

# “The Study on Surgical Services for the United States”: A Valid Prescription for American Surgery?

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Social change is often rationalized, if not furthered, through the performance of studies and the promulgation of reports. In the field of medicine and health services, the Shattuck report (1850), the Flexner report (1910), and the *Report of the National Advisory Commission on Health Manpower* (1967) are examples of scholarly efforts underlying subsequent social change. It is in this light that some associated with “The Study on Surgical Services for the United States” (SOSSUS) have heralded the study as a major breakthrough (Moore, 1976) and have called for a number of reforms on the basis of the study’s findings. Now that over two years have passed since the release of the SOSSUS report and over a year has passed since the publication of some of the study’s associated papers,<sup>1</sup> substantial questions can be raised concerning the study’s contribution to knowledge about the supply of surgeons. The question of whether, on the basis of the study’s findings, any policy initiatives are appropriate can also be raised. Despite the “advertisements for oneself” associated with SOSSUS (Moore, 1976), little serious attention has been paid to the study’s technical integrity, to the validity of its findings, or to the appropriateness of its recommendations. In this context, Blackstone’s critique serves a useful

<sup>1</sup>The associated papers of principal concern to this critique include Hauck et al., 1976; Moore, 1972 and 1976; and Nickerson et al., 1976a and 1976b. In this paper we use, for the most part, the terms “SOSSUS,” “the report,” and “the study” to refer to this collection of work. As with Blackstone (1977), our remarks focus on the manpower components of SOSSUS.

and constructive, although at times limited, initial effort to address these issues (Blackstone, 1977). We would like to expand the critique of SOSSUS and its associated papers and discuss some limitations in the study's overall approach to the problem, interpretation of findings, and policy recommendations.<sup>2</sup>

SOSSUS utilized three methodologies in investigating surgical manpower. First, relatively mechanistic algorithms were used to project the growth of surgical manpower over the next three decades. These algorithms were based upon existing geographic, specialty, and certification-status distributions of surgeons and upon alternative hypothetical projections of the output of medical schools and residency training programs (Moore et al., 1972). Second, operative work loads of all physicians performing surgery in four clearly defined geographic areas were measured using the California Relative Value Studies to aggregate and compare this operative work (Nickerson et al., 1976a, b). And last, the allocation of professional time, the net income, and the practice arrangements of surgeons were investigated through a mailed questionnaire (Hauck et al., 1976). On the basis of the data generated in these efforts, SOSSUS concluded: (1) that surgical work loads were "too low"; (2) that they were "too low" because too many physicians were performing surgery; and (3) that, on the basis of the manpower projections, work loads were likely to remain "low" as new surgeons were produced in increased numbers. As a result of these conclusions, it was recommended both that surgical privileges be restricted to board-certified (or board-eligible) surgeons and that residency training positions be reduced.

There are three major objections to these conclusions and recommendations. First, the authors of the report do not specify either *ex ante* or *ex post* norms by which to judge the adequacy of the volume

<sup>2</sup>Another set of issues deals with the technical competence of the research itself and includes the lack of a substantial non-response analysis in the reporting of the questionnaire results; the use of self-reported data in eliciting the time allocation of the surgeons; the use of the "California Relative Value Studies" units for specialties other than general surgery, for which no validation currently exists (Hughes et al., 1972 and 1975); and the validity of the data on the number of surgical residents in training (Haug, 1976; Hughes, 1974; *Medical World News*, 1976). An additional set of concerns entails the extent to which SOSSUS makes methodologic contributions and, with the exception of the log-diary questionnaire, is anything more than the application of previously developed techniques to larger populations (Hughes et al., 1972 and 1975). The limitations of space prevent an in-depth critique of these considerations. They deserve attention, however, especially in view of the rather grandiose claims made for SOSSUS by its proponents (Moore, 1976).

of the surgical work loads observed. For this reason, one cannot determine whether or not the observed work loads are indeed “too low” and whether or not the work loads that are projected to result from the recommended redistribution of surgery to board-certified surgeons are more appropriate. Second, SOSSUS fails to realize that the observed work loads are the result of the behavioral interactions of patients and surgeons and are influenced by variables that may be only marginally related to what is a technically possible work load. Because of a failure to consider the behavioral dimensions underlying the phenomena being measured, the authors of SOSSUS do not adequately address the question of whether or not their goals are reasonable or attainable and do not attempt to identify, let alone measure, the costs as well as the benefits that might accompany the achievement of their goals. Last, SOSSUS does not convincingly demonstrate that increased surgical work loads in-and-of-themselves are a desirable goal, let alone worth the costs that might be associated with them.

In his critique of SOSSUS, Blackstone’s primary concern is that the adoption of the SOSSUS recommendations to restrict the number of surgeons could significantly increase monopoly power within the market for surgical services and substantially raise surgical prices. In focusing on this concern, he overlooks the flaws in the reasoning leading to these recommendations.

