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The Sky Is Falling:

The Massachusetts Medical Society Reports on the "Physician Shortage"

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Summary of Findings

Massachusetts physicians face many serious problems. Unhappily, the July 1988 Massachusetts Medical Society report to the Legislature on *Practicing Medicine in Massachusetts* focuses on symptoms of these problems rather than on their causes. The report's methods and substance are flawed. Because of these shortcomings, the report distracts attention from important underlying matters. Physicians' frustration will increase unless their real problems are accurately identified and attacked.

The aim of this study is to analyze and then to broaden the work begun in the Medical Society's report. Hoping to raise new questions for more careful investigation and debate, this study makes nine main points:

1. The physician exodus. The Medical Society's report suggests that Massachusetts is becoming what is called elsewhere a "Beirut of medicine." Yet there is no evidence that this is the case. The report fails to document widespread physician dissatisfaction in Massachusetts. By the latest available AMA data, and by all measures of physician supply, Massachusetts has the highest physician-to-population ratio in the U.S.A. Overall, Massachusetts has 38 percent more patient care physicians per capita than the nation as a whole. Even in the specialties where worries about a physician exodus have been voiced, Massachusetts physician-to-population ratios range between 13 and 48 percent above the national average.

2. Hospital recruiting problems. The report highlights a claim that 90 percent of hospitals are having trouble recruiting physicians. This exaggerates the extent of any problem. An alternative calculation gives a 9.4 percent problem ratio. Recruiting problems are not defined in the report. There are no comparisons with other states. There is no statement of changes over time.

3. Survey of specialists. This survey reported by the Medical Society suffered a low 38 percent response rate, suggesting the serious flaw of a biased sample. The survey tries to estimate the number of specialists who have recently made a significant change in their practices, and why they have done so. Although the low response rate precludes drawing reliable conclusions, almost 13 percent of respondents said they had limited surgery. There is no assessment of whether this is good or bad. It might well be good, especially if it tends to concentrate surgery in the right hands or if it helps reduce what appear to be inappropriately high rates of surgery. (Massachusetts has the third-highest rate of surgery in the nation.) Many physicians blame malpractice costs, the ban on balance billing, and state regulation generally for the changes. There is no analysis of the possible role of retroactive or deferred malpractice premiums. There is no assessment of ways in which state regulations might conceivably lead physicians to change their practices. Again, there is no comparison with other states or a statement of changes over time in Massachusetts.

4. Survey of all physicians. The Medical Society selectively reports its own findings on physician views of the "main problem facing medicine today." It fails to note that more physicians were concerned about the public's health care system (48 percent of those polled were concerned most with access, cost, and quality problems) than were concerned about physicians' own problems (35 percent were concerned most with government regulation, liability, or third party issues). Again, there are no comparisons with physicians' responses in other states.

5. Visible vs. underlying problems. The Medical Society's report counts physicians' anecdotal views of what is bothering them. But both physicians and the Society may be looking for problems in the wrong places. Both may be too quick to blame government regula-

tion. It is possible that traditional forces in the world of Massachusetts health care, new forces of competition, and other private sector influences are far more responsible for whatever distress physicians in the Commonwealth are experiencing.

6. Incomes. The Society offers no evidence on whether physicians' incomes are lower in Massachusetts than in other states. Yet the best available data do suggest that incomes here are indeed appreciably lower-- and have been for at least 20 years. This is partly attributable to lower spending on physicians but mainly to the high physician-to-population ratio. But what does this mean? Apparently, so many physicians are working in Massachusetts because they like it here, despite the lower incomes. But why is spending on physicians so low in Massachusetts? In part, apparently, because we spend so much money on hospital care that relatively little is left over for physicians-- even in the state that probably has the nation's highest per capita health spending. High hospital spending and power may have forced cost control pressures to fall relatively heavily on physicians. We need to consider what incomes are fair to different physicians and affordable for the rest of us. Further, since relatively low incomes are not new for Massachusetts physicians, what has changed that makes some or many physicians so upset recently?

7. Looming threats to physicians. The Medical Society's report repeatedly discusses problems of malpractice insurance, balance billing bans, and government regulation. Yet these are mainly responses-- attempts to deal with other, underlying problems. (Malpractice is the exception. The malpractice system needs both immediate relief and thorough reform.) The Society ignores those underlying problems, especially the high cost of health care. Similarly, the Society ignores the pressures on many physicians' incomes from health maintenance organizations, relative value scales, and the growing supply of physicians itself. The Society tries to blame visible targets, especially state government. Government may be a convenient lightning rod for physicians' complaints. But railing against the state ignores the Medical Society's involvement in the law suits that resulted in both the state's ban on balance billing and the high deferred malpractice premiums that face physicians today. Railing against regulation distracts attention from real issues that divide physicians, and from problems that require sustained analysis, engagement, and negotiation. The real threats to Massachusetts physicians remain undisturbed in the underbrush.

8. Special attention to specialists. The Society's report highlights problems of specialists and tends to ignore or underplay the arguably more serious problems of primary care physicians-- internists, pediatricians, family practitioners, and general practitioners. Primary care physicians are vital to safeguarding access to affordable health care for all citizens of the Commonwealth, yet their interests do not seem important to the Society.

9. The public interest. The Medical Society focuses on reporting physicians' perceived problems. It does not analyze whether those problems are real or, if real, whether they affect the health of the citizens of the Commonwealth. The Society's failure to consider the public interest-- or its apparent assumption that what is good for doctors is good for us all-- is a serious shortcoming. It will be increasingly important in coming years to balance physicians', hospitals', and other caregivers' needs with the public's needs for universally accessible, affordable, and effective care. The Society should work to advance physicians' long-term interests in ways that help to build an effective health care system we can afford for all citizens of the Commonwealth. Physicians need to escape from their own rhetoric. Physicians live in an increasingly complex and costly health care world. Ameliorating their problems requires more than throwing money at malpractice premiums or liberating physicians to bill whatever they like. It requires patient engagement and sustained negotiation.

Introduction

In July of 1988, the Massachusetts Medical Society prepared a report to the legislature that sought to document the extent of unrest or unhappiness among the Commonwealth's physicians.[1] Responding to complaints that previous claims of physician unhappiness were only anecdotal, the Society tried to quantify measures of dissatisfaction.

The Society's report has succeeded largely in quantifying the anecdotes. Although the report highlights many physician opinions agreeing with established Medical Society positions, many of the report's findings actually tend to undermine those positions.

The report displays a pro-specialist bias. It appears to exaggerate the extent of any physician shortage. It complains about symptoms of problems rather than analyzing their possible underlying causes. It points fingers selectively, without offering durable, thoughtful, and affordable solutions. Perhaps most unfortunately, in highlighting some data, the report ignores opportunities for addressing physicians' problems while simultaneously advancing public interests in universal access, cost control, and more effective care.

This study first analyzes and then extends the work begun by the Society. It begins by examining the Society's report's main points. It finds several valid analyses, but also many misplaced emphases, gaps, flaws, and questions. This study continues by looking at some possible explanations of physician dissatisfaction that go beyond the narrow scope of the Society's report.

This study's data and analyses are far from definitive. Much more work is called for. But it is hoped that this effort will help suggest useful approaches to addressing problems troubling physicians and patients in Massachusetts.

The Massachusetts Medical Society's Report

The Society's report relied on three main data sources: a survey of hospitals that were trying to recruit physicians, a survey of high-risk specialists, and an opinion poll of a statewide probability sample of physicians.

Survey of Hospitals

The survey of hospitals had a response rate of 91 of 119 hospitals (77 percent). Of the 91, 75 were actively recruiting particular types of physicians during February-April 1988. Of the 75, 66 were experiencing problems recruiting physicians in one or more specialties. The term "recruiting problem" is not defined.

The Society's report asserts that 90 percent of hospitals actively recruiting physicians were experiencing problems. This is misleading. The Society's report fails to include hospitals that had no recruiting problem for the simple reason that they were satisfied and did not have to recruit. Therefore, only 72.5 percent (66 of 91) of hospitals surveyed were experiencing recruiting problems. Even this is an exaggeration. First, it is possible that hospitals experiencing recruiting problems were more likely to respond to the survey, since they were more concerned about the problem.

Second, and more important, to say that 66 hospitals are experiencing recruiting problems is falsely alarming. Each of these is a hospital that reports *any* problem of some sort, in any specialty. How serious are these problems? How numerous are they as a proportion of total positions, both filled and unfilled? How prolonged is the recruiting effort? Do they expect eventually to resolve the problem? What recruiting problems are experienced by hospitals in other industrial states? Has the size of the recruiting problem risen or declined over the past few years?

