

TRENDS

The Growth Of Physician Medical Malpractice Payments: Evidence From The National Practitioner Data Bank

The growth of malpractice payments is less than previously thought.

by **Amitabh Chandra, Shantanu Nundy, and Seth A. Seabury**

ABSTRACT: We used data from the National Practitioner Data Bank (NPDB) to study the growth of physician malpractice payments. Judgments at trial account for 4 percent of all malpractice payments; settlements account for the remaining 96 percent. The average payment grew 52 percent between 1991 and 2003 (4 percent per year) and now exceeds \$12 per capita each year. These increases are consistent with increases in the cost of health care. A preoccupation with data on judgments, extreme awards, or specific specialties results in an incomplete understanding of the growth of physician malpractice payments.

INFLUENTIAL TRADE associations such as the American Medical Association (AMA) and the Physician Insurers Association of America (PIAA) have attributed the dramatic increase in physician malpractice insurance premiums to the growth in malpractice payments.¹ Other factors such as declines in insurers' investment income are acknowledged to have contributed to the new medical malpractice crisis; however, losses from rising malpractice payments are believed to be the primary contributor to the growth of malpractice premiums.² To restrict the growth of payments, both groups advocate a nationwide \$250,000 limit (cap) on noneconomic damages, a policy endorsed by President George W. Bush.³ Support for damages caps is largely driven by the belief that malpractice payment growth has been concentrated in the very largest awards.⁴

Discussions of the malpractice crisis often rely on restrictive subsets of malpractice data, so a precise description of the problem is lacking. The AMA has drawn attention to trends in jury verdicts, even though only a small fraction of malpractice cases are resolved at trial.⁵ This restriction overstates the size of payments, and by ignoring information on settlements, it may drastically underestimate the overall burden of malpractice payment. The PIAA's tabulations, while more complete in principle than those that only rely on jury verdicts, rely on data that are not publicly available. In this paper we establish new facts on the growth in malpractice payments made on behalf of physicians by using a national database of payments from judgments at trial and settlements during 1 January 1991–31 December 2003.

Amitabh Chandra (amitabhchandra@dartmouth.edu) is an assistant professor of economics at Dartmouth in Hanover, New Hampshire; a senior research associate at the Center for the Evaluative Clinical Sciences, Dartmouth Medical School; and a faculty research fellow at the National Bureau of Economic Research (NBER). Shantanu Nundy is a medical student at the Johns Hopkins University in Baltimore, Maryland. Seth Seabury is an economist at the Institute for Civil Justice (ICJ) at RAND in Santa Monica, California.

Study Data And Methods

■ **Data and study sample.** All malpractice payments made on behalf of a licensed health care provider must be reported to the National Practitioner Data Bank (NPDB) within thirty days under the Health Care Quality Improvement Act of 1986.⁶ Noncompliance is subject to civil penalties codified in 42 USC 11131–11152.⁷ The NPDB has information on 250,137 such payments made between 1 September 1990 and 31 December 2003. We restricted our sample to the fifty states and excluded payments made for Washington, D.C.; areas with missing state information; and other U.S. territories (N = 3,200). The NPDB became operational late in 1990, so we deleted observations in this year (N = 2,132). We excluded payments that were linked to dentists, pharmacists, social workers, or nurses (N = 53,538). In a small fraction of payments (n = 10,823), there are multiple physician defendants (and thus multiple reports) but only the total payment by all defendants is reported. In these cases, we averaged the payment by the number of physicians involved.⁸

In the NPDB, 5 percent of payments are made by state funds in addition to other payments made by the primary insurer for the same incident (N = 9,919). We matched such payments based on an algorithm that used physician identifiers, state of work, state of licensure, area of malpractice, type of payment (judgment or settlement), and year of occurrence. We also experimented with using additional data fields to perform this match, but values were missing for many of these fields. Fund payments that could not be matched were retained in the data (N = 3,822). Because these cases were rare, we experimented with deleting them from the analysis. With the exception of Pennsylvania, which had 5,308 state fund payments (53 percent of all fund payments recorded in the NPDB), our results were essentially unchanged.

Our final sample consists of 184,506 payments made between 1 January 1991 and 31 December 2003 in the fifty states. Ninety-four percent of these were for physicians with a medical degree (MDs); the remaining 6 per-

cent were for osteopathic physicians (DOs). Each malpractice payment in the NPDB is classified in ten major categories of liability (such as surgery, diagnostics, obstetrics), which we used for our primary analysis.