The data presented by SOSSUS are compatible with competing behavioral models of the health delivery system. These models have different implications for the SOSSUS recommendations. In the discussion that follows, we will focus on the implications of implementing the SOSSUS recommendations within the context of these competing models. We will question whether or not the goal of increasing surgical work loads is in fact desirable and whether or not SOSSUS’ goals could actually be achieved through SOSSUS’ own policy recommendations. We will also attempt to demonstrate the potential costs of implementing these policies and will consider whether or not Blackstone’s fear of high social costs and higher prices arising from increased monopoly power in the market for surgical services is justified.

## Models of the Market for Surgery

To clarify our discussion, it is important to define carefully three concepts: the demand for surgery, the production of surgery, and

the supply of surgery. An individual's demand for surgery, like his demand for other goods and services, will depend on his weighing of the benefits and costs of the surgery. Ideally, when consumers determine their demand for surgery they take into consideration their disease (or health) state with its attendant pain, disability, and threat to life, and the potential gains from surgical intervention. In addition, they evaluate the costs of surgery, including discomfort, risk of complications, work loss, and the monetary cost of the surgeon's services and hospital confinement. If the referring physician or the surgeon were to make the decision for the patient, he would ideally follow a similar process. The potential benefits and costs under alternative therapeutic regimes, including one of no therapy, can be similarly evaluated. If most of the subjective and individualized costs for a patient are viewed as a constant or given, the amount of surgery demanded can generally be thought of as a decreasing function of the out-of-pocket price the patient pays. For a population of patients, the group or market demand would depend on the distribution of individual demand. This distribution would in turn depend on the incidence of disease within the population as well as the distribution of net benefits expected from the therapy.

If surgical services are to be available to meet the demand, they have to be produced. The method of production can vary and depends on various factors. An important production factor is the time of the attending surgeon who performs the surgery and who, in most cases, delivers the pre- and postoperative care. Other important inputs include nurses, technicians, anesthesiologists, hospital or ambulatory facilities, medications, and so forth. The potential combinations of different inputs, including the time of the surgeon and the extent of his previous surgical training, are vast and varied. Needless to say, the total cost of specific surgical therapies varies with different input mixes.

To a large extent, individual surgeons in the United States determine the manner in which surgical care is produced. Surgeons who choose a mode of practice that economizes on their own time input may either produce more aggregate work with a given input of their own labor or take their productivity gains in the form of increased leisure. Other surgeons may prefer a less "productive" mode of practice and, hence, may choose to "spend" the potential gains that might accrue from a more productive mode in pursuing

their preferred practice arrangement. For individual surgeons, these production decisions, as well as decisions about specialty choice and geographic location, entail significant implicit nonpecuniary consumption attributes (Watkins et al., 1976).

Once a surgeon has chosen his preferred mode of practice, he must determine how much care he will supply. There are several ways of conceptualizing this decision process and it is in considering these alternatives that important distinctions about possible market behavior arise. These distinctions can be formulated within the context of the standard polar models of economic theory—pure competition and pure monopoly. In pure competition, each seller takes the price as given and acts on the premise that he can sell whatever he wishes at that price. Under pure monopoly, there is only one seller, the entry of potential competitors is prohibited, and the seller is able to determine the price that will prevail in the market. The market for surgery, like the market for most goods and services, lies somewhere between these two extremes. Precisely where the market falls on the continuum from pure competition to pure monopoly is not known, and consequently, more than one model is possible.

Depending upon which model is most applicable and upon the parameters of that model, one can arrive at different conclusions regarding the two major concerns of SOSSUS, that is, regarding the positive determination of surgical work loads and the normative evaluation of the current utilization of surgical manpower. Blackstone's conclusion that price would rise if surgical manpower were limited is also critically dependent on one's choice of model; there are plausible models in which this conclusion does not follow.

We will first consider what would happen if a model characterized by price-taking behavior by surgeons were to apply. Because the price in such a market is given, it is possible to talk about a supply relationship for surgeons. If both the number and the distribution of surgeons are given, and the various modes of production are fixed, the quantity of surgical services that physicians supply will depend, among other things, on the price (fee) the physicians receive. In the short run, the price received for surgical services affects the quantity supplied primarily through the price's effect on the physician's allocation of time between surgical work, non-surgical work and leisure. Up to a point, a rising price for surgical services will divert a surgeon's time from other less remunerative work and

from leisure, while a falling price will cause surgeons to switch their time to other types of services and to leisure. If the price for surgical services becomes sufficiently high, the resulting increase in income may cause an individual surgeon to render fewer services of all types and take more leisure. This is frequently referred to as a “backward-bending” supply situation. In the long run, the price of surgical services will affect the number and type of physicians who want to perform surgery, as well as the mode of producing surgical services.

If the amount of surgical services demanded or the amount supplied depends on price, a “surplus” of surgical services will result if, at the going fee, surgeons wish to supply more services than patients feel they want. Consider the situation illustrated in Figure 1. Let  $S$  represent the supply of, and  $D$  represent the demand for, surgical services, given some level of insurance coverage.<sup>3</sup> At point  $E$ , where  $S$  and  $D$  intersect, the market will be in equilibrium because no more surgery will be demanded than is supplied and no more will be supplied than demanded. At any fee above  $P_0$  (the “market clearing price”), a surplus, as defined above, can be observed. For example, at fee  $P_1$ , surgeons are willing to supply  $Q_S$  surgery, but patients only demand  $Q_D$  worth of services. In well-functioning competitive markets, if such an oversupply existed, the fee should fall towards  $P_0$  and the quantity demanded and supplied should equilibrate to eliminate the surplus.

