

Damages Caps in Medical Malpractice Cases

LEONARD J. NELSON III, MICHAEL A. MORRISEY, and MEREDITH L. KILGORE

Samford University; University of Alabama at Birmingham

This article reviews the empirical literature on the effects of damages caps and concludes that the better-designed studies show that damages caps reduce liability insurance premiums. The effects of damages caps on defensive medicine, physicians' location decisions, and the cost of health care to consumers are less clear. The only study of whether consumers benefit from lower health insurance premiums as a result of damages caps found no impact. Some state courts have based decisions declaring damages caps legislation unconstitutional on the lack of evidence of their effectiveness, thereby ignoring the findings of conflicting research studies or discounting their relevance. Although courts should be cautious in rejecting empirical evidence that caps are effective, legislators should consider whether they benefit consumers enough to justify limiting tort recoveries for those most seriously injured by malpractice.

Keywords: Medical malpractice, tort reform, malpractice premiums, legislative history.

THIS ARTICLE EXAMINES LEGISLATION AND JUDICIAL rulings on capping jury awards in medical malpractice cases, summarizes the research on damages caps, and explores the impact of research on policy decisions by courts and legislatures.

With the recent sharp increases in premiums, interest in malpractice insurance has revived. In the early 2000s, it was widely believed that we were in the midst of a third malpractice liability insurance crisis. An issue

Address correspondence to: Michael A. Morrisey, Lister Hill Center for Health Policy, University of Alabama at Birmingham, 1665 University Blvd., Birmingham, AL 35294-0022 (email: morrisey@uab.edu).

The Milbank Quarterly, Vol. 85, No. 2, 2007 (pp. 259–286)
© 2007 Milbank Memorial Fund. Published by Blackwell Publishing.

brief from the Congressional Budget Office stated that “premiums for all physicians rose by 15 percent between 2000 and 2002—nearly twice as fast as total health care spending per person” and that increases were even higher for some specialties: “22 percent for obstetricians/gynecologists and 33 percent for internists and general surgeons” (CBO 2004, 1). President George W. Bush has repeatedly asked Congress for a national cap on awards for noneconomic damages (i.e., compensation for pain and suffering or other losses not easily quantified), and the House has repeatedly passed such a cap, only to have it blocked in the Senate (Van Grack 2005).

Several states have adopted statutory caps limiting the amount of damages that a successful plaintiff may recover in malpractice actions. In fact, damages caps have been called the “most important and controversial aspect of tort reform” (Weiler 1991, quoted in Saks et al. 1997, 245), and they also are the reform that, according to several studies, may have the best chance of containing the growth of malpractice premiums. The controversy over damages caps includes disagreements whether they actually reduce malpractice premiums, how they might affect medical errors, and whether they fairly compensate injured patients. Our focus is on one of the more contentious controversies over damages caps: whether they reduce the cost of medical liability insurance, improve access to medical care, and lower the cost of health insurance. We begin with a brief introduction to malpractice insurance and then review and describe the states’ enactment of damages caps statutes. Next we analyze the studies of the effects of tort reforms on medical liability insurance premiums, defensive medicine, physician supply, and health insurance premiums. Finally we review both the uses of research findings by the supreme courts of Alabama and Wisconsin declaring damages caps to be unconstitutional and the legislative responses to these decisions.

Malpractice Insurance

What are the factors influencing malpractice premiums? In short, liability insurance premiums are affected by several factors, including insurers’ loss payouts. Both commercial insurers and mutual insurers provide medical liability coverage. Mutual insurers were created during the 1970s by physicians’ groups in response to malpractice insurance availability problems (Danzon 1985). Commercial and mutual insurers

typically calculate rates according to geographic location and specialty area and generally do not base premiums on individual physicians' previous claims (i.e., experience rating) (Mello 2006).

Baker (2005) provides an excellent overview of how insurance firms operate, which we recommend to interested readers. In summary, both commercial and mutual insurers determine their underwriting costs (and premiums) in accordance with their expected losses, and both purchase reinsurance from firms on the international market to limit their exposure to very high loss payouts. Baker attributes most of the volatility in malpractice premiums to the "underwriting cycle," in which loss estimates are periodically underestimated until an actual loss forces firms to reevaluate their premium rates. This problem is exacerbated by the interval between an event and when malpractice liability becomes known, as well as the additional volatility in the market for reinsurance, which leads to a market prone to boom-and-bust cycles. Thus, many factors can affect malpractice premiums: expected losses and changes in expectations, actual accrued losses (compared with expectations), cost of reinsurance, and investment returns on the reserves held by insurers to cover losses.

The Enactment of Damages Caps by the States

The states enacted damages caps in three waves in response to perceived crises in the cost and availability of medical liability insurance, in the mid-1970s, mid-1980s, and early 2000s, as well as occasional enactments during the lulls between the crises. We compiled a compendium of state damages caps laws, which is available at the UAB Lister Hill Center for Health Policy website (healthpolicy.uab.edu) and then clicking on the "Medical Malpractice Research" button. It is current through the present and will be updated regularly (LHC 2007). This compendium also describes these laws, dates of enactment and repeal, and references to decisions about their constitutionality. Unless otherwise indicated, the following discussion is based on this compendium.

There are various types of damages caps. Some apply only to malpractice actions, and others apply to all personal injury actions, including malpractice actions. Some caps apply only to noneconomic compensatory damages (principally recoveries for past and future pain and suffering),

and other statutes apply to both economic (e.g., past and future lost wages and medical expenses) and noneconomic compensatory damages. In some instances, the statutes specify that caps on noneconomic damages also must include punitive damages (i.e., damages awarded to punish the defendant's behavior rather than to compensate the plaintiff for particular injuries), but in others the applicability of the cap to punitive damages may not be clear. Some caps are adjusted for inflation; others are not. Some statutes stipulate that the jury is not to be told about the cap; others do not deal with the issue, but in most jurisdictions the court applies the cap without the jury's being informed of its effect (Kang 1999).

The malpractice crisis of the mid-1970s was provoked by both a spike in premiums and the lack of available malpractice insurance coverage (Sloan 1985). In response, beginning in 1975, several states enacted caps on noneconomic damages that applied only to malpractice cases (Abraham 1977; *Duke Law Journal* 1975; Grossman 1976b; LHC 2007). These caps were set at levels ranging from \$200,000 to \$500,000. Other jurisdictions capped total damages (both economic and noneconomic) in malpractice actions at levels ranging from \$500,000 to \$750,000 (Abraham 1977).

In the 1970s, some states created patient compensation funds (PCFs) to supplement private insurance coverage. PCFs were intended to help stabilize the private insurance market and make insurance more affordable by limiting insurers' liability (Bovbjerg 1989; *Duke Law Journal* 1975; Robinson 1986). A PCF statute with a cap typically limits both noneconomic and economic compensatory damages. The provider's total liability is set at a relatively low level so that the provider's primary liability carrier pays the amount of a settlement or an award up to that level and the PCF pays the remainder of the award or settlement up to the level of the overall damages cap (Bovbjerg 1989; Robinson 1986).

