

THE EFFECT OF MALPRACTICE LIABILITY ON THE SPECIALTY OF OBSTETRICS AND GYNECOLOGY

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Abstract

Using data from a 2003 survey of 1,476 obstetrician-gynecologists, the effects of malpractice pressure on the specialty are investigated. Physicians report having made substantial changes to their practice in response to the general environment and to liability pressures. Regression analysis finds that liability pressure increases reports of income and practice reductions, but direct effects on actual income and productivity are less clear. Liability pressures may lead to a specialization effect, with some physicians concentrating more in obstetrics and others in gynecological surgery. Overall, the evidence suggests that liability pressure has moderate but significant effects on the specialty.

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Over the past several decades, the specialty of obstetrics and gynecology has struggled with professional and financial stresses created by medical malpractice litigation, stresses so great as to raise concerns about the very viability of the specialty. Three “malpractice crises,” characterized by rising malpractice premiums, the exit of insurers from some markets, and reduced affordability and availability of medical malpractice insurance, have sparked intense debate about exactly how these pressures may affect obstetrics and gynecology, and medical practice more generally (Studdert, Mello and Brennan 2004).

There are claims that malpractice pressure might encourage defensive medicine, increase medical costs, affect the size or composition of the physician workforce, or reduce incentives for physicians to care for risky patients. In surveys, large shares of ob-gyns consistently report practicing defensive medicine, limiting the scope of their practice, stopping obstetrics, stopping high-risk obstetrics, or planning to relocate due to liability pressures (Mello and Kelly 2005; Mello, Studdert, DesRoches et al. 2005; Studdert, Mello, Sage et al. 2005). It is argued that the malpractice environment has reduced ob-gyn incomes, reduced the supply of physicians, and impeded access to care.

The literature has generally not supported these claims, at least not fully. Baicker, Fisher, and Chandra (2007) do find that rising malpractice premiums increase the use of imaging technology, resulting in considerably higher Medicare spending. Mello, Studdert, et al. (2007) find little effect of premium increases on physicians restricting the scope of their practices in Pennsylvania, even when they examine the specialty of obstetrics and gynecology directly. The evidence regarding effects on the probability of cesarean sections is decidedly mixed (Mello et

al. 2007; Studdert et al. 2004). Investigations looking for effects on physician supply or income also come up largely empty-handed: while data certainly support the statement that ob-gyn incomes have declined more rapidly than those of other physicians, it is unclear whether this is due to liability pressures.¹ Rodwin, Chang and Clausen (2006) find that increasing malpractice premiums were not responsible for declining physician incomes in the past 30 years, and a number of studies find only small or nonexistent effects of liability pressures on physician supply (Baicker and Chandra 2004; Kessler, Sage and Becker 2005; Klick and Stratmann 2007; Mello et al. 2007).

Indeed, a large gap exists between the experience and perceptions of obstetricians and gynecologists – that their specialty is in grave crisis – and the assessment of many outside analysts – that the picture is not so bleak. While physician surveys provide a clear picture of substantial adverse effects on the practice of medicine more generally and ob-gyn in particular, direct analysis of practice or income data provides a murkier picture.² The goal of this paper is to try to reconcile these divergent impressions, and thereby to improve our understanding of the actual role malpractice insurance premiums and claims play in affecting the practice of obstetrician-gynecologists. I do this by using survey responses with regard to subjective perceptions, self-reported income and productivity outcomes, and external measures of the liability environment.

Several features distinguish this analysis. First, I focus solely on obstetrician-gynecologists, rather than physicians more generally. It is reasonable to expect effects to be

¹ In the 1990s, ob-gyns experienced declines in real income that were three times as large as physicians in other specialties (17% vs. 5%, *Physician Characteristics and Distribution*, American Medical Association, various years).

² Mello, Studdert, et al (2007) and Mello et al (2005) comment on a similar discord between actual measures and survey measures.

more evident among ob-gyns, and I employ a large and representative sample of just ob-gyns to investigate these effects specifically. Second, I use detailed individual-level data on these physicians, including reported changes to practice, attribution of those changes to liability pressure, and self-reported practice characteristics and productivity measures. This enables me to use a variety of different survey responses – qualitative and quantitative, framed in terms of liability and not – to assess the state of ob-gyn practice and the effects of liability pressure. Third, I use detailed and objective data on liability premiums and payments to measure the liability and practice environment, linking these in via geographic identifiers. This enables me to use these exogenous measures of the practice environment to assess the effects of liability pressure from a different angle.

Thus, by joining the detailed ob-gyn data with external liability insurance data, I am able to investigate liability's impacts on the specialty from several perspectives. First, I analyze what physicians say about their concerns, changes to their practice, reasons for these changes, and the extent to which they report having made changes in response to liability pressures. Second, I use objective measures of the malpractice environment to assess whether liability pressures increase the likelihood that physicians claim to have experienced or made specific changes in income or productivity. Third, I use objective measures of the malpractice environment to assess whether liability pressures actually affect physicians' income and productivity. Then, I can assess whether any estimated influence of malpractice pressure on alleged changes to practice (as measured by physicians' claims of such changes) is in line with any estimated influence on actual changes to practice (as measured by direct self-reports of productivity). The ultimate goal is to draw on different perspectives to sketch a coherent picture of how liability has affected the specialty of obstetrics and gynecology.

DATA AND METHODS

Data

In early 2003, the American College of Obstetricians and Gynecologists (ACOG) conducted its *2003 Survey of Fellows Regarding the Structure and Economics of Physicians' Practices* to collect detailed physician-level data about ob-gyn practice. This survey, of a stratified random sample of the ACOG membership, provides the primary data for this analysis. The data include information on physician concerns, changes to practice, personal characteristics, professional characteristics, subspecialization, scope of practice, deliveries, and surgical procedures. The survey also collected information about malpractice insurance: the physician's individual malpractice insurance premiums for several years, perceptions of the stresses of liability insurance, and responses indicating what changes each physician may have made to their practice due to liability pressure. The mail survey was designed by ACOG in collaboration with Princeton Survey Research Associates (PSRA) and was conducted by PSRA. It includes responses from 1,476 obstetrician-gynecologists, for an ultimate response rate of 49%. PSRA investigated the overall quality of the data and concluded that it is generally very good quality for a long and complex self-administered survey of professionals. Despite the moderate response rate, the data appear to be representative of the ACOG membership and of ob-gyns more generally.³ ACOG also conducted similar surveys in several prior years (1991, 1994, 1998). These earlier surveys provide data on an additional 3,647 physicians, but they placed little emphasis on liability concerns and consequently will be used only tangentially.

³ PSRA calculated data weights to adjust for slight differential non-response across demographic groups (categorized by ACOG geographic district, gender, age, and fellowship type). Divergences of the sample from the ACOG membership were very small, and the calculated weights are distributed approximately normally, falling between 1.00 and 2.07. These weights are used in the analysis. Additional discussion of potential response-rate bias and the representativeness of the ACOG survey sample can be found below.