In the market for surgical services, the surplus occurs, in a sense, because the price or fee is too high. Reduce the price, and the surplus will eventually disappear as physicians performing surgery reallocate their professional time and the specialty of surgery becomes less financially attractive to new entrants. At a given price, the surplus could also be corrected by reducing the supply of physicians performing surgery. There is no presumption as to which of these methods, if not some combination of each, is preferable. The critical implication is that a shortage depends on both the number of physicians and the price.

Within the context of this model, let us consider the possible effects of attempting to increase work loads by reducing the number of physicians allowed to perform surgery—the SOSSUS recommendation, presented most straightforwardly in the concluding section

<sup>3</sup>If insurance covers some of a surgeon’s fee, the price the patient pays will be less than the price the surgeon receives. Thus, the patient’s demand at any fee level in Figure 1 will increase with insurance coverage.

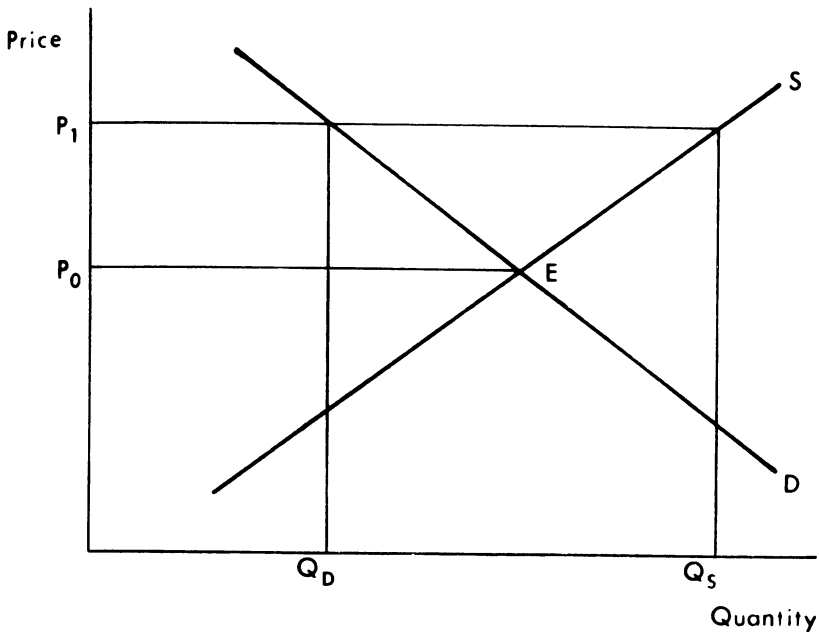
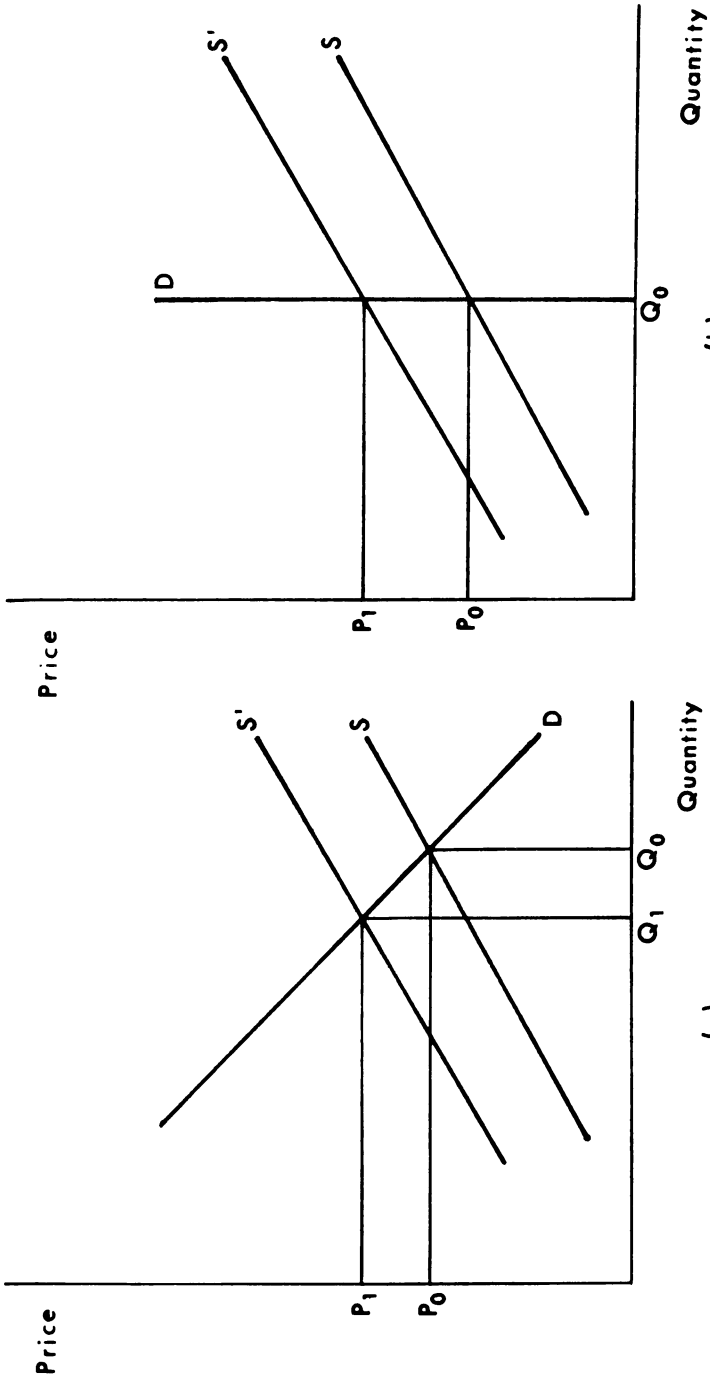


