI=[-0.5% , 0.4%]).

Figure 3: Distribution of Primary Carrier Payments



Note: 10 payments greater than \$4M were set equal to \$4M. They range from \$4M to \$10.2M.

Primary carriers made payments in 1,051 perinatal cases (11% of claims with primary carrier payments). The real mean (median) primary carrier payment for perinatal claims was \$350,000 (\$210,000), compared to non-perinatal claims with real mean (median) payments of \$250,000 (\$150,000). A claims-level regression of $\ln(\text{real primary carrier payment})$ on year found no significant time trend in payment size in perinatal cases (estimate=-0.01; 95% CI=[-0.03 , 0.002]).

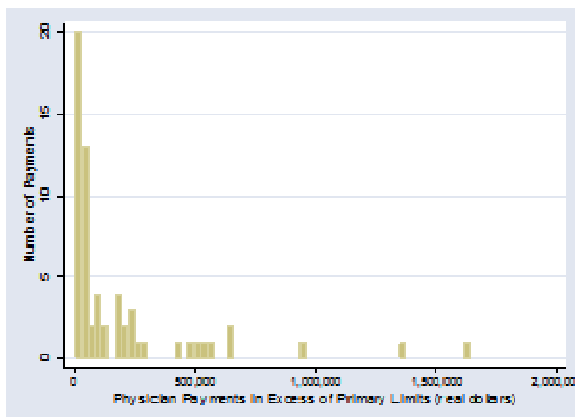
2. Above-Limit Payments by Physicians

Above-limit payments by physicians varied considerably in size. Panel A of Figure 4 shows the distribution of physician above-limit payments in real dollars. Physicians made above-limit payments in 62 of the 9,525 cases (0.65%). Thirty-eight

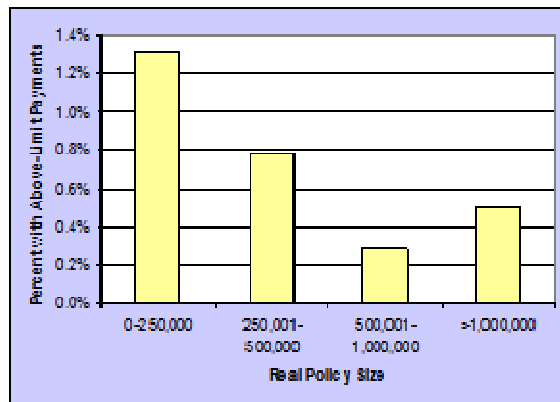
were \$100,000 or less; 45 were \$200,000 or less. The real mean (median) was \$190,000 (\$54,000) for all claims. A claims-level regression of ln(real above-limit payment) on year found no significant time trend in payment size (estimate=3%; 95% CI=[-6.9% , 13.2%]).

Figure 4: Physician Above-Limit Payments

Panel A: Distribution (n=62)



Panel B: Percent with Payments by Policy Limit Size



The frequency of above-limit payments varied by policy size, as shown in Figure 4, Panel B. These payments appeared most often when real policy limits were \$250,000 or less, occurring in 1.3% of these cases (26 of 1,969). Less than 1% of claims in cases with policies larger than \$250,000 (measured in 2003 dollars) involved physician above-limit payments (36 of 7,556). A claims-level logit regression finds that the likelihood of a payment decreases as real policy size grows (OR=0.9999994; 95% CI=[0.9999989,0.9999999]). The marginal decrease is small, however, because the absolute likelihood is low: for each additional \$1,000,000 in real coverage the predicted probability of an above-limit payment falls by 0.38%. In 18 of the 62 cases in which

physicians made payments, primary insurers paid less than the reported policy limits. Possible explanations for this pattern include eroded primary limits and coverage disputes.

Above-limit payments were made more often in perinatal cases, which account for 11% of all paid claims but for 26% of above-limit payments (16 of 62). A logit regression indicates that, controlling for $\ln(\text{real policy limit})$ and $\ln(\text{real payment size})$, above-limit payments were made more often in perinatal cases (OR=1.95; 95% CI=[1.093,3.488]). The real mean (median) payment for perinatal claims was \$270,000 (\$120,000), compared to non-perinatal claims with real mean (median) payments of \$160,000 (\$40,000).