Data on health care spending for 1991–2002 are from the National Health Accounts (NHA) published by the Centers for Medicare and Medicaid Services (CMS).⁹ We converted all payment amounts into 2000 dollars using the Implicit Gross Domestic Product (GDP) Price Deflator.¹⁰ Finally, data on state and national population levels by year for 1991–2003 come from the U.S. Census Bureau.¹¹

■ **Data quality and the role of the “corporate shield.”** Most previous studies of malpractice awards used data from publications that recorded information on jury verdicts in local jurisdictions, known as “jury verdict reporters.” Data from these reporters and the NPDB differ for several reasons, all of which make the NPDB better suited to our analysis. First, the reporters are not meant to cover the universe of awards; information is collected only on jury verdicts in local jurisdictions, and no data on settlements are included. Second, amounts recorded in the NPDB measure the amount of actual payments, not jury awards: If a jury awards a plaintiff \$1 million, that figure is recorded by a reporter; however, if a malpractice policyholder has coverage for only a smaller amount (which is what is paid by his or her insurer), if plaintiffs settle for a lower amount (to avoid appeals by the defendant), or if the jury award is reduced to comply with state damages caps, the NPDB will record the lower number—which is the number that is relevant for insurance premiums. Third, data from reporters record awards based on the year of the verdict, while the NPDB reports the year in which payments were made.

The NPDB has been the subject of criticism, from the PIAA in particular, but also from the U.S. Government Accountability Office (GAO).¹² One of the major points of criticism is the “corporate shield.” This loophole renders payments made on behalf of a hospital or other corporation exempt from inclusion in the NPDB, as long as any individual practitioner is

dropped as part of a settlement agreement. We assessed the potential importance of this source of bias (which understates the number and severity of payments) by comparing jury verdicts reported in the NPDB with those from a data set compiled by the RAND Institute for Civil Justice (the Jury Verdict Database, or JVDB) for New York and California.¹³

Between 1991 and 1999 the JVDB data showed an average annual growth of awards against physicians of 3.9 percent in New York (an average of forty-two awards) and 4.3 percent in California (an average of thirty-five awards). Over the same time period the NPDB reported average annual growth of 13 percent in New York (an average of fifty-three awards) and 1.6 percent in California (an average of forty-three awards). For both states, the NPDB understates both the number of and growth in awards. The magnitude of underreporting is remarkably consistent (approximately 20 percent in both states). This estimate is best interpreted as an upper bound on the degree of underreporting, because the NPDB reports payments by date of payment, whereas the JVDB records them by date of verdict. The two dates will differ if a verdict occurred in one year but payments began in another year.

Other concerns about the NPDB include potential underreporting of restrictions on clinical privileges and the quality of certain data fields that are not relevant for our study.¹⁴ Despite its limitations, though, the NPDB is the most representative national and publicly available database on physician malpractice payments. Indeed, hospitals are required by law to query the malpractice histories of potential hires; in 2002 the databank was queried 1.12 million times, or more than 3,000 times a day.¹⁵ We emphasize that it would be misleading to infer anything about the occurrence of negligence from data on payments, because past work shows a weak correlation between a malpractice claim and negligence.¹⁶

■ **Study design.** We present trends in the number and average dollar amount of U.S. medical malpractice payments from 1991 to 2003. We report average payments per capita and the constituent components: frequency of

payments (number of payments per capita) and average conditional severity (average size of payment for claims where a payment was made); an increase in either component will increase per capita malpractice payments. We focused on these two measures because of the assertion in earlier research that they are the key components of malpractice pressure influencing the practice of defensive medicine.¹⁷

To explore the claim that growth in payments has been concentrated in the largest awards, we compared the growth of the mean payment to the growth in the top 10 percent of payments. If the distribution of payments has become more skewed, we would expect the observed growth at the top end of the distribution to exceed that of the average payment.