FIG. 1. Determinants of a Surplus in a Competitive Market

of Nickerson et al. (1976b). As shown in Figure 2a, reducing the number of potential suppliers of a product will cause the supply function to shift upward to the left—to  $S'$ . If demand is somewhat responsive to price, then the new intersection between  $S'$  and  $D$  will be at a higher price or fee ( $P_1$ ) than previously ( $P_0$ ) and less total surgery will be demanded and supplied. If demand is completely unresponsive to price, as illustrated by  $D$  in Figure 2b, then only the price of surgery will increase, from  $P_0$  to  $P_1$ . (Such an unresponsiveness of demand to price is a possibility with 100 percent reimbursement for surgical services.) The amount performed will remain unchanged and work loads will in fact increase.

If physician supply is initially in equilibrium, a price increase will be necessary to induce physicians to increase work loads. For, if the number of suppliers is reduced and the government or other third-party payers do not permit price to increase, there will be no incentive for providers to expand their work loads. The result will be a decline in total output, with no effect on work loads. There is evidence in SOSSUS that at least some physicians may be in such an equilibrium. Hours of work and work loads decline after age 50. This decline can be interpreted as a desired reduction in



(a) (b)  
 FIG. 2. Effects of Reducing the Supply of Surgeons under Different Conditions of Demand



work loads. At the present time, however, we do not know how many surgeons are satisfied with their work loads. Nickerson et al. (1976b) state that unpublished evidence from the questionnaire suggests “many” surgeons wanted to do more operations. This is the point on which “hard data” would be most useful. What we need to know is not so much the quantity of work surgeons do or whether they are able to do more in a physical sense, but rather the extent to which they are desirous of doing more.

Perhaps the least favorable outcome of reducing the number of surgeons would occur if many of the remaining surgeons were on backward-bending supply curves. In this case, price would still tend to increase as supply decreases, but the price increase will cause surgeons to work less, produce less aggregate surgical output, and consume more leisure. Work loads would fall and price would rise.

The best case for a decrease in the number of surgeons could be made if a true “economic” surplus existed initially and is unlikely to be equilibrated by price, that is, if the price was set too high and unlikely to fall. In this case, a properly sized decrease in supply could increase utilization of the remaining surgeons with no price increase and no significant decrease in aggregate surgical output. Even if the market is not perfectly competitive, because of the presence of insurance, a surgeon might act as if the fees to be received from third parties were given, independent of the amount of surgery he produces. In such a case, this analysis is still relevant.

Clearly, without an appropriately formulated behavioral model, one cannot determine whether or not the SOSSUS recommendation to increase work loads by decreasing the number of surgeons would be successful and one cannot know what other outcomes might result.

In analyzing SOSSUS, Blackstone seems most concerned with the possibility of a significant price rise accompanying the recommended reduction in the number of surgeons. The analysis presented above suggests that a price increase is likely to accompany a reduction in the number of surgeons under particular market conditions. On the other hand, if an economic surplus, as defined previously, exists in the market for surgeons then a price increase would not necessarily result from following the SOSSUS recommendations. Unfortunately, neither SOSSUS nor Blackstone provides us with substantial information as to the true market situation.

An alternative model is one in which physicians have some monopoly power. Indeed, Blackstone’s primary concern about the

restriction of surgical privileges is that such monopoly power will increase. Several monopolistic elements do currently exist in the market for surgical services in the United States. These elements primarily spring from the restriction on entry posed by state licensure laws and the restriction of the number of places in the United States medical schools offering diplomas that are a prerequisite for licensure.<sup>4</sup>

Consumer ignorance of prices and quality may also contribute to monopoly power, as may product differentiation among surgeons caused by increasingly rigid specialty lines, restrictions on hospital privileges, and established referral patterns. In addition, in many geographic areas, demand is insufficient to support more than several general surgeons and no more than a single specialist such as a neurosurgeon or thoracic surgeon. In such geographic areas, it is hard to refute the ability of such a small number of surgeons to act as traditional monopolists.