Information on the broader liability environment is comprised of data on malpractice insurance premiums and malpractice payments (either through settlements or court judgments). First, the Medical Liability Monitor Rate Survey (MLM) provides data on malpractice insurance premiums in obstetrics and gynecology by state and year since 1991.⁴ The MLM data is constructed from a nationwide survey of the cost of a malpractice policy offering \$1 million in coverage per claim and \$3 million coverage per year. The MLM premium data are aggregated up to the state level by calculating the population-weighted average state premium.⁵ Second, the National Practitioner Databank (NPDB) records all medical malpractice payments made in the United States by or on behalf of a licensed health care provider, with detail about the provider's position and specialty as well as the nature of the claim.⁶ I use the claims related to ob-gyns only. Although the NPDB is sometimes faulted for not including payments made by hospitals or corporations, it still provides arguably the most comprehensive data available on medical malpractice payments.⁷ While the ACOG data also contain self-reports of malpractice insurance premiums, these are subject to obvious endogeneity concerns and reporting problems. Because the external measures from the MLM and NPDB provide more reliable and exogenous measures of the broader malpractice environment in the physician's state of practice, they will be used as the measures of the malpractice environment.

⁴ *Medical Liability Monitor Rate Survey*, Medical Liability Monitor, Oak Park, IL, various years.

⁵ This method for calculating a "standard" premium for ob-gyn liability insurance in each state is identical to that pursued by Baicker and Chandra (2004). While this method adjusts for the population of the counties in which insurers operate, it does not adjust for the market shares of insurers in those counties. Unfortunately, available data do not present a clear way to remedy this shortcoming. It would appear that the MLM still provides the best available data on ob-gyn liability premiums.

⁶ *National Practitioner Data Bank*, 2006. U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Rockville, MD.

⁷ One advantage of the NPDB is that, unlike the Jury Verdict Reporter, it is not limited to jury verdicts. Such verdicts comprise only a small and unrepresentative sample of payments. For a detailed discussion of these issues, see Chandra, Nundy, and Seabury (2005).

Data on the general medical practice environment are drawn from the Area Resource File, compiled by the Bureau of Health Professions.⁸ Dollar values in all of the datasets are deflated to real 2002 dollars using the Consumer Price Index.

Methods

The analysis begins with an assessment of physicians' reports of changes to their practice, as well as their perceptions of malpractice pressure and its effects on ob-gyn practice. The primary regression analysis used a probit equation to estimate the influence of malpractice environment on physician activity:

$$\begin{aligned} \text{Probability}(\text{outcome}) = & \alpha_0 \text{LiabilityMeasure} + \alpha_1 \text{female} + \alpha_2 \text{I}(\text{age} < 40) \\ & + \alpha_3 \text{I}(\text{black}) + \alpha_4 \text{I}(\text{asian}) + \alpha_5 \text{I}(\text{other race}) \\ & + \alpha_6 \text{I}(\text{subspecialist}) + \alpha_7 \text{I}(\text{board certification}) + \alpha_8 \text{YearsInPractice} \\ & + \alpha_{15} \text{I}(\text{census region}) + \alpha_{15} \text{I}(\text{County Pop} < 50\text{k}) + \alpha_{15} \text{I}(\text{County Pop} > 100\text{k}) + \varepsilon \end{aligned}$$

Outcomes considered included reducing all ob-gyn care, reducing only obstetrics, reducing gynecological care, reducing high-risk obstetrics care, or stopping obstetrics all together. Effects on income, the number of deliveries, and the share of deliveries by cesarean section were also estimated using weighted least squares. Liability measures included the average malpractice premium in the state, changes in state premiums, the average value of the liability payments, and the number of such payments per ob-gyn in the state.⁹

A Framework for Establishing the "Guilt" of Malpractice Pressure

⁸ *Area Resource File*, 2004. US Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Rockville, MD.

⁹ Regression analysis was performed on a sub-sample of 1,104 of ob-gyns with complete data. Observations were retained in the sample if i) they contained values for income, weeks, hours, patients, procedures, age, sex, ii) age < 80 years, iii) annual income between 2nd and 98th percentiles, iv) weeks > 26, v) hours and patients between the 1st and 99th percentiles, and vi) procedures performed less than the 99th percentile. Data weights calculated by PSRA were used in the analysis.

The goal of this paper is to determine how malpractice pressures affect the specialty of obstetrics and gynecology. To understand how this paper adds to this discussion, it may be helpful to consider the following legal analogy.

Oscar is attacked and robbed while walking home one night. He is, understandably, very upset about this. Oscar goes to the police station to report the crime and to try to obtain justice.

Scenario A. Just as Oscar is recounting his sad tale to one police officer, another police officer drags a suspicious character into the squadroom. The officers put two-and-two together, and ask Oscar “Is this the guy?” Oscar, seeing the guy, thinks he looks familiar and suspicious and says “Yeah, I think that’s him.” After a few minutes pass, he becomes more and more convinced that the guy is indeed the one who robbed him, even coming up with details to support this account.

Scenario B. Oscar is taken into a separate room, and recounts his sad tale to a police officer. He actually didn’t see very much because it was dark and he was attacked from behind. He relates some general impressions about his assailant, but is not able to provide much detail.

In Scenario A, the suggestiveness of the suspicious party’s presentation renders Oscar’s identification inherently unreliable. It is easy to point the finger at such a prominent suspect, and easy to add detail to support the story. However, Oscar’s account very well might not hold up under cross-examination, when he would be asked questions like “What were the lighting conditions?” “Was he behind you or in front of you?” or “Were you scared?” Oscar’s responses might be inconsistent in response to this questioning or might not match the facts. A court can probe for consistency: if Oscar says the guy came at him from the left and hit him over the head, does Oscar have a bruise on the left side of his head, and does the alleged assailant have the strength to make that bruise?

Now substitute ob-gyns for Oscar and malpractice pressures for the assailant. Substitute lost income, lower professional status, and increased stress for a lost wallet, the shame of being robbed, and the stress of being attacked. The strategy of this paper should be becoming clear. Survey questions that ask ob-gyns what happened because of malpractice pressure are Scenario

A: malpractice is front and center as the lone suspect. We can't necessarily believe all that is relayed. On the other hand, questions that ask ob-gyns what happened more generally, without specific reference to malpractice pressure, or simply ask them what they do in their practice, are Scenario B: the questions are open-ended and the universe of suspects is much broader. We can have more confidence in the objectivity of the answers.

Thus, this paper is essentially cross-examining the ob-gyns: they say malpractice pressures are to blame for their many ills, but does that hold up? Could it just be that malpractice is an easy target? Is the story consistent when we look at what ob-gyns say when they are asked open-ended questions? Is it consistent when we look at what they report doing? Most importantly, if ob-gyns report that malpractice pressures produce certain effects, we want to see that objective measures of those malpractice pressures are actually related to those effects. Moreover, we want to understand what happened.