When one is considering the growth in malpractice payments, it is important to account for changes over time in the number of events that are at risk for litigation. The number of physicians or health care workers may seem like a natural proxy for health care use, but it could be affected by medical malpractice liability.¹⁸ We therefore used two different variables to control for use at the national level. The first was population, which is almost certainly exogenous to medical malpractice but ignores trends in the use of care.¹⁹ The second was total health care spending, which might not be exogenous to medical malpractice but should capture trends in the price and quantity of medical services. Note that there are no data in the NPDB that allow us to measure changes in litigiousness (that is, the number of claims—successful or unsuccessful—per capita). We report the number of dollars for payments as a function of total health spending and spending on physician and clinical services (the latter are probably more relevant for our data, given that the NPDB only reports payments on behalf of physicians).

Study Results

■ **Growth of malpractice payments.** The number of payments (which comprises the number of judgments and settlements) remained stable over the study period. The average payment amount (severity) grew 52 per-

cent in real dollars (an average annual growth rate of 4 percent) between 1991 and 2003 but only 6 percent between 2000 and 2003 (average, 1.6 percent). The top 10 percent of payments grew only 33 percent (2.6 percent annually) from 1991 to 2003. Thus, the growth in the middle of the malpractice distribution exceeded the growth at the top.

Comparing the numbers of judgments with the full sample of payments, we see that judgments account for less than 4 percent of all payments but are approximately 1.7–2.4 times larger than settlements, on average. The growth in the average payment has been larger for settlements than for judgments (Exhibit 1). However, growth in average payments is larger than growth in the most severe cases for both judgments and settlements; there has been no statistically significant increase in the top 10 percent of judgments.²⁰

In real dollars, payments per person grew 41 percent, from \$9.2 in 1991 to \$13.0 in 2001 (Exhibit 2), an annual rate of thirty-one cents per year (p value for trend $< .001$). The number

of payments per 100,000 people decreased slightly, from 5.2 to 5.0 (p value for trend $< .026$, data not shown). Exhibits 1 and 2 underscore the importance of including settlements with judgments; if we ignored settlements, per capita payments would be much smaller.

Malpractice payments have grown proportionately with health care spending (Exhibit 3). Payments per \$1,000 spent on physician and clinical services grew about 10.6 percent during the decade, compared with 6.8 percent for payments per \$1,000 spent on all health care.

■ **Growth by area of alleged malpractice.** Exhibit 4 reports the severity of payments for ten broad areas of alleged malpractice. Payments were highest in obstetrics; in fact, the severity of judgments in obstetrics has greatly increased since 1996, with average payments rising 40 percent, from \$697,000 to \$1,005,000 ($p < .01$). When obstetrics is excluded, the growth in severity from 1996–98 to 2001–03 is comparable with that from 1991–93 to 1996–98.

EXHIBIT 1 Change in Medical Malpractice Payments Made On Behalf Of Physicians, 1991–2003

Year	Judgments and settlements		
	Number of payments in NPDB	Average payment	Average payment for highest 10% of all payments
1991	13,365	\$173,018	\$ 867,792
1992	14,119	194,893	972,865
1993	14,151	197,152	955,292
1994	14,568	200,908	995,174
1995	13,511	207,863	999,689
1996	14,240	220,062	913,449
1997	13,845	219,881	973,642
1998	13,305	225,187	985,769
1999	14,175	232,711	1,050,898
2000	14,626	247,651	1,054,807
2001	15,694	258,965	1,130,976
2002	14,539	262,629	1,127,478
2003	14,368	263,101	1,155,031
Test for trend		$p < .000$	$p < .000$
1991–2003 growth		52.1% (4.0%)	33.1% (2.5%)
2000–2003 growth		6.2% (1.6%)	9.5% (2.4%)

EXHIBIT 1
Change In Medical Malpractice Payments Made On Behalf Of Physicians, 1991–2003
(cont.)

Year	Judgments		
	Number of payments in NPDB	Average payment	Average payment for highest 10% of all payments
1991	459	\$320,917	\$1,472,779
1992	413	398,890	2,111,009
1993	444	422,652	2,034,162
1994	419	353,326	1,542,976
1995	398	369,793	1,798,806
1996	578	387,264	1,634,023
1997	453	384,905	1,594,561
1998	401	425,663	1,764,773
1999	404	387,782	1,447,200
2000	537	474,821	1,840,507
2001	533	601,155	2,827,785
2002	411	488,020	1,903,668
2003	430	460,736	1,850,294
Test for trend		$p < .006$	$p < .295$
1991–2003 growth		43.6% (3.4%)	25.6% (2.0%)
2000–2003 growth		-3.0% (0.7%)	0.5% (0.1%)
Year	Settlements		
	Number of payments in NPDB	Average payment	Average payment for highest 10% of all payments
1991	12,906	\$167,758	\$ 853,373
1992	13,706	188,746	918,424
1993	13,707	189,847	894,590
1994	14,149	196,395	908,393
1995	13,113	202,948	997,338
1996	13,662	212,988	898,364
1997	13,392	214,298	945,389
1998	12,904	218,958	949,778
1999	13,771	228,162	1,015,759
2000	14,089	238,992	1,023,973
2001	15,161	246,935	1,064,999
2002	14,128	256,072	1,095,691
2003	13,938	257,004	1,080,121
Test for trend		$p < .000$	$p < .000$
1991–2003 growth		53.2% (4.1%)	26.6% (2.0%)
2000–2003 growth		7.5% (1.9%)	5.5% (1.4%)