Third, the report asks about recruiting problems among 28 categories of physicians. If all 91 hospitals had a recruiting problem in each category, we would expect 2,548

problems-- 28 X 91. But we find only 240 instances of problems, for an average of 2.6 specialty recruiting problems per hospital. And 240 instances divided by 2,548 possible problems gives us only a 9.4 percent problem ratio-- far below the 90 percent level cited in the Society report. Which of these measures is more valid? It is hard to say without further work.

One useful approach would be to measure a) the total number of physicians sought by hospitals (the denominator, including both filled and unfilled positions) and b) the number of positions remaining unfilled after a reasonable number of months of effort (the true numerator). The ratio between this numerator and denominator (b/a) would be one fair measure of the size of hospitals' problems in recruiting physicians.

The hospital survey continues by examining the specialties in which the 66 hospitals were experiencing problems. Of the 66, 29 were having trouble recruiting in family practice, 28 in obstetrics/gynecology (OB/GYN), 26 in orthopedic surgery, 23 in internal medicine, 15 in emergency medicine, 14 in both general practice and in neurological surgery and in pediatrics, 12 in general surgery, 11 in anesthesiology, and so on.

It is striking that so many of the recruiting problems are found in the primary care specialties. There were 80 instances of problems in the four primary care specialties (family practice, internal medicine, general practice, and pediatrics), for an average of 20 per specialty. By contrast, there were only 159 instances of recruiting problems in the remaining 24 non-primary care specialties, for an average of 6.6 per specialty. This finding fails to support the overwhelming attention that the Mass. Medical Society report pays to the reported problems of non-primary care physicians.

Anecdotes about recruiting problems in certain parts of the state, such as Cape Cod, do not add up to a compelling story in the state with the nation's highest physician/population ratio. If there is an overall, year-round shortage of physicians on the Cape, this signals unwillingness of physicians to move there. The Medical Society talks of difficulties in recruiting physicians from out-of-state, but the Cape is apparently

unable to attract physicians from elsewhere in Massachusetts as well. Perhaps the year-round practice and living conditions are not satisfactory. Perhaps a disproportionate share of citizens of the area suffer low incomes or lack health insurance, reducing purchasing power for physicians' services. Perhaps one or more of the area's hospitals are unattractive to physicians, for a variety of reasons. Perhaps year-round physicians are swamped by the heavy burdens of work during the summer. (If so, a special solution is called for, since many of the physicians needed to cope with high summer volumes would be idle during the rest of the year.)

Survey of Specialists

In a second effort, the Medical Society surveyed 4,439 physicians "practicing in selected high risk specialties." Only 1,697 of these responded-- a 38.2 percent response rate. This is a serious flaw. It is too low a response rate to assure a representative (unbiased) sample, particularly given the failure of the Medical Society report to compare the characteristics of survey respondents and non-respondents.

What type of bias might be introduced by the low response rate? Possibly, physicians who are more angry about malpractice, regulation, and other problems recently highlighted by specialty societies would be likelier to respond; the survey could give them a chance to vent their anger. Alternatively, very angry physicians might be too disgusted or alienated even to wish to vent their anger. On balance, we suspect the first is more common. It would be helpful in this regard to learn the contents of the Medical Society's cover letter mailed with the survey. Did this letter inadvertently tend to encourage specialist physicians to use the survey to register their grievances?

Of the 1,697 respondents, 539 (31.8 percent) reported that they had "recently made some type of significant change in the way they conduct their medical practices," mostly within the past three years.

Does this survey point to serious problems? It is hard to say. How many of the

changes were made more than three years ago? Were older physicians likelier to change their practices? Has there been an increase in the age-specific rate of change over time?

Volume of surgery. Fully 216 (12.7 percent of respondents and 40.0 percent of those reporting changes) said they had limited or stopped performing surgery. Does this survey result reflect an underlying reduction in the number of surgeons? If so, is it good or bad? (We assume for now that the total volume of surgery has been appropriate.) This depends in part on whether other surgeons picked up whatever slack might have been generated by these surgeons' decisions to constrain their practices. If some surgeons curtailed high-risk and low-volume work, in part because their total fees in these areas could not pay the commensurate malpractice premiums, this might be a social gain, assuming again that an adequate number of surgeons remained to perform these procedures. Physicians who perform only low volumes of surgery could well be less proficient.

Hughes et al.[2] found this to be the case but Kelly and Hellinger[3] found no relation between physician volume and surgical mortality.[4] Both groups of authors found that greater concentrations of surgery in fewer hospitals tended to lower mortality rates. Therefore, if surgeons' decisions to constrain their practices meant concentrating surgery in fewer hospitals, a quality improvement is likely to have resulted.

It is worth noting that Massachusetts surgeons overall averaged fewer operations per year than their counterparts across the nation. In hospital fiscal year 1986 (1 October 1985 - 30 September 1986), the average Massachusetts surgeon performed 164.0 operations, 5.3 percent below the national average of 173.1 operations per surgeon.[5] Thus, if higher volume per surgeon is associated with improved proficiency, other things equal, some reduction in the number of Massachusetts surgeons would probably be desirable.

The Medical Society report and associated press releases point to the risk of losing needed surgeons in a few specialties, including neurosurgery, plastic and reconstructive surgery, and orthopedic surgery. We lack data on operations per surgeon in these specific areas, and therefore cannot speak to the question of the influences of possible declines in

the number of surgeons on operations per surgeon and on quality of surgery.

But what if the total volume of surgery has fallen as a result of surgeons' decisions to constrain their practices? Is this good or bad? The Medical Society report implicitly assumes it is bad.

Given traditionally high surgery rates in Massachusetts, a drop in rates might be good. In 1986, Massachusetts' rate of surgery per capita was 21.0 percent above the national average, third-highest behind West Virginia and Pennsylvania. Work by Wennberg et al. has raised important questions about the appropriateness of much of the large volume of surgery in the Boston area.[6] It would be important here to begin by looking at appropriate-- *needed*-- rates of surgery in different specialties, and for different specific procedures, and then to ask whether Massachusetts has enough physicians to provide access to this needed level of care. By focusing on physician complaints, the Medical Society's approach neglects the question of Massachusetts citizens' real needs for physicians' services.

When asked why they changed practices, 329 specialists (19.4 percent of respondents) cited cost of liability insurance, 192 (11.3 percent) blamed the ban on balance billing, and 132 (7.8 percent) pointed to state regulation and legislation generally. The Medical Society report dwells at length on these sorts of problems. But how serious have they really been for different groups of Massachusetts physicians?

Malpractice insurance. It is hard to draw solid conclusions from the Society's report. Specialists in many states have problems associated with malpractice insurance. Are these problems more serious in Massachusetts? Without inter-state comparative data, how can we know? How much of Massachusetts physicians' malpractice problems stems from deferred billing of past years' malpractice premium increases (making current premiums unnaturally high)? Do the physicians who are complaining about malpractice premiums tend to be those who failed earlier to set aside money to pay these deferred premium increases? What do we make of the finding in the Society's own survey that

"physicians aged 26 to 35 are substantially more likely than those aged 56 to 65 to report that the liability situation has worsened"? What evidence would be available to such young physicians to support this view? With little of their own experience, their views may be shaped largely by the Medical Society's own reports on the problem. Older physicians, with more experience, might not be alarmed by rising premiums. They may expect rates to level off, as they have in the past (perhaps when insurors' investment incomes grow). Or, incomes of older and established physicians may be large enough to bear the premium increases.

Most of the problems of the medical malpractice system are national in scope. It seems to be failing simultaneously in both a) efficiently and fairly compensating people who suffer harm; and b) identifying, helping, or weeding out the small minority of impaired or incompetent physicians. Comprehensive reform is called for. When premiums become intolerable enough, this will be pursued effectively. It will be essential to provide fair compensation for harm, whether avoidable or not, and to improve standards of medical practice. Patients' and society's expectations from medicine may have to be rethought. And patient-physician trust will have to be rebuilt through caring and sustained relationships. The harm to trust wrought by recent movements to competition in health care must be remedied.

Malpractice premiums are high in many states. Is anything unusual about medical malpractice insurance in Massachusetts? It appears that normal 1987-1988 Massachusetts malpractice premium rates were not out of line from other nearby states. But the abnormal addition of retroactive and deferred premiums billed during that period raised Massachusetts rates considerably.[7] Several years ago, Massachusetts physicians unsuccessfully contested malpractice premium increases. Rates were frozen for a time. After higher rates were allowed, physicians were forced to pay both the retroactive and current increases at the same time. Physicians were allowed to pay the retroactive sums over five years. Once these sums are paid off, physicians' annual malpractice premiums will fall

appreciably to more natural levels. Until then, it will be worthwhile exploring whether physicians deserve relief from high rates of interest charged on retroactive payments. Annual payments might be lowered by spreading them out over several more years. The process that yielded such extremely high retroactive billings must be carefully examined.