Data Summary

Table 1 provides a summary of the data. The average age of physicians in the sample is 46, 40% are female, and 83% are white. The physicians have been in practice for an average of 15 years, 18% characterize themselves as sub-specialists, and nearly one-quarter report doing no obstetrics. Annual net medical income averages \$207,000, which is indeed lower than the averages reported in previous ACOG surveys (\$282,000 in 1990, \$247,000 in 1993, and \$218,000 in 1997, all in inflation-adjusted year-2002 dollars). A detailed investigation comparing the survey sample, the ACOG membership, and available AMA data on ob-gyns

indicates that the ACOG survey sample is representative of obstetrician-gynecologists practicing in the United States in 2002.¹⁰

The lower portion of Table 1 provides information about the malpractice liability environment. The average insurance premium calculated from the MLM rate survey of insurers (in the states in which these physicians practice) is \$60,000.¹¹ The MLM data also show that in the decade between 1991-1993 and 2001-2003, premiums in the states in which these physicians practice rose an average of 9%. Increases in premiums were much larger in the period 2001-2003, averaging 33% during this most recent malpractice “crisis.”¹²

¹⁰ There is a close match between the number of ob-gyns who are AMA members and the number of ACOG fellows, suggesting that ACOG includes most ob-gyns in the United States. Moreover, the values of demographic and professional characteristics (e.g. age, gender, type of practice, weeks, hours, time allocation across different activities and settings) in available AMA survey data match those in the ACOG survey reasonably well. These comparisons therefore indicate that ob-gyns who are ACOG members are representative of ob-gyns who are AMA members. (See (Wassenaar and Thran 2003)) In addition, as discussed above, PSRA established that the ACOG survey respondents were, in turn, reasonably representative of the ACOG membership. Thus, the ACOG survey respondents can be taken to be reasonably representative of ob-gyns more generally.

¹¹ The ACOG data also contain self-reports of insurance premiums: the average total insurance premium (premium for individual professional liability insurance plus payment to state patient compensation or birth injury fund) reported is \$37,000. This is considerably lower than the \$60,000 average in the MLM data. The exact source of the discrepancy is unclear. Investigation of the data suggests that the discrepancy can probably be attributed to physicians having imperfect knowledge of their liability premiums and their payments to patient compensation funds (particularly those in group practices, employed by hospitals or managed care organizations, or residing in states where patient compensation funds are significant.) This gap between physician self-reports and industry reports is not unique to the ACOG data: the ACOG average of \$37,000 is close to the \$39,000 reported in AMA survey data for the same time period (Wassenaar and Thran (2003), *Practice Patterns of Obstetrics/Gynecology 2003*). Whatever the explanation for this discrepancy, the self-reports of liability insurance premiums will not be used in this paper; only the state-level MLM measures of liability insurance premiums will be used. State-level measures also avoid endogeneity problems that plague individual measures (e.g. those who practice obstetrics have higher premiums).

¹² From 1991-1993 to 2001-2003, the 25th percentile of changes in premiums was a decline of 10%, the median was an increase of 3.7%, and the 75th percentile was an increase of 31%. Between 2001 and 2003, these numbers were +20% (25th percentile), +29% (median), and +42% (75th percentile).

Malpractice payments (either through settlements or court judgments) average \$525,000 in the NPDB data for the year 2002, with a median payment of \$330,000. As has been observed elsewhere, the distribution of payments has a long upper tail, and the 90th percentile in this sample is well over \$1 million. Lastly, for every 100 ob-gyns in a state, there are an average of 2.8 allegations that result in payments each year.

RESULTS: Concerns, Changes, and Reasons

Reported Concerns

The salient information on physician concerns and practice changes is shown in Table 2, which lists the top 3 to 5 answers to questions about major concerns and practice changes.¹³ When asked to select the two professional issues that were of greatest concern to them, nearly all respondents – in excess of 90% – placed medical liability issues or the financial viability of their practice in the top two, and 36% indicated that together those were their top two concerns. In all, 78% cited liability issues as a top concern and 48% cited the financial viability of their practice as a top concern. Paperwork/administrative burden and managed care were respectively cited 27% and 21% of the time.

Reported Changes in Practice

Physicians were also asked about how their practice may have changed in the previous year.¹⁴ Nearly one-third (30%) of respondents answered that their workload had increased, while only one-tenth (11%) responded that their workload had decreased. Somewhat in contrast to

¹³ Respondents were asked “Which of the following are the top *two* issues of greatest concern to you in your professional life today?” and were given a list of seven possible choices. This was the first question on the survey. Note that in this, as in most questions, respondents could write in an answer if none of the available options seemed appropriate.

¹⁴ Respondents were asked “Which of the following statements are true about your current practice when compared to your practice a year ago?” and were given a list of twelve choices.

that split, 13% responded that they had *limited* the scope of their practice in some manner, while 7% had expanded the scope of their practice.¹⁵ Twelve percent responded that their practice group had expanded. No other single change was reported by more than 3% of the sample. While the detailed picture is far from clear, it is obvious that physicians were not providing an image of particularly stable practice, with two-thirds of physicians reporting a significant change. Moreover, reports of an increasing workload were common. (Further detail can be seen in Appendix Figure 1.)

Reported Reasons for Changes

Physicians cite a range of reasons for these changes.¹⁶ Three categories make a strong showing: reimbursement issues (23%), increased patient needs (17%), and the affordability of professional liability insurance (17%). Personal reasons come in fourth at 15%, and other reasons (such as better opportunities, more professional autonomy, or the availability of liability insurance) come in at 7% or below. (Further detail can be seen in Appendix Figure 2.)

Reported Malpractice-Induced Changes

Physicians were also asked about changes they may have made or experienced as a consequence of liability pressures in particular.¹⁷ Figure 1 summarizes these responses. Only 12% of physicians say they relocated, retired, or changed their position or type of practice in response to liability pressures. In contrast, 38% report adverse financial consequences: 32%

¹⁵ These reports are not necessarily in contradiction with each other: workload refers to a volume of services, while scope refers to the type of services. Hence, increasing workload could be consistent with reduced scope.

¹⁶ Immediately following the question about changes, respondents were asked to “indicate *why* you made the changes you identified” and could choose from nine options.

¹⁷ This was one of the last questions on the survey, and was placed 30 questions after the questions about general changes. The question was “In the past two years, that is, *since January 2001*, have you made any of the following changes *because of professional liability insurance affordability and availability issues*.” Respondents could chose from eight “personal/practice” choices and five “financial situation” choices.

indicate that their salary was reduced by 10% or more, 15% report using a loan or savings to fund increases in insurance premiums, 4% report decreased personal or professional expenditures, and 1% report having declared bankruptcy. These self-reports paint a rather dire picture of the financial consequences of liability pressures, one not inconsistent with the image of a specialty in crisis.

Changes to physician workload are also reported frequently: 31% of physicians report reducing or limiting their workload significantly. These effects are primarily in obstetrics – 22% report decreasing high-risk obstetrics, 10% report reducing deliveries, and 7% report stopping obstetrics altogether – but gynecological surgery is not unaffected – 11% report decreasing gynecological surgery and 4% report stopping gynecological surgery altogether.¹⁸ Only 5% of respondents indicated that their workload increased due to liability pressures.

Assessing the Consistency of Reported Changes

It should be apparent that many of the above reports from physicians are internally inconsistent. There is a stark contrast between the changes reported by physicians when they are asked in a general context versus in a liability context: in the former, 30% of physicians reported an increased workload, in the latter only 5% did; in the former, 11% reported a decreased workload, in the latter 31% did. While it is possible that this inconsistency is an artifact of aggregating individual data (those who increased workload more generally could be different from those who decreased workload due to liability pressures), this does not appear to be the case.¹⁹ One-quarter of the sample provides seemingly contradictory answers in the two sections,

¹⁸ A change in the share of births by cesarean section was not an available choice.