Although we do not attempt to explore the causes of above-limit payments, claims with these payments have certain prominent features, as shown in Table 4. They are much larger on average than claims in general; they are more likely than claims in general to involve brain damage and infants; and they are less likely than claims in general to be death cases. These characteristics make sense. Larger claims are more likely to exceed policy limits, and brain damage and infant plaintiffs are known to correlate positively with payment size. By contrast, death is known to reduce payments relative to injuries requiring future medical care.³⁹ In logit regressions using the presence or absence of an above-limit payment as the binary dependent variable, all three variables had the expected signs: positive for brain damage (coeff = 0.82; p = 0.01), and infant plaintiff (coeff = 0.90; p = 0.002); negative for death (coeff = -0.54; p = 0.069). High-low

³⁹ [cites]

agreements, which set upper and lower bounds on payments, appear not to have been used in any of these claims.⁴⁰

Table 4: Physician Above-Limit Payments in Various Subsets of Claims

	Claims with Physician Above-Limit Payments	All Claims
Mean Total Payment (2003\$)	\$640,000	\$270,000
Death	24% (15/62)	35% (3,363/9,525)
Brain Damage	19% (12/62)	10% (918/9,525)
Victim 0-1 Year of Age	26% (16/62)	12% (1,189/9,525)

Verdicts favoring plaintiffs were associated with payments above the policy limits as well. Table 5 reveals that doctors contributed to resolutions in 4.6% (9/196) of claims with pro-plaintiff verdicts, but the burden of these verdicts fell more heavily on primary insurers, which paid more than the limits 17.8% (35/196) of the time. At almost every verdict level, primary carriers were more likely to make above-limit payments than physicians and to pay larger amounts. In the 20 cases with the largest verdicts (>\$5 million), doctors made one above-limit payments, while primary carriers paid more than the limits eight times.

⁴⁰ [explain how we identify cases potentially involving high-low-agreements]

Table 5: Above-Limit Payments by Physicians and Primary Insurers by Verdict Size

Verdict size (2003\$)	N	Average Total Payment (2003\$)*	Number of positive above-limit payments by doc	Mean positive above-limit payments by doc (2003\$)	Max above-limit payment by doc (2003\$)	Number of positive above-limit payments by primary insurer	Mean positive above-limit payments by primary insurer (2003\$)	Max above-limit payment by primary insurer (2003\$)
0 - 1M	116	\$275,417	4	\$87,302	\$211,268	12	\$66,330	\$169,172
1M-2M	29	\$884,624	2	\$101,957	\$175,824	7	\$374,340	\$987,654
2M-3M	13	\$1,377,942	1	\$172,414	\$172,414	6	\$646,605	\$1,756,757
3M-4M	10	\$1,118,185	1	\$212,766	\$212,766	2	\$232,010	\$270,270
4M-5M	8	\$1,717,745	0	N/A	N/A	0	N/A	N/A
5M +	20	\$2,506,916	1	\$87,356	\$87,356	8	\$2,036,038	\$6,338,028
Total	196		9			35		

* "Total payment" includes payments by physician, primary insurer and excess carrier.

Table 6 compares the verdict to the policy limit and examines physician payments in light of this relationship. In 91 cases with verdict-to-policy limit ratios > 1, physicians made seven above-limit payments (7.7%), and each payment was \$200,000 or less. Although one might have suspected that the frequency of above-limit payments would rise with the verdict-to-payment ratio (as a penalty imposed by the plaintiff for being grossly underinsured), this was not observed. In the 31 cases with the highest verdict-to-policy limit ratios (> 5), only one above-limit physician payment appears. The burden of under-insuring appears to fall mainly on plaintiffs, who collect declining percentages of verdicts as the ratio of verdict to policy limits rises.⁴¹

⁴¹ For additional analysis of payments after verdicts see Hyman et al. (2006).