Table 1 presents malpractice premium data for three specialties for six northeastern states. The 1987-1988 Massachusetts regular premiums for general practitioners are below those of all comparison states except Maine; those for obstetricians/gynecologists and neurosurgeons are above those of New Jersey and Rhode Island. When Massachusetts regular and deferred premiums are considered, the Massachusetts rate exceeds that of almost all comparison states. Once the deferred premiums are paid off, most Massachusetts medical malpractice rates can be expected to bear a reasonable relation to those of other states.

A report prepared for the American College of Obstetrics and Gynecology asserts that threats of malpractice litigation and high insurance costs have led many OB/GYNs to stop delivering babies. This is a national problem: about one-eighth of OB/GYNs in the United States are reported to have stopped delivering babies. Also, more OB/GYNs are avoiding women with high-risk pregnancies than in earlier years. The Medical Society's report offers no data to suggest that Massachusetts OB/GYNs are more likely than those in other states to stop delivering babies or to avoid attending women with high-risk pregnancies.[8]

It is likely that malpractice premiums are particular problems in Massachusetts, because of high payments for retroactive premium costs and relatively low net physician incomes (discussed shortly). Massachusetts physicians therefore deserve protection from the immediate problem of high malpractice costs while a durable solution to the systemic problem is sought. The alternative is possibly to drive from practice some of the state's most dedicated physicians. Possibly, the concentrated crisis associated with retroactive payments will spur reform soon. We should avoid throwing money at this problem. We

should fix it.

Regulation and legislation. What can be said about reported problems with state regulation and legislation generally? What does it mean that 132 physicians out of 1,697 respondents (7.8 percent) found problems with state regulation and legislation? First, this small proportion hardly supports claims by some physicians that Massachusetts has become "the Beirut of medicine."[9] Second, what are the proportions of physicians elsewhere who have complaints about state government regulation or legislation? Would it be surprising if this figure reached 7.8 percent in other states? Third, what are the specific state government regulations or legislation that conceivably caused physicians to change their practices? Is there evidence that Massachusetts is a more active regulator in these areas than other industrial states?

The complaint about balance billing might be a more substantial matter. But how did the ban cause physicians to change their financial practices? Physicians have asserted, on one hand, that they did not want to balance bill often, but wanted to have the right to do so. They therefore claimed that neither the decades-old Blue Shield ban nor the recent state legislative ban on balance billing were necessary to protect patients' finances. On the other hand, if the bans have led physicians to change or cut back on their clinical practices, perhaps it is because they are holding down physician fees and incomes-- while protecting patients financially.

Or do some physicians simply think that the bans on balance billing have this effect? It is not possible to say, because the Medical Society report simply skirts the entire issue of physician fees and incomes. It reports none of the data needed to decide whether physicians' complaints are justified.

The Society's report's work on balance billing again pays relatively little attention to primary care physicians. Because the existing fee structure tends to discriminate against primary care physicians, their incomes may have been more constrained by the balance billing ban than the incomes of more specialized physicians whose causes are

championed by the Society. Primary care physicians typically face lower fees, lower incomes, and higher administrative costs than more specialized physicians. The Society has nothing to say about primary care physicians' special problems and needs.

The real issues here concerns the fees insurors should pay for different services and to different physicians, and the incomes physicians should enjoy. Balance billing merely concerns physicians' right to bill above the authorized fee schedules. Fee schedules themselves affect physicians' incomes far more than does balance billing. Balance billing raises patients' out-of-pocket payments; fee schedules affect insurance premiums and those who pay them. (Americans-- and Canadians and Western Europeans-- usually want comprehensive protection against health care costs. Therefore, physicians cannot win the political battle over balance billing. Their main allies are free market ideologues who say patients should feel more of the financial cost of their illness, so they can become more price-conscious consumers-- and fight as front-line soldiers in the war on high health costs. On whom would they war? Free markets in health care institutionalize mistrust and undermine therapeutic relations between patients and caregivers.)

The Medical Society report says nothing straightforward about fees and incomes. These subjects only lurk in the background. Are they too sensitive to be discussed openly? Are they too divisive, with the potential to turn physicians against one another? Are they too explosive politically, because they call attention to physicians' incomes?

In this connection, the report's (and physicians') emphasis on grievances with state government regulation and legislation is hard to understand. Is the state a convenient *outside* party, a scapegoat, to blame simple-mindedly for all the things physicians dislike? This sort of blame allows physicians to get angry, but it does not require any sustained engagement or negotiations. It unifies physicians. It avoids inter-physician debates about how to divide up the medical income pie. Also, Massachusetts state government is heavily identified with the Democratic party and most physicians are Republicans. Are physicians seizing an opportunity to make a political statement?

Finally, is it possible that physicians are more interested in ventilating and publicizing problems than in solving them? In publicizing purported problems in Massachusetts medicine, are physicians trying to discourage other physicians from coming to the state, in order to lower the supply of physicians here and thereby raise incomes? This sounds Machiavellian, but it appears to fit the facts. Why else, partisan politics and unendurable frustration aside, would Massachusetts physicians (who complain of a shortage of doctors in the Commonwealth) work so hard to broadcast their problems throughout the nation? This does nothing to attract more physicians to the state.

The Physician Opinion Poll

The Massachusetts Medical Society commissioned a telephone survey of 309 physicians during the first half of February 1988. The number of non-respondents is not given. Although the firm that performed this survey also apparently performs a parallel national survey of physicians for the American Medical Association, the Society's report fails to compare U.S.A. and Massachusetts results. This is surprising, given the Society's frequent contention that conditions of Massachusetts physicians are inferior to those of physicians in other states.

The report focuses on responses to one open-ended question concerning the "main problem facing medicine today." The report categorizes the responses, and finds that 31 percent of physicians point to high costs of health care, 16 percent to government regulation, 10 percent to professional liability problems, 9 percent to difficulties associated with third party payors, 9 percent to access problems, and 8 percent to quality problems.

The Medical Society's press release accompanying its report fails to mention the problem of the high cost of health care.[10]

The high ranking accorded to health care costs does not support the Society's view that government regulation is undermining the practice of medicine in the Commonwealth. More physicians are worried about the *public's health care system* (48 percent con-

cerned most with cost, access, or quality) than about physicians' own problems (35 percent concerned most with government regulation, liability, or third party issues). This should be construed as a very public-spirited response from physicians. They declare themselves more concerned with the health of health services than with their own narrow financial or professional problems.

These physician responses should inspire the Society to identify ways of attacking problems of cost, access, and quality while also advancing its members' interests. If physicians are seen to be pursuing mainly selfish interests, they will continue to inspire mistrust and provoke opposition.

Other Explanations for Physician Dissatisfaction

The Medical Society's report offers no evidence on whether Massachusetts physicians are worse off than their colleagues in other states, or even on whether they think they are worse off.

The report does assert that the majority of Massachusetts hospitals are now experiencing some difficulty in recruiting one or more physicians, that fairly small minorities of physicians responding to two surveys identify problems with malpractice insurance, with government regulation and legislation generally, and with the ban on balance billing specifically.

One impression that emerges is that certain groups of specialist physicians think themselves more aggrieved than other groups. OB/GYNs, neurosurgeons, orthopedic surgeons, and others seem to feel squeezed between rising malpractice and other costs and constrained incomes. We have little reliable evidence from the Medical Society report on how many feel this way, or on how justified such feelings are. We have no data from the report on inter-state or intra-state comparative gross and net incomes, fees, malpractice and other practice costs, or other indicators of the merits of specialist physician grievances.

The Medical Society report's concern for problems of physicians in certain specialties-- neurosurgery, obstetrics/gynecology, orthopedic surgery, plastic surgery, and anesthesiology-- are not supported the best available comparative data from the American Medical Association. Massachusetts has substantially more total physicians per capita and more total patient care physicians per capita in each of these specialties than does the nation as a whole. Table 2 presents data on the relation between the Massachusetts physician-to-population ratio and the United States physician-to-population ratio, by specialty and type of practice (patient care, office based, resident, teaching, research, and

the like). In Table 2, a ratio larger than 1.0 indicates that Massachusetts has more physicians per capita in that category than does the United States as a whole. For example, the upper-left-hand cell of the table, for total physicians, has a value of 1.439. This indicates that Massachusetts had 43.9 percent more physicians per capita than the United States as a whole.