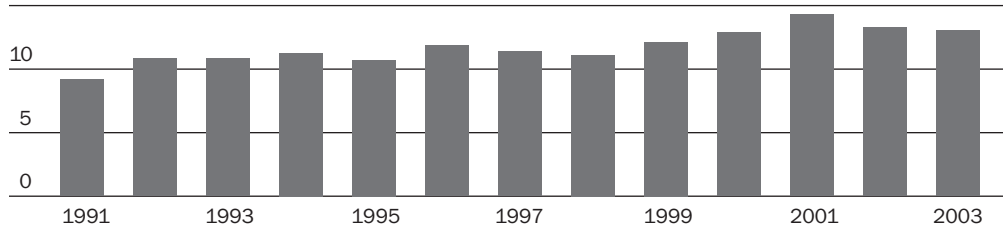
SOURCE: Authors' tabulations based on data from the National Practitioner Data Bank (NPDB).

NOTES: Data are for all payments (judgments or settlements) involving a physician defendant in the fifty states between 1 January 1991 and 31 December 2003. All dollar values are converted to year 2000 dollars using the Implicit Gross Domestic Product (GDP) Price Deflator and are rounded to the nearest dollar. Numbers in parentheses are average annual growth rates.

A focus on severity alone might lead to the spurious conclusion that areas of malpractice with the highest payments also account for the largest share of malpractice dollars. However, an area with high severity might not account for a large portion of liability if the number of

EXHIBIT 2 Growth In Per Capita Medical Malpractice Payments, 1991–2003

Per capita payments (2000 dollars)
15



SOURCE: Authors' tabulations based on data from the National Practitioner Data Bank (NPDB).

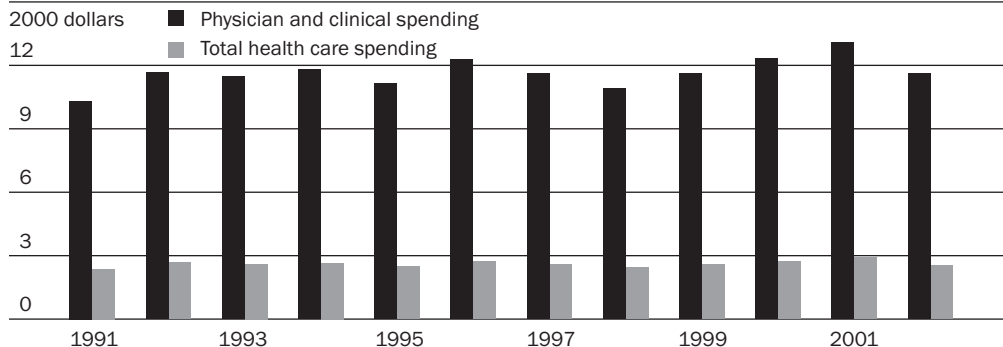
NOTES: Data are for all payments (judgments or settlements) involving a physician defendant in the fifty states between 1 January 1991 and 31 December 2003. All dollar values are converted to year 2000 dollars using the Implicit Gross Domestic Product (GDP) Price Deflator and are rounded to the nearest dollar. Between 1993 and 2003, per capita malpractice dollars grew \$0.31 per year ($p < .001$).

payments for that area is relatively small. Consistent with this hypothesis, Exhibit 5 demonstrates that the largest areas of total malpractice payments between 2001 and 2003 were diagnoses, surgery, and treatment. In this exhibit, payments in obstetrics are the most severe but are the fourth-largest contributor to all malpractice dollars. We have combined data from judgments and settlements but in unpublished work have verified that the two distributions are identical.²¹

We also examined the detailed distribution of malpractice payments in surgery and ob-

stetrics, because these specialties have high malpractice premiums and receive the most attention (data not shown). Contrary to anecdote, suits stemming from operating on the wrong body part or leaving foreign objects in the wound represent less than 5 percent of surgical payments. Likewise, in obstetrics, abandonment, improperly performed cesarean sections, and retained instruments are not major contributors to malpractice payments. The sum of all payments for these high-profile incidents accounts for less than 2 percent of total malpractice payments.