Sometimes the damages caps enacted in the 1970s were part of comprehensive malpractice reform legislation. For example, California's Medical Injury Compensation Reform Act (MICRA) remains "the gold standard" for many malpractice liability reform advocates (Finley 2004, 1283). The MICRA was adopted by the California legislature in 1975 and specifies a flat cap of \$250,000 on noneconomic damages in malpractice cases with no inflation adjustment (Keene 1976). In addition to its \$250,000 cap on noneconomic damages, the MICRA has a number of provisions that provide a template for reform proponents: a collateral source offset

(i.e., giving a defendant credit for moneys received by the plaintiff from collateral sources such as health or disability insurance), a mandatory periodic payout of future damages (i.e., requiring the payment of future damages as incurred rather than as a lump sum discounted to present value), limits on contingency fees (i.e., limiting the amount of the fee charged by plaintiff's attorney), and a statute of repose (i.e., placing an absolute outside limit on when a malpractice claim can be filed, regardless of when an injury or harm is discovered by the plaintiff) (Bovbjerg 1989; Keene 1976). MICRA-style tort reforms are intended to reduce both the frequency and the size of claims (Bovbjerg 1989). Damages caps and collateral source offset statutes are focused on reducing the size of claims, and the limits on contingency fees and statutes of repose are focused on reducing the frequency of claims.

By the late 1970s, the malpractice insurance crisis had subsided, but by 1985 the general liability insurance market was in crisis, primarily because of the lack of affordability of several lines of insurance (Sloan, Mergenhagen, and Bovbjerg 1989). By 1986, forty-one states had enacted tort reform measures, including provisions for caps on noneconomic damages that applied to personal injury actions and malpractice actions at levels ranging from \$350,000 to \$500,000 (Blackmon and Zeckhauser 1990). In addition, some states in the 1980s imposed caps on noneconomic damages specific to malpractice cases at various levels ranging from \$225,000 to \$1 million.

In the early 2000s, in response to another affordability crisis in the medical liability insurance market, the states enacted more malpractice reforms. Several states imposed caps on noneconomic damages applicable in medical malpractice cases at levels ranging from \$250,000 to \$650,000. Some of these statutes, however, apply only to particular types of malpractice cases or include significant exceptions. The cap proposals submitted to voters have met with mixed results. In 2003 the Nevada legislature adopted a cap of \$350,000 on noneconomic damages in medical malpractice cases with several exceptions, and in a 2004 referendum the cap was retained but stripped of exceptions. In 2004, Oregon voters defeated a ballot measure that would have capped noneconomic damages at \$500,000 in medical malpractice cases (NCSL 2004), and in 2005, Washington voters rejected a proposal to cap noneconomic damages in malpractice cases at \$350,000 (NCSL 2005).

State appellate courts have declared several damages caps statutes to be unconstitutional. Typically, the state courts have relied on various

provisions of their state constitutions in declaring these statutes unconstitutional, including guarantees of equal protection, due process, right to a jury trial, and access to courts (Gfell 2004; Nelson 1989). In some of these cases, discussed later, the courts based their determination of unconstitutionality partly on the lack of sufficient proof that caps would reduce liability insurance premiums.

Methodologies for Studying the Effects of Damages Caps

Estimating the effects of malpractice tort reforms is challenging. Indeed, the U.S. General Accounting Office (GAO) (2003a, 2003b) and the National Association of Insurance Commissioners (Nordman, Cermak, and McDaniel 2004) suggested that it was impossible to determine whether caps reduce premiums because it was not possible to distinguish economic from noneconomic damages and was therefore impossible to track the effects of the laws on the size of insurers' losses, on the frequency of claims, or on handling costs. Economists, however, have been trying to estimate the impact of tort reforms since at least the mid-1980s. The difference is that economists have taken an econometric rather than an accounting approach.

In this article we examine some of the studies released by governmental agencies and advocacy groups that have been widely cited by both tort reform proponents and opponents in arguing their positions, as well as studies that have been published in peer-reviewed journals.

To test the effect of a tort reform and to determine whether or not the statute had an impact, researchers prefer that a randomly selected state impose the new statute with nothing else changing over time as the reform played out. They would then simply compare the frequency and magnitude of claims, the size of the jury awards, and the premiums charged to physicians before and after the law's enactment.

Several studies have taken an approach superficially similar to this, with mixed results. The U.S. GAO (2003a) concluded that in 2001 and 2002, loss payouts for malpractice claims against physicians were lower in, and grew more slowly in, states with caps and that malpractice premiums also grew more slowly in states with caps. A report by the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation (2002) concluded that the

premium increases for 2001 in ten states with noneconomic damages caps of \$350,000 or less were 72 percent lower than those in ten other states without caps. Updating this work, from 2000 through 2002 (U.S. DHHS 2003), the two-year difference in premium increases between states with and without caps was 60 percent. But Weiss, Gannon, and Eakins (2003) also examined the period from 1991 through 2002 and found that insurers in states with premium caps raised their premiums faster than did those in states without caps.

Potential problems with these types of studies are that they consider neither the other factors that may have changed over time nor the differences among states other than the enactment of damages caps laws. The studies cited also compared states with and without laws over a very short period. Therefore they were not comparing the effects of a law as it played out in each state but instead were assuming that those states without the laws were otherwise the same as those states with the laws. If the states had meaningful differences, then their conclusions about the law's effect could be misleading. States that enact damages caps laws are not a random selection because each state enacted the laws for potentially unique economic and political reasons. Thus, a study of the effect of a damages cap in one state may not produce conclusions that are generalizable to other states.

The better empirical studies attempted to account for differences across states, time, and the nonrandom enactment of the laws. For example, they developed a statistical model that relates malpractice premiums to factors thought to affect those premiums. These factors might include the enactment of new laws, demographics, average incomes, and perhaps the number of physician specialists. For example, if incomes are higher in one state, malpractice premiums may also be higher. Similarly, if incomes rise rapidly in a state, premiums may increase as well. The better-designed studies also attempted to account for national trends or events that may have affected all the states, for example, a decrease in investment returns that reduce insurers' income from reserves.

The better studies accounted for these factors by using various forms of regression analysis, which statistically control for the variation of other factors included in the model in order to estimate the uncontaminated effect of the new laws on premiums. This approach has two major problems: how to deal with "unobservables" and how to deal with the nonrandom enactment of laws. *Unobservables* are factors believed to affect

malpractice premiums that cannot be measured, for example, the differences among states in the willingness of patients to sue their physicians. The state-of-the-art approach to the unobservables problem is to use a fixed-effects model, in which the regression analysis includes a binary variable for each state in the study for each year. For example, although Louisiana and Utah may differ in a variety of ways, most of these differences are relatively stable over time. Thus, the binary variable for each state controls for the net average effect of all the unobservables for each state. Similarly, for a national trend such as rising interest rates or increasing expectations by plaintiffs of favorable treatment by the court system, the binary year variables capture the net average effects of these secular unobservables.

The nonrandom enactment of the laws is more problematic. One approach is to estimate an instrumental variables model in which the researcher predicts the enactment of the law based on factors that do not influence malpractice premiums and then uses this predicted enactment term in the premium regression. The problem with this approach is that it has been difficult to find predicting variables that satisfy the conditions for a good instrumental variable. Consequently, the state of the art is to employ fixed-effects models, on the assumption that among the unobservables are the predictors of legislative enactment. In short, the better empirical analyses of the effects of tort reform used several years of data across many states and controlled for other relevant factors, typically by employing fixed-effects models to account for unobservables.

