The Efficiency of Medical Malpractice Law

Theory and Empirical Evidence

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ABSTRACT. This paper empirically tests the hypothesis that the medical malpractice system, despite the common perception of a crisis, has efficiently responded to changes in medical relationships by increasing physician liability. The empirical testing is based upon a tort liability model, which demonstrates that increased physician liability would be optimal when physicians become more productive, especially by increased technological ability, when the opportunity costs of physicians' time increases, or when the cost to physicians of defending against malpractice claims decreases. The empirical results, based upon closed malpractice claims from the mid-1980s, consistently support the hypothesis that medical malpractice law does change physician liability optimally.

I. Introduction

For the past two or three decades it has commonly been thought that the medical malpractice system was in disarray and in need of reform. The assumption that malpractice law needed reform has been extremely broad, extending from physicians to professional researchers and public policy makers.[1] Legal advocates for patients have been almost the single voice questioning the need for legal reform. The consensus that medical malpractice reform is necessary is based upon the perception that physician liability, previously stable, suddenly began increasing at unprecedented rates during the past three decades.

During the 1950s and into the early 1960s physician liability, as measured by the frequency of malpractice suits, the probability of losing such suits, and the average size of awards for lost suits, was relatively low and exhibited little or no change. For example, during the 1950s and early 1960s claim frequency remained stable at about 1.6 claims per 100 physicians (AMA, 1963). By 1968, however, claim frequency had risen 76 percent. Overall from the mid-1960s to the mid-1980s, claim frequency rose, on an average annual basis, approximately 7 to 10 percent.[2] Even more dramatic, the average size of malpractice awards rose over the same time period at average annual rates of from 10 to 14 percent (Weiler, 1991; Peterson, 1987). Probability of physician loss of malpractice suits likewise rose over the same time period from about 25 percent in the mid-1960s to about 50 percent in the mid-1980s (Peterson, 1987; Weiler

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[1] See for example, Anderson, et al. (1985), Bovbjerg (1989), Blackman and Bailey (1990), Danzon (1985 and 1988), Edwards, 1989, General Accounting Office (GAO 1986a, 1986b, 1987a, 1987b), Harvard Medical Practice Study Group (1990), Law and Polan (1978), Sloan, et al., (1991), U.S. Congress, 1969, U.S. Dept. of Health, Education, and Welfare (1973), and U.S. Dept. of Health and Human Services (1987), Weiler (1991), White House (1993), and Winter (1988).

[2] See the AMA (reported in U.S. Department of Health and Human Services; 1987), the General Accounting Office (1986b) and St. Paul Insurance Company (1989). See Olsen (1996) for a more complete summary of the data series.

1991; GAO 1987a).

Olsen (1996), however, has shown that the argument favoring malpractice reform is at least partially flawed. As discussed above, there exists little doubt that physician liability for medical malpractice has increased dramatically over much of the past three decades. However, contrary to widespread belief, physician liability has not historically been stable in the U.S. Rather, it has increased at significant rates throughout much of U.S. history. Claims per physician, for example, have risen at about 2 percent annually from 1830 to 1955 with some decades showing average annual increases of as much as 12 percent.[3] Available data also indicates that significant increases in the average size of malpractice awards from the early 1800s to the 1950s, especially after adjusting for inflation, are comparable to the trend in the past 30 years (Olsen, 1996).

That increased physician liability for medical malpractice is not a recent phenomenon does not, of course, necessarily indicate that medical malpractice reform is unwarranted. The possibility exists that medical malpractice has been in need of reform for most of the history of the U.S. Long-term increases in physician liability do serve as a warning that further thought should be taken before proposing or enacting such reforms. In that light, the most fruitful approach to the issue of medical malpractice is to ask under what conditions increased physician liability would be efficient and to then determine whether such conditions are driving recent, and historical, increases in physician liability. If such is found to be the case, the argument in favor of medical malpractice reform will have been seriously weakened.

The main purpose of this paper is to present formal empirical work designed to test the hypothesis that medical malpractice law responds efficiently to changing conditions in medical relationships. The empirical work is based upon a tort liability model presented below that gives insight into the conditions under which increased physician liability would be efficient.[4] This model demonstrates, for example, that when physicians become more productive at avoiding medical accidents, such as by increased technology of care, their liability should be increased as well. In this case, increased physician liability induces the

[3] These data are based upon appellate malpractice cases rather than trial level cases and, hence, are not strictly comparable to the post-1950s data discussed previously. Appellate case data are, unfortunately, the only available data prior to the 1950s.

[4] For a related theoretical justification of increased liability for physicians see Grady (1988).

physician to lessen their shirking on costly inputs used to avoid medical accidents.

Some evidence exists that medical malpractice liability increased historically as an efficient response to changes in medicine, primarily increases in physician productivity (Olsen, 2000). However, this evidence is primarily based upon historical data that does not allow for statistical testing of the hypotheses via regression analysis. The main advantage of the empirical work presented in this paper is that it is based upon detailed data gathered from malpractice claims closed in the mid-1980s. Such detailed data allows the hypothesis that physician liability efficiently changes as the nature of the medical relationship changes to be rigorously tested for the first time. Physician liability is found to change as the theoretical model predicts and, therefore, seriously questions both the perceptions of a malpractice crisis and the need for malpractice reform.

II. The Theory of Medical Malpractice

The theory of medical malpractice fits into a larger literature on tort (accident) law, which addresses the optimal allocation of accident losses between victims and injurers. As is well known tort law generally and medical malpractice specifically serve two legitimate purposes. First, the law serves to compensate victims for their losses. Second, the threat of liability serves to deter future accidents. The law and economics literature has primarily been concerned with the deterrence effect of malpractice liability and, especially, the issue of whether or not a given liability rule will result in optimal or efficient deterrence. Efficient deterrence is defined to occur when the liability rule gives both parties (for medical malpractice, the health care provider and the patient) an incentive to take actions, or precaution, which minimizes the expected accident costs of the injuries themselves, the costs of providing the precaution by both parties, and the costs of administering the liability system (Calabresi, 1970).

A number of researchers have shown that tort liability rules, especially various forms of the negligence liability rule, can be used to give both parties an incentive to consider the full potential loss and, hence, to take optimal precaution (*e.g.,* Brown, 1973; Landes and Posner, 1980 and 1984; Cooter and Ulen, 1986; and Posner, 1998). However, this result only holds under very limiting and ultimately unrealistic conditions; the courts and both parties must have full and costless information. When the high cost of information limits its acquisition, tort liability rules will not generally result in optimal deterrence

(Cooter and Ulen, 1986; Haddock and Curran, 1985; Kolstad, Ulen, and Johnson, 1990; Shavell, 1987; and White, 1989). In this more realistic scenario, even though the first-best optimum is unachievable, the form of the liability rule is crucial in providing incentives to reach a second-best optimum.

In our second-best world, where optimal deterrence is not achievable, the primary question at issue for this paper is to empirically test whether medical malpractice law efficiently responds to relevant changes in the medical environment so as to achieve the second-best optimum. In order to test this hypothesis both the nature of the second-best optimum and which specific variables are likely to change that optimum must be discussed.

In order to generate testable hypotheses, the model discussed below makes some simplifying assumptions. Most important, the model assumes that the law simply shares the liability between the two parties in the relationship, the health care provider and the patient. Thus, the elegant tort liability models referenced above, where the entire liability is generally dependent upon which party is negligent and which bears residual liability, is abandoned in favor of a simpler, yet perhaps more realistic, model.[5]

While the assumption that the law shares liability may seem to abandon the actual functioning of tort liability rules, empirical evidence indicates that such an assumption more accurately describes how tort liability rules work in practice than is generally assumed in the literature. For example, White (1989) presents evidence that courts and juries do share accident losses in this manner. Under negligence rules a non-negligent defendant should technically not bear any of the losses. However, White finds that such defendants actually bear some, but not all, of the losses. Likewise, all negligence rules technically impose the entire liability upon the defendant when the defendant is negligent and the plaintiff non-negligent. Yet, again, White finds that such defendants pay only a fraction of actual accident losses. Thus, the evidence indicates that in our second-best world, where information is costly to acquire, a rule that shares liability between the parties is a reasonable assumption.

[5]There exist several forms of the negligence liability rule. All negligence rules require courts to compare the actual actions taken by the parties to a legal standard of care with negligence defined as a failure to meet the legal standard. Of the negligence rules, only comparative negligence explicitly shares liability between the parties and then only if both provider and patient are negligent. See Cooter and Ulen (1997) and Posner (1998) for a discussion of tort liability rules.

The Model

As noted above, medical malpractice is modelled under the assumption that the law chooses a particular share rule and, once an accident has occurred, incurs the costs necessary to enforce the division of accident losses consistent with the rule. The model assumes that there are three sources of such enforcement costs: the enforcement costs borne by the patient (E_p), the enforcement costs borne by the doctor (E_d), and the enforcement costs borne by the court (E_c). Enforcement costs are similar to Calabresi's (1970) administration costs and include both direct and indirect legal costs borne by each of the parties. Each party bears only their own enforcement costs while court enforcement costs are generally borne by society as a whole. According to Prosser and Keeton (1984) this is generally consistent with rules in American courts.

The model also assumes that the probability of an accident occurring is given by $P = p(x, y)$ where x and y are the physician's and patient's precaution levels. The probability function is assumed to have the normal properties; increased precaution by both parties reduces the probability of an accident occurring but at a decreasing rate ($p_x, p_y < 0; p_{xx}, p_{yy} > 0$).[6]

Under the exogenous tort liability rule, t, expected values to physician and patient are given respectively by:

(1) $$V_d = f - (1 - t)p(x,y)A - p(x,y)E_d - w_x x - c$$

(2) $$V_p = V - f - tp(x,y)A - p(x,y)E_p - w_y y$$

where V is the monetary value to the patient of the physician's services, f is the fee paid by the patient to the physician (determined by the market), t is the share of expected accident losses borne by the patient under medical malpractice law, A represents accident losses, w_y and w_x are per unit input costs for y and x respectively, and c is the marginal cost of producing the physician's services.