EXHIBIT 3 Malpractice Payments Per \$1,000 In Health Spending, 1991–2002

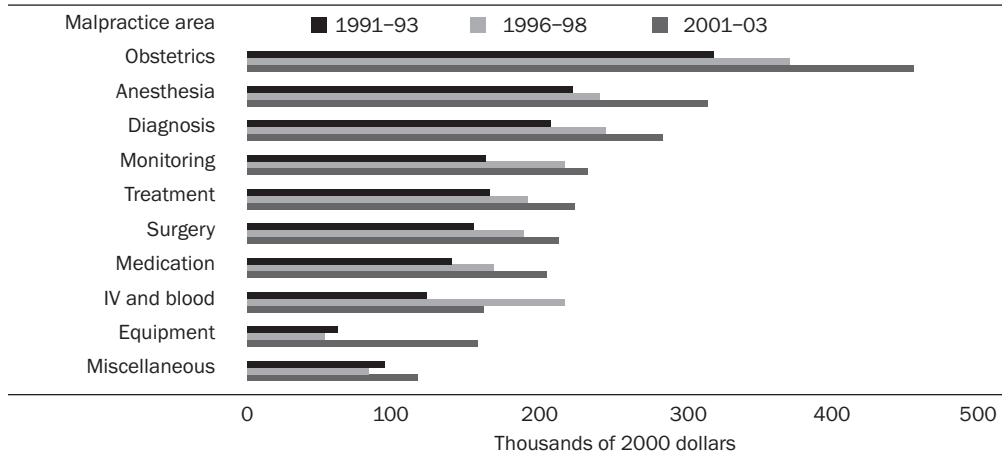


SOURCE: Authors' tabulations based on data from the National Practitioner Data Bank (NPDB) and data from the National Health Accounts, Centers for Medicare and Medicaid Services.

NOTES: Data are for all payments (judgments or settlements) involving a physician defendant in the fifty states between 1 January 1991 and 31 December 2002; National Health Accounts data are those for total health care spending and spending on physician and clinical services. All dollar values are converted to year 2000 dollars using the Implicit Gross Domestic Product (GDP) Price Deflator and are rounded to the nearest dollar.

EXHIBIT 4

Change In Average Malpractice Payments, By Area Of Alleged Malpractice, 1991-93, 1996-98, And 2001-03



SOURCE: Authors' tabulations based on data from the National Practitioner Data Bank (NPDB).

NOTES: Data are for all payments (judgments or settlements) involving a physician defendant in the fifty states between 1 January 1991 and 31 December 2003. All dollar values are converted to year 2000 dollars using the Implicit Gross Domestic Product (GDP) Price Deflator and are rounded to the nearest dollar.

Discussion

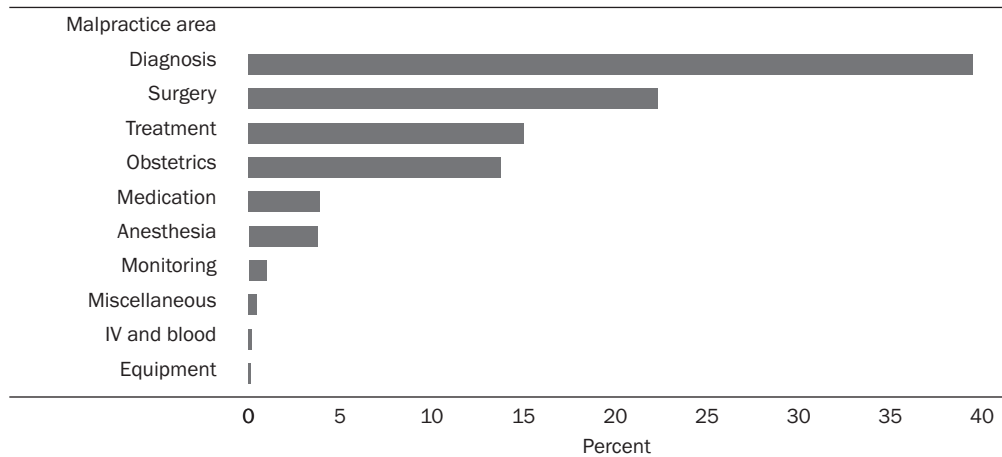
The goal of our analysis was to describe the growth of physician malpractice payments—a factor widely believed to be the principal driver of the growth in malpractice premiums.