Research Findings on the Effects of Damages Caps

There is still some controversy over whether caps reduce awards and judgments. Some studies counterintuitively suggest that caps can actually increase loss payouts. Zeiler (2003) hypothesized that damages caps could reduce the quality of care provided by physicians, thereby increasing the frequency of injuries caused by negligent medical care. Based on a game theoretic model, she concluded that caps could result in an increase in ex ante damages unless the cap were set so low that the total amount of damages recovered was below the litigation costs. Moreover,

Sage (2001) pointed out that a cap on noneconomic damages had no effect on increases in awards for economic damages. Sharkey (2005) suggested that if noneconomic damages were capped, plaintiffs' attorneys would try to prove more economic damages, resulting in higher jury awards.

Gronfein and Kinney (1991) found that paid malpractice claims were actually higher in Indiana, which had a cap on total damages, than in Michigan and Ohio, which did not have such caps. Nonetheless, Indiana still had lower malpractice premiums than Michigan and Ohio had. Babcock and Pogarsky (1999) compared simulated negotiations with and without a cap of \$250,000 and found that the mean settlement amount among those negotiating teams that were subject to the cap was approximately twice that of the mean settlement amount for those negotiating teams that were not subject to the cap. They concluded that caps encouraged settlements and lowered negotiating costs.

Malpractice Premiums

The general approach to identifying rigorous research studies was to begin with the Zuckerman, Bovbjerg, and Sloan (1990) study and then to search for citations to this study using the expanded Science Citation Index available online through many university libraries. We scanned the abstracts of the papers cited and reviewed those with new empirical research on the effects of damages caps on malpractice premiums, including those that undertook rigorous empirical work. We then examined the citations in these papers to identify any additional candidates for inclusion in the rigorous studies.

Beginning in 1990, several published studies found a link between damages caps and lower malpractice premiums. These studies differed in their time periods, measures of premiums, and approaches to analysis. Zuckerman, Bovbjerg, and Sloan (1990) used 1974–1986 HCFA data on the average premiums paid by general practitioners (GPs), general surgeons (GSs), and obstetricians/gynecologists (OBs). They included lagged premiums to allow the estimation of long- and short-run effects, and they used state and year fixed effects to control for unobserved state and temporal effects. They found that damages caps reduced GPs', GSs',

and OBs' premiums by 13.4, 14.3, and 16.9 percent, respectively, in the short run and by 40 to 58 percent in the long run.

Kessler and McClellan (1997) used data from 1985 through 1993. Their measures of malpractice premiums were self-reported by physicians and were, therefore, similar to those used by Zuckerman, Bovbjerg, and Sloan (1990). Kessler and McClellan also used fixed-effects models and concluded that three years after their enactment, "direct" reforms (including damages caps) reduced the growth in premiums by 8.4 percent.

Danzon, Epstein, and Johnson (2004) looked at a still more recent period, 1994 to 2003, and used *Medical Liability Monitor* average premium data on internists, general surgeons, and obstetricians by insurance carrier by state and year. Using a state/year fixed-effects model, they concluded that the increases in premiums in those states with noneconomic damages caps set at or below \$500,000 were 5.7 percent lower than those in states without such caps. Neither noneconomic damages caps higher than that value nor total damages caps had any statistically significant effects.

Kilgore, Morrissey, and Nelson (2006) examined the period between 1991 and 2004, also using *Medical Liability Monitor* data and examining the same specialties as Danzon, Epstein, and Johnson (2004) did but using state or substate average premiums for each. Using a state/year fixed-effects model, they found that noneconomic damages caps reduced premiums by 17.3, 20.7, and 25.5 percent, respectively, for the three specialties. Each \$100,000 increase in the inflation-adjusted (2004 dollars) value of the cap increased premiums by 3.9 percent. This implied that caps of \$250,000 or less reduced premiums substantially. Those caps between \$250,000 and \$750,000 had no impact, but those caps above \$750,000 increased premiums substantially.

In contrast to these studies, several studies used insurers' aggregate premium revenue as their measure of malpractice premiums. Physicians' average premiums reflect something close to the price of coverage, and the aggregate measures also are affected by the volume and extent of coverage sold and by the mix of physician specialties buying coverage.

Blackmon and Zeckhauser (1990) examined the three years between 1985 and 1988, a short period that meant they could not use fixed-effects techniques to control for unobservables. In any case, they found that four reforms enacted in 1986 (damages caps, limits on joint and several liability, statutes of limitation/repose, and collateral source offsets) together reduced aggregate premiums by 16.6 percent. Viscusi

and colleagues (1993) expanded and refined Blackmon and Zeckhauser's study, using the same data from *Best's Review* but examining the effects of the 1985, 1986, and 1987 reforms. They found that the 1985 and 1986 reforms reduced aggregate premiums by 27.7 and 21.4 percent, respectively. Gius (1998) also used the aggregate state premium revenue measure from *Best's*, but for a much longer time period, 1976 to 1990. This allowed him to use a random-effects model, with which he was unable to find any effects of limits on liability on aggregate premium revenue.

Viscusi and Born (1995) examined the period between 1985 and 1991 with carrier-specific aggregate premium revenue by state and year and used data collected by the National Association of Insurance Commissioners (NAIC) and also state/year fixed effects. Reforms, particularly damages caps, reduced short-run firm-specific aggregate premiums by 12.4 percent, but long-run effects were said to be "implausibly large" (p. 485). Viscusi and Born (2004) expanded their earlier work to incorporate more detailed measures of the reforms. They found that noneconomic damages caps lowered firm-specific short-run premiums by 6.2 percent and that punitive damages caps lowered short-run premiums by 8.1 percent. Their long-run estimates were reductions of 19.7 and 25.8 percent, respectively.

Finally, Thorpe (2004) used the NAIC data for 1985 to 2001 to examine aggregate state malpractice premium revenue and aggregate revenue per physician in the state. He did not include state fixed effects but did include year fixed effects and a lagged dependent variable in his specification. The aggregate premium revenue of states with award caps was estimated to be 17.1 percent lower than in those states without caps, and the premium revenue per physician was 12.2 percent lower. He found no statistically significant effects of punitive damage limits.

In short, the more rigorous empirical analyses consistently showed that damages caps reduced medical malpractice premiums. These ten papers examined different time periods from the mid-1970s through the early 2000s, and because of the differing time periods, they generally identified different states with damages caps. They all, however, controlled for other factors, and nearly all used a fixed-effects model. All but one of them found that damages caps reduced malpractice premiums and/or the growth in premiums. Thus, the issue is not whether caps reduce premiums but whether the reductions are closer to 6 percent or 25 percent.

Defensive Medicine

Another question about damages caps that can be answered through empirical research is whether caps can reduce defensive medicine. The U.S. Office of Technology Assessment defined *defensive medicine* as practiced “when doctors order tests, procedures, or visits, or avoid high risk patients or procedures, primarily (but not necessarily solely) to reduce their exposure to malpractice liability” (U.S. OTA 1994, 21). It also noted that defensive medicine was “not always bad for patients” and that, according to its definition, may include “practices that benefit patients” (13). The OTA further stated that damages caps may not have much impact on defensive medicine, and even if they do, the effect may be to reduce “indiscriminately” both appropriate and inappropriate practices (12).