Monopolistic markets are characterized by supplier behavior that reflects a knowledge of the effect the supply of a specific quantity of goods or services will have on price. In particular, a monopolist is aware that supplying additional quantities of goods or services in a particular market will depress the price he can charge. Accordingly, prices of a given item will tend to be higher and the quantity sold lower in monopolistic markets than in competitive markets.

In such a model, the price that maximizes net income for a seller is usually the one at which the seller is unwilling to cut his price to attract demanders because the profit on additional units sold would be insufficient to compensate the seller for the decline in profits resulting from the lower price on all units sold. In such a market, a surplus almost always exists. That is, no matter what the level of output, within broad limits, a supplier will desire to sell more at the current price than demanders are willing to take. Suppliers collectively will feel that they are in excess.

<sup>4</sup>Limitations on the number of United States medical school positions have not been as important a source of market restriction over the last two decades as in the earlier post-Flexner period. Large government subsidies have encouraged the expansion of medical schools in this country, and the influx of FMGs has substantially circumvented the restriction. However, the presence in the United States of numerous potential medical school entrants for every medical school position is adequate testimony to the continuing importance of training and licensure barriers as they operate within the United States medical market.

Blackstone may be correct when he states that restricting operative privileges to board-certified surgeons and restricting approved residency positions will reduce the number of practicing surgeons, will raise new barriers to entry, and will therefore be monopolistic. If the market for surgeons' services could be characterized as one of monopolistic competition (one with several sellers of a differentiated product and relatively free entry), then a decrease in the number of sellers could lead to an increase in price, as Blackstone cautions, and to a decrease in the amount of surgery demanded and produced. However, there may be an analogue to the "backward-bending supply" case here. Although the monopolistic competitor has some control over price, an increase in the demand he faces would increase his income and might increase the value of his leisure time to such an extent that he would actually reduce his work load.

Reductions in surgical manpower might also result in lower prices. Cross-section analyses of the relationship between physician fees and the number of physicians *per capita* indicate that fees tend to be lower where physicians are fewer (Fuchs and Kramer, 1973; Reinhardt, 1975). The theoretical explanation for this empirical relationship is far from clear, and attempts to provide a definitive explanation have not been satisfactory. Such a relationship could conceivably hold, were the supply of surgeons changed in the way recommended by SOSSUS.<sup>5</sup>

To reiterate, it is impossible to determine from the SOSSUS

<sup>5</sup>Several other noncompetitive models of the market for surgery are possible: in particular, cartel (collusive collective monopoly) and oligopoly (a market with few sellers, who recognize their interdependence). In a cartel, several sellers who might otherwise compete join together to act as a single monopolist, to raise prices, to restrict output, and to share in the monopoly profit thus created. A cartel generally must develop a mechanism to police itself, since any individual producer or new entrant can always do better by undercutting the group at large and selling for less. It is precisely this sort of restrictive market behavior that concerns Blackstone and that Kessel postulated to be a consequence of the Flexner report (Kessel, 1958, 1970, 1972). Although Kessel's argument may have historical validity, it is unlikely that the present national market for surgery could be characterized by this model. In addition, even though Blackstone may be justified in his concern that such a market situation will result from the SOSSUS recommendations, we feel unable to evaluate this possibility with the information at hand. Oligopoly models, while perhaps appropriate to describe surgeon behavior, particularly in local market areas, are largely of academic interest in the absence of more definitive data describing actual surgeon market behavior.

data whether the competitive model, the monopolistic competition model, or either, is an appropriate description of the market for surgical services. Moreover, it is impossible, based on the data in SOSSUS, to estimate the size of the change in aggregate surgical output, the potential change in price, or the change in individual surgeons' work loads that might accompany the implementation of the SOSSUS recommendations.

### Should "The Surplus" Be Reduced?

We have argued thus far that the behavior expected by SOSSUS and Blackstone may not, in fact, occur. An equally fundamental question is whether the normative strategy that SOSSUS proposes is one that should be accepted. The primary goal with which all would agree is that the number and types of physicians performing surgery be appropriate. The critical question is how one should define "appropriate."

Despite some discussion regarding the relative necessity of different types of surgical procedures (American College of Surgeons and American Surgical Association, 1971: 89), SOSSUS is silent on the issue of an "appropriate" amount of surgery. SOSSUS does seem, however, to advance normative judgments based on the premise that whatever the level of both surgical and non-surgical care produced, it is better to produce care with a smaller, rather than a larger, amount of inputs. More specifically, the report asserts that restricting surgery to board-certified surgeons will increase the quality of care delivered and will release other physicians, now performing surgery, for primary care. The report fails, however, to present a conclusive case for the proposition that surgical services can be produced in a less socially costly manner by reducing the number of physicians performing surgery.

A recent review of the literature failed to document that the care delivered by board-certified surgeons was clearly and consistently superior to care delivered by non-board-certified surgeons (Hughes, 1977). In addition, it is not clear, as Blackstone indicates, that substantial quality of care benefits would result from increasing the size of the work loads of surgeons *per se*. The lower mean complexity of the work loads of non-board-certified surgeons found in SOSSUS and in Hughes et al., (1972) suggests that there may be mechanisms already functioning in surgical markets that tend to direct more complex cases to board-certified surgeons.