Maximization by each party of their respective expected values will result in their choosing input levels x^d and y^p and satisfy the following first-order conditions:

[6]For simplicity, it is assumed that the two inputs are neither substitutes nor complements ($p_{xy} = 0$). This assumption is not needed to show that an equilibrium exists (Cooper and Ross, 1985).

(3a) $- [(1 - t)A + E_d]p_x(x,y) = w_x$

(3b) $- [tA + E_p]p_y(x,y) = w_y$

It is not difficult to demonstrate that the liability rule induces both parties to shirk on their provision of precaution as compared to the first-best or social optimum. The societal wealth maximization problem is to:

(4) $$\max_{x,y} N_t = V - p(x,y)[A + E] - c - w_x x - w_y y$$

where E represents total enforcement costs ($E = E_p + E_d + E_c$).

The socially optimal input levels (x* and y*) satisfy:

(5a) $- [A + E]p_x(x^*,y^*) = w_x$

(5b) $- [A + E]p_y(x^*,y^*) = w_y$

Shirking occurs because each party bears only a fraction of societal losses if an accident occurs. There are two components of societal losses, both of which contribute to the shirking problem. First, societal losses include the actual accident losses, A, which must be borne when an accident occurs. The malpractice share rule, t, causes each party to bear only a fraction of the expected accident losses which induces shirking by both parties. Second, societal losses include total enforcement costs, E, which must also be borne when an accident occurs. Additional shirking occurs because each party pays only their own, rather than total, enforcement costs.

In accordance with the efficiency theory of the common law it is assumed that medical malpractice rules are chosen to maximize societal wealth.[7] Because it is too costly for the courts to establish a completely different malpractice rule for each different physician-patient relationship, a single malpractice rule is chosen for a large number of relationships. However, the costs of not being able to set a single rule

[7]For relevant literature see Rubin (1977), Priest (1977), Landes and Posner (1984), and Posner (1981).

for each relationship are minimized by setting different rules for different homogeneous classes of relationships.

Obviously the medical malpractice rule for a given class of relationships has a large impact on the parties' input choices and, hence, on societal wealth. As a result, the share rule (t) must be chosen optimally to maximize wealth subject to the constraints that each party will shirk on their own input use. The societal wealth maximization problem is to:

$$(6) \qquad \max_{t} N = V - p(x^d, y^p)[A + E] - c - w_x x^d - w_y y^p$$

where x^d and y^p are the actual precaution levels chosen by the physician and patient, respectively, which maximize their private expected wealth as given by equations 1 and 2 above. The optimal malpractice rule, t*, satisfies the following first-order condition:

$$(7) \qquad -(p_x[A + E] + w_x)x_t = (p_y[A + E] + w_y)y_t$$

Three factors affect the optimal share rule, t*, enforcement costs (E_d and E_p), per unit input or precaution prices (w_x and w_y), and each party's marginal productivity ($-p_x$ and $-p_y$). For example, increases in the patients' enforcement costs will decrease their share of accident costs (t*). As patients' enforcement costs rise, their willingness to supply precaution rises since they bear a larger portion of total enforcement costs. In order to also reduce shirking by physicians, their share of expected accident costs must also increase. Likewise, increases in the physicians' enforcement costs will decrease their share of accident costs (1-t*).

A party whose precaution costs are higher has a larger incentive to shirk on the use of the more costly precaution. Thus, as a party's price of precaution (w_x or w_y) rises their share of expected accident losses will also rise. Finally, either party's shirking becomes more costly as that party's precaution is more productive in reducing the probability of accidents. Thus, for example, as the physician's productivity ($-p_x$)

increases relative to the patient's, the physician's liability (1-t*) is also expected to increase.

Table 1 summarizes the predicted impact of enforcement costs, precaution prices, and productivity on the optimal share of accident losses borne by the patient, t*. The predicted impact of these factors on the physician's optimal share, 1-t*, will be exactly the opposite of those listed in Table 1. The model predicts that these factors should affect medical malpractice rules in two separate and distinct manners. First, as these factors change over time malpractice liability is expected to change consistent with these predictions as well. Second, the rule in effect is expected to be different for different types of relationships. For example, it would be expected that malpractice liability of specialists who are presumably more productive in avoiding accident loss would be higher than that of general practitioners.

Productivity Defined

Physician productivity is defined above to equal the marginal impact of the physician's precaution (x) on the probability of a medical accident occurring (P) and is given by $-p_x$. Although seemingly straightforward, physician productivity is empirically much more complex. To illustrate both the complexity and the extent of physician productivity consider what, exactly, constitutes a medical accident. The most common view of an accident is one where the injurer, in this case the physician, does something that directly causes harm (*e.g.,* operates on the wrong limb). However, for virtually all cases of treatment, a physician has not only a duty to avoid directly causing harm, but also an affirmative duty to take actions to reduce the harm that will naturally occur, from disease or injury, in the absence of such treatment. The affirmative duty that a physician has to avoid causing harm has been enforced by holding physicians to a standard of care, which is often, but not always, given by the prevailing practice of the profession. Physicians whose care fell below that standard would be found negligent (Weiler, 1991; Danzon, 1985; and McCoid 1959.)

Thus, the failure to provide treatment that meets the current standards of the medical specialty constitutes negligence under medical malpractice law and, hence, is also considered a "medical accident" in terms of the theoretical model. This view of medical accidents implies that anything that increases the physician's marginal productivity of treating patients' illnesses or injuries also increases the physician's marginal productivity of avoiding medical accidents. In brief, anything that increases the ability for the physician to do harm to the patient, either directly or indirectly, also increases the marginal productivity of the precaution the physician takes to avoid such harm.

To illustrate this principle, consider physician productivity when physicians' actions cannot cause much harm, either directly or indirectly. In this case, the productivity of taking care to be attentive while performing a medical procedure, for example, or taking the time to make a careful diagnosis is low simply because taking care has little ability to reduce the probability of harm.[8] However, when physician ability to cause harm rises then the productivity of paying attention during a procedure or taking care to make a careful diagnosis clearly rises, as harm can now be avoided by taking such care.

It is relevant to ask, then, what would increase physician productivity in treating diseases and injuries (*i.e.,* increase the ability of the physician to cause harm). Obviously, both improved medical technology and expanded medical knowledge would do so and, hence, would increase the physician marginal productivity of avoiding harm. In essence, increases in either technology or medical knowledge will increase the ability of physicians to cause harm through, for example, machines which have increased treatment potential but, which, if not correctly used, can directly cause harm. Likewise, increased ability

[8]Both being attentive during a medical procedure and taking the time to make a careful diagnosis are examples of what Grady (1988) terms non-durable precaution, since this type of precaution does not endure for future treatments.

to cause harm can be caused by not using the treatment at all.[9]

III. Data

The empirical work that follows is based on two data sources. First, survey data on medical malpractice claims closed in 1984 is utilized which was compiled by the general accounting office for all fifty U.S. states (GAO, 1987a). Second, state level controls for relevant medical malpractice reforms were compiled from American Medical Association data (AMA, 1989) and merged with the GAO data. Malpractice reforms only apply to claims filed after the date the reform came into effect in a given jurisdiction (Hughes, 1989). Hence, the malpractice reforms used in this study were those that were in effect the year each claim was filed rather than 1984, the year the claims were closed.

Table 2 contains a list of variable definitions; Tables 3 and 4 contain mean values for different data sets and samples. As can be seen from Table 2, the data set includes patient/claim specific, physician specific, and state specific variables. Although the GAO data includes non-physicians (nurses, dentists, and health care facilities) as defendants, these observations have been excluded because detailed, defendant specific information was gathered by the GAO only for physician defendants. An additional complication arises from the fact that the GAO data includes malpractice claims with multiple physician defendants. Hence, although physician data is unique for a given observation, neither patient/claim data nor state level tort reform data are necessarily unique.

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[9]Grady (1988) makes a related argument with, however, some fundamental differences. For example, I am arguing that increased technology increases the ability of the physician to cause harm. As a result, malpractice law efficiently responds by increasing physician liability thereby giving physicians an incentive to take more care. Grady, however, views increased technology as increasing physician liability, not because of an efficient change in the law, but because the law has not changed and applies old standards to the new technology. Hence, increased physician liability, especially the increased frequency of malpractice cases due to what he terms non-durable precaution, results from an inefficient application of existing law to advances in technology.

The primary purpose of this study is to test the validity of the theoretical predictions presented in the previous section. Physician liability should, according to the theoretical model, increase as patient specific or physician specific variables change. The current data set, however, includes relevant proxies only for physicians and not for patients. Hence, this study estimates the impact that physician productivity, enforcement (legal) costs, and precaution costs have upon physician liability.

Physician liability is measured by the probability of a claim being filed, the probability of a claim being lost by the defendant physician, and the amount of the malpractice award paid on behalf of the physician by his malpractice insurance. Increases in any one of these three variables would, all else equal, result in an increase in physician liability. Unfortunately, the GAO collected data only for closed claims and, as a result, the probability of a claim being filed cannot be estimated. As a result, the two remaining physician liability variables, the malpractice award and whether payment was made on behalf of the physician, are utilized as dependent variables in the empirical analysis.