¹⁹ Of the individuals who cited an increase or expansion of workload in the general section, only 9% also cited a liability-induced increase, and 34% actually cited a liability-induced decrease. Those who cited decreases in the general section were more consistent: 62% also cited a

while only one-quarter provides qualitatively similar answers in both sections. Even the basic counts fail to match: when asked in a general context, only 21% of physicians who made changes cited liability pressures as a reason for those changes; in contrast, when asked about changes made specifically due to liability, 55% of physicians cited at least one change. Many physicians seem inclined to report that their workload is increasing and broadening while at the same time reporting that their workload is decreasing and narrowing due to liability pressures. There is substantial inconsistency.

RESULTS: Relationship between malpractice pressures and changes in practice

I now endeavor to assess to what extent malpractice pressures are in fact responsible for changes in practice. The above results reveal frequent reports of decreases in salary, increased and diversified workloads, as well as decreased and narrowed workloads, and much of this is attributed to liability pressures. But are liability pressures really the culprit? By regressing reported practice changes on measures of the liability environment or changes therein, I aim to ascertain whether greater malpractice pressures lead to greater reports of adverse effects.

Moreover, I can look directly at self-reported physician productivity. The ACOG data contain self-reports of net medical income, mix of procedures, and practice or cessation of obstetrics. While the value of self-reports is debatable, these questions may provide more reliable data because they were asked in a neutral manner (“how many deliveries did you perform?”) and in a separate part of the survey from the malpractice questions. Not having been framed in terms of liability, the answers should be more objective. By regressing physician productivity on measures of the liability environment or changes therein, I can ascertain whether

decrease due to liability pressures, while 4% cited an increase. There is substantial intra-individual inconsistency.

malpractice pressures lead to adverse effects on physician productivity, where productivity is measured in quantitative self-reports.²⁰

Together, by investigating effects on self-reported changes and on self-reported productivity, I aim to probe the validity of some of the claims put forward above. I consider income first, then turn to practice scope.

Effects on Income

The above survey responses suggest that liability pressures may significantly reduce income, with nearly one-third of the sample attributing a 10% income decline to liability pressures. An initial look at the ACOG data reveals that average ob-gyn income dropped by 3.7% between 1997 and 2002, making it seem unlikely that a full third of the sample could have experienced declines of 10% or more in just the years between 2000 and 2002 unless the remainder of the sample had stable or increasing incomes. However, we can gain much from a detailed investigation, and Table 3 considers this relationship between malpractice pressures and income declines. Each coefficient shown in Table 3 reflects the effect of a single liability variable on a single practice outcome.²¹

²⁰ Effects on certain outcomes (relocations, retirements or other exits) cannot be assessed using this cross-section of active physicians.

²¹ Tables 3, 4 and 5 each show results from multiple regressions. Each number shown reflects the effect of a single liability variable (as indicated at the left of the row) on a single practice outcome (as indicated at the top of the column). Numbers in the first column, reflecting results from probit specifications, show the change in the probability of attributing an income decline of 10% or more to liability that results from a 1-unit change in the liability variable. For example: a \$10,000 increase in the state average premium is associated with a 5 percentage point increase in the probability of attributing such an income decline to liability ($0.05 = 0.005 \times 10$). A second example: a 10% change in the liability premium between 2001 and 2003 is associated with a 3.15 percentage point increase in the probability of attributing such an income decline to liability ($0.0315 = 0.315 \times 0.10$). For the probit specifications in column 1, the marginal effects are evaluated at the sample mean. Numbers in the second column, reflecting results from ordinary least squares, show the change in net medical income for a 1-unit change in the liability variable.

The first three rows of the table consider the effects of higher or rising malpractice premiums. Higher average state premiums and rising state premiums are strongly associated with the probability of *attributing* an income reduction of 10% or more to liability pressures. An additional \$10,000 of premium in the state is associated with a 5 percentage point increase in the likelihood of a physician attributing such an income reduction to liability, while a 10% *increase* in premiums (either in the short run or long run) produces a 3-4 percentage point increase in that likelihood. When considering actual reported incomes (rather than assertions of the effects of liability pressure), the results are less consistent. Higher state premiums are associated with lower net medical incomes: for each additional \$10,000 of premium, income is lower by \$3,650. However, this is primarily a result of the cross-state comparison in 2002: when one considers *changes* to premiums, either in the decade between 1992 and 2002 or in the most recent years 2001 to 2003, there is no significant adverse effect on income. The point estimates are negative and insignificant. Thus, while increasing liability pressure is associated with physicians' *alleging* income declines due to liability pressure, it is not associated with lower physician incomes when income is reported directly and separate from any discussion of liability.

The last two rows of Table 3 consider the potential effects of malpractice payments, or paid claims. There is little indication of a relationship between the average malpractice payment in a state and lower income (either probability of reporting an income decline or reported income). There is, however, evidence that more frequent payments increase the probability of reporting an income decline and also decrease income (although the P-value for the former effect is just insignificant at $P=0.103$.) A 10% increase in the frequency of payments is associated with a 0.7% drop in income; put another way, a move from the 25th percentile of payment frequency

For example: an increase in the state average premium of \$10,000 is associated with a decrease of \$3,650 in income ($\Delta y = \beta \Delta x$ or $-3.65 = -0.365 \times 10.00$).

to the 75th percentile is associated with an income decline of approximately \$12,000 or 6%. Thus, the frequency, not the severity, of payments adversely affects income.

Effects on Scope of Practice

Income, while of obvious importance, is a relatively coarse measure of practice performance. Luckily, because the ACOG survey was designed exclusively for ob-gyns, the data permit more detailed analysis of the relationships between the liability environment and specific reported changes to or aspects of practice. These results are shown in Table 4.

Panel A investigates effects on physician reports of liability-induced changes.²² A higher state premium increases reports of reducing all care and reducing gynecological surgery due to liability pressures, but does not appear to be specifically related to reports of reducing obstetrics or high-risk obstetrics. Recent changes in state premiums (between 2001 and 2003) do *not* show a significant influence on reports of reducing care (coefficients are generally positive but insignificant). On the other hand, changes in state premiums over the 1990s are strongly associated with reports of reducing all care, obstetrics, and high-risk obstetrics. A 29% rise in insurance premiums (the 75th percentile increase in this period) is associated with a 10 percentage-point increase in the likelihood of reducing all care. Lastly, while the average liability payment shows no significant relationships with these outcomes, a high frequency of paid claims is strongly associated with nearly all reported reductions in care and with reports of the cessation of obstetrics – the elasticity for this last effect is 1.00, with a standard error of 0.34. Overall, there is mixed evidence that greater liability pressure, be it high or rising premiums or

²² The outcomes investigated in Panel A are in answer to the question “In the past two years, that is, *since January 2001*, have you made any of the following changes *because of professional liability insurance affordability and availability issues*.” (Emphasis in original.)

high or frequent claims, may increase reports of reduction of care or narrowing of the scope of practice.