Let us again consider the case in which work loads are increased primarily for board-certified surgeons. Surgeons can increase work loads in three ways. First, they can increase hours of work. In this case, the cost of the additional surgery is the value to the surgeons of the leisure they give up. Second, surgeons can devote more of their professional time to surgical work. The cost in this instance is either the non-surgical care the surgeons are producing or, in some sense, the time per surgical patient foregone. Finally, surgeons can use more ancillary inputs to increase their productivity. The cost is then the cost of those inputs. Additional consideration must be given, however, to the costs that a policy of increasing surgical work loads might inflict on patients. These costs could include increased access costs such as direct and indirect travel expenses, increased waiting time and search activities, and negative impacts on the quality of care received, including a less satisfactory doctor-patient relationship (Hulka et al., 1975). These costs could be especially severe in some rural areas where non-board-certified surgeons may be supplying a critical portion of the surgery (Nolen, 1973).

The "benefit" of restricting surgery by non-board-certified surgeons is the time the disenfranchised surgeons gain for other activities, plus any quality of care benefits attributable to the greater surgical skill of board-certified surgeons. The non-board-certified physicians can obtain more leisure time, provide more non-surgical care, or substitute their own time for non-physician inputs. In principle, these physicians could leave medicine altogether, but that would probably not occur on a large scale. Surgical manpower could also be reduced by diverting students from medicine as a profession, but this, too, is unlikely.

Would the "costs" of such a policy exceed or fall short of the "benefits"? At the present time, evidence is insufficient for answering this question satisfactorily. However, if all physicians value leisure equally and hire the same kinds of inputs, and if board-certified surgeons reduce their work loads of primary care and non-board-certified physicians correspondingly increase theirs, there might be no net gain or loss from such a switch except for that attributable to changes in quality or access. If the additional specialization caused improves the quality of care that each type of physician delivers, an additional benefit might accrue with time. It is possible, however, that increased access costs will outweigh any potential quality of care benefits, particularly if the latter are as evanescent as they

appear to be. (A paradoxical situation might arise if board-certified surgeons were, in reality, more proficient at both primary care and surgery than non-board-certified surgeons, but relatively more proficient at primary care. In this case an optimal solution might require that board-certified surgeons specialize in primary care.)

SOSSUS made no attempt to ask, much less answer, these questions. It tried to answer questions about surgery by looking only at surgeons, and for that reason the report cannot tell us what else will happen if some physicians perform less surgery. The conventional wisdom is that primary care is, in some sense, in greater shortage than is surgery and that physicians who are not board-certified surgeons are on average less proficient at the surgery they perform. We have already noted the lack of clear-cut evidence on the second question. Here we only add that, for manpower planning to be reliable, one needs "hard data" rather than conventional wisdom. Not too long ago, the conventional wisdom held that there was a shortage of physicians of all kinds, including surgeons (Hughes et al., 1972). If primary care physicians overstate their hours of work by as much as general surgeons do, release of additional time for primary care may not be as valuable as is generally believed (Hughes et al., 1975).

An additional argument advanced in SOSSUS for restricting operating room privileges is that although one may not be able to demonstrate adequately that board-certified surgeons are superior to non-board-certified surgeons, it is wasteful for individuals who have received such expensive training not to have higher work loads. This argument is inappropriate. The cost of training these surgeons has already been incurred. The only issue is the present opportunity costs of using the time of these surgeons in different ways.

This point underscores an interesting dilemma in potential manpower policy. Even though the training investment in the present stock of surgeons has already been spent, resources might be saved by directing attention to the training of future surgeons. It behooves surgical educators to evaluate seriously the extent to which the training for board certification is useful, or sufficiently useful, to be promoted as a requirement for all future surgeons. Data reported in SOSSUS and in previous studies certainly suggest that the majority of surgical procedures performed by board-certified and non-board-certified surgeons alike are of, at most, "moderate" complexity (Hughes et al, 1972, 1973). It is therefore

appropriate to ask whether a full complement of surgical training is desirable for all surgeons.

Even if surgical work loads were substantially increased, it is unlikely that, barring the development of highly specific referral patterns, individual surgeons would be able to increase substantially their output of complex procedures. If quality in the delivery of some procedures could be enhanced by highly specialized training, an efficient long-run policy might be to produce fewer highly trained surgeons and to delegate more of the work to individuals with less training (Hughes et al., 1973). Improved quality might also be obtained under a nonrestrictive system of knowledgeable referrals or an individually oriented certification system based on procedure-specific competency.