Although whether payment was made for a given physician is accurately measured, the malpractice award on behalf on a given physician is not as straightforward. The GAO data include two measures of the malpractice award: (1) the total malpractice award paid to a particular patient (claim) from all sources and (2) that amount of the total award paid by the current physician's insurance company on behalf of all physicians insured by that company who are involved in the current claim. Neither of these are necessarily accurate measures of the amount paid for a single physician because payment may have been made on behalf of multiple physicians.

The major disadvantage with the first measure of malpractice awards is that, although the data identifies the total award, it does not identify the number of physicians involved in the current claim whom had payment made on their behalf. As a result, estimating the amount of the total award paid only on behalf of the current physician is problematic and this measure is not used in the empirical work. The second measure of awards (Award), the total award paid by the current physician's insurance company for the current claim, does identify the number of physicians involved in the current claim and is used in the empirical work. In fact, amongst claims for which payment was made (Table 3) a maximum of 5 physicians had payment made on their behalf by the current physician's insurance company. Further, as shown by Table 3, observations in the malpractice awards data set averaged approximately 1.3 physicians for whom the current insurance company paid a claim.

Even though the actual malpractice award paid for a particular physician cannot be calculated, two variables are used as estimates. First, the total malpractice award (Award) paid by the physician's insurance company on his behalf and, in some cases, on the behalf of other physicians is included. Second, assuming that the total malpractice award was evenly distributed across liable physicians, the total award is divided by the number of physicians for which payment was made (Awardd). Table 3 shows a fairly minor difference of 18 percent in the full sample (sample 1) between these two measures of malpractice awards. Given that the second measure of malpractice awards is more reliable, only regression results utilizing this measure are presented in the paper. Although not reported in the paper, regression results using the first definition of malpractice awards are consistently similar to those using the second definition as are regression results utilizing only those observations with single physician defendants.

Physician productivity, enforcement (legal) costs, and precaution costs are measured by a number of proxies that are specific to a given physician. For example, physicians who are board certified in their specialty are assumed to be more productive. Physicians with a previous malpractice claim, partially trained physicians (residents and fellows) and emergency physicians are also assumed to be less productive.

There are some weaknesses, however, in some of the productivity proxies. For example, Previous

Claims measures whether a previous malpractice claim was filed against the physician and not whether the previous claim was successful. Obviously previous successful malpractice claims would be a better measure of lowered physician productivity. Even were the data on previous successful malpractice claims against a particular physician available, this variable would be somewhat problematic. The theoretical model indicates that physicians, who are inherently less productive, should bear less liability. However, prior claims may result, not from lowered productivity alone, but also from physician shirking (*i.e.*, negligence). If previous claims were a result of shirking then the appropriate response would be to increase liability for such physicians.

Physician experience, assumed to be continuous from the year in which the physician graduated from medical school, actually serves as a proxy for both physician productivity and physician precaution costs. These assumptions result from the empirical observation that both productivity and income (*i.e.*, opportunity costs) tend to rise with experience.[10] In accordance with human capital theory, it is assumed that experience has a non-constant impact upon both the malpractice award and payment being made. Hence, either the square of physician experience or experience dummy variables for different levels of experience are included in the empirical models presented below.

A physician's enforcement (legal) costs are assumed lower, all else equal, as the physician's insurance company helps to pay those costs. The Copayment variable measures whether or not such help was forthcoming from the physician's insurance company and is, therefore, predicted to have a positive impact on physician liability. In all of the tables reporting the empirical work the variables which proxy physician productivity, enforcement (legal) costs, and precaution costs are grouped at the beginning of the table. Additional controls, either physician, patient (claim), or state specific, are grouped thereafter. The

[10]The conclusion that productivity and income rise as experience increases is a standard component of the human capital model (Becker, 1975).

GAO data set also contains a weighting variable, which can be used to weight observations by insurance company in order to approximate the U.S. as a whole. Both unweighted and weighted regressions are presented below. [11]

Two primary data sets are used in the empirical work to estimate the impact of the explanatory variables upon both malpractice awards and the probability of payment. Table 3 contains unweighted mean values for the malpractice award data set while Table 4 contains unweighted mean values from the malpractice payment data set. The malpractice award data set contains only observations for which a malpractice award was paid to the patient on behalf of the physician regardless of the stage at which the claim was closed.[12] The malpractice payment data set contains relevant information from all physicians regardless of whether payment was made on their behalf to the patient. As shown by the payment data set, approximately 66 percent of all physicians in the full sample paid damages to a patient (Payment made by Physician). [13]

A significant problem with the GAO data set is that many of the important variables have missing

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[11]The GAO surveyed 25 out of a total of 102 malpractice insurance companies in the U.S. to gather the data used in this paper. They then created a weighting variable to "project" the data "to the 102 companies in the universe" (GAO, 1987a, p. 16.) The weighting variable I use in this paper is the same that the GAO created to estimate the entire population of malpractice claims closed in 1984. See GAO (1987a, pp. 14-17) for a discussion of their scope and methodology both in their survey and in creating the weighting variable.

[12]Hence, this data set includes all settled claims as well as claims which had malpractice payments awarded at trial.

[13]The leading malpractice insurance company, the St. Paul Fire and Marine Insurance Company (1989) reports that their claims rate equaled 16.5 per 100 physicians in 1984. Other data also indicates that while relatively high compared to earlier years, a fairly small percentage of physicians, certainly less than 20 percent, experienced claims in any one year during the early to mid-1980s (see Olsen, 1996, for a summary.) As noted above, the data set used in this study includes only physicians with a claim closed in 1984 and, hence, excludes from consideration all physicians without claims. Clearly, the exclusion of physicians without claims may bias the results. Unfortunately, systematic data is only available for this restricted sub-set of physicians.

observations. For example, in Table 3 only 81 percent of the observations report whether the physician is board certified even though this variable is an important explanatory variable. In fact, almost half of the total observations in both data sets would be lost if all observations with missing values were deleted. In order to preserve observations, and yet completely test the theoretical predictions, the empirical work below presents regression analysis based upon sub-samples of each data set. The sub-samples are defined by the important variables that have missing values: (1) Physician Board Certified?, (2) Years of Physician Experience, (3) Previous Claims, (4) Total Medical Expenses, and (5) Patient's Age. Although these last two variables are potentially important explanatory variables, sub-samples based upon these variables are not reported in the paper to decrease the size of the tables.[14]

As a result, Table 3 presents means for five different samples, the full sample (Sample 1), the sample that excludes all observations with missing values for any of these five variables (Sample 5), and 3 samples which include only those observations without missing values for each of the first three variables discussed above, respectively. These same variables, with the exception of Total Medical Expenses, are used to define the various samples in the malpractice payment data set presented in Table 4 as well.

IV. Malpractice Awards

Tables 5 and 6 present the unweighted and weighted ordinary least squares (OLS) estimates for the malpractice awards data set, respectively. The weighted OLS estimates, based upon the GAO weights presented in Table 3, are more accurate estimates of the actual nationwide LogAwardd regression coefficients. However, the state level malpractice reforms that ideally should be included in the regression models cannot be included in the weighted models because the weighting variable used to obtain estimates

[14]These sub-samples are not as important to consider because these variables do not proxy physician liability and, hence, are not used to test the theoretical predictions. However, means and regressions based upon these sub-samples are available from the author upon request.

is specific to the GAO data set and not to the state level malpractice reform data. Thus, the unweighted OLS estimates are presented both as a further test of the models and to allow the inclusion of the malpractice reform variables.

As shown in the tables, seven empirical models are estimated for the five different samples that were presented in Table 3. Tables 5 and 6 present estimates from two empirical models for Samples 3 and 5. For each of these samples, estimates are presented with physician experience either proxied by years of physician experience and its square (models 3 and 6) or physician experience dummy variables (models 4 and 7.)

An examination of both the unweighted and weighted regression estimates demonstrates that no major differences arise when using weighted, as compared to unweighted, OLS. Of more importance physician productivity, enforcement (legal) costs, and precaution costs impact malpractice awards as predicted by the theoretical model. For example, board certification has a positive impact on malpractice awards as expected although it is not always statistically significant.

Years of Physician Experience has a positive impact on awards while its square has a negative impact, which is the expected non-linear relationship between experience and awards. However, this relationship is only significant in the weighted regression results. The finding that experience is an important explanatory variable in explaining malpractice awards is, however, reinforced when examining models 4 and 7 in both Tables 5 and 6. As compared to physicians with 0 to 10 years of experience, most other physicians are found to have significantly higher awards.[15] This finding is an indication that some minimum level of experience is needed before a high level of productivity is reached. Thereafter, awards

[15]This is true with the exception of physicians with greater than 40 years of experience, although only in model 4 in both tables. Awards for these older physicians are found to be higher, but are statistically insignificant either at the 10 percent level (Table 5) or at the 5 percent level (Table 6).

remain relatively constant or fall slightly, dependent upon the model, as experience increases.

Of course, the impact of experience upon malpractice awards is, at least potentially, a result of increased precaution costs. Hence, this finding could result from earnings rising significantly in earlier years, while a practice is built up, and leveling off in later years of experience. For example, in both Tables 5 and 6, the model with the most observations (model 4) shows no statistically significant difference between very young physicians (0 to 10 years) and very old physicians (greater than 40 years). Again, this supports the hypothesis that experience first increases productivity (or precaution costs) but will eventually, as skills erode and training becomes less relevant, decrease productivity.