Our study uncovered several salient findings.

■ **Salient findings.** First, focusing exclusively on judgments provides an incomplete picture of malpractice trends; judgments account for less than 4 percent of all payments

EXHIBIT 5

Distribution Of Medical Malpractice Payments, By Area Of Alleged Malpractice, 2001-2003



SOURCE: Authors' tabulations based on data from the National Practitioner Data Bank (NPDB).

NOTES: Data are for all payments (judgments or settlements) involving a physician defendant in the fifty states between 1 January 2001 and 31 December 2003. All dollar values are converted to year 2000 dollars using the Implicit Gross Domestic Product (GDP) Price Deflator and are rounded to the nearest dollar.

and 5 percent all medical malpractice dollars. This overstates average malpractice payments but understates the per capita growth in payments. We found that the average payment grew 52 percent (4 percent per year) between 1991 and 2003 and now exceeds \$12 per person each year. Excluding data on settlements would greatly understate the per capita number. We found that growth of the top 10 percent of payments is smaller than that of the average payment. This suggests that the large jury awards focused on by the AMA have not been key drivers of malpractice growth. We also found that the increase in per capita malpractice payments is driven by increases in the conditional average severity, not in the frequency of paid claims per capita. The growth of payments has leveled off in recent years: Between 2000 and 2003 the average payment (combining judgments and settlements) grew 1.6 percent annually, whereas that for judgments fell -0.7 percent annually. These increases are much less than the growth observed for the entire 1991-2003 period (where the average payment grew 52 percent and the average judgment payment grew 3.4 percent).

Second, we demonstrated that payments as a fraction of national health care spending (as measured by either the share of physician and clinical spending or of total health care spending) have not risen significantly. This suggests that rising medical costs, which contribute to the size of compensatory awards, may explain a sizable portion of payment growth, consistent with other findings.²² Our results are also consistent with new research using a database of closed claims for the state of Texas.²³

Third, the distribution of malpractice payments by area of alleged malpractice has been stable during the past decade, and areas with highest severity do not account for the largest share of malpractice dollars. Average payments in obstetrics were noted to be the highest, but these account for only 15 percent of total malpractice payments. Contrary to popular belief, payments for sensational incidents such as amputation of the wrong body part constitute just 2 percent of total malpractice dollars.

Our data may understate the extent of pay-

ment severity and the number of payments. This is due largely to the aforementioned corporate shield. Thus, the actual U.S. per capita malpractice payments are higher than reported here. Our other results appear uncontaminated by the corporate shield; if certain areas of malpractice were systematically settled under the corporate shield more than others, we would expect the distribution of settlements and judgments to be much different, but we did not find support for this hypothesis. Also, our imperfect ability to match duplicate reports in the NPDB overstates the number of payments and understates their severity. Additionally, the growth trends we report would be biased only if the reporting problems to the NPDB changed over time, but this loophole has existed since the NPDB's creation. Finally, we note the similarity of our findings to a recent study that was not susceptible to this limitation.²⁴

■ **Other reasons for the premium increase.** If the current increase in premiums is not attributable to the increase in payments, why have premiums risen? Other research has noted the weak relationship between premiums and payments (including its leads and lags) at the state level: States where payments grew dramatically between the early 1990s and the early 2000s were not states where premiums grew radically.²⁵

Payment size and frequency represent only one dimension of the current medical malpractice crisis. If the number of claims (including unsuccessful and frivolous claims) rose dramatically, premiums might have risen because of the accompanying increase in administrative costs. This hypothesis has been shown to be weak in a study that focused on the Texas experience.²⁶

Another factor is the secular decline in insurers' investment income (which is different from idiosyncratic declines in investment income for a given insurer).²⁷ State insurance regulations often adjust premiums based on expected investment returns. Hence, premiums would respond to changes in investment income, not just changes in expected payouts.