In the same vein, consider the implications of the SOSSUS finding that the distribution of surgical work loads is highly skewed, with the majority of surgeons having work loads less than half the work loads produced by the surgeons above the ninety-fifth percentile (Nickerson et al., 1976a). SOSSUS seems implicitly to accept these findings as evidence that the majority of surgeons could physically do more work and that their work loads should accordingly be increased. We have argued that information as to what surgeons "could" do is not as important a basis for manpower policy as knowledge as to what surgeons would do under varying circumstances. Consider, however, the normative implications of evaluating the observed wide disparity in work loads within the context of a market where patients and referring physicians successfully seek out "high-quality" surgeons. One might then expect that surgeons who deliver "higher-quality" care would be busier than "lower-quality" surgeons. In such a situation, it may not be a desirable goal to increase the work loads of those board-certified surgeons whose work loads, as determined by the market, are initially "too low."

Finally, although economists generally regard monopoly as undesirable, this need not always be the case. The current restriction on entry to the physicians' services market to licensed practitioners is based on the premise that the increase in quality of medical care produced under such a system will outweigh the negative monopoly effects of this restriction.

Blackstone argues vigorously that the SOSSUS study could be a latter-day Flexner report, a nose in the tent to be followed by the camel of monopoly. Whether one fully accepts this interpretation of the Flexner report or accepts Blackstone's extension of this analysis

to SOSSUS, it should be understood that monopolistic institutions are not always to be avoided at all costs. For example, in many industries, economies of scale may dictate that costs will be lower if firms are sufficiently large so as to be able to act as monopolists in their respective markets. In a surgeon's practice, there may well be some fixed costs (including the cost of the surgeon's training) that do lead to economies of scale. In a general sense, even if restrictions on entry lead to monopoly, they may be desirable if they also lead to more efficient production.

Whether the quality of medical care would be enhanced by further limiting entry into surgery to more highly trained, board-certified surgeons remains to be demonstrated. Were gains to accrue from such restrictions, however, they would have to be weighed against the explicitly stated costs of further restricting the market before such a policy could be justified.

### The Cause of "the Surplus"?

If a surplus of surgeons does exist, what has been its cause? Neither Blackstone nor SOSSUS address this question. We have argued that, in the case of the competitive model, if a surplus of surgeons existed, price would tend to fall until the surplus was eliminated. We have noted that, in situations of monopolistic competition, providers will always report a surplus because, although they would like to sell more at the going price, they are aware that efforts toward this goal will cause a fall in prices and profits. Traditionally, markets characterized by monopolistic competition reach equilibrium when the addition of a sufficient number of new entrants eliminates the monopoly profit. This happens because new entrants not only drive the price down but also claim a share of the market for themselves. In the market for surgical services, prices do not appear to be falling substantially. What we may be observing is the process of the market being divided up among an increasingly larger pool of providers. Support for this inference lies in the fact that under current pricing mechanisms, physicians who enter surgery can make an attractive income, even if they produce low work loads, and can still enjoy a fair amount of leisure time.

The possible surplus of surgeons may be the result of a high relative price for surgeons' services in pre-insurance and "pre-surplus" days being "frozen" into the current structure of third-party payments. Because of insurance coverage, prices do not fall, and entry



occurs until real incomes are roughly equal to those that can be earned in other medical specialties. Thus, given a fixed total demand (at a zero user price), increased entry results in “low” work loads. Attempts to ration the supply of entrants in arbitrary and probably costly ways, such as limiting entry to board-certified surgeons or restricting the number of residents, may not necessarily increase individual work loads and would, in some instances, raise surgical prices. Accordingly, a more appropriate solution might be to correct the pricing mechanism. This option is not discussed to any extent by either SOSSUS or Blackstone.

## Conclusion

The stated approach taken by SOSSUS was that it be a study of surgical services “by surgeons” (American College of Surgeons and American Surgical Association, 1971). Though this approach was, of necessity, modified somewhat in practice, we contend that the approach restricted the multidisciplinary scope of the study and reduced its utility as a document for manpower planning. Central to this lack of a truly multidisciplinary approach was the lack of an analytic perspective. Such a perspective requires more than a description of a phenomenon. It entails an attempt to understand the determinants of that which is being observed. A goal of SOSSUS was “to assemble accurate data on all phases of surgical care” (American College of Surgeons and American Surgical Association, 1975: 15). However, the study was undertaken without clearly stated hypotheses and the study’s utility as a means to a better understanding of “all phases of the delivery of surgical care” was correspondingly diminished. This failure to formulate and test hypotheses resulted in a failure to go beyond the descriptive level and to generate data on the dynamics of the delivery of surgical services. Implicit in this oversight was a failure to recognize that the workings of the delivery system entail the unfolding of multidimensional behaviors by consumers (patients), providers (surgeons, hospitals, etc.), and payers. Only when one understands the interrelationships implicit in these behaviors can one promulgate sound policy recommendations. We contend that the descriptive data generated by SOSSUS are consistent with a number of different models of the delivery system. Accordingly, the implications of following the policy recommendations advanced in SOSSUS are unclear and their implementation could be associated with substantial costs not addressed by the authors of the report.