On 31 December 1986, Massachusetts had 22.4 percent more patient care neurosurgeons per capita than the nation as a whole, 13.0 percent more obstetricians/gynecologists, 39.1 percent more orthopedic surgeons, 23.4 percent more plastic surgeons, and 48.0 percent more anesthesiologists.[11]

As mentioned during the earlier discussion of surgery rates, it is difficult to learn how many of different types of physicians are needed. Some useful data are available for OB/GYNs. The number of live births per OB/GYN in Massachusetts dropped steadily from 173 in 1970 to 96 in 1983, a decline of 44.5 percent. In both years, Massachusetts ranked second-lowest, behind Connecticut, among the New England states in live births per OB/GYN. While several factors cloud comparisons (for example, different reliance on OB/GYNs to deliver babies in different states and at different times), it does seem that care from OB/GYNs has become more available in Massachusetts during the period examined.[12]

More recently, it does appear that some obstetricians/gynecologists are ceasing to deliver babies or to take on new patients. Some women are having trouble finding an obstetrician or scheduling prenatal visits. While the extent of this problem is not known, it may be large and it may be growing. The malpractice premium squeeze on OB/GYNs, in combination with other factors, may be involved. If so, they must be addressed. (Given the impressive recent success of the state's Medicaid and Healthy Start programs in raising obstetricians' fees to fair levels and in virtually universalizing financial coverage for pregnant women, it would be unfortunate if malpractice or other problems were to lower women's access to needed care.)

Incomes

It is likely that physicians in Massachusetts typically earn less money than their colleagues in many or most other states, and that many or most are feeling increasingly squeezed financially between constrained incomes and rising costs. They appear increasingly to blame public policies for their problems. But such government regulations as the ban on balance billing may be more a lightening rod for vocal complaints from specialist physicians than a genuine source of financial distress. Government regulations, insurors' policies, and other things that many physicians dislike are probably attempts to cope with underlying problems-- and not always successfully. They should not be confused with the problems themselves.

There are indications that several sets of circumstances have combined to lower physician incomes in Massachusetts below the national average. While some physician groups have complained about the effects of government regulation on physician income, the real threats seem to originate in the sheer numbers of physicians, in the shape of medical practice in the Commonwealth, in the growth of HMO's, and in other forces far from government control. Two types of evidence support this view.

First, according to the latest data from the American Medical Association, Massachusetts has more physicians per capita than any other state.[13] As indicated in Table 3, Massachusetts' 1986 physician/population ratio was, by different measures, between 38.0 and 46.0 percent above the national average.

Both overall and in almost every specialty, Massachusetts has more physicians per capita than the national average-- after residents, hospital staff, administrators, medical school faculty, researchers, and similar types of physicians are excluded. The data are clear (Table 2).

With so many physicians, if any competitive forces are at work in lowering prices (fees), it is not surprising that physician incomes are lower in Massachusetts. Alterna-

tively, even if there is not much price competition, and fees have remained high, average *incomes* may be held down simply because there are not enough patients for so many physicians.

These forces working to lower incomes are probably strengthened slightly by an above-average commitment by Massachusetts physicians to medical education and research, areas that are typically less remunerative. Nationally, such physicians were 8.4 percent of those in active practice on 31 December 1986, but they were 10.7 percent of Massachusetts physicians in active practice. Similarly, Massachusetts hospitals train a disproportionate number of residents. Residents, whose incomes are relatively low, were 19.0 percent of practicing physicians in Massachusetts but only 15.4 percent nationally.[14]

Second, despite the large number of physicians, spending on physicians in Massachusetts is less per citizen than in the nation as a whole. This is associated with a health care system that is substantially more hospital-intensive than the typical state's. Massachusetts spends well above the national average on hospital care-- both per capita and as a share of total health spending. This may leave less money for physicians. Indeed, the Pearson product-moment correlation (r_p) between a state's percentage of health spending going to hospitals and its percentage going to physicians in 1978 was -0.46, significant at better than 0.0005. This is hardly surprising; a greater percentage of health spending on hospitals will crowd out other spending, leaving less for others collectively.

In 1986, Massachusetts hospital spending per capita was highest in the nation, far ahead of any other state.[15] In 1978, the last year for which published, consistent federal data are available, Massachusetts ranked first among the states in the share of health spending devoted to hospital care. Several other states that devote a high share of health spending to hospitals, such as Pennsylvania and West Virginia, share with Massachusetts very high per capita surgery rates.

In 1978, Massachusetts physician spending per capita of $147.67 was 8.4 percent

below the national average. Hospital spending per capita was 45.2 percent above the national average and total health spending per capita was 25.4 percent above the national average.[16] In 1978, Massachusetts ranked first in total health spending and hospital spending per capita but only 24th in physician spending per capita. (Interestingly, per capita spending on physicians in Massachusetts seems to have dipped below the national average only since around 1970; the reasons for this would be interesting to explore. But gross revenue and net revenue per Massachusetts physician have probably been well below the national average for a substantially longer time, since the state has long enjoyed a physician-to-population ratio well above the U.S. average.)

The Massachusetts experience thus departs somewhat from that of most other states. Across all states, per capita hospital spending and per capita physician spending were fairly strongly correlated in 1978, at $r_p = +0.4178$, significant at 0.001.

According to Massachusetts state estimates for FY 1985 (1 July 1984 - 30 June 1985), per capita health expenditures in the state in all three categories fell from their 1978 levels relative to the national average. Hospital spending per capita then was 37.8 percent above the national average, physician spending per capita was fully 10.7 percent below the national average, and total health spending per capita was 22.4 percent above the national average.[17]

If these relations persisted through the end of 1986-- and there is no reason to believe that they did not-- then spending on the average Massachusetts physician in active practice was fully 40.9 percent below the national average. (If residents are excluded, on the assumption that the bulk of their incomes are included in hospital spending, not physician spending, then spending on Massachusetts physicians still averaged 38.9 percent below the national mean.) This is owing in lesser part to Massachusetts' per capita spending on physicians being 10.7 percent below the national average, and in greater part to Massachusetts' active physicians per capita ratio being 46.0 percent above the national average. In other words, there is somewhat less money for substantially more physicians.

While these figures rely on the best available publicly collected data, further study of inter-state differences in physician incomes, and of the reasons for those differences, is indicated. What, for example, are the interactions among patterns of hospital care (and spending on hospitals), physician/population ratios, and physicians' incomes?

We can get a cross-bearing physician spending and incomes by examining data on physician revenues (Table 4). The first section of the table shows that 1984 Massachusetts physician gross revenues for three specialties and for physicians overall were well below the national average. Massachusetts physicians' gross revenues averaged $147,200, 73.2 percent of the $201,000 enjoyed by the average U.S. physician. When net revenues are considered, Massachusetts physicians fare better overall, averaging 81.8 percent of the U.S. total. Thus, in 1984, Massachusetts physicians' net revenues as a share of gross revenues ratio was 11.7 percent greater than the U.S. average. (These data reflect 1984 malpractice premiums that were relatively low in Massachusetts; it would not be surprising if Massachusetts physicians' net revenue ratios were much closer to the U.S. average today.)

Are Massachusetts physicians well off? It depends. In absolute dollars of net revenue per physician, the average Massachusetts physician makes a great deal of money. In relative terms, compared to physicians in the nation as a whole, the average Massachusetts physician makes less. This is more true for Massachusetts physicians in internal medicine and less true for Massachusetts surgeons.

Public Responses

High hospital costs in Massachusetts have spurred a variety of public sector responses. These include a fairly visible (if not very effective) certificate of need program and a gradual evolution (until 1988) toward potentially more effective hospital rate setting. These efforts have so far been only moderately successful in slowing the rate of increase in hospital costs. One reason for limited success has been the enormous politi-

cal power of the state's hospitals, and their prestige as life-saving, non-profit institutions.[18] Business and insurors and government consequently seem to have turned toward other cost containment methods, many of which are unpleasant to large numbers of physicians. These methods include private utilization review of hospital admission, length of stay, and surgery; support of HMO's and PPO's; slowing of physician fee increases and proliferation of irritating billing requirements; and extension of the decades-old Blue Shield ban on balance billing to other payors.

If these sorts of public and private regulatory efforts are more successful-- or at least more vigorous-- in Massachusetts than in other states, there must be a reason. The possibility that that Massachusetts public and private insurors want to irritate or anger physicians should be dismissed. Similarly, it is unlikely that state businesses, insurors, and public policy-makers are congenitally committed to regulation, regardless of the consequences. Rather, a growing body of opinion seems to be worried by the state's high health spending, and is working to control it wherever possible. These regulatory efforts might not be more effective in Massachusetts, but they might well worry physicians more, because Massachusetts physicians' net revenues are already relatively low.

In the context of average physician incomes already low by national standards, regulatory interventions can seem-- and be-- oppressive to physicians. But the controls should probably be seen as a set of well-intentioned (if not always effective) responses to serious health care delivery and financing problems, not as mean-spirited attempts to harm physicians. It is these responses that the Massachusetts Medical Society report highlights.