Panel B investigates effects on self-reported physician productivity – numbers of procedures, deliveries, and surgeries; the share of births by cesarean section; and the probability the physician practices no obstetrics.²³ The idea is to see how liability pressure affects physician practice by looking not at what they say about how it affects them, but rather by looking for a relationship between such pressure and what they do. These results are less consistent, and two main observations can be made. First, in most cases the only liability pressure measure that has the expected effect of reducing care provided is the recent percentage increase in insurance premiums. The average premium increase of 30% is associated with a 5-6% reduction in total procedures, and a doubling of premiums would be associated with an 18-21% reduction (elasticity 0.18). The effects are similar when gynecological surgeries are examined separately, but the effect on the number of deliveries is insignificant ($P=0.17$). There is, however, a substantial effect on having stopped obstetrics recently: the elasticity is 0.88, and the average premium increase of 30% would be associated with a 12 percentage-point increase in the likelihood of having stopped obstetrics.

Second, there are no significant effects on the number of deliveries. This is not what one would have expected. There is some indication of effects on the reduction of gynecological surgery (elasticities 0.1 to 0.2) and the cessation of obstetrics (elasticities 0.7 to 0.9). In general, the results in Table 4 reveal incongruity between estimated effects on reports of liability-induced changes and estimated effects on more objective measures of productivity. Moreover, it appears that understanding the effects of liability pressure on production and the scope of practice may

²³ These are in answer to the question “During all of 2002, how many of the following procedures did you perform?”

require more precise modeling of obstetric care decisions, in particular the decision to stop obstetrics altogether. The next section does this.

Two Pathways in the Short-Run and the Long-Run

Separating physicians who continue to practice obstetrics from those who choose to stop obstetrics provides an opportunity to investigate these two pathways directly. Not only is this the appropriate econometric strategy in this situation,²⁴ it also allows a more nuanced investigation of the short-run and long-run dynamics. Essentially, whether to stop obstetrics appears to be a pivotal choice, and the analysis in Table 5 takes that into account.

First consider Panel A, which shows results on self-reported productivity. In response to recent sharp increases in premiums (between 2001 and 2003), physicians *who continue to practice obstetrics* reduce the total number of procedures they perform, including a highly significant effect reducing the number of deliveries and a marginally insignificant effect reducing the number of surgeries. Those *who have stopped obstetrics* substantially reduce the number of surgeries they perform (in addition to having stopped obstetrics altogether). This is the standard story: increasing premiums lead to reductions in care.

However, the long-run situation is markedly different. Long-term premium increases (over the decade between 1992 and 2002) lead to *higher* numbers of deliveries among those who still practice obstetrics and *higher* numbers of surgeries among those who have stopped obstetrics. Rather than a uniform reduction, there is specialization and a shift. Some physicians

²⁴ The distribution of outcomes in the sample, particularly the large number of physicians reporting no deliveries and the fact that the distribution is not merely a truncated normal, presents an econometric challenge. Ordinary least squares is an inappropriate strategy, and a tobit or similar specification is “manifestly misspecified” for these data (Greene 2008, pp. 878-880). Ultimately, splitting the sample is the most appropriate econometric strategy.

specialize more in obstetrics (elasticity 0.13), others specialize more in gynecological surgery (elasticity 0.35). This is a new story.

Before considering effects on income, it is worthwhile to note that the preceding results pertaining to actual outcomes bear little relation to results pertaining to physicians' reports of the effects of liability pressure. The latter results, shown in Panel B, show effects of only long-term premium increases on reported reductions for those who still practice obstetrics, and no effects for those who have stopped obstetrics.

Turning to income, Panel C reveals few significant effects of premium changes on net medical income. The only statistically significant effect on income is that short-term premium increases reduce income for physicians who have stopped obstetrics.²⁵ This would suggest that premium increases are not responsible for lower incomes. It is interesting to see that, for those who still practice obstetrics, long-term increases in premiums increase the share of income from obstetrics, supporting the specialization scenario. Finally, I note that these results for net medical income are not at all in line with the results for physicians' reports of income declines; also shown in Panel C, the latter indicate that increasing liability pressure substantially increases reports of income declines. Again, there appears to be some misattribution of blame onto liability pressures.

²⁵ Alternately, I can calculate the income lost from the predicted reductions in practice (cessation of obstetrics and/or reduction of the number of procedures performed): a 30% increase in malpractice premiums in the 2001-2003 period is associated with an income decline of approximately \$8,500 (3.7%) for physicians who do not stop obstetrics, and a decline of \$10,500 (5.5%) for physicians who stop obstetrics.

DISCUSSION

Malpractice-Induced Specialization

One interpretation consistent with the above results is a “two-pathway” story. Faced with liability pressure, physicians choose a pathway – continue doing obstetrics or stop – and one pathway leads to increasing concentration in obstetrics while the other leads to increasing concentration in gynecological surgery. Those physicians left behind still doing obstetrics do more of it, while those who have stopped doing obstetrics naturally shift into doing more gynecological surgery. Those who continue obstetrics are able to maintain reasonably stable incomes in the face of liability pressure, and over time a larger share of their income comes from obstetrics. Those who stop obstetrics experience income declines in the short-term, but these are largely erased over time by a reallocation of effort towards gynecological surgery.

Thus, the available evidence indicates that malpractice pressures do not simply shrink the specialty and reduce incomes. Rather, malpractice pressures may induce specialization and reallocation, and through this responsive action physicians largely insulate themselves from income declines. Although this contrasts with the standard story, it is supported by the data and makes a good deal of sense from an economic standpoint.

It is important to note that these hypotheses are limited by having derived primarily from analysis of cross-sectional data and by being unable to directly assess the roles of some other supply or demand factors (entry into the specialty, substitution of other providers, or changes in demand). However, these hypotheses do appear to accord well with other recent work, particularly two papers that present similar scenarios in which physicians engage in reallocations of effort which serve to stabilize their incomes in the face of liability pressures. Baicker, Fischer, and Chandra (2007) discuss the possibility of both positive and negative defensive

medicine: physicians can do more (positive) or less (negative) in response to liability pressures, and the net effect on income may be neutral. Pauly, Abbott, and Thompson (2004) find support for the hypothesis that physicians maintain net income not by raising prices but rather by providing more services, whether those are defensive actions or more generic. In this way, while the details of this specialization story are new, the broad outlines have been taking shape in the recent literature.

Reports vs. Data

The previous section outlined a simple scenario of ob-gyn behavior that is supported by the data. However, this scenario is not in line with physician reports that liability pressures are causing a crisis in the specialty. Physicians' twin concerns regarding medical liability issues and the financial viability of their practice are hardly surprising. In the 1990s, obstetrics and gynecology experienced a much larger income decline than other specialties. Insurance premiums rose mildly in the 1990s, and rose drastically after 2000. It is easy to understand why ob-gyns put liability and financial viability at the top of their list of concerns, and why they may have linked the two, blaming liability pressures for their declining incomes. Nevertheless, the above results indicate that much of that blame is not justified. As has been discussed by Rodwin, Chang, and Clausen (2006), simultaneity may have led to conflation of these issues. Chandra, Nundy, and Seabury (2005) discuss a similar misattribution of blame in the liability arena, arguing that the growth in malpractice payments is overstated and does not appear to be the driving factor in the growth in malpractice premiums. Moreover, the physicians' reports in the ACOG survey are not internally consistent, with substantial discrepancies between changes reported in a general context and changes reported in a liability context. Many physicians report that their workload is increasing and broadening while at the same time reporting that their

workload is decreasing and narrowing due to liability pressures. Ultimately, the scenarios put forward by physicians – according to which liability pressures have a substantial negative impact on ob-gyn practice – do not withstand close scrutiny.