Table 6: Above-Limit Payments by Verdict-to-Policy Limit Ratio

Verdict to policy limit ratio	Number of cases with pro-plaintiff verdicts	Mean portion of verdict paid	Mean above-limit payment by doc (all pro-plaintiff verdict cases)	Mean above-limit payment by doc (cases with positive above-limit physician payment only)	Number of verdict cases with positive above-limit payments
0-1	105	84.81%	\$2,146	\$112,676	2
1-2	36	72.17%	\$3,440	\$61,928	2
2-3	13	51.81%	\$13,263	\$172,414	1
3-4	5	29.73%	\$35,165	\$175,824	1
4-5	6	34.40%	\$19,241	\$57,723	2
> 5	31	24.33%	\$6,863	\$212,766	1
Total	196				9

The statistics on above-limit payments in verdict cases discussed in this section reflect mainly cases with pro-plaintiff verdicts that ended with payments to claimants. Defense wins rarely appear in the TCCD because these cases usually end without payments. Studies typically find that defendants win 70-80% of medical malpractice trials.⁴² Taking this into account, the estimated likelihood of a physician above-limit payment in a tried case (as opposed to a tried case that yielded a pro-plaintiff verdict) was about 1%.

C. Primary Policy Size

Although the dataset (for claims *closed* from 1990-2003) includes claims on policies sold as early as 1965, the data are reasonably complete only on policies

⁴² THOMAS H. COHEN, U.S. DEPARTMENT OF JUSTICE, BUREAU OF JUSTICE STATISTICS, MEDICAL MALPRACTICE TRIALS AND VERDICTS IN LARGE COUNTIES, 2001 1 (Apr. 2004), <http://www.ojp.usdoj.gov/bjs/pub/pdf/mmtv1c01.pdf>.

purchased from 1988 through 1999.⁴³ The discussions in this section are based on this subset of purchase years.⁴⁴

The conventional wisdom is that doctors buy medical malpractice policies with \$1 million per occurrence limits.⁴⁵ The data do not support this belief. We find a median policy limit of \$500,000 (nominal), which is constant during our sample period. Only 31% of the policies in our sample had \$1 million limits, while 32% had nominal limits of \$200,000 or less. Taking policies covering closed claims as a guide, it would be more accurate to say that the \$1 million per occurrence policy is among the *largest* policies physicians are likely to purchase. Physicians with paid claims usually carried much less insurance.

Table 7 shows the percentage of all paid claims covered by policies purchased 1988-1999 with the most common nominal limits—\$100,000, \$200,000, \$500,000, \$1 million, and \$2 million. Ninety-two percent of primary policies purchased in these years fell into these five categories. Although policies with \$1 million limits were the most common type, only about one-third of the policies reported were of this size, and few (6.1%) were larger. Policies with limits of \$100,000, \$200,000, and \$500,000 were collectively more numerous than \$1 million policies, being present in more than half the paid claim reports.

⁴³ For example, we exclude 2003 because that year includes only claims closed in 2003 using policies purchased in 2003. Because our data on claims closed after 2003 excludes all claims that remain open on policies purchased in 2003 and are therefore mostly likely unrepresentative. Larger claims tend to take longer to resolve than smaller ones. [cite] Larger payments also correlate with larger limits, as we show in Section _____. For these reasons reports concerning policies sold in early years might contain unusually large payments and limits, while reports on policies sold in later years might contain unusually small payments and limits.

⁴⁴ Distributions of year claims closed by policy purchase year are available upon request.

⁴⁵ Cheney, FW. How Much Professional Liability Coverage Is Enough? Lessons From the ASA Closed Claims Project, 63:6 *ASA Newsletter*. June, 1999; http://www.asahq.org/Newsletters/1999/06_99/How_0699.html.

Table 7: Distribution of Policies Purchased by Per Occurrence Limit and Purchase Year (in nominal dollars)

Purchase Year	Per Occurrence Limits (nominal)					Total
	\$100K	\$200K	\$500K	\$1M	\$2M	
1988	11%	15%	25%	37%	4%	92%*
1989	11%	25%	29%	24%	1%	91%
1990	11%	23%	30%	24%	3%	90%
1991	12%	23%	30%	24%	2%	91%
1992	10%	23%	29%	27%	4%	92%
1993	8%	24%	28%	28%	2%	91%
1994	10%	24%	24%	30%	3%	92%
1995	6%	27%	23%	33%	4%	93%
1996	4%	25%	22%	35%	5%	91%
1997	6%	25%	22%	35%	3%	90%
1998	6%	22%	21%	41%	2%	92%
1999	4%	27%	21%	41%	4%	96%
1988-1999	8%	24%	25%	31%	3%	92%

* These totals do not sum to 100% because not all policy types are included.