Certain threats or possible threats to many physicians are ignored or barely mentioned in the report. These include the growth of health maintenance organizations and the likelihood that some sort of relative value scale will shortly be used to recalibrate physicians' Medicare fees. In 1987, Massachusetts ranked fourth among the states in the share of its population enrolled in health maintenance organizations-- 19.1 percent of the

state's insured population, compared with only about 11.8 percent nationally.[19] Thus, HMOs' impact on physicians' patient loads or incomes is over sixty percent greater in Massachusetts than in the average state. It seems likely that Medicare will soon use some type of relative value scale to pay physicians. Medicare may well attempt to set a fixed total level of payment to physicians, as it did with hospital inpatient payments beginning in 1983. A relative value scale would then redistribute income away from many procedure-oriented specialists and toward primary care and cognitively-oriented specialists.

As asked earlier, does the Medical Society ignore or downplay these sorts of threats and blame state government for physicians' perceived problems in order to sidestep issues that might divide physicians, to hit Democrats in state government, to avoid facing hard decisions, or to avoid taking responsibility for those of the Society's own decisions that have harmed or upset physicians? Arguably, both the comprehensive bans on balance billing in the Commonwealth, and physicians' high payments for deferred malpractice premiums, have resulted in large part from ill-conceived Medical Society litigation and other actions.

It is worth noting that other states seem to be following Massachusetts' lead on balance billing. In 1987 alone, four other states enacted some form of a ban on balance billing; fifteen others considered a ban.[20]

More globally, as physician/population ratios rise in other states, and as pressures to control health care costs spread, is it not likely that physicians' incomes in other states will decline toward the levels experienced in Massachusetts? Perhaps Massachusetts has only been leading the way.

The Society's report would have been more useful to state legislators-- and others concerned with physicians' well-being and with health care access, cost, and effectiveness-- if it had looked beyond the symptoms of problems to their causes.

Health care costs are high in the Commonwealth and in most other states. In response, Medicaid, Medicare, Blue Shield, and other payors have sought to squeeze payments to physicians. Denial of claims, utilization review, irritating paperwork, bans on balance billing, and slow increases in fees have been parts of this response. Some physicians may respond by "unbundling" services-- charging separate fees and a higher total sum for services once billed as a package. Other physicians may try to increase their incomes by performing various remunerative minor procedures and laboratory tests in their offices. Payors will doubtless try to escalate their own responses to physicians' attempts to game payment methods.

All of these behaviors exacerbate mistrust among physicians, government, other payors, and patients. Massachusetts cannot afford a medical war of all against all.

A Social Compact

What is needed is a new social compact between physicians and society. The compact should pay physicians adequately. It should pay them simply. It should pay them fairly, in light of the difficulty of their tasks, their skill, and the effectiveness of their efforts on patients' behalf. It should promise efficient and effective resource allocation, universal access, and high-quality care. To accomplish this, it should be integrated closely with genuine reform of our methods of paying hospitals. This is necessary to weed out unnecessary care and to mobilize scarce health care resources to the patients who most need them.

Such a compact may require that physicians abandon their long-standing insistence on both clinical and financial autonomy. They can have one-- possibly the one they choose-- but not both. If they insist on both, they risk losing both. Financial autonomy, control over one's own income, may be an illusion in health care. Payors are becoming too powerful. It should be possible to negotiate an arrangement that pays physicians adequately and encourages those who pay to trust physicians' clinical judgment. This

might boost physicians' incomes and help to rebuild trust between patients and physicians.

Instead of pursuing an accommodation that respects both physician and public interests, the Medical Society and some of its constituent groups seem to have employed unfair or irrelevant arguments to try to discredit public regulations and business and insurors' policies.

For example, the Society points to the exodus of large numbers of newly trained residents as an example of harm supposedly caused by such regulations and policies. A combination of high physician/population ratios, the high HMO enrollments, high debts of physicians recently completing residency training, and high costs of housing in Massachusetts (associated in part with the state's recent economic prosperity) have made it more difficult for newly trained residents to establish practices in the Commonwealth. Even given this, do we have data that show an increase in the percentage of Massachusetts-trained physicians who are leaving the state to establish their practices? Massachusetts has probably exported physicians since the American Revolution. Would our state's established physicians really prefer more residents to remain here to compete with them?

The Society's report pays little attention to problems of primary care physicians in Massachusetts-- a group less politically powerful and less well-represented by the Society. Primary care physicians (family practitioners, general practitioners, internists, pediatricians, and some obstetricians-gynecologists) must deal with more billing problems and other paperwork, because their average bill is smaller and they therefore generate more paperwork per thousand dollars of income. With incomes typically lower than the average physician, they have been especially vulnerable to Blue Shield and other fee squeezes.[21]

Finally, the Medical Society report pays little attention to the public interest. It does not explore why Massachusetts physicians are experiencing the problems at which the surveys hint. It is to be feared that the Medical Society, like the Hospital Association,

will adopt a strategy of "throwing money" at its members' problems. More money could provide a short-term fix to some physicians' problems. But giving physicians more money so they can afford higher malpractice premiums is hardly a durable solution. Thorough reform of the method of compensating those injured in the course of care is required.

More broadly, we need to encourage physicians and hospitals to work with others to design and implement financing and delivery mechanisms we can afford. If Massachusetts is to slow the rate of increase in its health care costs, to make our new Health Care for All law affordable, we cannot blandly throw money at either hospitals or doctors.

By reasonable estimates, total health care spending per capita in Massachusetts is between one-quarter and one-fifth above an already-generous national average. (As a nation, we spend substantially more per capita than other industrial democracies, but they cover all of their citizens and also enjoy better health outcomes. Other countries don't spend more than we do, but they seem to spend smarter.) Comparing Boston and New Haven hospital care, Wennberg and his colleagues have uncovered evidence suggesting that high hospital spending in Massachusetts-- 36 percent above the national average per citizen-- does not seem to be attributable to teaching, research, or other useful activities.[22] Very possibly, some of this excess could be made available to finance care for uninsured citizens and for other important health purposes.

If some Massachusetts physicians are being hurt unfairly by high malpractice insurance premiums, constricted fees, and the like, the Medical Society should propose reforms that address the causes of these problems. To do so means considering the questions of appropriate physician gross incomes, practice costs, and net incomes by specialty. It means addressing the tough question of a fair net income for different Massachusetts physicians, in light of a host of market and non-market factors. These factors might include a physician's competence and the difficulty of his or her tasks; working conditions; availability and need for different types of physicians, by specialty and region of the

state; physicians' desires to work in Massachusetts; living costs; incomes enjoyed by other working citizens of the Commonwealth; and others.

Statements that Massachusetts has become a "Beirut of medicine" appear unfounded. They are entirely unsupported by the Medical Society's own report.

To say that the state has an anti-physician bias is rhetorically to confound problems and attempted solutions. Massachusetts has a great number of physicians per capita. They seem to like it here, despite relatively low incomes for Massachusetts physicians for at least the past 20 years. Massachusetts hospital costs are high. This leaves relatively little money for each physician. At the same time, hospital power has been so great that some cost control efforts may have fallen disproportionately on some groups of physicians.

Physicians anxious to protect their own financial futures might begin by investigating where the money goes, and by working to fashion hospital and physician payment methods that are fair to all parties and that advance the public interest in affordable health care for all.

Notes

1. Massachusetts Medical Society, *Practicing Medicine in Massachusetts: A Report to the State Legislature*, Waltham: The Society, July 1988.

2. Robert G. Hughes, Sandra S. Hunt, and Harold S. Luft, "Effects of Surgeon Volume and Hospital Volume on Quality of Care in Hospitals," *Medical Care*, Vol. 25, No. 6 (June 1987), pp. 489-503.

3. Joyce V. Kelly and Fred J. Hellinger, "Physician and Hospital Factors Associated with Mortality of Surgical Patients," *Medical Care*, Vol. 24, No. 9 (September 1986), pp. 785-800.

4. Mortality is only one measure of surgical competence. Morbidity, unsuccessful result, and infections and post-operative complications may be more sensitive measures of surgeons' success. We believe that, other things equal, more practice with a given type of surgery does improve outcomes.

5. American Hospital Association, *Hospital Statistics, 1987 Edition*, Chicago: The Association, 1987, tables 5A and 5C; American Hospital Association, *Physician Characteristics and Distribution of Physicians in the United States, 1987*, Chicago: The Association, 1987, tables 1 and 9.

6. John E. Wennberg, Jean L. Freeman, and William J. Culp, "Are Hospital Services Rationed in New Haven or Over-utilised in Boston?" *The Lancet*, 23 May 1987, pp. 1185-1189.