This brings us to consider a question posed by Mark Pauly: “If physicians generally can offset the impact of higher malpractice premiums on their net incomes, why do they complain so bitterly?” (Pauly 2007) This paper suggests an answer, similar to that proposed by Danzon (2000): physicians complain because the smooth surface of the data – where little appears to change – belies a turbulent reality – where physicians are making many difficult adjustments. Thus, while physicians are largely successful in “protecting” themselves from incurring direct costs in the form of lost income, they may incur substantial other costs in the form of effort or stress. Physicians may “complain so bitterly” because, having achieved apparent stability with apparent ease, they may be eager to set the story straight and tell the full account of their struggles, even if that might involve embellishing the details.

A Mild “Crisis”?

This is not to say that the liability crisis is all imagined. I do find substantial (if not entirely consistent) evidence that liability pressures affect ob-gyn practice. Different measures of the liability environment yield different results: some measures of liability pressure have significant effects on physicians claiming changes due to liability pressure, some on actual reports of activities, with little overlap. High state premiums, long-term changes in premiums, and greater frequency of payments all increase the likelihood of *reporting* reductions in practice, but are largely unrelated to lower actual productivity. On the other hand, short-term changes in premiums are not significantly related to the likelihood of reporting reductions in practice, but are significantly associated with lower *actual* productivity.

Overall, the results could be seen to paint a picture of a crisis, but a mild one. They provide credence to the claims of physicians that liability pressures cause them to contract their medical practice, while also supporting the conclusions of many analysts that the effects may be smaller than alleged. The reductions in income, deliveries, and procedures this analysis is able to ascribe to greater malpractice pressure may not be as prevalent nor as sizeable as those that physicians themselves ascribe to greater malpractice pressure, but they are qualitatively similar in many respects.

CONCLUSION

The major contribution that this paper makes is to provide insight into what has happened to the practice of obstetrics and gynecology as a result of malpractice pressures. I have shown that in the short run rising premiums lead to practice reductions, but in the long run they may lead to a specialization effect, with some physicians focusing more on obstetrics and others focusing more on gynecological surgery. Moreover, this reallocation of effort appears to go a long way to insulating physicians from income declines that might otherwise arise from liability pressures. It is unclear, however, what other stresses physicians may take on in order to maintain these incomes. In addition, as discussed elsewhere in the literature, the particulars of individual experience may be obscured when looking at larger population trends. Future work will further investigate the dynamics of how physician behavior evolves in response to liability pressures.

Overall, the ultimate effects of liability pressures on the specialty of obstetrics and gynecology appear to be less significant than physicians claim, apparently as a result of adjustments made by the physicians themselves. In trying to reconcile different perceptions, I arrive at the conclusion that the reality is somewhere in the middle – there is a “crisis,” but it is

probably not as severe as is claimed. However, the estimated effects are not necessarily trivial. Although the current analysis does not provide the opportunity to assess precisely how this all adds up, reductions of 5% in surgeries, deliveries, and procedures could present barriers to patient access to care. Small reductions in physician income may not be seen as onerous, given that they fall on a group of high-income individuals, but they could adversely affect the long-run supply of obstetrician-gynecologists, thereby presenting additional barriers to access to care.

While future work will investigate these dynamics more closely, the current paper has endeavored to sketch out a more detailed picture of how the malpractice crisis has affected the practice of obstetrics and gynecology. The hope is that these insights will be useful in discussions regarding malpractice reform and the future of the specialty.

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TABLE 1
Summary of Variables

Characteristic	Mean	Std. Dev.
<i>Demographics</i>		
Age	46	(11)
Share under age 40	36%	
Share Female	40%	
Share White	83%	
<i>Physician Characteristics</i>		
Years in practice	15	(11)
Share board certified	77%	
Share subspecialists	18%	
Share who do no obstetrics	21%	
Annual income (\$ thousands)	207	(149)
Hours per week	63	(22)
Patients per week	91	(44)
Number of births per year	109	(90)
Number of procedures per year	227	(149)
Share of births by cesarean	24%	(11%)
<i>Malpractice Insurance Premiums</i>		
State average insurance premium (\$ thousands)	60	(24)
% change in premium in the state 1992-2002	9%	(28%)
% change in premium in the state 2001-2003	33%	(23%)
<i>Malpractice Payments</i>		
Number of payments (paid claims) in state	42	(34)
Number of payments per 100 ob-gyns in state	2.8	(1.1)
Mean payment in state (\$ thousands)	525	(257)
Median payment in state (\$ thousands)	330	(149)
<i>Number of Observations</i>	1476	

SOURCE: Physician-level data from the ACOG survey. State average insurance premiums are from the MLM. Payments are from the NPDB.

NOTES: Means are weighted using weights provided with the ACOG data to adjust for small differences in response rates across groups. Dollar values are in thousands of 2002 dollars (adjusted for inflation using the Consumer Price Index).

TABLE 2
Major Concerns, Changes to Practice,
and Reasons for Changes

Concern, Change, or Reason	Share reporting
<i>Major concerns</i>	
Liability	78%
Financial viability of practice	48%
Paperwork and administrative burden	27%
Managed care	21%
<i>Changes to Practice</i>	
Workload increased	30%
Limited scope of practice	13%
Group has expanded	12%
Workload decreased	11%
Expanded scope of practice	7%
<i>Reasons for Changes to Practice</i>	
Reimbursement concerns	23%
Increased patient demand	17%
Liability insurance affordability	17%
Personal reasons	15%

SOURCE: Author's calculations from ACOG survey data.

TABLE 3
Effects of Malpractice Pressure on Physician Income

Liability Risk Measure	Probability of Attributing an Income Decline of 10% or more to Liability Pressure	Net Medical Income (\$ thousands)
State Average Premium (\$ thousands)	0.005 ** (0.002)	-0.365 ** (0.127)
Percentage Change in Premium 2001-2003	0.315 * (0.164)	-8.302 (11.952)
Percentage Change in Premium 1992-2002	0.390 ** (0.146)	-14.610 (10.815)
State Average Liability Payment (\$ millions)	0.280 (0.305)	30.686 (21.853)
Payments (Paid Claims) per Ob-Gyn in State	5.950 (3.649)	-531.789 ** (261.266)

NOTES: Analysis on ACOG data as described in the text. Premium data are from the MLM, payment and allegation data from the NPDB. Each number is the coefficient from a single regression. The numbers in the first column, reflecting results from probit specifications, show the change in the probability of attributing an income decline of 10% or more to liability pressure that results from a 1-unit change in the liability variable. These marginal effects are evaluated at the sample mean. The numbers in the second column, reflecting results from ordinary least squares, show the change in net medical income for a 1-unit change in the liability variable. Premiums and income are in thousands of 2002 dollars; state average liability payment is in millions of 2002 dollars. Significance is indicated by * for P< 0.10 and ** for P< 0.05.