Other measures of physician productivity also have the expected impact on malpractice awards. For example, in all samples in both Tables 5 and 6 emergency physicians are assessed lower awards than are physicians in individual practice. Further, the difference is almost always statistically significant. Generally, physicians in other types of practices, either group practice physicians or hospital physicians are found to have similar awards to physicians in individual practice. The fact that emergency physicians, who labor under severe time constraints and increased stress that in turn decrease their productivity, are found to have significantly lower awards than are physicians in other types of practice strongly supports the model.

Likewise, residents and fellows, who are not yet fully trained as physicians, are also generally assessed lower malpractice awards than physicians in practice, all else equal, although this effect is only significant in the weighted results and then only in the model in Table 6 (model 1) without missing observations. Although not reported in Table 6 (see section III,) the impact of residents and fellows on awards is also negative and significant for the weighted models that exclude observations missing for two variables, Total Medical Expenses and Patient's Age.

In contrast to theoretical expectations, however, physicians with previous malpractice claims, who are presumed to have lower productivity, tend to have to pay higher malpractice awards although this finding is not always significant. This anomalous finding could be a result of the inadequacy of previous claims as a proxy for productivity, as discussed in the previous section.

The OLS regression estimates also demonstrate that, as predicted, physicians for whom the insurance company bears part of the cost of legal fees (Copayment) tend to be assessed higher malpractice awards. This finding is always present and is always statistically significant in both the unweighted and weighted models.

Thus, the empirical results presented in Tables 5 and 6 strongly support the theoretical predictions that physician liability, as measured by increased malpractice awards, increases as physician productivity increases, physician enforcement (legal) costs decrease, or physician opportunity costs increase. The power of the empirical results is strengthened by the fact that these findings are robust for different model specifications and when estimating the models using both OLS and weighted OLS.

The findings are also strengthened by the fact that consistent and reasonable regression estimates are obtained for the additional explanatory variables. For example, pre-trial reviews consistently increase awards as does increased patient total medical expenses. Likewise, the more severe is the injury, the higher are awards.[16] Also the stage during which the claim is closed has a significant impact on awards with claims closed in favor of the plaintiff having higher awards in general as the claim is settled at later stages. Although not reported in Tables 5 and 6, the type of allegation made at claim, physician specialty and the types of patient insurance are all controlled for and have reasonable impacts upon awards. Finally, note that some malpractice reforms tend to have a significant impact on awards, especially periodic payment and mandatory screening statutes as well as the admissibility at trial of pre-trial screening results.

[16] This is true with the exception of death of the plaintiff, where awards assessed against physicians drop slightly.

V. Probability of Malpractice Payment

As discussed above, the theoretical predictions were strongly supported by the malpractice awards data. Although still present, the evidence supporting the theoretical predictions is weaker for the payment regression estimates presented in Tables 7 and 8. Both unweighted (Table 7) and weighted (Table 8) probit estimates are presented for the five different samples discussed in Section III above. As with the awards regressions, the unweighted probit estimates are presented both as a further test of the models and to allow the inclusion of the malpractice reform variables.

The strongest support for the predictive power of the theoretical model is found when examining the impact of experience upon the probability of physician payment. As expected, physician experience tends to increase the probability of payment although at a decreasing rate. This effect is strongest statistically, at least when examining experience and experience squared, in the unweighted probit models contained in Table 7. When examining the models using experience dummies (models 4 and 7) the positive impact of experience upon the probability of payment, although present in both tables, is strongest in the weighted results. Again, consistent with the awards results, physicians with lower levels of experience have lower probabilities of making payment for malpractice claims. In contrast to the awards results, where most physicians with greater than ten years of experience had higher awards, a higher level of experience must be achieved before the probability of payment significantly increases. Thus, the results in both tables tend to demonstrate that most physicians with experience exceeding 30 years had a significantly higher probability of payment.

Previous claims provide weak evidence that decreased physician productivity decreases the probability of payment. Physicians with previous claims, which are presumably less productive, generally have a lower probability of paying a malpractice claim. However, this impact is always found to be insignificant in both Tables 7 and 8.

The unweighted probit estimates from Table 7 indicate that board certification has, contrary to expectations, a negative impact on the probability of payment. However, this impact is only significant in model 2 and then only at the ten-percent level. Further, it generally has a positive impact, as expected, in the weighted probit models presented in Table 8 although these estimates are all insignificant. These results indicate that board certification has no significant impact on the probability of payment yet, as discussed in the previous section, significantly increase malpractice awards. Thus, the overall impact of board certification on physician liability, considering both its impacts on the probability of payment and the malpractice award, is positive as predicted.

This same pattern is generally present for the rest of the relevant variables. In the weighted models, for example, the coefficients for emergency physicians, residents/fellows, and Copayment are generally insignificant. In fact, with the exception of Copayment, these variables all have generally insignificant impacts in both Tables 7 and 8. Again, when combined with the results from the malpractice awards estimates where all these measures were found to have the predicted impact upon physician liability, their overall impact is to increase physician liability.

Hence, the probit estimates contained in Tables 7 and 8 indicate that physician productivity, enforcement (legal) costs, and precaution costs either have the predicted impact as is true for experience or their coefficients are generally insignificant, especially in the weighted models. Thus, although support for the predictions from the theoretical model is necessarily weaker when considering the probability of payment, that support nevertheless remains present.

One might wonder, given the general insignificance of some of the important variables discussed above, whether or not the probit estimates have any explanatory power. Notice, however, that the chi-squared likelihood ratio statistics included at the end of Tables 7 and 8 indicates that each model does have predictive power. Further, notice that other explanatory variables included as controls tend to have significant and expected impacts upon the probability of payment. For example, the stage at which the suit is closed has a significant impact, with the probability of payment being highest for suits that are closed after the suit is filed but before a trial verdict. Likewise, as expected, increased severity tends to increase the probability of payment by the physician. Control variables included, but not reported in the tables, such as the type of allegation, physician specialty, and type of patient insurance also have reasonable impacts upon the probability of payment.

Contrary to malpractice awards, however, tort reforms tend to have little or no significant impact upon the probability of payment. In fact, the reform with the most consistently significant impact, periodic payment of damages, has been primarily designed to reduce malpractice awards. That Periodic Payment consistently increases the probability of payment may indicate that juries compensate for lower awards by increasing the probability of payment. On the other hand, state level reforms that are primarily designed to affect the probability of payment (*e.g.,* Mandatory Screening and Screening Admissible) are mostly insignificant indicating that such reforms may be ineffective.

VI. Conclusions

One of the primary purposes of medical malpractice law is to deter physicians from shirking in their avoidance of medical accidents. The tort model of deterrence discussed in the body of the paper demonstrates that physician liability should efficiently increase whenever physician productivity in accident avoidance increases. Likewise, efficient increases in physician liability are predicted theoretically whenever physician enforcement (legal) costs fall or when physician precaution or opportunity costs increase. Contrary to the common perception that the malpractice system is inefficient and even in crisis, the empirical results provide evidence that physician liability responds in an efficient manner to changes in physician productivity, enforcement costs, and precaution costs. The empirical results also indicate that physician liability is primarily affected by these variables through their impact upon the level of malpractice awards rather than upon the probability that awards will be paid.

The conclusion that increased physician liability in the recent past is efficient is contrary to the seemingly general consensus that malpractice reform is a necessary step in controlling a runaway malpractice system. In fact, even when controlling for state level malpractice reforms, the empirical results indicate that physician liability still changes, consistent with theoretical predictions, in response to changing conditions in medical relationships. That is, the data indicates that when the cost of physicians shirking on their use of precaution to avoid medical accidents increases, their liability for such accidents also increases. At the very least, these results question the common perception in the literature that the malpractice system is in need of reform. Given that many of the reforms have no significant impact on physician liability, one must also question whether the current debates about malpractice reform is not only misplaced but also wasteful.

Of course, malpractice reforms were found to have their largest impact on malpractice awards. Consistent with the theory that all law, both common and legislated law, is efficient (see Posner, 1981 and 1998) it may be the case that legislated tort reform is part of the process whereby efficient levels of physician liability are set. However, the current research highlights the fact that it is simplistic to view medical malpractice law as inflexible with regards to changing circumstances that would necessitate changes in physician liability in order to achieve efficiency. The available evidence indicates that not only might malpractice law itself change as circumstances warrant but so does its application to specific claims and specific physicians.

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Table 1

Summary of Theoretical Predictions

Factor	Expected Impact on t*
Physician's Enforcement Costs (E_d)	+
Patient's Enforcement Costs (E_p)	-
Physician's Precaution Price (w_x)	-
Patient's Precaution Price (w_y)	+
Physician's Marginal Productivity ($-p_x$)	-
Patient's Marginal Productivity ($-p_y$)	+

t* equals the optimal share of expected accident losses borne by the patient.

The impact of each factor upon the optimal share borne by the physician, 1-t*, is exactly the opposite of those listed above for the patient.