There is some evidence for this hypothesis

that links premium increases to declines in insurer's investment income: According to the GAO, between 1998 and 2001 insurers realized drastic declines in income from bond holdings (more than 70 percent of insurers' portfolios were invested in bonds).²⁸ Before this explanation is embraced too quickly, we note one fact that is difficult to reconcile within this simple framework: Assuming that insurers use a similar return-maximizing investment strategy, the growth of premiums should be similar across states (because insurers should have similar expectations about future returns.) Others have demonstrated large variations across states in the growth of premiums.²⁹ This finding suggests that the interaction with additional factors (such as the role of regulation, the local competitiveness of the malpractice industry, or incorrectly priced premiums in the 1990s) may also be potentially important. Our study cannot disentangle the role of these competing explanations, and we emphasize that our discussion of the underwriting cycle is speculative. Precisely quantifying the empirical content of these hypotheses would be a fruitful topic for future research.

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NOTES

1. American Medical Association, "America's Medical Liability Crisis," February 2005, www.ama-assn.org/ama1/pub/upload/mm/399/mlr_tp.pdf (6 May 2005); AMA, "The Medical Liability Crisis: Why Repealing the McCarran-Ferguson or Passing Other Insurance Laws Is Not the Answer," 2004, www.ama-assn.org/ama1/pub/upload/mm/399/mlrcrisis.pdf (2 May 2004); and Lawrence E. Smarr, president, Physician Insurers

Association of America, "Statement of the Physician Insurers Association of America before a Joint Hearing of the United States Senate Judiciary Committee and the Health, Education, Labor, and Pensions Committee," 11 February 2003, www.thepiaa.org/pdf_files/February_11_Testimony.pdf (6 May 2005).

2. U.S. Government Accountability Office, *Medical Malpractice Insurance: Multiple Factors Have Contributed to Increased Premium Rates*, Pub. no. GAO-03-702 (Washington: GAO, 2003).

3. CNN, "Bush Outlines Medical Liability Reform," 16 January 2003, www.cnn.com/2003/ALLPOLITICS/01/16/bush.malpractice/index.html (6 May 2005).

4. Smarr, "Statement of the Physician Insurers Association of America"; and M.M. Mello, D.M. Studdert, and T.A. Brennan, "The New Medical Malpractice Crisis," *New England Journal of Medicine* 348, no. 23 (2003): 2281-2284.

5. AMA, "America's Medical Liability Crisis."

6. Division of Practitioner Data Banks, Bureau of Health Professions, Health Resources and Services Administration, National Practitioner Data Bank Public Use Data File (Washington: DHHS, 2004).

7. The creation of the NPDB has been demonstrated to reduce physicians' willingness to settle even small claims because of "reputation effects," induced by the presence of a record in the NPDB. Such an effect implies that even small claims are correctly reported to the data bank. The evidence also demonstrates that the creation of the NPDB improved the specificity of the tort system by reducing compensatory payments for questionable claims. See T.M. Waters et al., "Impact of the National Practitioner Data Bank on Resolution of Malpractice Claims," *Inquiry* 40, no. 3 (2003): 283-294. Because our paper only uses data from the NPDB, these before-after changes in the willingness to settle did not affect our results. However, if these effects operate with a significant lag, then holding everything else equal, payment data for the early period of our analysis will be higher than in later periods.

8. Dividing total payments by the number of defendants could introduce bias, especially in states that have joint and several liability (every defendant may be liable for the entire amount of the awarded damages without regard to the defendant's share of responsibility). To explore this issue, we deleted all such payments and noted that our results were essentially unchanged. This is not surprising, given the small number of states that continue to have full joint and several liability.