7. Massachusetts Medical Society, "Universal Health Insurance: Its Impact on Massachusetts Physicians," Waltham: The Society, no date, cited in Edward C. Halperin, "George Bush, Michael Dukakis, and Health Policy Issues in the 1988 Presidential Campaign," *North Carolina Medical Journal*, forthcoming.

8. Opinion Research Corporation, "Professional Liability and Its Effects: Report of a 1987 Survey of ACOG's Membership," A report prepared for the American College of Obstetricians and Gynecologists, Washington: Opinion Research Corporation, March 1988; "Obstetricians Dropping our of Baby Delivery Business," *The Nation's Health*, Vol. 18, No. 4 (April 1988), p.5.

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and 1987.

12. "Comparison of Number of Obstetricians/Gynecologists in New England to Number of Live Births in New England," unpublished data compiled by Blue Cross/Blue Shield of Massachusetts from American Medical Association publications on physicians, and from National Center for Health Statistics data on live births.

13. American Medical Association, *Physician Characteristics and Distribution of Physicians in the United States, 1987*, Chicago: The Association, 1987, tables 1 and 9.

14. American Medical Association, *Physician Characteristics and Distribution of Physicians in the United States, 1987*, Chicago: The Association, 1987, tables 1 and 9.

15. American Hospital Association, *Hospital Statistics, 1987 Edition*, Chicago: The Association, 1987.

16. Katherine R. Levit, "Personal Health Care Expenditures by State, Selected Years 1966-1978," *Health Care Financing Review*, Vol. 4, No. 2 (December 1982), pp. 1-66, Tables A-13 - A-15.

17. Anestis J. Ghanotakis, *Massachusetts Health Expenditures, FYs 1980, 1983, and 1985*, Boston: Office of Health Policy, Executive Office of Human Services, 1986-1987; Division of National Cost Estimates, Office of the Actuary, Health Care Financing Administration, "National Health Expenditures, 1986-2000," *Health Care Financing Review*, Vol. 8, No. 4 (Summer 1987), pp. 1-36.

18. See, for example, Susan Goldberger and Robert Keough, "Rocky Road Awaits Insurance Plan," *Staying Alive*, No. 23-24 (Spring-Summer 1988), pp. 2-9, 19; Alan Sager, "Prices of Equitable Access: The New Massachusetts Health Insurance Law," *Hastings Center Report*, Vol. 18, No. 3 (June/July 1988), pp. 21-25.

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Table 1

Inter-state Comparison of 1987-88 Malpractice Premium Rates for Selected Specialties

Premium by Specialty

State	G.P.	Obstet.	Neurosurg.
Massachusetts			
regular	$4,600	$33,200	$38,000
regular+deferred	$8,000	$57,800	$65,400
New York			
NYC+Long Island	$11,607	$84,645	$103,647
up-state	$5,252	$38,298	$46,895
New Jersey	$5,316	$23,889	$35,442
Maine	$4,542	$36,778	$46,530
Connecticut	$6,780	$63,152	$63,152
Rhode Island	$4,704	$23,521	$23,521

Percent of Mass. Regular

	G.P.	Obstet.	Neurosurg.
Massachusetts			
regular	100.0%	100.0%	100.0%
regular+deferred	173.9%	174.1%	172.1%
New York			
NYC+Long Island	252.3%	255.0%	272.8%
up-state	114.2%	115.4%	123.4%
New Jersey	115.6%	72.0%	93.3%
Maine	98.7%	110.8%	122.4%
Connecticut	147.4%	190.2%	166.2%
Rhode Island	102.26%	70.85%	61.90%

Percent of Mass. Regular + Deferred

	G.P.	Obstet.	Neurosurg.
Massachusetts			
regular	57.5%	57.4%	58.1%
regular+deferred	100.0%	100.0%	100.0%
New York			
NYC+Long Island	145.1%	146.4%	158.5%
up-state	65.7%	66.3%	71.7%
New Jersey	66.5%	41.3%	54.2%
Maine	56.8%	63.6%	71.1%
Connecticut	84.8%	109.3%	96.6%
Rhode Island	58.8%	40.7%	36.0%

Source: Edward C. Halperin, "George Bush, Michael Dukakis, and Health Policy Issues in the 1988 Presidential Campaign," North Carolina Medical Journal, forthcoming, Table 1.

Table 2

FEDERAL AND NON-FEDERAL PHYSICIANS IN THE UNITED AND POSSESSIONS
BY SPECIALTY AND ACTIVITY DECEMBER 31 1986

Massachusetts physician-to-population ratio divided by U.S. physician-to-population ratio

	MAJOR PROFESSIONAL ACTIVITY									
	PATIENT CARE						OTHER PROFESSIONAL ACTIVITY			
				HOSPITAL BASED						
SPECIALTY	TOTAL PHYSI-CIANS	TOTAL PATIENT CARE	OFFICE BASED	RESI-DENTS	CLINICAL FELLOWS	PHYS. STAFF	ADMINIS-TRATION	MEDICAL TEACHING	RESEARCH	OTHER
TOTAL PHYS.	1.439	1.380	1.223	1.802	2.744	1.515	1.537	1.186	3.182	1.655
GEN. PRAC.	0.587	0.588	0.617	0.388	0.253	0.574	0.480	0.197	1.303	1.305
Family Pract	0.485	0.488	0.516	0.388	0.253	0.444	0.441	0.207	1.219	0.451
General Pract	0.759	0.755	0.757	ERR	ERR	0.727	0.548	0.000	1.454	1.791
MED. SPEC.	1.757	1.668	1.455	2.238	2.900	1.642	1.559	1.161	3.247	2.038
Allergy	1.203	1.235	1.143	0.000	3.604	3.033	0.000	0.000	1.091	0.000
Cardio-vasc	1.804	1.688	1.351	4.267	2.473	2.185	1.789	1.429	3.026	1.863
Dermatology	1.318	1.202	1.175	1.126	4.522	1.256	1.049	3.622	4.363	2.182
Gastro-enter	1.583	1.400	1.363	1.823	1.742	1.176	2.277	1.848	2.928	4.605
Internal Med	1.939	1.848	1.579	2.474	3.542	1.644	1.686	1.116	3.458	2.321
Pediatrics	1.452	1.425	1.387	1.444	2.799	1.353	1.210	0.679	2.656	1.237
Pulmonary Dis	1.608	1.414	1.104	2.022	1.856	2.514	1.516	1.196	3.031	1.594
SURG. SPEC.	1.272	1.245	1.163	1.570	2.329	1.092	1.631	0.462	3.588	1.554
Colon/rectal	0.993	0.918	0.926	0.000	2.303	0.000	0.000	0.000	6.908	0.000
General	1.416	1.359	1.209	1.843	2.164	0.937	2.163	0.601	4.479	2.108
Neurological	1.306	1.224	1.129	1.189	2.303	2.115	2.126	1.036	4.908	4.605
OB/GYN	1.133	1.130	1.100	1.218	2.653	1.086	1.169	0.634	2.079	0.658
Opthalmology	1.275	1.225	1.153	1.405	3.146	1.213	1.951	0.377	3.969	1.974
Orthopedic	1.413	1.391	1.325	1.564	2.763	1.393	2.467	0.000	4.522	0.782
Otolaryngol	1.061	1.074	1.055	1.263	0.553	0.891	0.000	0.000	1.507	2.438
Plastic	1.228	1.234	1.087	2.205	1.928	1.399	0.000	0.000	2.763	0.000
Thoracic	1.451	1.464	1.530	1.480	0.882	1.052	0.000	1.480	2.475	0.000
Urological	1.052	1.066	1.019	1.546	0.000	0.772	0.669	0.000	0.499	2.763
OTHER SPEC.	1.655	1.594	1.415	1.927	2.942	1.756	1.647	1.777	2.999	1.598
Anesthesiol	1.533	1.480	1.212	1.926	3.347	2.120	3.356	1.990	3.544	0.740
Diag Radiol	1.542	1.528	1.262	1.827	3.049	1.899	2.282	0.973	2.346	1.742
Emerg Med	1.042	1.033	0.999	0.378	2.182	1.339	0.837	1.645	2.391	1.382
Gen Prevent	1.460	1.506	1.589	0.979	4.605	1.727	1.151	2.369	1.256	2.961
Neurology	2.122	1.931	1.466	2.601	4.001	3.077	2.133	2.313	3.749	2.909
Nuclear Med	1.261	1.123	0.811	2.038	0.846	1.412	1.658	0.000	3.283	0.000
Occup Med	0.979	0.933	0.855	2.108	0.000	1.579	0.883	3.768	2.467	0.512
Psychiatry	2.125	2.091	2.154	2.109	3.571	1.795	2.133	1.918	3.180	3.498
Phys/Rehab	1.080	1.046	0.928	1.221	6.632	0.938	0.823	1.184	5.527	1.535
Pathology	1.587	1.486	0.980	2.351	2.286	1.809	1.921	0.633	3.222	1.117
Radiology	1.396	1.313	1.139	4.391	3.120	1.445	2.984	1.264	5.817	1.191
OTHER	1.797	1.455	1.356	1.913	1.110	1.954	1.610	3.498	2.514	1.471
UNSPEC.	1.303	1.324	0.919	1.581	6.908	0.777	0.531	1.063	1.677	0.505
INACTIVE	1.218									

Source: American Medical Association, Physician Characteristics and Distribution of Physicians in the United States, 1987, Chicago: AMA, 1987, Tables 1 and 9.