Table 2

Variable Definitions

Variable Name	Variable Definition
Award	total malpractice award paid by physician's insurance company
LogAward	the natural logarithm of Award
Number of Physicians	number of physicians in current case for whom company made payment
Awardd	Award divided by Number of Physicians
LogAwardd	the natural logarithm of Awardd
Total Medical Expenses	Includes current and future medical, lost wages and other expenses ($1,000s)
Payment made by Physician	1 if payment made to patient on behalf of physician; 0 otherwise
Patient's Age	patient's age in years at the time of injury
Physician Board Certified?	1 if physician is board certified in specialty where liability injury occurred; 0 otherwise
Years of Physician Experience	years of experience as a physician
Years of Physician Experience Squared	years of experience as a physician squared
Physician experience 0 to 10 years	1 if physician has 0 to 10 years of experience; 0 otherwise
Physician experience 11 to 20 years	1 if physician has 11 to 20 years of experience; 0 otherwise
Physician experience 21 to 30 years	1 if physician has 21 to 30 years of experience; 0 otherwise
Physician experience 31 to 40 years	1 if physician has 31 to 40 years of experience; 0 otherwise
Physician experience greater than 40 years	1 if physician has greater than 40 years of experience; 0 otherwise
Previous claims	1 if physician had previous malpractice claims; 0 otherwise
Physician in Individual Practice	1 if physician is in individual practice; 0 otherwise
Physician in Group Practice	1 if physician is in group practice; 0 otherwise
Physician Hospital Salaried	1 if physician is hospital salaried employee; 0 otherwise
Physician HMO salaried	1 if physician is Health Maintenance Organization salaried employee; 0 otherwise
Physician Emergency salaried	1 if physician is emergency salaried employee; 0 otherwise
Physician other/unknown practice	1 if physician practice other or unknown; 0 otherwise
Physician = Resident/Fellow	1 if physician is a resident or a fellow; 0 otherwise
Physician = Physician in Practice	1 if physician is a liscensed physician in practice; 0 otherwise
Physician = Unknown/Other	1 if physician status unknown or other; 0 otherwise
Copayment	1 if physician's insurance company paid legal fees; 0 otherwise
Pretrial Review	1 if claim underwent review by pre-trial panel; 0 otherwise
Arbitration	1 if claim underwent pre-trial arbitration; 0 otherwise
GAO Weighting variable by insurance company	GAO weighting variable by insurance company
Periodic Payment	1 if state requires periodic payment of malpractice awards; 0 otherwise
Mandatory Screening	1 if state requires pre-trial screening of malpractice cases; 0 otherwise
Mandatory Collateral Source	1 if state requires collateral source to offset patient costs; 0 otherwise
Payment Limits	1 if state limits the amount of malpractice awards; 0 otherwise
Screening Admissable	1 if pre-trial screening admissable at trial; 0 otherwise
State Arbitration	1 if state has pre-trial arbitration; 0 otherwise
Attorney Fee Regulation	1 if state regulates attorney fees; 0 otherwise
Closed, claim filed before suit	1 if claim closed after claim filed, before suit; 0 otherwise
Closed, suit before trial/arbitration	1 if claim closed after suit filed, before trial or arbitration; 0 otherwise
Closed, during trial/arbitration	1 if claim closed during trial or arbitration; 0 otherwise
Closed, after trial verdict	1 if claim closed after trial verdict, before suit; 0 otherwise
Closed, after appeal/binding arbitration	1 if claim closed after appeal or binding arbitration, before suit; 0 otherwise
Sex of patient	1 if patient male; 0 if patient female
Patient Employed?	1 if patient employed; 0 otherwise
Severity = Very Minor Disability	1 if injury resulted in a very minor disability; 0 otherwise
Severity = Temporary Disability	1 if injury resulted in a temporary disability; 0 otherwise
Severity = Permanent Partial Disability	1 if injury resulted in a permanent partial disability; 0 otherwise
Severity = Permanent Total Disability	1 if injury resulted in a permanent total disability; 0 otherwise
Severity = Death	1 if injury resulted in death; 0 otherwise

Principle Allegation, Physician Specialty, and Patient Insurance dummies are included as controls in all regressions.

Table 3

Physician Specific Unweighted Mean Values - Malpractice Awards Data Set*

Variable Name	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Award	$375,268	$421,634	$355,427	$399,514	$300,344
LogAward	10.45105	10.56564	10.43181	10.47444	10.33757
Number of Physicians	1.32048	1.33288	1.29956	1.31276	1.29132
Awardd	$317,478	$357,878	$297,066	$342,782	$240,227
LogAwardd	10.26060	10.37174	10.24835	10.29018	10.16252
Patient's Age					38.64674
Total Medical Expenses					$181.50220
Physician Board Certified?		0.72666			0.71694
Years of Physician Experience			23.62702		23.44835
Years of Physician Experience Squared			675.21586		659.50207
Physician experience 0 to 10 years			0.10573		0.10124
Physician experience 11 to 20 years			0.33040		0.33678
Physician experience 21 to 30 years			0.30396		0.30992
Physician experience 31 to 40 years			0.18796		0.19008
Physician experience greater than 40 years			0.07195		0.06198
Previous claims				0.50351	0.50826
Physician in Individual Practice	0.52093	0.51962	0.53891	0.52034	0.52686
Physician in Group Practice	0.33260	0.35859	0.34802	0.34502	0.38843
Physician Hospital Salaried	0.08040	0.07172	0.05727	0.06872	0.05579
Physician HMO salaried	0.01101	0.01353	0.00734	0.00842	0.00620
Physician Emergency salaried	0.02974	0.02571	0.02203	0.02805	0.01446
Physician other/unknown practice	0.02423	0.01083	0.02643	0.02945	0.00826
Physician = Resident/Fellow	0.02643	0.02436	0.01468	0.02104	0.01033
Physician = Physician in Practice	0.97026	0.97429	0.98385	0.97756	0.98760
Physician = Unknown/Other	0.00220	0.00135	0.00147	0.00140	0.00207
Copayment	0.84692	0.84574	0.85169	0.85554	0.83471
Pretrial Review	0.16300	0.18809	0.16006	0.19215	0.17975
Arbitration	0.01762	0.02030	0.02056	0.01964	0.02273
GAO Weighting variable by insurance company	22.43979	21.23211	21.97600	20.10102	21.09274
Periodic Payment	0.27423	0.28281	0.27166	0.27069	0.28512
Mandatory Screening	0.52203	0.57781	0.56828	0.58906	0.64050
Mandatory Collateral Source	0.21916	0.16779	0.19824	0.21178	0.14463
Payment Limits	0.18612	0.20027	0.18209	0.16129	0.19215
Screening Admissable	0.45815	0.49797	0.46696	0.49229	0.50207
State Arbitration	0.26762	0.23275	0.25991	0.24123	0.18388
Attorney Fee Regulation	0.54185	0.57240	0.57709	0.53156	0.64256
Closed, claim filed before suit	0.22907	0.22327	0.23201	0.21879	0.23760
Closed, suit before trial/arbitration	0.63656	0.63329	0.60793	0.63534	0.60744
Closed, during trial/arbitration	0.04075	0.04601	0.04846	0.03647	0.04545
Closed, after trial verdict	0.04185	0.04736	0.04405	0.04628	0.05165
Closed, after appeal/binding arbitration	0.01101	0.01218	0.01322	0.01122	0.01033
Sex of patient	0.42070	0.40189	0.41997	0.41374	0.41116
Patient Employed?	0.43062	0.46008	0.45815	0.42216	0.47727
Severity = Very Minor Disability	0.11784	0.10825	0.10426	0.12763	0.10950
Severity = Temporary Disability	0.29846	0.29635	0.31424	0.28892	0.32645
Severity = Permanent Partial Disability	0.24890	0.25710	0.24816	0.24404	0.26033
Severity = Permanent Total Disability	0.15419	0.15426	0.13950	0.15007	0.12397
Severity = Death	0.18062	0.18403	0.19383	0.18934	0.17975
Number of Observations	908	739	681	713	484

*state level tort reforms are those in effect the year the claim was filed.

Table 4

Physician Specific Unweighted Mean Values - Malpractice Payment Data Set*

Variable Name	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Payment made by Physician	0.66326	0.66878	0.64185	0.67519	0.69143
Patient's Age					38.40170
Physician Board Certified?		0.75113			0.73143
Years of Physician Experience			23.08294		23.20429
Years of Physician Experience Squared			648.93591		654.01571
Physician experience 0 to 10 years			0.11027		0.11143
Physician experience 11 to 20 years			0.34496		0.33857
Physician experience 21 to 30 years			0.31008		0.31143
Physician experience 31 to 40 years			0.16117		0.16714
Physician experience greater than 40 years			0.07352		0.07143
Previous claims				0.50473	0.51714
Physician in Individual Practice	0.48430	0.49774	0.49670	0.47822	0.49286
Physician in Group Practice	0.34478	0.38371	0.36098	0.35701	0.42143
Physician Hospital Salaried	0.08035	0.07240	0.06126	0.06818	0.05857
Physician HMO salaried	0.01023	0.01086	0.00660	0.00758	0.00571
Physician Emergency salaried	0.02411	0.02172	0.01602	0.02462	0.01286
Physician other/unknown practice	0.05478	0.01357	0.05844	0.06439	0.00857
Physician = Resident/Fellow	0.02411	0.02443	0.01697	0.01894	0.01143
Physician = Physician in Practice	0.97078	0.97285	0.98021	0.97822	0.98571
Physician = Unknown/Other	0.00365	0.00271	0.00283	0.00284	0.00286
Copayment	0.85975	0.85520	0.86522	0.86174	0.83143
Pretrial Review	0.16654	0.19457	0.16588	0.18182	0.17714
Arbitration	0.01899	0.02081	0.01979	0.01894	0.01857
GAO Weighting variable by insurance company	43.66973	38.70277	45.92228	40.71298	38.88000
Periodic Payment	0.25274	0.25973	0.23845	0.25284	0.25429
Mandatory Screening	0.54127	0.61719	0.59001	0.58807	0.65857
Mandatory Collateral Source	0.22571	0.15475	0.20170	0.21970	0.12571
Payment Limits	0.17604	0.19005	0.16588	0.15625	0.19000
Screening Admissable	0.47553	0.53213	0.49010	0.49527	0.52143
State Arbitration	0.26370	0.20995	0.24976	0.25000	0.17429
Attorney Fee Regulation	0.55150	0.59819	0.58624	0.52936	0.65571
Closed, claim filed before suit	0.22571	0.22715	0.22809	0.22443	0.25143
Closed, suit before trial/arbitration	0.62454	0.60905	0.59943	0.62500	0.59286
Closed, during trial/arbitration	0.04018	0.04525	0.04713	0.03220	0.03857
Closed, after trial verdict	0.04383	0.04977	0.04524	0.04545	0.05143
Closed, after appeal/binding arbitration	0.01242	0.01267	0.01225	0.01136	0.00857
Sex of patient	0.43389	0.41538	0.42978	0.43750	0.43143
Patient Employed?	0.44412	0.47511	0.46089	0.43277	0.49286
Severity = Very Minor Disability	0.12710	0.12127	0.11781	0.13068	0.12429
Severity = Temporary Disability	0.31191	0.30950	0.32328	0.30682	0.33714
Severity = Permanent Partial Disability	0.23959	0.24253	0.23845	0.23390	0.23857
Severity = Permanent Total Disability	0.14025	0.14661	0.13195	0.14205	0.13143
Severity = Death	0.18042	0.17919	0.18756	0.18655	0.16857
Number of Observations	1369	1105	1061	1056	700

*state level tort reforms are those in effect the year the claim was filed.