9. Centers for Medicare and Medicaid Services,

- “Health Accounts,” 17 March 2005, www.cms.hhs.gov/statistics/nhe/default.asp (6 May 2005).
10. Bureau of Economic Analysis, U.S. Department of Commerce, “Gross Domestic Product: Implicit Price Deflator,” 28 April 2005, research.stlouisfed.org/fred2/data/GDPDEF.txt (6 May 2005).
 11. U.S. Census Bureau, “U.S. Census 2000, Resident Population,” 25 January 2002, www.census.gov/population/www/cen2000/respop.html (6 May 2005).
 12. Smarr, “Statement of the Physician Insurers Association of America”; and GAO, *Major Improvements Are Needed to Enhance Data Bank’s Reliability*, Pub. no. GAO-01-130 (Washington: GAO, 2000).
 13. We labeled the size of a medical malpractice award as “severity.” This usage is standard in the economics and public health literatures; see, for example, Mello et al., “The New Medical Malpractice Crisis,” and P.M. Danzon, “The Frequency and Severity of Medical Malpractice Claims: New Evidence,” *Law and Contemporary Problems* 49, no. 2 (1986): 57–84. Our use of this word should not be seen as implying that there is an association with the severity of the alleged injury. Regarding the JVDB, see M.A. Peterson and G.L. Priest, *The Civil Jury: Trends in Trials and Verdicts, Cook County, Illinois, 1960–1979*, Pub. no. R-2881-ICJ (Santa Monica, Calif.: RAND, 1982).
 14. GAO, *Major Improvements Are Needed*.
 15. J.T. Hallinan, “Doctor Is Out: Attempt to Track Malpractice Cases Is Often Thwarted,” *Wall Street Journal*, 27 August 2004.
 16. See, for example, A.R. Localio et al., “Relation between Malpractice Claims and Adverse Events Due to Negligence: Results of the Harvard Medical Practice Study III,” *New England Journal of Medicine* 325, no. 5 (1991): 245–251; P.C. Weiler et al., *A Measure of Malpractice: Medical Injury, Malpractice Litigation, and Patient Compensation* (Cambridge, Mass.: Harvard University Press, 1993); and E.J. Thomas et al., “The Reliability of Medical Record Review for Estimating Adverse Event Rates,” *Annals of Internal Medicine* 136, no. 11 (2002): 812–816.
 17. See, for example, D.P. Kessler and M.B. McClellan, “The Effects of Malpractice Pressure and Liability Reforms on Physicians’ Perceptions of Medical Care,” *Law and Contemporary Problems* 60, nos. 1–2 (1997): 81–106.
 18. D.P. Kessler and M.B. McClellan, “How Liability Law Affects Medical Productivity,” *Journal of Health Economics* 21, no. 6 (2002): 931–955.
 19. We avoided using hospital days or physician visits (in lieu of population) for two reasons. First, the use of these services is affected by the liability climate. See D.P. Kessler and M.B. McClellan, “Do Doctors Practice Defensive Medicine?” *Quarterly Journal of Economics* 111, no. 2 (1996): 353–390. It is also difficult to argue that increases in use of health care services are completely captured by hospital days or physician visits. For example, increases in screening and procedure usage may be only weakly correlated with hospital days or the number of physicians.
 20. We have also looked at the presence of million-dollar awards, which increased from 143 awards between 1991 and 1993 to 168 between 2001 and 2003. Between 1991 and 2003, the average payment for a judgment conditional on being over \$1 million increased from \$1.8 million to \$2.0 million. The latter number could be understated because of the corporate shield.
 21. These tabulations are available from the authors on request; send e-mail to amitabhchandra@dartmouth.edu. The tabulations for 1991–1993 are also very similar to those in Exhibit 5.
 22. S.A. Seabury, N.M. Pace, and R.T. Reville, “Forty Years of Civil Jury Verdicts,” *Journal of Empirical Legal Studies* 1, no. 1 (2004): 1–15.
 23. B. Black et al., “Stability, Not Crisis: Medical Malpractice Claim Outcomes in Texas, 1988–2002,” *Journal of Empirical Legal Studies* (forthcoming). Black and colleagues note that the number of claims was constant during the 1990s and that there was no statistically significant increase in the number jury awards. There does not appear to be a noticeable increase in the severity of payments, but there was a 4.3 percent (annual) increase in real defense costs associated with a claim.
 24. *Ibid.*
 25. K. Baicker and A. Chandra, “The Effect of Malpractice Liability on the Delivery of Health Care,” in *Frontiers of Health Policy Research*, vol. 8, ed. D.M. Cutler and A.M. Garber (Cambridge, Mass.: MIT Press, 2005).
 26. Black et al., “Stability, Not Crisis.”
 27. GAO, *Medical Malpractice Insurance*; and Baicker and Chandra, “The Effect of Malpractice Liability.”
 28. GAO, *Medical Malpractice Insurance*.
 29. Baicker and Chandra, “The Effect of Malpractice Liability.”