Note: The value in each cell is the Massachusetts physician/population ratio divided by the U.S. physician/population ratio. Thus, the value of 1.439 in the upper-left-hand cell means that Massachusetts has 43.9 percent more total physicians/capita than the nation as a whole.

Table 3

Physicians/100,000 Citizens by State[1]

and as Proportion of United States Average

physicians/100,000 citizens

state	total	active	patient care
Massachusetts	338.2	314.7	263.3
Maryland	333.5	310.8	253.7
New York	324.4	301.0	259.9
U.S.A. average	234.9	215.6	190.8

state proportion of U.S.A. ratios

state	total	active	patient care
Massachusetts	143.9%	146.0%	138.0%
Maryland	142.0%	144.2%	133.0%
New York	138.0%	139.6%	136.3%

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[1] Three states with highest total physician/population ratio.

Source: American Medical Association, Physician Characteristics and Distribution of Physicians in the United States, 1987, Chicago: The Association, 1987, Tables 1 and 9; United States Bureau of the Census, "Estimates of the Resident Population of States, July 1 1986 and 1987."

Table 4

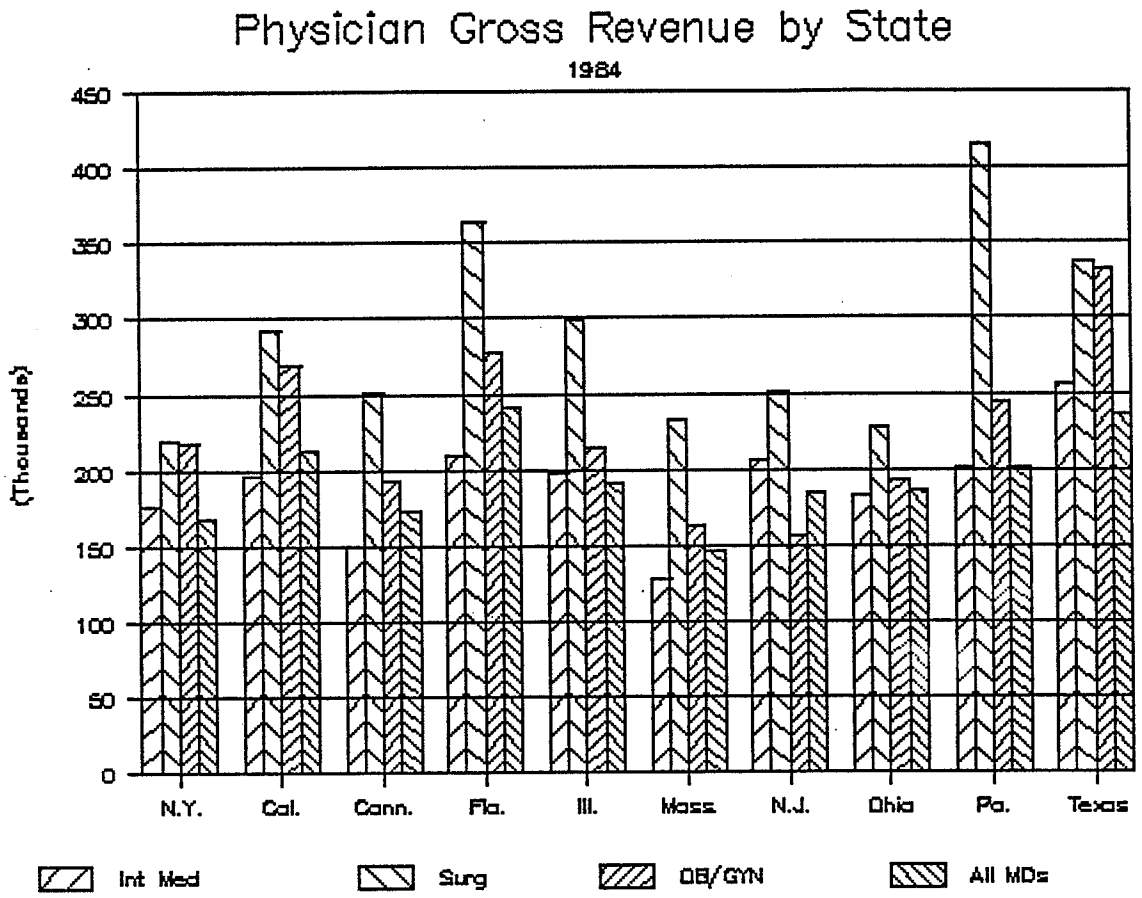
Physician Revenue for Selected States and Specialties, 1984

State	Gross Revenue: Internal Medicine	Surgery	Obstet./ Gynecol.	All M.D.s	Gross Revenue as Percent of U.S.: Internal Medicine	Surgery	Obstet./ Gynecol.	All M.D.s
New York	$176,300	$219,300	$218,500	$168,300	90.6%	77.5%	92.7%	83.7%
California	$197,000	$291,900	$269,600	$212,900	101.3%	103.1%	114.4%	105.9%
Connecticut	$149,700	$251,900	$193,000	$173,700	77.0%	89.0%	81.9%	86.4%
Florida	$208,900	$363,600	$276,900	$241,200	107.4%	128.5%	117.5%	120.0%
Illinois	$198,000	$299,600	$214,100	$191,800	101.8%	105.9%	90.9%	95.4%
Massachusetts	$128,300	$233,000	$162,800	$147,200	66.0%	82.3%	69.1%	73.2%
New Jersey	$206,300	$251,100	$157,300	$185,000	106.1%	88.7%	66.8%	92.0%
Ohio	$182,500	$227,700	$193,500	$186,900	93.8%	80.5%	82.1%	93.0%
Pennsylvania	$202,000	$415,800	$243,800	$201,900	103.9%	146.9%	103.5%	100.4%
Texas	$256,500	$337,300	$331,700	$235,800	131.9%	119.2%	140.8%	117.3%
United States	$194,500	$283,000	$235,600	$201,000	100.0%	100.0%	100.0%	100.0%