Table 5

Physician Specific Unweighted LogAwardd Regression Coefficients*

Variable Name	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	7.3169	7.2724	7.0039	6.9644	7.1761	6.4674	6.1989
	(24.321)	(20.160)	(16.077)	(18.145)	(20.869)	(11.897)	(13.136)
Patient's Age						-0.0008	-0.0009
						(-0.187)	(-0.220)
Total Medical Expenses						0.0007	0.0007
						(4.631)	(4.747)
Physician Board Certified?		0.2712				0.2354	0.2128
		(1.981)				(1.440)	(1.320)
Years of Physician Experience			0.0263			0.0229	
			(1.189)			(0.832)	
Years of Physician Experience Squared			-0.0004			-0.0003	
			(-1.002)			(-0.616)	
Physician experience 11 to 20 years				0.5546			0.9306
				(2.584)			(3.783)
Physician experience 21 to 30 years				0.4678			0.7235
				(2.147)			(2.794)
Physician experience 31 to 40 years				0.5011			0.6415
				(2.135)			(2.326)
Physician experience greater than 40 years				0.4543			1.0057
				(1.536)			(2.837)
Previous claims					0.2319	0.0906	0.0693
					(1.834)	(0.605)	(0.472)
Physician in Group Practice	-0.1313	-0.1094	0.0226	0.0468	-0.0569	0.1334	0.1805
	(-1.099)	(-0.861)	(0.166)	(0.344)	(-0.416)	(0.895)	(1.224)
Physician Hospital Salaried	-0.4715	-0.4605	-0.6193	-0.6095	-0.6276	-0.6518	-0.5732
	(-2.053)	(-1.671)	(-2.057)	(-2.016)	(-2.256)	(-1.849)	(-1.644)
Physician Emergency Salaried	-0.8493	-1.0648	-0.9471	-0.9586	-0.7997	-0.9630	-1.0118
	(-2.369)	(-2.603)	(-2.122)	(-2.148)	(-1.836)	(-1.615)	(-1.720)
Physician Other/Unknown Practice	-0.4733	-0.0877	-0.4811	-0.4661	-0.3507	-0.0149	-0.0007
	(-1.333)	(-0.152)	(-1.205)	(-1.170)	(-0.929)	(-0.018)	(-0.001)
Physician = Resident/Fellow	-0.1732	-0.3353	0.1970	0.2498	0.1143	0.7363	1.0141
	(-0.496)	(-0.795)	(0.379)	(0.487)	(0.263)	(0.979)	(1.368)
Physician = Unknown/Other	1.1196	2.8272	3.3597	3.1172	3.3101	2.9874	2.6131
	(1.007)	(1.839)	(2.147)	(1.993)	(2.064)	(1.976)	(1.749)
Copayment	1.3783	1.1012	1.2788	1.2458	1.4092	1.4296	1.3800
	(7.075)	(5.151)	(5.668)	(5.522)	(6.276)	(5.632)	(5.514)
Pretrial Review	0.6918	0.6528	0.6489	0.6684	0.6517	0.3900	0.3999
	(4.219)	(3.818)	(3.359)	(3.454)	(3.570)	(1.829)	(1.896)
Arbitration	-0.4238	-0.2721	-0.3261	-0.3198	-0.3249	-0.4702	-0.4746
	(-0.983)	(-0.610)	(-0.713)	(-0.702)	(-0.686)	(-0.931)	(-0.955)
Periodic Payment	0.2793	0.1630	0.0646	0.0743	0.2292	0.1217	0.0636
	(1.978)	(1.014)	(0.362)	(0.417)	(1.397)	(0.568)	(0.300)
Mandatory Screening	-0.6674	-0.5311	-0.6833	-0.6999	-0.5792	-0.4186	-0.4152
	(-3.298)	(-2.350)	(-2.845)	(-2.903)	(-2.368)	(-1.532)	(-1.529)
Mandatory Collateral Source	-0.0525	-0.0261	-0.1961	-0.1809	-0.0130	-0.4143	-0.3359
	(-0.365)	(-0.154)	(-1.065)	(-0.986)	(-0.074)	(-1.880)	(-1.548)
Payment Limits	-0.2317	-0.2593	-0.1501	-0.1412	0.0042	0.1240	0.1699
	(-1.140)	(-1.120)	(-0.562)	(-0.530)	(0.018)	(0.392)	(0.544)
Screening Admissable	0.6620	0.5904	0.7223	0.7314	0.6475	0.5312	0.5405
	(3.672)	(3.063)	(3.632)	(3.684)	(3.146)	(2.455)	(2.532)
State Arbitration	-0.2097	-0.0187	0.0289	-0.0010	-0.1853	-0.1639	-0.1564
	(-1.174)	(-0.087)	(0.132)	(-0.005)	(-0.879)	(-0.536)	(-0.519)
Attorney Fee Regulation	-0.0335	-0.0824	-0.1067	-0.1225	-0.0940	-0.0688	-0.1231
	(-0.288)	(-0.640)	(-0.736)	(-0.843)	(-0.665)	(-0.404)	(-0.726)
Closed, suit before trial/arbitration	0.4617	0.7579	0.4072	0.4072	0.4971	0.6510	0.6365
	(2.824)	(4.026)	(2.151)	(2.155)	(2.699)	(2.883)	(2.857)

Table 5

Physician Specific Unweighted LogAwardd Regression Coefficients*

Variable Name	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Closed, during trial/arbitration	0.7286	0.9939	0.7672	0.7775	0.8765	0.9708	1.0001
	(2.364)	(3.039)	(2.282)	(2.314)	(2.365)	(2.411)	(2.515)
Closed, after trial verdict	0.8771	1.3280	0.4839	0.4993	0.7980	1.0037	0.9994
	(2.908)	(4.106)	(1.383)	(1.433)	(2.381)	(2.585)	(2.619)
Closed, after appeal/binding arbitration	0.8766	0.9314	0.9175	0.9247	0.7887	1.1741	1.1345
	(1.587)	(1.603)	(1.602)	(1.619)	(1.263)	(1.587)	(1.558)
Sex of patient	-0.0910	-0.0878	-0.0607	-0.0340	-0.1278	-0.0240	0.0044
	(-0.827)	(-0.740)	(-0.477)	(-0.268)	(-1.024)	(-0.169)	(0.032)
Patient Employed?	0.2040	0.1731	0.2177	0.2043	0.1895	0.2543	0.2182
	(1.689)	(1.333)	(1.557)	(1.465)	(1.367)	(1.616)	(1.404)
Severity = Temporary Disability	0.3983	0.4595	0.3393	0.3285	0.4839	0.4009	0.3902
	(2.166)	(2.213)	(1.567)	(1.521)	(2.345)	(1.671)	(1.644)
Severity = Permanent Partial Disability	2.1071	1.9855	2.0546	2.0086	2.0638	1.8874	1.8223
	(10.688)	(8.921)	(8.793)	(8.591)	(9.189)	(7.170)	(6.981)
Severity = Permanent Total Disability	3.8459	3.8825	3.9281	3.8948	3.9258	3.2008	3.2025
	(17.328)	(15.809)	(14.995)	(14.805)	(15.644)	(9.620)	(9.770)
Severity = Death	2.1102	2.1295	2.0841	2.0818	2.0497	1.8691	1.8633
	(10.078)	(9.039)	(8.479)	(8.494)	(8.660)	(6.641)	(6.702)
Number of Observations	908	739	681	681	713	484	484
Adjusted R-squared	0.6067	0.618	0.6103	0.6123	0.5935	0.6477	0.6578
F Value	26.443	22.316	19.686	19.203	19.897	15.8	15.977

Student's t-statistics are in parentheses

*Dependent variable is the natural logarithm of AWARDD; state level tort reforms are those in effect the year the claim was filed.

Principle Allegation, Physician Specialty, and Patient Insurance dummies are included as controls in all regressions.