The declining percentage of physicians with \$100,000 nominal policies may suggest that doctors switched to larger policies over time. Alternatively, plaintiffs simply may have sued doctors with these policies less often. The data do not allow us to determine which phenomenon, if either, explains the observed pattern.

Table 8 shows mean and median nominal policy limits by purchase year from 1988 to 1999 for all physician, perinatal physicians and non-perinatal physicians. The absence of overall time trends for nominal policy size is clear. Table 8 also shows real mean and median policy limits in 2003 dollars. From 1988 to 1999, real mean (median) policy size declined by 31% (30%) for all physicians. A claim-based linear regression of the log of real policy limits against year revealed a statistically significant decline over

time (coefficient = -0.04; p = 0.000; n = 6,801). In real dollars, doctors with paid claims clearly carried less insurance over time.

TABLE 8: Trends over Time in Policy Size (purchase years 1988-1999)

Panel A: Mean and Median Limits for Purchase Years 1988 and 1999 (in thousands)						
	PERINATAL		NON-PERINATAL		ALL PHYSICIANS	
	1988 (n = 49)	1999 (n = 56)	1988 (n = 360)	1999 (n = 544)	1988 (n = 409)	1999 (n = 600)
Mean (nominal)	\$600	\$580	\$730	\$710	\$710	\$690
Median (nominal)	\$500	\$500	\$500	\$500	\$500	\$500
Mean (2003\$)	\$930	\$640	\$1,140	\$780	\$1,100	\$760
Median (2003\$)	\$780	\$550	\$780	\$550	\$780	\$550

Panel B: Claims-level Regression Results (all purchase years)			
Dependent variable: ln(real policy limit)			
Purchase Year	-0.06 (p = 0.000)	-0.02 (p = 0.000)	-0.03 (p = 0.000)
Years to Close	-0.03 (p = 0.010)	0.02 (p = 0.002)	0.01 (p = 0.137)
n	1,050	8,474	9,525
R ²	0.12	0.03	0.03

Perinatal physicians with paid claims carried less insurance than other physicians with paid claims. In 1988 these perinatal physicians purchased roughly \$930,000 of coverage on average (measured in 2003 dollars), while non-perinatal physicians purchased approximately \$1,140,000 of coverage on average (diff = \$210,000; statistically significant at the 5% level (p = 0.036). In 1999 perinatal physicians purchased \$640,000 of coverage on average while non-perinatal physicians purchased \$780,000 on average (diff = \$60,000; statistically significant at the 10% level (p = 0.0997).

Because median real policy size for perinatal physicians and other doctors is similar, the lower mean for perinatal physicians must reflect a relative dearth of policies with high limits: 30.54% of perinatal claims involved policies with nominal limits \geq \$1

million versus 43.24% of claims involving other physicians (95% CI=[-0.157,-0.097]). Although perinatal physicians supposedly face claims with the greatest potential upward variation, they are less likely than other doctors to carry the largest insurance policies.

Panel B of Table 8 reports the results of claims-level regressions of ln(real policy limit) on purchase year. These regressions use reports for policies sold in all years (1965-2003). We address possible bias due to incomplete data for early and later purchase years by including years-to-close (closing year minus purchase year) as a separate independent variable. The coefficients on purchase year indicate statistically significant decreases in real limits over time for perinatal physicians, non-perinatal physicians and all physicians combined. We obtain similar results in regressions limited to purchase years 1988-1999.