In his critique of SOSSUS, Blackstone identifies the possibility of decreased competition and higher prices in the market for surgeons' services if the report's recommendations were followed. In his concern about the monopoly threat, however, Blackstone does not adequately address the report's more fundamental weaknesses. Despite the considerable amount of money, time, and energy lavished on SOSSUS, the report does little more than support concerns initially voiced by others regarding a possible malfunction in the delivery of surgical services in the United States (Taylor, 1965; Ginzberg, 1966; Fuchs, 1969; Bunker, 1970; Hughes et al., 1972). The resources spent to produce SOSSUS, like those already invested in training surgeons, are sunk costs. It does not advance the level of public debate to try to wring substantial conclusions for manpower policy out of a study that does not lend itself to such specificity.

## References

- American College of Surgeons and American Surgical Association. 1971. The Study on Surgical Services for the United States. *Bulletin of the American College of Surgeons*, March: 14-17.
- . 1975. *Surgery in the United States*. Chicago: American College of Surgeons.
- Blackstone, E. A. 1977. The Condition of Surgery: An Analysis of the American College of Surgeons' and the American Surgical Association's Report on the Status of Surgery. *Health and Society* 55 (4).
- Bunker, J. P. 1970. Surgical Manpower: A Comparison of Operations and Surgeons in the United States and in England and Wales. *New England Journal of Medicine* 282: 135.
- Flexner, A. 1910. *Medical Education in the United States*. New York: Carnegie Foundation for the Advancement of Teaching.
- Fuchs, V. R. 1969. Improving the Delivery of Health Services. *Journal of Bone Joint Surgery*, 51A: 407.
- Fuchs, V. R. and Kramer, M. J. 1973. *Determinants of Expenditures for Physicians' Services in the U.S., 1948-1968*. Washington, D.C.: National Center for Health Services Research and Development.
- Ginzberg, E. 1966. Physician Shortage Reconsidered. *New England Journal of Medicine*, 275: 85.

- Hauck, W. W., Jr.; Bloom, B. S.; McPherson, C. K., et al. 1976. Surgeons in the United States. *Journal of the American Medical Association* 236 (October 18): 1864-1871.
- Haug, J. M. 1976. Misconceptions on Surgical Residency Positions. *Socio-Economic Issues in Surgery*. Chicago: American College of Surgeons.
- Hughes, E. F.X. 1974. The Demand for Surgical Residents: Some Preliminary Observations. *Surgery* 76 (July): 176-183.
- . 1977. Board Certification and the Quality of Surgical Care: An Examination of the Issues. Center for Health Services and Policy Research, Northwestern University, Working Paper No. 2, March.
- Hughes, E. F.X.; Fuchs, V. R.; Jacoby, J. E.; and Lewit, E. M. 1972. Surgical Work Loads in a Community Practice. *Surgery* 71 (March): 315-327.
- Hughes, E. F.X.; Lewit, E. M.; and Rand, E. R. 1973. Operative Work Loads in One Hospital's General Surgery Residency Program. *New England Journal of Medicine* 289 (September 27): 660-666.
- Hughes, E. F.X.; Lewit, E. M.; and Lorenzo, F. V. 1975. Time Utilization of a Population of General Surgeons in Community Practice. *Surgery* 77 (March): 371-383.
- Hulka, B. S.; Kupper, L. L.; Cassel, J. C.; and Babineau, R. A. 1975. Practice Characteristics and Quality of Primary Medical Care: The Doctor-Patient Relationship. *Medical Care* 13 (October): 808-820.
- Kessel, R. A. 1958. Price Discrimination in Medicine. *Journal of Law and Economics* 1 (October): 20-53.
- . 1970. The A.M.A. and the Supply of Physicians. *Law and Contemporary Problems* 35 (April): 267-283.
- . 1972. Higher Education and the Nation's Health: A Review of the Carnegie Commission Report on Medical Education. *Journal of Law and Economics* 15 (April): 115-127.
- Medical World News. 1976. Were the Surgical Manpower Projections Wrong? September 20.
- Moore, F. D. 1976. Contemporary American Surgery: Hard Data At Last. *New England Journal of Medicine* 295 (October 21): 953-954.
- Nickerson, R. J.; Colton, T.; Peterson, O. L.; et al. 1976a. Doctors Who Perform Operations. *New England Journal of Medicine* 295 (October 21): 921-926.
- . 1976b. Doctors Who Perform Operations. *New England Journal of Medicine* 295 (October 28): 982-989.
- Nolen, W. A. 1973. We Need More Semi-Trained Surgeons. *Medical Economics* 50 (October 15): 85.

- Reinhardt, U.E. 1975. Alternative Methods of Reimbursing Non-Institutional Provisions of Health Care Services. In *Controls on Health Care: Papers of the Conference on Regulation in the Health Care Industry*, sponsored by the Institute of Medicine, pp. 135-174. Washington, D.C.: National Academy of Sciences.
- Report of National Advisory Commission on Health Manpower. 1967. Washington, D.C.: U.S. Government Printing Office.
- Shattuck, L. 1850. *The Massachusetts Sanitary Commission Report of a General Plan for the Promotion of Public and Personal Health*. Boston: Dutton and Wentworth.
- Watkins, R.N., Hughes, E. F.X., and Lewit, E.M. 1976. Time Utilization of a Population of General Surgeons in a Prepaid Group Practice. *Medical Care* 14 (October): 824-838.

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