Although some studies failed to find a link between higher malpractice claims and a higher incidence of defensive medicine (Mello and Brennan 2002), several recent studies did find a link. Kessler and McClellan (1996) examined the effect of direct and indirect malpractice reforms on the treatment of Medicare beneficiaries for heart disease in 1984, 1987, and 1990. Using a state/year fixed-effects framework for analysis, they found that within three to five years of their adoption, direct reforms (i.e., damages caps, collateral source modification, abolition of mandatory prejudgment interest, and abolition of punitive damages) led to a 5 to 9 percent reduction in medical expenditures for the treatment of heart disease. These reductions in expenditures were not associated with “any consequential effects on mortality or on the rates of significant cardiac complications” (Kessler and McClellan 1996, 383). Baker (2005) praised the methods used by Kessler and McClellan to examine the effects of tort reforms on the use of marginally effective procedures in treating heart disease but criticized their “opaque and unjustified” extrapolation that direct tort reforms could save more than \$50 billion annually if their findings were generalized to other medical expenditures outside hospitals (Kessler and McClellan 1996, discussed in Baker 2005). Baker argued that the generalizability of their findings was highly questionable, that the results showed that tort reforms produced only transient effects, and that Kessler and McClellan failed to account for benefits arising from lawsuits that provide incentives for physicians to provide appropriate care.

In a subsequent paper, Kessler and McClellan (2002) found that malpractice reforms reduced defensive practice in the care of Medicare beneficiaries treated for heart disease between 1984 and 1994 in areas of both high and low managed care enrollment but that reforms and managed care were substitutes. Using essentially the same analytic model they used in their 1996 work, Kessler and McClellan (2002) found that direct reforms lowered long-run hospital expenditures on ischemic heart disease patients by approximately 4.4 percent without any significant impact on the patients' health outcomes.

Baker (2005) contended that Kessler and McClellan's findings underscore the greater efficacy of health services management, in contrast to tort reform, in reducing the use of costly and minimally effective treatment, and he also suggested that the methods used likely underestimated managed care effects. The Congressional Budget Office applied the methods used by Kessler and McClellan (1996) to study the treatment of heart disease to the treatment of other diseases, but it found no evidence that malpractice reform reduced health care spending. And using other data, CBO found no difference in per-capita health care spending in states both with and without reforms (CBO 2004).

Dubay, Kaestner, and Waidmann (2001) used 1990–1992 national data on measures of infant health and prenatal care to examine the effects of malpractice premiums on obstetrics care. Since premiums are endogenous, they used tort reforms as instruments in a two-stage regression model. The first stage regression predicted premium levels based on tort reforms; the second stage regressed the onset of prenatal care on the predicted premiums from the first stage. They found that lower premiums were associated with a small but statistically significant delay in the onset of prenatal care but that their measures had no statistically meaningful effects on infant health. Grant and McInnes (2004) examined the behavior of a panel of Florida obstetricians between 1992 and 1995. They found that physicians who had had medical malpractice claims that led to substantial indemnity payments increased their risk-adjusted cesarean section rates by about one percentage point. Like DuBay and colleagues, they concluded that in this context, defensive medicine was practiced modestly.

In contrast, Studdert and colleagues (2005) surveyed physicians in six specialties in Pennsylvania in May 2003. Nearly 93 percent of those responding indicated that they practiced defensive medicine by using

imaging technology more aggressively, eliminating procedures prone to complications, and avoiding patients with complex problems. This work mirrors earlier work by Reynolds, Rizzo, and Gonzales (1987) that used physician surveys of defensive medicine to estimate the cost of such practices. Inasmuch as the responding Pennsylvanian physicians were not disinterested participants and there was no effort to account for other factors, this conclusion may be overstated.

In short, the relatively sparse rigorous empirical research on the effects of damages caps on defensive medicine yielded a range of effects from none to small to modest. This contrasts with survey findings suggesting that defensive medicine is widespread. Clearly, much more empirical work is needed on this question.

Physician Supply

Reform proponents argue that high malpractice premiums have driven physicians from their states and that damages caps would end and possibly reverse this trend. The first study to find a link between damages caps and physician supply was by Hellinger and Encinosa (2003). They estimated the effect of state damages caps using statewide aggregate and county data. They found that states with caps on noneconomic damages had 12 percent more physicians per capita than did states without caps (Hellinger and Encinosa 2003). They also found that states with relatively higher caps were less likely to have more physicians than were states with relatively lower caps. Furthermore, in 2000, "States that adopted a cap averaged 135 physicians per 100,000 citizens per county while States without a cap averaged 120" (Hellinger and Encinosa 2003, 14). This study can be criticized, however, because it did not control for other factors that may have differed across states.

Subsequently, Encinosa and Hellinger (2005) used a fixed-effects model and continued to find a link between damages caps and physician supply, which reduced the likelihood that other factors had contaminated their earlier estimates. They used county-level data from all fifty states from 1985 to 2000 to examine the link between physician supply and damages caps. They concluded that the counties in those states with damages caps had 2.2 percent more physicians per capita because of the cap and that rural counties in those states had 3.2 percent more physicians. They found that rural counties of states where

caps on noncompensatory damages were set at \$250,000 or less had 5.4 percent more obstetrician/gynecologists and 5.5 percent more surgeons than in rural counties in states with a cap of more than \$250,000. Overall, they concluded that damages caps enacted in the mid-1980s had a greater impact on physician supply than did the caps passed in the 1970s and that various other, related tort reforms had no impact on physician supply.

Thurston (2001) noted that physicians should be concerned about their medical malpractice premiums only if they could not pass on the premiums to their patients in the form of higher prices. He used data on physician fees and malpractice premiums from the 1983–1985 Physicians' Practice Costs and Income Survey and found that both surgeons and nonsurgeons were able to pass on premium increases to payers but that significantly more of these costs were passed on to surgical than to nonsurgical patients. More recently, Pauly and colleagues (2005) examined net income data from single-specialty group practices in 1994, 1996, and 2002. They found no evidence that higher malpractice premiums depressed physician incomes over this period, thereby suggesting that physicians had been able to pass on the premium increases to payers.

The ability of physicians to pass on increased premium costs to purchasers of health care indicates that reforms reducing premium levels should have a limited impact on physicians' location decisions or that the flight of some physicians allowed those remaining to raise prices. Clearly, more work is needed to disentangle the physicians' location and pricing issues.

Health Insurance Premiums

Proponents of damages caps contend that damages caps benefit consumers by reducing the rate of increase in health insurance. A broader question could be framed as whether people are sufficiently compensated for the smaller amount of expected damages for malpractice by a reduction in the cost of health care. Morrissey, Kilgore, and Nelson (2007) found no evidence that employer-sponsored health insurance premiums were lower as a result of damages caps. They examined the effect of malpractice reforms on health insurance premiums, noting that health insurance costs could be affected by malpractice reform in two ways: (1) providers

could pass through cost reductions in liability insurance to health care consumers, and (2) the less frequent practice of defensive medicine could lower the number of tests and other services. Using data on the health insurance premiums of private-sector employers for the years 1991 to 2004 in a fixed-effects regression model, Morrissey, Kilgore, and Nelson found no evidence that damages caps reduced employer-sponsored health insurance premiums. They offered two possible explanations for this. First, their findings were consistent with the view that malpractice premium increases and defensive medicine activities were too small in magnitude to affect overall health insurance premiums. With respect to malpractice premiums, this is not surprising. Danzon (2000) has noted that, in aggregate, malpractice premiums constitute less than 2 percent of health care costs. The result also is consistent with the limited evidence of the effects of damages caps on defensive medicine noted earlier but is clearly inconsistent with the survey findings by Studdert, Yang, and Mello (2004). Second, the findings also are consistent with the view that defensive medicine is not affected by tort reforms because tort reforms do not affect the time costs, anxiety, and embarrassment of physicians faced with a malpractice suit.