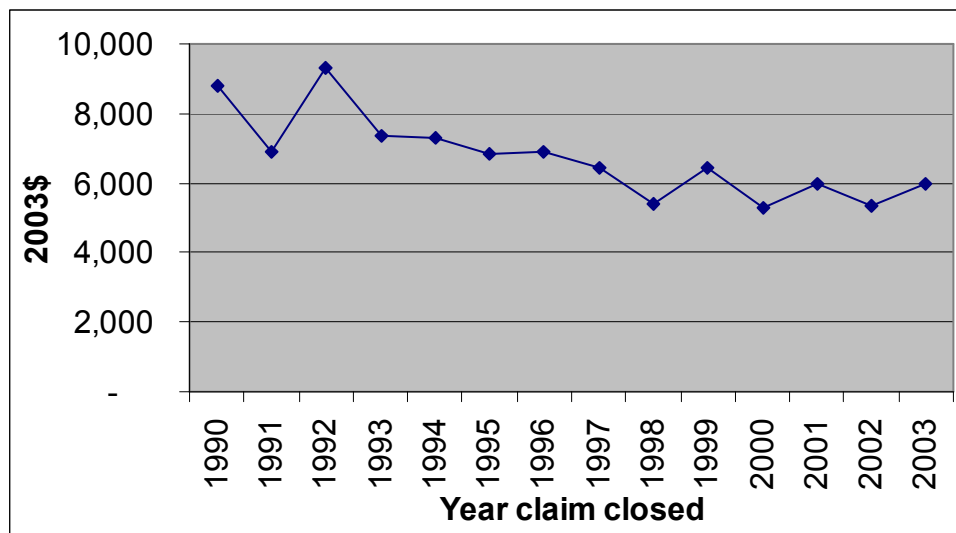
D. Claim Frequencies and Total Payments

Given the findings that policy size declined and that policies seem to cap recoveries, one would suspect that total payments and claim frequencies also declined. In theory, both the likelihood of litigation and the payments plaintiffs recover might reflect the declining real dollars the insurance system makes available for compensation. We found that claim rates remained steady or declined over the period, while payments amounts remained stable.

In a regression of number of paid claims per million Texas residents, the coefficient on closing year was negative but statistically insignificant (estimate=-0.25; 95% CI=[-0.677,0.175]). The number of paid claims per 1,000 nonfederal practicing Texas physicians showed a statistically significant decline (estimate=-0.528; 95% CI= [-0.845,-0.211]), as did payments per \$1 billion in Texas health care spending (estimate=-0.651; 95% CI=[-0.792,-0.510]).

Across all cases, the mean real payment per claim dropped from \$325,000 in 1990 to \$258,000 in 2003, but the median increased from \$141,000 to \$195,000.⁴⁶ A claims-level regression of $\ln(\text{real payment})$ on closing year indicates no time trend (estimate=-0.001; 95% CI=[-0.006,0.004]).⁴⁷ The real mean (median) payment per perinatal claim fell from \$480,000 (\$260,000) in 1990 to \$320,000 (\$200,000) in 2003. A claims-level regression of $\ln(\text{real perinatal claim payment})$ on closing year produces a negative but statistically insignificant coefficient on year (estimate=-0.01; 95% CI=[-0.025,0.003]).

Figure 5: Inflation-adjust payment per TX physician



When we measure trends in severity in terms of dollars paid per practicing Texas physician, we observe a significant decline, as shown in Figure 5. The high water mark was reached in 1992, when payments peaked at \$9,300 per physician (measured in 2003

⁴⁶ [this finding might merit further discussion]

⁴⁷ Pro-plaintiff jury verdicts were present in a small portion of closed claims in all years (n=189; 1.98% of all paid claims). The mean (median) real verdict was \$2,410,000 (\$640,000); the mean (median) payment after verdict was \$760,000 (\$400,000). A regression of $\ln(\text{real verdict})$ against verdict year indicates no significant time trend (estimate=-0.02; 95% CI=[-0.075,0.025]).

dollars). Payments then declined and remained in the range of roughly \$5,300-\$6,500 per physician from 1997 on. When we regress annual payment (in 2003 dollars) per physician against year claim closed to detect any linear trend over time, we find a small but statistically significant decrease (coefficient = -145; $p = 0.012$, $n = 14$).⁴⁸

IV. DISCUSSION

Liability insurance provides the bulk of the currency with which medical malpractice claims are paid. For paid claims in the TCCD, primary carriers funded all but a small fraction of the dollars claimants received. The tendency of paid claims to stack up at the policy limits was striking as well: 13.6% of all paid claims had payment-to-limit ratios of 1, and claims with ratios exceeding 1 were uncommon regardless of policy size. While policymakers debate the advisability of statutory caps on damages in medical malpractice cases, insurance policies appear to have imposed informal caps for years. These de facto caps tightened as real policy size fell.