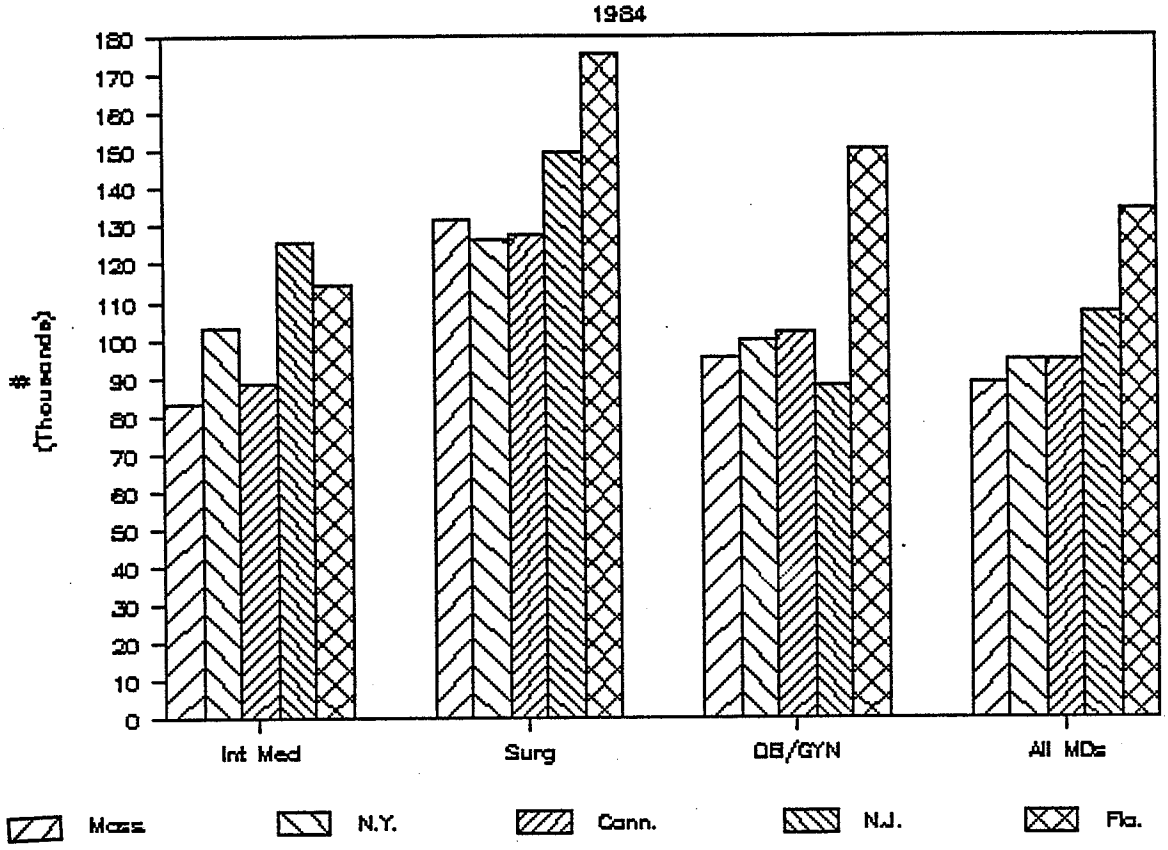
State	Net Revenue: Internal Medicine	Surgery	Obstet./ Gynecol.	All M.D.s	Net Revenue as Percent of U.S.: Internal Medicine	Surgery	Obstet./ Gynecol.	All M.D.s
New York	$103,000	$126,600	$99,700	$94,800	97.6%	83.4%	85.8%	87.5%
California	$106,200	$143,900	$132,600	$111,400	100.7%	94.8%	114.1%	102.8%
Connecticut	$88,500	$127,600	$101,500	$94,500	83.9%	84.1%	87.3%	87.2%
Florida	$114,600	$175,600	$150,000	$134,200	108.6%	115.7%	129.1%	123.8%
Illinois	$102,600	$157,900	$105,700	$105,100	97.3%	104.0%	91.0%	97.0%
Massachusetts	$83,300	$131,400	$94,900	$88,700	79.0%	86.6%	81.7%	81.8%
New Jersey	$125,700	$149,700	$87,600	$107,200	119.1%	98.6%	75.4%	98.9%
Ohio	$105,000	$130,100	$128,800	$115,600	99.5%	85.7%	110.8%	106.6%
Pennsylvania	$96,700	$170,100	$117,300	$99,900	91.7%	112.1%	100.9%	92.2%
Texas	$124,800	$163,200	$129,500	$114,700	118.3%	107.5%	111.4%	105.8%
United States	$105,500	$151,800	$116,200	$108,400	100.0%	100.0%	100.0%	100.0%

State	Net Revenue as Pct. of Gross Revenue: Internal Medicine	Surgery	Obstet./ Gynecol.	All M.D.s	NR percent of GR as percent of U.S.: Internal Medicine	Surgery	Obstet./ Gynecol.	All M.D.s
New York	58.4%	57.7%	45.6%	56.3%	107.7%	107.6%	92.5%	104.4%
California	53.9%	49.3%	49.2%	52.3%	99.4%	91.9%	99.7%	97.0%
Connecticut	59.1%	50.7%	52.6%	54.4%	109.0%	94.4%	106.6%	100.9%
Florida	54.9%	48.3%	54.2%	55.6%	101.1%	90.0%	109.8%	103.2%
Illinois	51.8%	52.7%	49.4%	54.8%	95.5%	98.3%	100.1%	101.6%
Massachusetts	64.9%	56.4%	58.3%	60.3%	119.7%	105.1%	118.2%	111.7%
New Jersey	60.9%	59.6%	55.7%	57.9%	112.3%	111.1%	112.9%	107.4%
Ohio	57.5%	57.1%	66.6%	61.9%	106.1%	106.5%	135.0%	114.7%
Pennsylvania	47.9%	40.9%	48.1%	49.5%	88.3%	76.3%	97.6%	91.7%
Texas	48.7%	48.4%	39.0%	48.6%	89.7%	90.2%	79.2%	90.2%
United States	54.2%	53.6%	49.3%	53.9%	100.0%	100.0%	100.0%	100.0%

Source: Healthscope Management Services Corporationand the Center for Health Policy Studies, An Analysis of Medical Malpractice Expenses and Physician Income in New York and Selected States, a report to the Medical Society of the State of New York, September 1985, exhibits 1 and 2.
Note: some data are estimated.

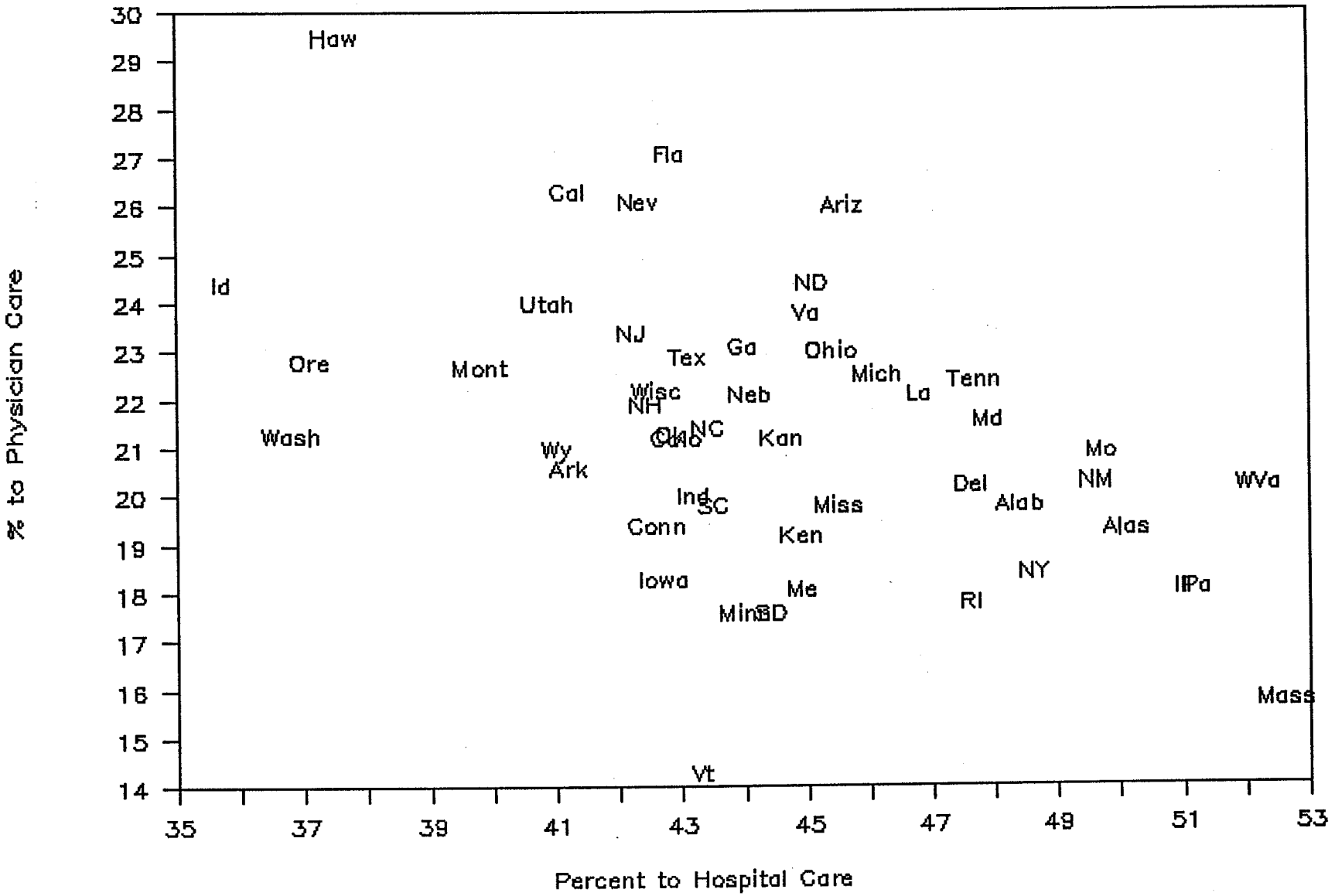

Physician Gross Revenue by State
1984
(Thousands)
450
400
350
300
250
200
150
100
50
0
N.Y.
Cal.
Conn.
Fla.
Ill.
Mass.
N.J.
Ohio
Pa.
Texas
Int Med
Surg
OB/GYN
All MDs

MD Net Revenue by Specialty



Pct. Health $ to Hospitals and Phys.

1978



Per Capital Hospital and MD Spending

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