Table 6

Physician Specific Weighted LogAwardd Regression Coefficients*

Variable Name	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	7.9302	7.8604	7.0345	6.9861	7.7132	6.2674	6.0473
	(30.083)	(26.513)	(18.333)	(20.066)	(27.054)	(12.482)	(13.783)
Patient's Age						0.0068	0.0065
						(1.845)	(1.770)
Total Medical Expenses						0.0008	0.0008
						(5.028)	(5.048)
Physician Board Certified?		0.1146				0.0301	-0.0015
		(0.938)				(0.209)	(-0.010)
Years of Physician Experience			0.0377			0.0430	
			(1.874)			(1.641)	
Years of Physician Experience Squared			-0.0006			-0.0007	
			(-1.706)			(-1.612)	
Physician experience 11 to 20 years				0.6490			0.9778
				(2.698)			(3.268)
Physician experience 21 to 30 years				0.6855			0.9969
				(2.847)			(3.198)
Physician experience 31 to 40 years				0.6613			0.8682
				(2.667)			(2.731)
Physician experience greater than 40 years				0.4967			0.8441
				(1.789)			(2.339)
Previous claims					0.2986	0.1827	0.1523
					(2.674)	(1.381)	(1.165)
Physician in Group Practice	0.1613	0.1685	0.2077	0.2069	0.2502	0.3690	0.3857
	(1.582)	(1.584)	(1.863)	(1.855)	(2.133)	(2.761)	(2.906)
Physician Hospital Salaried	0.3087	-0.0311	-0.1416	-0.1199	-0.1891	-0.1929	-0.0924
	(1.550)	(-0.137)	(-0.604)	(-0.508)	(-0.750)	(-0.685)	(-0.325)
Physician Emergency Salaried	-0.7771	-0.9466	-0.7010	-0.7504	-0.7442	-0.5500	-0.6135
	(-2.031)	(-2.361)	(-1.677)	(-1.794)	(-1.713)	(-1.048)	(-1.176)
Physician Other/Unknown Practice	0.5039	0.4875	0.5648	0.5481	0.5771	-0.1167	0.0575
	(1.289)	(0.504)	(1.458)	(1.418)	(1.490)	(-0.092)	(0.046)
Physician = Resident/Fellow	-0.6340	-0.4445	0.0986	0.1690	-0.3709	1.1014	1.1587
	(-2.190)	(-1.132)	(0.243)	(0.422)	(-1.088)	(1.582)	(1.676)
Physician = Unknown/Other	1.1957	2.1217	2.5124	2.2570	2.5395	2.0182	1.7610
	(0.679)	(1.060)	(1.244)	(1.119)	(1.227)	(1.049)	(0.921)
Copayment	1.2480	0.6844	0.9276	0.8894	1.1508	0.7549	0.6905
	(6.733)	(3.385)	(4.344)	(4.129)	(5.684)	(3.301)	(3.007)
Pretrial Review	0.6847	0.6510	0.6506	0.6572	0.6168	0.5634	0.5559
	(4.958)	(4.678)	(4.389)	(4.449)	(4.125)	(3.370)	(3.362)
Arbitration	-0.5653	-0.5269	-0.3294	-0.2834	-0.2196	-0.3048	-0.3507
	(-1.325)	(-1.264)	(-0.770)	(-0.659)	(-0.478)	(-0.591)	(-0.681)
Closed, suit before trial/arbitration	0.6848	0.8900	0.7103	0.7136	0.5325	1.0325	1.0188
	(4.492)	(5.200)	(4.012)	(4.032)	(3.225)	(5.114)	(5.069)
Closed, during trial/arbitration	0.9017	1.1198	0.9591	0.9533	0.9175	1.2033	1.2159
	(3.637)	(4.422)	(3.752)	(3.732)	(3.047)	(3.707)	(3.764)
Closed, after trial verdict	1.2278	1.4246	0.9338	0.9640	1.1665	1.6877	1.6684
	(3.718)	(4.340)	(2.702)	(2.794)	(3.258)	(4.479)	(4.464)
Closed, after appeal/binding arbitration	0.7117	0.8462	1.0085	1.0021	0.3360	0.9967	0.9709
	(1.540)	(1.887)	(2.144)	(2.133)	(0.638)	(1.755)	(1.713)
Sex of patient	-0.1085	-0.1350	-0.0654	-0.0504	-0.0436	0.0913	0.0783
	(-1.091)	(-1.302)	(-0.608)	(-0.469)	(-0.398)	(0.730)	(0.630)
Patient Employed?	-0.0007	0.1392	0.1298	0.1127	0.0724	0.3386	0.2941
	(-0.007)	(1.274)	(1.134)	(0.983)	(0.619)	(2.578)	(2.238)
Severity = Temporary Disability	-0.0500	0.1277	-0.0325	-0.0302	0.0865	-0.0658	-0.0493
	(-0.306)	(0.755)	(-0.187)	(-0.173)	(0.503)	(-0.339)	(-0.251)
Severity = Permanent Partial Disability	1.0898	1.2376	1.3192	1.3086	1.0898	1.0844	1.0756
	(6.407)	(7.098)	(7.230)	(7.053)	(5.932)	(5.314)	(5.209)
Severity = Permanent Total Disability	3.2516	3.4791	3.4943	3.4780	3.4273	2.6819	2.7481
	(15.349)	(16.027)	(15.456)	(15.020)	(14.424)	(8.369)	(8.585)
Severity = Death	1.0508	1.4626	1.4872	1.5006	1.2881	1.2927	1.3253
	(5.643)	(7.305)	(7.366)	(7.400)	(6.328)	(5.527)	(5.658)
Number of Observations	908	739	681	681	713	484	484
F Value	27.157	22.579	22.600	21.948	17.943	17.418	17.214
Adjusted R-squared	0.5806	0.5889	0.6136	0.6157	0.5332	0.6431	0.6487

Student's t-statistics are in parentheses

*Dependent variable is the natural logarithm of AWARDD.

Principle Allegation, Physician Specialty, and Patient Insurance dummies are included as controls in all regressions.

Table 7

Physician Specific Unweighted Probit Regression Coefficients*

Variable Name	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	0.6828	0.8568	0.1691	0.4140	0.7268	0.0879	0.4265
	(3.363)	(3.545)	(0.595)	(1.632)	(3.137)	(0.251)	(1.341)
Patient's Age						0.0010	0.0016
						(0.302)	(0.476)
Physician Board Certified?		-0.1957				-0.1078	-0.0993
		(-1.831)				(-0.818)	(-0.749)
Years of Physician Experience			0.0230			0.0393	
			(1.420)			(1.949)	
Years of Physician Experience Squared			-0.0003			-0.0007	
			(-0.950)			(-1.887)	
Physician experience 11 to 20 years				0.0242			0.0743
				(0.158)			(0.406)
Physician experience 21 to 30 years				0.0889			0.1260
				(0.574)			(0.662)
Physician experience 31 to 40 years				0.4035			0.4229
				(2.284)			(1.964)
Physician experience greater than 40 years				0.0341			-0.2259
				(0.164)			(-0.894)
Previous claims					-0.0370	-0.0677	-0.0551
					(-0.404)	(-0.583)	(-0.476)
Physician in Group Practice	-0.1881	-0.1525	-0.1797	-0.1880	-0.2231	-0.2034	-0.2135
	(-2.202)	(-1.643)	(-1.863)	(-1.945)	(-2.244)	(-1.779)	(-1.861)
Physician Hospital Salaried	-0.2943	-0.2004	-0.2899	-0.3245	-0.4232	-0.2953	-0.3318
	(-1.837)	(-1.043)	(-1.432)	(-1.592)	(-2.154)	(-1.188)	(-1.322)
Physician Emergency Salaried	0.4013	0.1767	0.6893	0.6717	-0.2221	0.3468	0.3978
	(1.343)	(0.512)	(1.565)	(1.512)	(-0.639)	(0.615)	(0.703)
Physician Other/Unknown Practice	-1.3925	-0.4579	-1.4486	-1.4669	-1.4569	-0.2663	-0.2401
	(-6.939)	(-1.238)	(-6.016)	(-6.083)	(-6.410)	(-0.504)	(-0.454)
Physician = Resident/Fellow	0.5464	0.0638	0.3187	0.2579	0.6218	-0.1720	-0.2650
	(2.022)	(0.210)	(0.943)	(0.769)	(1.813)	(-0.353)	(-0.540)
Physician = Unknown/Other	-0.6298	-1.0303	-0.5540	-0.6263	-1.1620	-0.8489	-0.9200
	(-0.982)	(-1.254)	(-0.661)	(-0.759)	(-1.354)	(-0.884)	(-0.985)
Copayment	-0.4051	-0.4505	-0.4836	-0.4626	-0.2837	-0.4688	-0.4323
	(-2.949)	(-2.974)	(-3.071)	(-2.931)	(-1.822)	(-2.583)	(-2.376)
Pretrial Review	-0.0540	-0.0281	-0.0361	-0.0364	0.0655	0.1554	0.1683
	(-0.456)	(-0.223)	(-0.265)	(-0.266)	(0.485)	(0.947)	(1.017)
Arbitration	-0.1103	-0.0273	-0.0031	0.0101	0.2214	0.5416	0.5622
	(-0.360)	(-0.085)	(-0.009)	(0.029)	(0.635)	(1.310)	(1.341)
Periodic Payment	0.2037	0.3010	0.2863	0.2884	0.1343	0.3603	0.3800
	(1.901)	(2.404)	(2.132)	(2.140)	(1.056)	(2.180)	(2.279)
Mandatory Screening	-0.0336	-0.0923	0.0129	0.0136	0.0053	-0.0303	-0.0545
	(-0.220)	(-0.530)	(0.072)	(0.075)	(0.029)	(-0.137)	(-0.246)
Mandatory Collateral Source	0.1020	0.1244	0.2258	0.2323	0.1904	0.3429	0.3280
	(0.948)	(0.953)	(1.635)	(1.677)	(1.419)	(1.919)	(1.825)
Payment Limits	-0.1368	-0.1977	-0.1847	-0.1892	-0.1226	-0.2245	-0.2448
	(-0.909)	(-1.129)	(-0.989)	(-1.010)	(-0.710)	(-1.007)	(-1.090)
Screening Admissable	-0.1076	-0.1648	-0.2294	-0.2360	-0.1114	-0.2409	-0.2596
	(-0.810)	(-1.147)	(-1.564)	(-1.599)	(-0.721)	(-1.409)	(-1.508)
State Arbitration	0.0806	0.0566	0.1609	0.1596	0.0819	0.0551	0.0367
	(0.572)	(0.318)	(0.920)	(0.908)	(0.492)	(0.238)	(0.157)
Attorney Fee Regulation	-0.1638	-0.2011	-0.1455	-0.1348	-0.0494	0.0293	0.0482
	(-1.903)	(-2.030)	(-1.364)	(-1.259)	(-0.478)	(0.223)	(0.364)
Closed, suit before trial/arbitration	0.2502	0.4175	0.2818	0.2853	0.2288	0.4798	0.4787
	(2.339)	(3.377)	(2.342)	(2.361)	(1.908)	(3.209)	(3.186)
Closed, during trial/arbitration	0.5204	0.7009	0.5439	0.5501	0.6882	0.9303	0.9148
	(2.320)	(2.878)	(2.262)	(2.283)	(2.398)	(2.849)	(2.791)