The tendency of claims to stack up at the policy limits may have several explanations. First, the difficulty of collecting from physicians may promote at-limit settlements of claims with high expected trial verdicts. Many doctors have limited assets or use asset protection strategies to insulate their wealth.¹² Even when unprotected assets exist, collection is costly¹³ and professional norms discourage plaintiffs' attorneys from seeking to collect against them.¹¹ Second, claims with expected verdicts below the limits might settle at or near the limits because patients benefit from pressure exerted on insurers by physicians who want to avoid personal exposure by settling. The inverse

⁴⁸ These trends are in line with the finding in Black et al. that payments on claims were generally stable from 1988 to 2002.

relationship between policy limits and the magnitude of the spike (Figure 2) is consistent with both hypotheses.

The dominant role of primary insurers shows that the direct deterrent effect of malpractice liability is largely mediated through them, as they convert the judgment-and-settlement-related costs of claims into premiums, monitor physicians' conduct, and evaluate physicians' insurability. Carriers absorb the impact of exceptionally high verdicts as well. Doctors made above-limit payments in only 1 of 31 cases with verdict-to-limit ratios of 5 or higher (Table 6) and in only 1 of 20 cases with verdicts above \$5 million (real). Although insurers and physicians gain the entire benefit when courts mistakenly send deserving plaintiffs home empty-handed, claimants capture only a fraction of awards that are unduly large. The larger the verdict, the smaller the percentage of the verdict a claimant collects.⁴⁹

Doctors with paid claims carried less insurance than expected, and their insurance purchases fell over time. Most of these physicians (62%) had policies with limits below \$1 million (nominal). If the general population of physicians resembles those with paid claims, our data do not support the conventional wisdom that \$1 million policies are standard. This raises the possibility that payers such as Medicare err by using premiums charged for \$1 million policies as benchmarks in physician reimbursement formulas.¹⁴ And even if physicians with paid claims carried less insurance than others, this too is noteworthy, for these are the physicians from whom patients injured by medical malpractice sought compensation. From the point of view of compensation and deterrence, physicians with paid claims are disproportionately important.

⁴⁹ See Hyman et al. (2006) for analysis of the relationship between jury verdicts and subsequent recoveries by plaintiffs.

The tendency of physicians involved in perinatal cases to have less coverage than other doctors also merits attention, given the larger average payment per perinatal claim and the higher frequency of above-limit payments. As shown, physicians with paid perinatal claims less often carried policies with limits above \$1 million than other doctors. This could reflect the higher premiums physicians must pay for coverage of perinatal claims or insurers' reluctance to sell large policies on perinatal risks.

We have not explained why doctors buy the amounts of coverage they do. They may take guidance from other physicians, hospitals, managed care organizations, brokers, medical societies, or financial advisors. They may sort themselves into coverage size categories using unobserved variables such as specialty. Nor have we explained why the real mean (median) policy limit among doctors with paid claims dropped 31% (30%) from 1988 to 1999. When buying insurance, doctors may fail to adjust for inflation. Other explanations are also possible. Texas physicians may have purchased less real coverage on average because: (1) liability risks declined owing to tort reforms or other causes; (2) doctors (or their insurers) sought to drive down payments by making less insurance money available to malpractice plaintiffs; (3) premiums for malpractice coverage increased; or (4) doctors increasingly substituted other forms of asset protection for insurance. Further research is needed to determine the strength of these explanations.