This is the only study examining the effects of damages caps on consumers more generally. This broad issue is important, for if consumers are to give up some of their recourse in the courts, they should expect to see something in return. Clearly, much more research on the value of tort reform for consumers is in order.

Uses of Research Findings by State Appellate Courts and Legislatures

In light of the availability of research reports on the effects of damages caps, we would hope that courts considering the constitutionality of damages caps legislation would carefully review such reports. Indeed, claims that damages caps are unconstitutional often include assertions that damages caps do not reduce the cost of medical liability insurance, increase access to physicians, or lower health care costs. This is essentially an empirical inquiry, and we might expect that the findings of research studies might influence policy. Indeed, ever since Louis Brandeis's inclusion of social science research in the brief he filed in upholding an Oregon law limiting work hours for women, *Muller v. Oregon*, 208 U.S.

412 (1908), courts have cited empirical studies by social scientists to support their judicial decisions.

The traditional posture of state courts in reviewing the constitutionality of social and economic legislation has been one of deference. For example, in upholding a \$250,000 statutory cap on noneconomic damages in malpractice cases, the Supreme Court of California stated that

it is well established that a plaintiff has no vested property right in a particular measure of damages, and that the legislature possesses broad authority to modify the scope and nature of such damages. Since the demise of the substantive due process analysis of *Lochner v. New York* (1905) 198 U.S. 45, it has been clear that the constitutionality of measures affecting such economic rights under the due process clause does not depend on a judicial assessment of the justifications for the legislation or of the wisdom or fairness of the enactment. So long as the measure is rationally related to some legitimate state interest, policy determinations as to the need for, and the desirability of, the enactment are for the Legislature. (*Fein v. Permanente Medical Group*, 695 P.2d 665 [Cal. 1985] quoting from *American Bank & Trust Co. v. Community Hospital*, 683 P.2d 670 [Cal. 1984])

Indeed, in some recent decisions, state courts that have upheld the constitutionality of damages caps have eschewed any attempt to review research studies on the effect of caps, indicating that this task is for the legislature rather than for the judiciary (see, e.g., *Judd v. Drezga*, 103 P.3d 135 [Utah 2004]). But while most state courts have upheld damages caps, despite questions about their efficacy (Kelly and Mello 2005), others have referred to such studies or their absence in striking down caps. Before 1990, those contending that the relationship between the means employed (damages caps) and the ends sought (reductions in medical malpractice premiums or health care costs) was not sufficient could point to the failure of studies to find any such relationship. Since then, however, such links have been found.

We examine judicial opinions from two jurisdictions, Alabama and Wisconsin, where in cases decided after 1990, the courts cited research studies or referred to the lack of such studies, in striking down damages caps as unconstitutional under their respective state constitutions. We also look at the legislative response to the courts' actions.

Alabama: Judicial Action and Legislative Response

In 1987, Alabama enacted both general tort reform measures and measures specific to medical malpractice (Hunter 1988). The medical liability provisions of the legislation were based on the MICRA and included a cap of \$400,000 on noneconomic damages (including punitive damages), collateral source offset, and mandatory periodic payouts of future damages (Hunter 1988). The legislation also included a cap of \$1 million on punitive damages in wrongful death actions (Hunter 1988; Nelson 1989). The legislative findings accompanying the medical liability legislation declared that the legislature was responding to a crisis in health care costs and access and the availability of professional liability insurance that had been caused by “the increasing threat of legal actions for alleged medical injuries” (Hunter 1988, 324).

Subsequently, a series of Alabama Supreme Court opinions declaring the damages caps to be unconstitutional referred to the lack of studies finding that damages caps would reduce malpractice premiums or health care costs. The \$400,000 cap was held unconstitutional as violating the Alabama Constitution’s provisions of equal protection and right to a jury trial in *Moore v. Mobile Infirmary Association*, 592 So.2d 156 (Ala. 1991). The Alabama Supreme Court also held the \$1 million cap on punitive damages in wrongful death malpractice cases to be unconstitutional (*Ray v. Anesthesia Associates of Mobile, P.C.*, 674 So.2d 525 [Ala. 1995] and *Smith v. Schulte* 671 So.2d 1334 [Ala. 1995]).

In *Moore* the court noted that the purpose of imposing the challenged \$400,000 cap on noneconomic damages in malpractice cases, as articulated by the legislature, was a concern about increased health care costs due to malpractice suits. The court concluded “that the correlation between the [\$400,000] damages cap imposed . . . and the reduction of health care costs to the citizens of Alabama is, at best, indirect and remote.” In reaching this conclusion, the court cited a finding by the U.S. General Accounting Office (GAO) (1986) that the link between damages caps and health care costs was remote. The court further noted that the GAO (1986) had found that malpractice insurance costs continued to rise sharply from 1983 to 1985, even though damages caps had been in place in some states for a decade. It also referred to studies by Sloan (1985) and Danzon (1987), noting that they had failed to find any connection between malpractice reforms and reductions in malpractice

premiums. Surprisingly, however, the *Moore* court did not mention other studies available at the time of the decision—Zuckerman, Bovbjerg, and Sloan (1990) and Blackmon and Zeckhauser (1990)—that supported the efficacy of damages caps in reducing malpractice liability insurance premiums.

Following *Moore*, the legislature considered bills with similar caps on noneconomic damages on several occasions (Stewart 1999), driven in part by Alabama's image as a "tort hell," but it did not adopt any caps. Also during the 1990s, victories of Republican justices supported by business interests changed the composition of the Supreme Court of Alabama (Stewart 1999). This raised the possibility that it might now uphold damages caps. A study by Yoon (2001) concluded that average relative recoveries by plaintiffs decreased by approximately \$20,000 after the enactment of the damages cap and increased by approximately twice that following judicial invalidation. Nonetheless, in *Mobile Medical Infirmary Medical Center v. Hodgen*, 884 So.2d 801 (Ala. 2003), the supreme court declined to reinstate the \$400,000 cap on noneconomic damages, although it did seemingly invite the legislature to reenact a cap.

Wisconsin: Judicial Decision and Legislative Response

In 1975, the Wisconsin legislature created the Wisconsin Patient Compensation Fund (PCF) in order to stabilize the insurance market by providing a layer of coverage beyond that obtained from private insurers (Kenitz 2006). Subsequently, in 1986, the legislature adopted a cap of \$1 million in noneconomic damages that limited the PCF's liability, but this cap expired in 1991 (Kenitz 2006). In 1995, the legislature adopted a cap of \$350,000 (adjusted for inflation) on noneconomic damages in malpractice cases that again limited the PCF's liability (Kenitz 2006).

In *Ferdon ex rel. Petrucelli v. Compensation Fund*, 701 N.W.2d 444 (Wis. 2005), after reviewing research on the effectiveness of caps, the court struck down the \$350,000 cap as unconstitutional under the equal protection clause of the Wisconsin Constitution. Both the majority opinion and the dissenting opinion by Justice David Prosser included extensive and lengthy reviews of social science research. Indeed, the primary disagreement between the majority and the dissent revolved around

interpretations of the research findings. Prosser's dissent criticized the majority as being selective in its review of these studies and ignoring studies not supportive of its conclusion.