Table 7

Physician Specific Unweighted Probit Regression Coefficients*

Variable Name	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Closed, after trial verdict	0.1962	0.3263	0.2154	0.2258	0.1685	0.4587	0.4507
	(0.972)	(1.484)	(0.959)	(1.004)	(0.739)	(1.690)	(1.659)
Closed, after appeal/binding arbitration	-0.1159	0.1208	0.2080	0.2035	-0.1699	0.7327	0.8176
	(-0.308)	(0.295)	(0.472)	(0.460)	(-0.386)	(1.131)	(1.233)
Sex of patient	-0.0589	-0.0921	-0.0410	-0.0363	-0.1299	-0.1340	-0.1312
	(-0.734)	(-1.030)	(-0.450)	(-0.396)	(-1.423)	(-1.218)	(-1.182)
Patient Employed?	-0.0423	-0.0313	0.0290	0.0283	-0.0427	0.0373	0.0554
	(-0.479)	(-0.318)	(0.286)	(0.279)	(-0.420)	(0.301)	(0.445)
Severity = Temporary Disability	0.1974	0.1654	0.2983	0.2898	0.0694	0.2201	0.1944
	(1.572)	(1.150)	(2.035)	(1.974)	(0.478)	(1.247)	(1.097)
Severity = Permanent Partial Disability	0.4324	0.4270	0.5349	0.5240	0.2953	0.4745	0.4449
	(3.136)	(2.713)	(3.314)	(3.241)	(1.837)	(2.414)	(2.259)
Severity = Permanent Total Disability	0.5290	0.4479	0.5217	0.4875	0.2182	0.2440	0.1934
	(3.366)	(2.539)	(2.845)	(2.644)	(1.199)	(1.128)	(0.887)
Severity = Death	0.4135	0.3414	0.4876	0.4755	0.2880	0.4742	0.4473
	(2.847)	(2.074)	(2.889)	(2.813)	(1.697)	(2.236)	(2.107)
Number of Observations	1369	1105	1061	1061	1056	764	764
Log likelihood	-793.1599	-639.5678	-621.0051	-618.6838	-601.2733	-429.9161	-427.1109
Chi-squared	162.8538	124.3039	142.272	146.9147	128.9479	100.3019	105.9122

Asymptotic t-statistics are in parentheses

*Dependent variable is the"Payment made by Physician"; state level tort reforms are those in effect the year the claim was filed.

Principle Allegation, Physician Specialty, and Patient Insurance dummies are included as controls in all regressions.

Table 8

Physician Specific Weighted Probit Regression Coefficients*

Variable Name	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	-0.5898	-0.6369	-1.0836	-0.8255	-0.4572	-0.8307	-0.7864
	(-3.024)	(-2.984)	(-3.487)	(-3.090)	(-2.081)	(-2.339)	(-2.559)
Patient's Age						-0.0011	-0.0002
						(-0.320)	(-0.047)
Physician Board Certified?		-0.0501				0.0550	0.0602
		(-0.463)				(0.389)	(0.419)
Years of Physician Experience			0.0278			0.0188	
			(1.378)			(0.797)	
Years of Physician Experience Squared			-0.0002			-0.0002	
			(-0.470)			(-0.547)	
Physician experience 11 to 20 years				0.1634			0.2937
				(0.783)			(1.230)
Physician experience 21 to 30 years				0.2642			0.1757
				(1.259)			(0.718)
Physician experience 31 to 40 years				0.6432			0.4861
				(2.866)			(1.850)
Physician experience greater than 40 years				0.5437			0.2401
				(2.110)			(0.788)
Previous claims					0.0659	0.0480	0.0582
					(0.663)	(0.395)	(0.475)
Physician in Group Practice	-0.0745	0.0487	-0.0871	-0.0894	-0.1372	-0.1897	-0.1974
	(-0.824)	(0.514)	(-0.830)	(-0.848)	(-1.283)	(-1.584)	(-1.641)
Physician Hospital Salaried	-0.1406	-0.0611	-0.1882	-0.2358	-0.3117	-0.2724	-0.3455
	(-0.802)	(-0.297)	(-0.841)	(-1.044)	(-1.367)	(-1.056)	(-1.317)
Physician Emergency Salaried	1.0060	0.3008	0.6314	0.5958	-0.3280	0.4890	0.4357
	(2.857)	(0.700)	(1.105)	(1.033)	(-0.741)	(0.721)	(0.634)
Physician Other/Unknown Practice	-1.6945	-1.1096	-1.5713	-1.6023	-1.7706	-0.9201	-1.0071
	(-8.246)	(-1.850)	(-7.061)	(-7.202)	(-8.285)	(-1.139)	(-1.258)
Physician = Resident/Fellow	0.8043	0.1769	0.5722	0.5090	1.4461	0.2346	0.2422
	(2.599)	(0.488)	(1.388)	(1.250)	(2.990)	(0.315)	(0.328)
Physician = Unknown/Other	-0.1539	-0.3425	0.0503	-0.0516	-0.5836	0.0827	0.0979
	(-0.134)	(-0.244)	(0.032)	(-0.034)	(-0.418)	(0.052)	(0.059)
Copayment	0.1540	0.0399	0.0987	0.1364	0.2582	0.0160	0.0380
	(1.078)	(0.263)	(0.578)	(0.799)	(1.630)	(0.085)	(0.201)
Pretrial Review	0.0418	-0.0412	-0.1232	-0.1145	0.2642	0.1643	0.1934
	(0.316)	(-0.307)	(-0.824)	(-0.763)	(1.767)	(0.995)	(1.155)
Arbitration	-0.2621	-0.2750	-0.2963	-0.2230	0.2663	0.4159	0.4659
	(-0.708)	(-0.772)	(-0.706)	(-0.526)	(0.629)	(0.905)	(1.004)
Closed, suit before trial/arbitration	0.2656	0.5549	0.3333	0.3287	0.3751	0.7324	0.7265
	(2.224)	(4.220)	(2.389)	(2.345)	(2.870)	(4.509)	(4.453)
Closed, during trial/arbitration	0.8031	1.2383	0.9587	0.9627	0.7245	1.0816	1.0571
	(3.452)	(5.055)	(3.784)	(3.782)	(2.499)	(3.351)	(3.263)
Closed, after trial verdict	-0.4276	-0.1697	-0.3482	-0.3874	-0.5959	-0.2117	-0.2439
	(-1.821)	(-0.725)	(-1.326)	(-1.473)	(-2.209)	(-0.741)	(-0.850)
Closed, after appeal/binding arbitration	0.4904	0.8673	0.4922	0.4560	0.4347	1.5331	1.5836
	(1.115)	(2.004)	(0.928)	(0.860)	(0.792)	(1.914)	(1.970)
Sex of patient	-0.0026	-0.0558	0.0273	0.0338	-0.1367	-0.1767	-0.1638
	(-0.029)	(-0.588)	(0.264)	(0.327)	(-1.342)	(-1.481)	(-1.367)
Patient Employed?	-0.0727	-0.0655	-0.0380	-0.0434	-0.0618	-0.0449	-0.0581
	(-0.787)	(-0.664)	(-0.351)	(-0.400)	(-0.571)	(-0.359)	(-0.462)
Severity = Temporary Disability	0.1496	0.2994	0.2424	0.2257	0.2963	0.4223	0.4050
	(1.094)	(2.044)	(1.497)	(1.393)	(1.927)	(2.380)	(2.274)
Severity = Permanent Partial Disability	0.2846	0.3111	0.2719	0.2550	0.3256	0.4473	0.4372
	(1.928)	(2.000)	(1.562)	(1.459)	(1.935)	(2.327)	(2.270)
Severity = Permanent Total Disability	0.6002	0.5743	0.6265	0.6051	0.3191	0.3399	0.3508
	(3.160)	(2.914)	(2.877)	(2.762)	(1.426)	(1.368)	(1.395)
Severity = Death	0.3016	0.2176	0.2239	0.2209	0.2054	0.3822	0.3642
	(1.906)	(1.281)	(1.223)	(1.208)	(1.163)	(1.791)	(1.712)
Number of Observations	1369	1105	1061	1061	1056	764	764
Log likelihood	-717.4571	-627.0086	-526.8622	-526.7095	-522.867	-410.8387	-408.7978
Chi-squared	314.2596	149.4223	330.5579	330.8632	285.7605	138.4568	142.5384

Asymptotic t-statistics are in parentheses

*Dependent variable is the"Payment made by Physician"

Principle Allegation, Physician Specialty, and Patient Insurance dummies are included as controls in all regressions.