TABLE 4
Effects of Malpractice Pressure on Scope of Practice

Panel A. Effects on Probability of Attributing Certain Practice Changes to Liability Pressure

Liability Risk Measure	Reduce All Care	Reduce Obstetrics	Reduce Gyn. Surg	Reduce High-Risk OB	Stopped Obstetrics
State Average Premium (\$ thousands)	0.004 ** (0.002)	0.002 (0.002)	0.011 ** (0.002)	0.001 (0.002)	0.004 (0.003)
Percentage Change in Premium 2001-2003	0.171 (0.163)	0.106 (0.166)	0.046 (0.219)	0.172 (0.177)	-0.058 (0.262)
Percentage Change in Premium 1992-2002	0.300 ** (0.147)	0.287 * (0.149)	0.283 (0.199)	0.386 ** (0.161)	0.262 (0.236)
State Average Liability Payment (\$ millions)	-0.314 (0.306)	-0.427 (0.310)	0.095 (0.416)	-0.364 (0.333)	-0.442 (0.487)
Payments (Paid Claims) per Ob-Gyn in State	9.283 ** (3.641)	8.760 ** (3.696)	14.635 ** (4.825)	3.534 (3.945)	17.104 ** (5.671)

Panel B. Effects on Number of Procedures and Scope of Practice

Liability Risk Measure	All Procedures	Deliveries	Gyn. Surgeries	Share Cesarean	No Obstetrics
State Average Premium (\$ thousands)	-0.159 (0.154)	-0.021 (0.097)	-0.167 ** (0.094)	0.000 0.000	0.002 (0.003)
Percentage Change in Premium 2001-2003	-41.547 ** (14.399)	-12.433 (9.108)	-18.096 ** (8.820)	-0.022 (0.018)	0.427 * (0.244)
Percentage Change in Premium 1992-2002	10.944 (12.929)	8.606 (8.112)	2.376 (7.813)	-0.014 (0.016)	0.309 (0.231)
State Average Liability Payment (\$ millions)	-0.034 (0.026)	0.009 (0.017)	-0.031 * (0.016)	0.000 0.000	-0.677 (0.479)
Payments (Paid Claims) per Ob-Gyn in State	118.199 (316.821)	190.456 (200.739)	-25.388 (193.820)	0.260 (0.380)	13.247 ** (5.601)

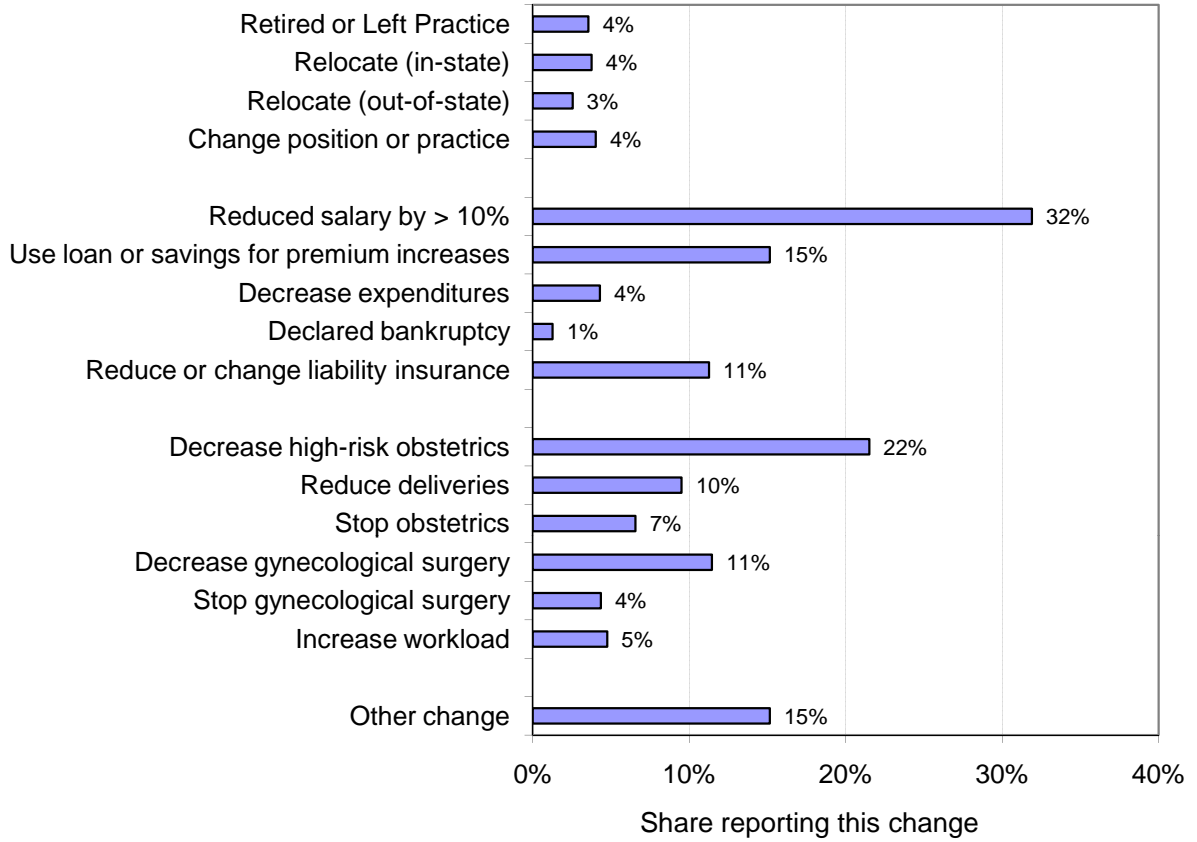
NOTES: Analysis on ACOG data as described in the text. Premium data are from the MLM, payment and allegation data from the NPDB. Each number is the coefficient from a single regression. The numbers in Panel A, reflecting results from probit specifications, show the change in the probability of reporting having made the indicated practice change (in the past two years), and attributing that change to liability, that results from a 1-unit change in the liability variable. These marginal effects are evaluated at the sample mean. The numbers in the first four columns of Panel B, reflecting results from ordinary least squares, show the change in the value of the outcome shown (total number of procedures, total number of deliveries, total number of gynecological surgeries, or share of deliveries by cesarean section) that results from a 1-unit change in the liability variable. The final column of Panel B shows marginal effects from a probit specification for not practicing obstetrics as of 2003. Premiums are in thousands of 2002 dollars; state average liability payment is in millions of 2002 dollars. Significance is indicated by * for P< 0.10 and ** for P< 0.05.