Initially, the court held that the relationship between the legislative objective of compensating victims and the damages cap was not rational, noting that the cap had the greatest impact on severely injured children. To support its conclusion that the cap was regressive, the court relied on the study by Studdert, Yang, and Mello (2004). The court then focused on whether the cap could reduce premiums. It examined several studies to support its assertion that malpractice premiums are not affected by caps: U.S. GAO (2003a), U.S. GAO (2003b), and Weiss, Gannon, and Eakins (2003). The majority opinion acknowledged that the GAO (2003b) found lower levels and slower growth in loss payouts in states with caps but concluded that this did not provide a rational basis for the cap, noting that the GAO indicated it could not be determined whether caps or other factors were responsible for the lower loss payouts and premiums in states with caps.

The majority opinion also cited Thorpe (2004) in a footnote, observing his conclusion that premiums in states with caps were 17.1 percent lower than those in states without caps but discounting the relevance of this finding because this study combined states with caps on both economic and noneconomic damages. The court concluded that therefore it was not possible to determine the impact of a cap on noneconomic damages. The majority then turned to whether the cap could lower health care costs. It began by stating that malpractice premiums and PCF assessments were an "exceedingly small portion of overall health care costs" and repeated its concern about the impact of the cap on the most severely injured malpractice victims.

The majority then considered whether the cap could attract more physicians to Wisconsin. It referred to the U.S. GAO (2003a) finding that damages caps do not affect physicians' location decisions but then acknowledged that not all studies had similar findings. Encinosa and Hellinger (2005) found that caps resulted in a greater supply of some types of physicians in rural areas, but the majority discounted the relevance of this study to Wisconsin. Instead, it referred to Vidmar (2005), a report commissioned by the Illinois State Bar Association, concluding that there was no evidence of physicians leaving the state because of malpractice costs. On this basis, the majority concluded that the cap was not rationally related to the objective of increasing the supply of physicians.

Finally, the majority discussed whether the cap could reduce the practice of defensive medicine. It referred to the findings of Kessler and McClellan (1996) concerning the prevalence of defensive medicine observed in elderly patients but discounted the relevance of that study because it did not focus specifically on the impact of damages caps on defensive medicine. It observed that three reports from governmental agencies—U.S. GAO (2003a), CBO (2004), and U.S. OTA (1994)—found that defensive medicine costs had not been reliably measured and did not significantly contribute to health care costs. The majority noted that most studies of the prevalence of defensive medicine were inherently suspect because they relied on physician surveys. Thus the *Ferdon* majority concluded that the \$350,000 cap was unconstitutional because it was not rationally related to the proffered legislative objectives.

The dissenting opinion by Justice Prosser referred to a finding by the U.S. Department of Health and Human Services (2003) of a significant increase in the size of recent awards for noneconomic damages. His dissent criticized the majority opinion's reliance on Weiss, Gannon, and Eakins (2003) and, more particularly, on its conclusion that noneconomic damages caps had not resulted in reductions in median awards. Prosser argued that the amount of the median award was simply irrelevant until it exceeded the cap and that the relevant measure should instead be the mean. His dissent noted that the Weiss, Gannon, and Eakins study concluded that Wisconsin's malpractice premiums had actually dropped 5 percent from 1991 to 2001 while premiums rose in other states. The dissent also criticized the majority opinion's use of the U.S. GAO study (2003b), noting it found that loss payouts were the primary driver of increased premiums. Relying on the U.S. Department of Health and Human Services (2003) and Thorpe (2004), the dissenting opinion contended that the evidence showed that malpractice premiums had been substantially lower in Wisconsin and other states with caps than in states without caps. Prosser also criticized the failure of the majority opinion to adequately consider studies of defensive medicine that did not rely on physician surveys, citing Kessler and McClellan (1996) and the findings in a study by the U.S. Congress Joint Economic Committee (2003) that tort reform could result in substantial savings in the federal budget and result in greater access to health care.

There was a swift legislative reaction to the *Ferdon* decision. In 2005, the Wisconsin legislature passed a bill adopting a cap of \$550,000 on noneconomic damages in malpractice cases for victims under eighteen

and \$450,000 for adults, but this bill was vetoed by Governor James Doyle in December 2005. At the time, the governor stated that he had consulted with a panel of experts who believed that this bill was too similar to the legislation that was struck down by *Ferdon*. Subsequently, the legislature passed a \$750,000 cap on noneconomic damages, and in March 2006 this legislation was signed into law. The governor noted his uncertainty that the bill would be upheld by the court but hoped that it was a “reasonable compromise” (Pribek 2006).

The legislature included a number of findings in the bill that delineated their objectives in passing the new cap. It referred to governmental reports issued by federal agencies, for example, the U.S. Congress Joint Economic Committee (2003) and the U.S. Department of Health and Human Services (2003), and state agencies to support its assertions that the cap was necessary to contain health care costs, preserve access, and ensure the fiscal integrity of the Wisconsin PCF. It further stated that it had arrived at the \$750,000 figure based on actuarial studies, the experiences of other states, the testimony of experts, and other documentary evidence.

In summary, state courts have sometimes tried to use research studies for cases challenging the constitutionality of damages caps in medical malpractice actions. In the *Moore* case, the court ignored applicable studies that supported the legislature’s belief that damages caps could reduce medical liability insurance premiums. In the *Ferdon* case, the majority rejected the findings of some studies and ignored others that arguably provided support for the legislation. The two case studies suggest that the courts have been too selective and uncritical in their use and interpretation of the empirical literature. Decision making by the courts may be improved with a better understanding of the strengths and weaknesses of the evidence.

Conclusion

Damages caps are the most controversial aspect of malpractice reform. Debate has raged over whether medical malpractice damages caps have reduced malpractice insurance premiums. Our view is that this issue has now been resolved. Nearly all the rigorous empirical analyses conducted since 1990 found that malpractice premiums are lower in the presence of damages caps. Only one study found caps to be ineffective in this regard. Two other studies found low caps effective, but higher caps—those above \$500,000 or \$750,000 in 2005 dollars—to be ineffective.

The effects of damages caps on the practice of defensive medicine, physicians' location decisions, and the cost of health care to consumers are less clear. There is evidence of small to modest effects of damages caps on defensive medicine and some evidence that caps expand the available supply of physicians. We could find only one study that looked at the broader issue of whether consumers benefit from lower health insurance premiums as a result of damages caps, and that study found no impact. More research on these issues is in order.

Some state courts have declared that damages caps are unconstitutional, at least in part because they cannot achieve some of their purported purposes, that is, reductions in medical liability insurance premiums, less practice of defensive medicine, and a greater supply of physicians, but others have deferred to the legislature on this question. Legislatures considering the enactment of damages caps in malpractice actions should take some comfort from findings that damages caps are effective in achieving their purported purposes. However, legislative policymakers should recognize that damages caps are not a panacea and that the limitations on recovery of damages for the most seriously injured victims of malpractice may not be justified by the possibility of lower health care costs.