Whether the decline in real policy size reduced compensation for injured patients is unclear. On the one hand, the tendency of perinatal claims to stack up at the policy limits increased. This may indicate that infants' damages became more likely to equal or exceed physicians' insurance coverage over time. On the other hand, claims-level regressions found no significant time trend in payment per claim or payment per perinatal

claim. This may imply that a large portion of claims moved into the spike from below, as declining policy size led physicians to pressure insurers more aggressively to settle. Black et al. also report that total payments from all defendants were steady from 1988 to 2002.⁵⁰ It is possible that some patients dropped their claims after discovering that their doctors had too little insurance to warrant litigation.

The low risk of making an above-limit payment seems unlikely to motivate a risk-neutral physician to take many precautions. From 1990 to 2003, real physician above-limit payments in all 9,525 cases totaled \$11,778,330, an average of \$1,237 per paid claim. Using all malpractice claims (rather than just paid claims) as the divisor would reduce the average considerably. A recent study by the Texas Medical Association found that 86% of malpractice claims closed without payments.⁵¹ Assuming a 4:1 ratio of unpaid to paid claims, the expected above-limit payment is only \$247 per malpractice claim.

Clearly, physicians rarely suffered personal financial disaster due to malpractice cases. Defining “disaster” as an above-limit real payment exceeding \$200,000, it struck only 17 times in 14 years. The average number of disasters was 0.43 per 10,000 practicing Texas physicians per year. If physicians are risk-averse, however, this remote risk may trigger a disproportionate response, especially when it is coupled with other uninsured litigation costs, including anxiety, reputational loss, and time spent away from the practice of medicine.

The spike in settlements at or near the policy limits does not necessarily imply that physicians under-insure, whether for purposes of deterrence, compensation, or

⁵⁰ Black et al. JELS 2005.

⁵¹ <http://www.texmed.org/liability/2001study.asp>.

protection from liability risks. Such an inference would require a theory of optimal insurance purchasing or of optimal compensation for malpractice victims, neither of which we have developed. It would also require data on insurance purchases by physicians who did not incur paid malpractice claims, which we lack. For example, tolerance for risk is subjective. Even the remote danger of “financial disaster” that exists at current insurance levels might worry some physicians.

The nature of our dataset limits our ability to generalize from Texas’ experience with malpractice policies and payments to other states. Existing nationwide datasets, such as the National Practitioner Data Bank and the dataset maintained by the Physician Insurers Association of America, contain no information on policy size. A preliminary assessment of closed claim data collected by the Office of Insurance Regulation in Florida confirmed our finding of a spike in resolutions at the policy limits. Efforts to compare Texas with Florida are continuing.

V. CONCLUSION

This study represents the first quantification of the degree to which insurance protects physicians from personal exposure from malpractice liability. Despite claims that all physicians are one lawsuit away from financial ruin, for claims closed 1990-2003 policy limits seem to act as de facto caps on claimant recoveries and physicians rarely paid out of their own pockets to satisfy malpractice claims. In addition, the data do not support conventional wisdom that physicians purchase \$1 million per occurrence coverage. Coverage among physicians with paid malpractice claims decreased over time, while claim rates and real payments remained fairly stable.

Given the observed low level of personal exposure to malpractice claims, liability would seem to have no deterrent effect unless its costs were transmitted to doctors through different routes (e.g., via the underwriting, pricing and monitoring practices of their insurers). While medical malpractice insurance has not been traditionally experience rated, the market seems to be moving in this direction.⁵² Further study is needed to determine if the malpractice liability system serves its intended deterrent function.

⁵² [cite]

Appendix

Table 1: Various data sources

Variable	Source	Application
<i>Real Dollars</i>	Consumer Price Index for All Urban Consumers. Bureau of Labor Statistics http://www.bls.gov/cpi/home.htm#tables .	Used as an index to convert nominal dollars to constant dollars for indicated base year, usually 1988.
<i>Texas Population</i>	U.S. Census Bureau, Population Estimates, http://www.census.gov/popest/states/tables/NST-EST2003-01.xls .	Used as an index to normalize other variables for population growth, as a proxy for health care consumption.
<i>Texas Physicians</i>	Nonfederal physicians in active practice in Texas (1991 estimated). Texas Department of State Health Services, Center for Health Statistics, http://www.dshs.state.tx.us/chs/hprc/PHYS-lnk.shtm .	Used to adjust other variables for growth of physician supply, as a proxy for health care consumption.