TABLE 5
Comparison of Changes by Whether Physicians Have Stopped Practicing Obstetrics

	Those Who Still Practice Obstetrics			Those Who Have Stopped Obstetrics		
Panel A						
Productivity	Total Procedures	Deliveries	Surgeries	Total Procedures	Deliveries	Surgeries
Δ Premium 2001-2003	-44.84 ** (15.17)	-21.57 ** (9.27)	-12.29 (8.43)	-54.93 (35.08)	---	-52.73 * (28.74)
Δ Premium 1992-2002	11.65 (13.85)	17.72 ** (8.42)	-6.00 (7.51)	50.80 * (28.45)	---	39.28 * (23.39)
Panel B						
Reported Reductions	Report Reduce All Care	Report Reduce Obstetrics	Report Reduce Gyn. Surg	Report Reduce All Care	Report Reduce Obstetrics	Report Reduce Gyn. Surg
Δ Premium 2001-2003	0.11 (0.18)	0.06 (0.18)	0.03 (0.26)	0.38 (0.42)	---	0.16 (0.47)
Δ Premium 1992-2002	0.32 ** (0.16)	0.28 ** (0.16)	0.54 ** (0.24)	0.05 (0.35)	---	-0.33 (0.40)
Panel C						
Income	Income	Share of Income from OB	Report Income Decline	Income	Share of Income from OB	Report Income Decline
Δ Premium 2001-2003	-1.17 (12.49)	-1.33 (2.62)	0.36 ** (0.18)	-67.85 ** (34.08)	---	0.26 (0.42)
Δ Premium 1992-2002	-12.99 (11.45)	7.98 ** (2.35)	0.29 * (0.16)	-1.30 (28.89)	---	0.60 * (0.36)

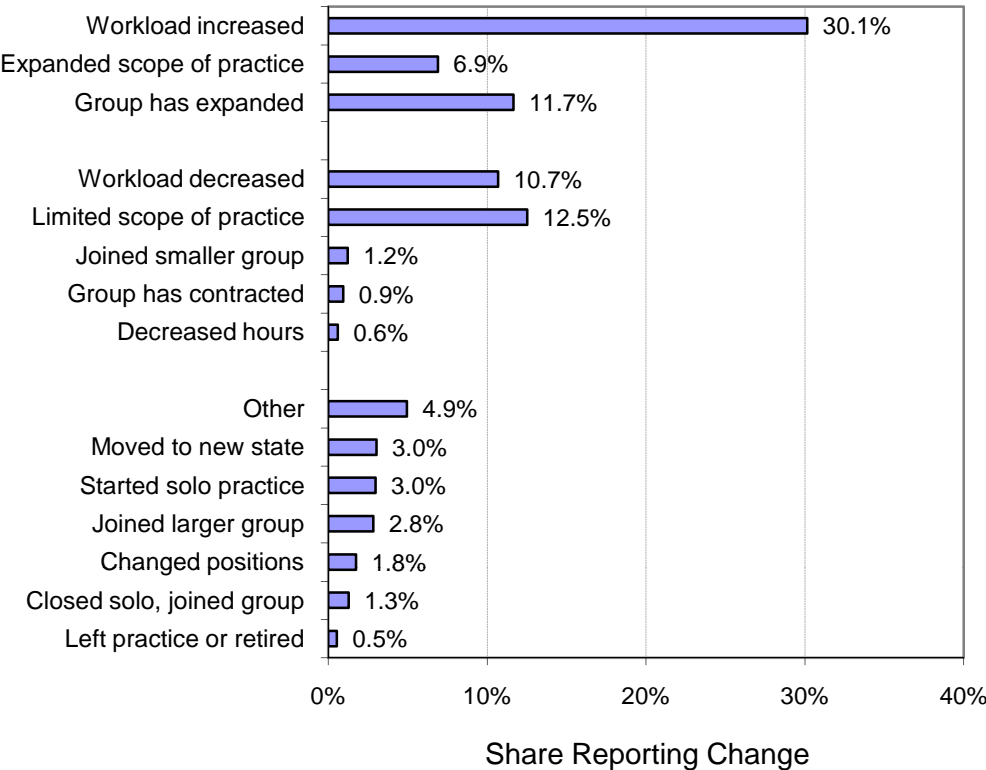
NOTES: Analysis on ACOG data as described in the text and in notes to Table 4. The first three columns show results from analysis on the sample of 879 physicians who report still practicing obstetrics as of 2003. The next three columns show results from analysis on the sample of 225 physicians who report having stopped obstetrics by 2003. Significance is indicated by * for P< 0.10 and ** for P< 0.05.

FIGURE 1
Changes Attributed to Liability Pressures



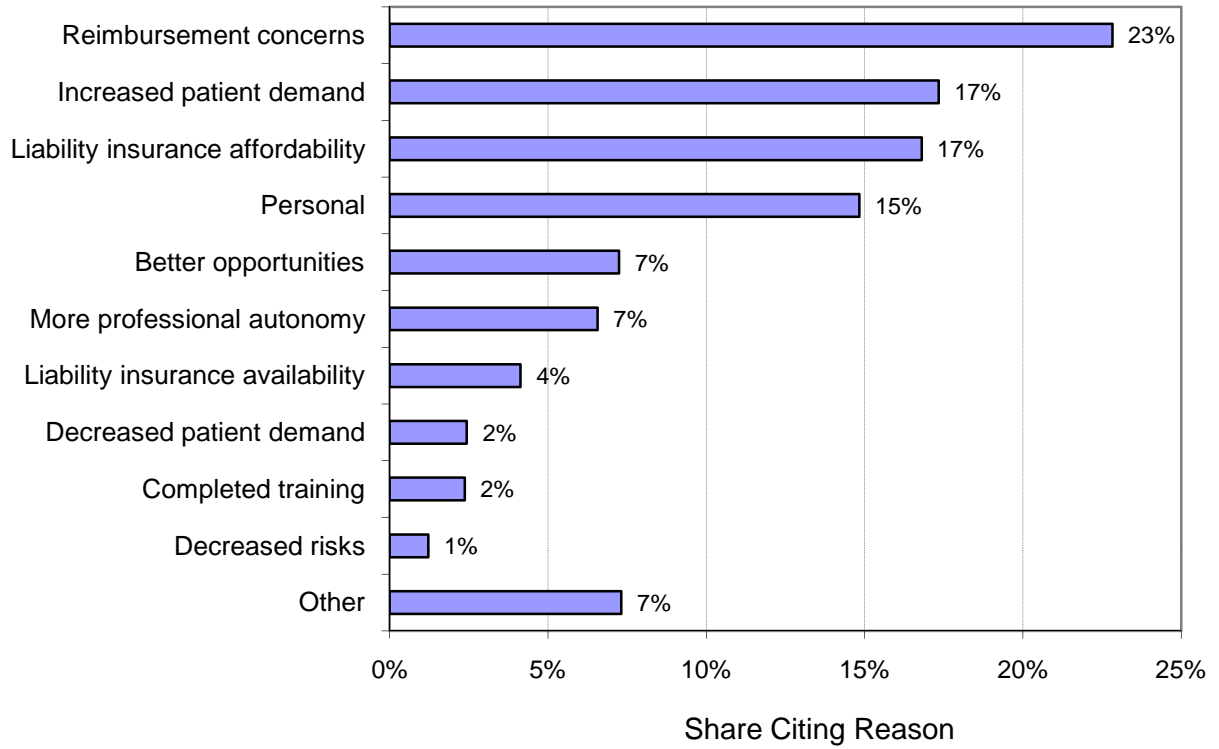
SOURCE: Author's calculations from ACOG data.

Appendix FIGURE 1
Changes to Ob-Gyn Practice



SOURCE: Author's calculations from ACOG data.

Appendix FIGURE 2 Reasons for Changes to Ob-Gyn Practice



SOURCE: Author's calculations from ACOG data.