References

- Abraham, K. 1977. Medical Malpractice Reform. *Maryland Law Review* 36:489–532.
- Babcock, L., and G. Pogarsky. 1999. Damage Caps and Settlement: A Behavioral Approach. *Journal of Legal Studies* 28:341–71.
- Baker, T. 2005. *The Medical Malpractice Myth*. Chicago: University of Chicago Press.
- Blackmon, G., and R. Zeckhauser. 1990. *The Effect of State Tort Reform Legislation on Liability Insurance Losses and Premiums*. Cambridge, Mass.: Harvard University, John F. Kennedy School of Government.
- Bovbjerg, R.R. 1989. Legislation on Medical Malpractice: Further Developments and a Preliminary Report Card. *U.C. Davis Law Review* 22:499–556.
- Duke Law Journal*. 1975. Comment: An Analysis of State Legislative Responses to the Medical Malpractice Crisis. 1975(6):1417–68.

- Congressional Budget Office (CBO). 2004. *Limiting Tort Liability for Medical Malpractice*. Washington, D.C.: U.S. Congressional Budget Office. Available at <http://www.cbo.gov/ftpdocs/49xx/doc4968/01-08-MedicalMalpractice.pdf> (accessed February 22, 2007).
- Danzon, P.M. 1985. *Medical Malpractice: Theory, Evidence, and Public Policy*. Cambridge, Mass.: Harvard University Press.
- Danzon, P.M. 1987. The Effects of Tort Reforms on the Frequency and Severity of Medical Malpractice Claims. *Ohio State Law Journal* 48:413–17.
- Danzon, P.M. 2000. Liability for Medical Malpractice. In *Handbook of Health Economics*, edited by A.J. Culyer and J.P. Newhouse, vol 1B, 1339–1404. Amsterdam: Elsevier.
- Danzon, P.M., A.J. Epstein, and S. Johnson. 2004. The “Crisis” in Medical Malpractice Insurance. Working paper, University of Pennsylvania, Wharton School of Business.
- Dubay, L., R. Kaestner, and T. Waidmann. 2001. Medical Malpractice Liability and Its Effect on Prenatal Care Utilization and Infant Health. *Journal of Health Economics* 20:591–611.
- Encinosa, W.E., and F.J. Hellinger. 2005. Have State Caps on Malpractice Awards Increased the Supply of Physicians? *Health Affairs*—Web Exclusive W5-250-58. Available at <http://content.healthaffairs.org/cgi/reprint/hlthaff.w5.250v1> (accessed February 28, 2007).
- Finley, L. 2004. The Hidden Victims of Tort Reform: Women, Children and the Elderly. *Emory Law Journal* 53(3):1263–1314.
- Gfell, K.J. 2004. The Constitutional and Economic Implications of a National Cap on Non-Economic Damages in Medical Malpractice Actions. *Indiana Law Review* 7:773–809.
- Gius, M.P. 1998. Using Panel Data to Estimate the Determinants of Medical Malpractice Insurance Premiums. *Applied Economic Letters* 5:37–39.
- Grant, D., and M.M. McInnes. 2004. Malpractice Experience and the Incidence of Cesarean Delivery: A Physician-Level Longitudinal Analysis. *Inquiry* 41(2):170–88.
- Gronfein, W.P., and E.D. Kinney. 1991. Controlling Large Malpractice Claims: The Unexpected Impact of Damages Caps. *Journal of Health Politics, Policy and Law* 16:441–64.
- Grossman, S.A. 1976a. An Analysis of 1975 Legislation Relating to Medical Malpractice. In *A Legislator's Guide to the Medical Malpractice Issue*, edited by D. Warren and R. Merritt, 3–11. Washington, D.C.: Health Policy Center, Georgetown University, and National Conference of State Legislators.
- Grossman, S.A. 1976b. State-by-State Summary of Legislative Activities on Medical Malpractice. In *A Legislator's Guide to the Medical*

- Malpractice Issue*, edited by D. Warren and R. Merritt, 12–21. Washington, D.C.: Health Policy Center, Georgetown University, and National Conference of State Legislators.
- Hellinger, F.J., and W.E. Encinosa. 2003. *The Impact of State Laws Limiting Malpractice Awards on the Geographic Distribution of Physicians*. Washington, D.C.: U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality. Available at: <http://www.ahrq.gov/RESEARCH/tortcaps/tortcaps.pdf> (accessed February 23, 2007).
- Hunter, R.D. 1988. Alabama's 1987 Tort Reform Legislation. *Cumberland Law Review* 18:281–383.
- Kang, M.S. 1999. Don't Tell Juries about Statutory Damage Caps: The Merits of Nondisclosure. *University of Chicago Law Review* 66:469–93.
- Keene, B. 1976. California's Medical Malpractice Crisis. In *A Legislator's Guide to the Medical Malpractice Issue*, edited by D. Warren and R. Merritt, 27–37. Washington, D.C.: Health Policy Center, Georgetown University, and National Conference of State Legislators.
- Kenitz, M.S. 2006. Wisconsin's Caps on Noneconomic Damages in Medical Malpractice Cases: Where Wisconsin Stands (and Should Stand) on "Tort Reform." *Marquette Law Review* 89:601–24.
- Kelly, C., and M. Mello. 2005. Are Medical Malpractice Damages Caps Constitutional? An Overview of State Litigation. *Journal of Law, Medicine and Ethics* 33:515–27.
- Kessler, D.P., and M.B. McClellan. 1996. Do Doctors Practice Defensive Medicine? *Quarterly Journal of Economics* 111:353–90.
- Kessler, D.P., and M.B. McClellan. 1997. The Effects of Malpractice Pressure and Liability Reforms on Physician's Preparations of Medical Care. *Law and Contemporary Problems* 60:81–106.
- Kessler, D.P., and M.B. McClellan. 2002. Malpractice Law and Health Care Reform: Optimal Liability Policy in an Era of Managed Care. *Journal of Public Economics* 84:175–97.
- Kilgore, M.L., M.A. Morrissey, and L.J. Nelson. 2006. Tort Law and Medical Malpractice Insurance Premiums. *Inquiry* 43:255–70.
- Lister Hill Center (LHC). 2007. Compendium of State Damages Caps Laws 1975–Present. Available at: <http://images.main.uab.edu/isoph/LHC/MalpracticeTable.pdf> (accessed February 28, 2007).
- Mello, M.M. 2006. Understanding Medical Malpractice Insurance: A Primer. *Research Synthesis Report* no. 8. Princeton, N.J.: Robert Wood Johnson Foundation. Available at: http://www.rwjf.org/publications/synthesis/reports_and_briefs/pdf/no8_primer.pdf (accessed February 23, 2007).

- Mello, M.M., and T.A. Brennan. 2002. Deterrence of Medical Errors: Theory and Evidence for Malpractice Reform. *Texas Law Review* 80:1595–1637.
- Morrissey, M.A., M.L. Kilgore, and L.J. Nelson. 2007. Tort Law and Employer Health Insurance Premiums. Working paper, University of Alabama at Birmingham, Lister Hill Center for Health Policy.
- National Conference of State Legislatures (NCSL). 2004. State Initiatives and Referenda. Available at <http://www.ncsl.org/ncsl/db/elect98/irsrch.cfm?recid=2341> (accessed February 23, 2007).
- National Conference of State Legislatures (NCSL). 2005. Medical Malpractice Tort Reform: Introduced Legislation. Available at <http://www.ncsl.org/standcomm/sclaw/medmalreform05.htm> (accessed February 23, 2007).
- Nelson, L.J. 1989. Tort Reform in Alabama: Some Constitutional Issues. *Alabama Law Review* 40:533–73.
- Nordman, E., D. Cermak, and K. McDaniel. 2004. *Medical Malpractice Insurance Report: A Study of Market Conditions and Potential Solutions to the Recent Crisis*. National Association of Insurance Commissioners. Available at http://www.naic.org/models_papers/papers/MMP-OP-04-EL.pdf (accessed February 21, 2007).
- Pauly, M.V., C. Thompson, T. Abbot, J. Margolis, and W. Sage. 2005. Who Pays?: The Incidence of High Malpractice Premiums. Working paper, University of Pennsylvania, Wharton School of Business.
- Pribek, J. 2006. Wisconsin Governor Jim Doyle Signs Medical Malpractice Cap Bill. *Wisconsin Law Journal*. March. Available at: http://www.accessmylibrary.com/coms2/summary/0286-14159787_ITM (accessed February 23, 2007).
- Reynolds, R.A., J.A. Rizzo, and M.L. Gonzales. 1987. The Cost of Medical Professional Liability. *Journal of the American Medical Association* 257(20):2776–81.
- Robinson, G.O. 1986. Malpractice Crises of the 1970's. *Law and Contemporary Problems* 49:5–35.
- Sage, W.N. 2001. Understanding the First Malpractice Crisis of the 21st Century. In *Health Law Handbook*, edited by A. Gosfield, 1–31. St. Paul: Westgroup.
- Saks, M.J., L.A. Hollinger, R.L. Wissler, D.L. Evans, and A.J. Hart. 1997. Reducing Variability in Civil Jury Awards. *Law and Human Behavior* 21:243–56.
- Sharkey, C.M. 2005. Unintended Consequences of Medical Malpractice Damages Caps. *New York University Law Review* 80:391–512.
- Sloan, F.A. 1985. State Responses to the Malpractice Insurance “Crisis” of the 1970s: An Empirical Assessment. *Journal of Health Politics, Policy and Law* 9:629–46.

- Sloan, F.A., P.M. Mergenhagen, and R.R. Bovbjerg. 1989. Effects of Tort Reforms on the Value of Closed Medical Malpractice Claims: A Microanalysis. *Journal of Health Politics, Policy and Law* 14:663–89.
- Stewart, C.E. 1999. Damages Caps in Alabama's Civil Justice System: An Uncivil War within the State. *Cumberland Law Review* 29:201–37.
- Studdert, D.M., M.M. Mello, W.M. Sage, C.M. Desroches, J. Peugh, K. Zapert, and T.A. Brennan. 2005. Defensive Medicine among High Risk Specialist Physicians in a Volatile Malpractice Environment. *Journal of the American Medical Association* 293(21):2609–17.
- Studdert, D.M., Y.T. Yang, and M.M. Mello. 2004. Are Damages Caps Regressive? A Study of Malpractice Jury Verdicts in California. *Health Affairs* 23:54–67.
- Thorpe, K. 2004. The Medical Malpractice “Crisis”: Recent Trends and the Impact of State Tort Reforms. *Health Affairs—Web Exclusive*, W4-20-4-30. Available at <http://content.healthaffairs.org/cgi/content/full/hlthaff.w4.20v1/DC1> (accessed February 23, 2007).
- Thurston, N.K. 2001. Physician Market Power—Evidence from the Allocation of Malpractice Premiums. *Economic Inquiry* 39:487–98.
- U.S. Congress, Joint Economic Committee (JEC). 2003. *Liability for Medical Malpractice: Issues and Evidence*. Available at <http://www.house.gov/jec/tort/05-06-03.pdf> (accessed February 23, 2007).
- U.S. Congress, Office of Technology Assessment (OTA). 1994. *Defensive Medicine and Medical Malpractice*. Report no. OTA-H-602. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Health and Human Services (DHHS), Office of the Assistant Secretary for Planning and Evaluation. 2002. *Confronting the New Health Care Crisis: Improving Health Care Quality and Lowering Costs by Fixing Our Medical Liability System*. Washington, D.C., July. Available at: <http://aspe.hhs.gov/daltcp/reports/litrefm.pdf> (accessed February 22, 2007).
- U.S. Department of Health and Human Services (DHHS), Office of the Assistant Secretary for Planning and Evaluation. 2003. *Addressing the New Health Care Crisis: Reforming the Medical Malpractice System to Improve the Quality of Health Care*. Washington, D.C.
- U.S. General Accounting Office (GAO). 1986. *Medical Malpractice: Insurance Cost Increased but Varied among Physicians and Hospitals*. Report no. HRD-86-112. Washington, D.C.: U.S. Government Printing Office.
- U.S. General Accounting Office (GAO). 2003a. *Medical Malpractice: Implications of Rising Premiums on Access to Health Care*. Report no. GAO-03-836. Washington, D.C.: U.S. Government Printing Office.

- U.S. General Accounting Office (GAO). 2003b. *Medical Malpractice Insurance: Multiple Factors Have Contributed to Increased Premium Rates*. Report no. GAO-03-702. Washington, D.C.: U.S. Government Printing Office.
- Van Grack, B. 2005. The Medical Malpractice Liability Limitation Bill. *Harvard Journal of Legislation* 42:299–318.
- Vidmar, N. 2005. *Medical Malpractice and the Tort System in Illinois: A Report to the Illinois State Bar*. Durham, N.C.: Duke Law School. Available at http://eprints.law.duke.edu/archive/00001125/01/Medical_Malpractice_and_the_Tort_System_in_Illinois.pdf (accessed February 23, 2007).
- Viscusi, W.K., and P.H. Born. 1995. Medical Malpractice Insurance in the Wake of Liability Reform. *Journal of Legal Studies* 24:463–91.
- Viscusi, W.K., and P.H. Born. 2004. Damages Caps, Insurability, and the Performance of Medical Malpractice Insurance. Working paper, Harvard University, John M. Olin Center for Law, Economics and Business.
- Viscusi, W.K., R.J. Zeckhauser, P. Born, and G. Blackmon. 1993. The Effects of 1980s Tort Reform Legislation on General Liability and Medical Malpractice Insurance. *Journal of Risk and Uncertainty* 6:165–86.
- Weiler, P.C. 1991. *Medical Malpractice on Trial*. Cambridge, Mass.: Harvard University Press.
- Weiss, M.D., M. Gannon, and S. Eakins. 2003. *Medical Malpractice Caps: The Impact of Non-Economic Damage Caps on Physician Premiums, Claims Payout Levels, and Availability of Coverage*. Weiss Ratings, Inc. Available at <http://www.weissratings.com/MedicalMalpractice.pdf> (accessed February 23, 2007).
- Yoon, A. 2001. Damages Caps and Civil Litigation: An Empirical Study of Medical Malpractice Litigation in the South. *American Law and Economics Review* 3:199–227.
- Zeiler, K. 2003. *Medical Malpractice and Contract Disclosure: A Study of the Effects of Legal Rules on Behavior in Health Care Markets*. Ph.D. diss., California Institute of Technology.
- Zuckerman, S., R.R. Bovbjerg, and F. Sloan. 1990. Effects of Tort Reform and Other Factors on Medical Malpractice Insurance Premiums. *Inquiry* 27:167–82.

Acknowledgments: This project was funded by the Robert Wood Johnson Foundation Changes in Health Care Financing and Organization Initiative, grant no. 050298, and, for Professor Nelson, by the Cumberland Law School.