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Complaints, Redress, and Subsequent
Purchases of Medical Services by
Dissatisfied Consumers

ABSTRACT. Consumer complaints about dissatisfactory medical services as a method to increase quality and competition in the medical industry are examined by using a block-recursive simultaneous equation model. The probability of complaining about a specific service, the number of complaints made about it, the probability of its resolution, and the probability of subsequently purchasing the same service are estimated. Variables that measure learning, constraints, attitude, and cost/benefits are included. Results indicate that the learning variables, represented by age, education, and gender, are most associated with the process of medical complaints. Overall findings indicate that placing the burden of controlling the costs and quality of medical services on the consumer is not viable given the current structure of the U.S. medical industry.

It has been suggested that one way to contain costs and increase the quality of medical care in the United States is to increase medical consumerism; that is, have clients assume more responsibility for their care (Beisecker, 1988). By becoming more informed, consumers may be able to make more intelligent decisions about the quality and quantity of medical care they consume. Complaining about dissatisfaction with medical care is one form of consumerism. It can be added to the list of other consumer oriented activities, including doctor shopping (Pauly & Satterthwaite, 1981; White-Means, 1989), and should produce the same results. First, it can lead to a higher quality of care provided at a given cost if complaints are resolved. Second, if clients are dissatisfied and a problem goes unresolved, they can switch medical service providers, increase competition in the industry, and drive prices down, while increasing quality.

Unfortunately, several characteristics of the medical care system in the United States inhibit the effectiveness of consumer complaints. This study describes a model of the complaint process for medical services, given the current structure of the U.S. system. Estimates are obtained of the effects of various consumer and medical service provider characteristics on the probability that a consumer will

complain about a particular unsatisfactory experience, whether the complaint will be resolved, and whether a consumer will purchase the same service again.

AN OVERVIEW OF MEDICAL CARE IN THE UNITED STATES

The provision of health care in the United States can best be characterized as a system of fee for service. However, the majority of payments are made through the provision of private insurance. Seventy-seven percent of Americans carry private insurance policies, 10.7% are covered by public insurance such as medicare (for persons aged 65 and older) and medicaid (for persons with incomes below the poverty level) and 12.3% are without insurance (Health Insurance Association of America, 1991). Over 604 billion dollars were spent on health services in the United States in 1990, and rises in costs have surpassed rises in the general consumer price index every year since 1966 (Health Insurance Association of America, 1991; Lazenby & Letsch, 1990). Of all expenditures that were related to personal health care, consumers spent less than 19% of the total, after accounting for out-of-pocket expenses for health insurance premiums.

The above discussion implies that when insured consumers use the medical system, they pay a price that is less than the market price for medical services. And, when they do pay, in the form of insurance premiums or copayments (a percentage of the total charge), the payment is either separated from the time of service, or the consumer does not see how the copayment affects each charge related to the medical services provided. An unfortunate side effect of holding insurance is termed moral hazard. Because the price a consumer pays is lower than the actual cost of the service, the consumer may demand more of the service than may be optimal.

The problem of moral hazard is exacerbated by the fact that the medical service marketplace is one of imperfect consumer information. Medical services are unique in that both supply and demand are controlled by the physician. Doctors provide the services, but they also order the tests, medications, and other treatments for clients. Thus, much of the time the actual user of medical services has little to say in the choice and amount of service. In addition, consumers are probably less informed about medical services than any other product or service. There are few listings of prices, inconsistent quality

across medical providers, and almost no objective evaluations of health services are available (Sharp, Register, & Leftwich, 1988; White-Means, 1989). Because consumers have trouble judging price and quality accurately, sellers may be able to raise prices, or offer lower quality service at a given price. And, because medical care providers sell both information and services, they may be able to increase the demand for those services (Pauly, 1988).

With regard to limited availability of services, current policies regarding the training and certification of physicians restrict the number of practicing medical personnel. Medical schools reject a high number of qualified applicants, and the American Medical Association controls the supply of physicians through their accreditation process. In addition, the supply of hospital facilities is related to technological advances and the costs of such advances. Certain hospitals choose to “specialize” in certain services that are most cost effective given potential clientele (Sharp et al., 1988). For example, it does not make economic sense for two “competing” hospitals to both offer a highly specialized cardiac care unit. When only one hospital offers the service, they have a captive audience for those needing it. Therefore, the structure of the hospital industry may artificially lower supply, decreasing consumer choice.

Thus, limited choice, limited information, and few economic incentives point to the expectation that relatively few consumers will actually complain directly to a seller of medical services. But, voicing dissatisfaction to medical providers is an important way for the quality of goods and services to improve in a marketplace where current state and federal policies are not sufficient in controlling either the cost or quality of medical service provision. (It should also be noted that in the U.S. there is no national agency to handle complaints about medical services.) When consumers voice their complaints directly to medical care providers, the providers are made aware of problems and are able to address them. By identifying factors that influence the voicing of medical complaints directly to medical providers, strategies that increase voice can be outlined. Increases in the quality of medical care should be the ultimate reward to the consumer.

COMPLAINTS, COMPLAINT RESOLUTION, AND SUBSEQUENT DEMAND
FOR MEDICAL SERVICES

Despite their potential importance, relatively few studies have examined dissatisfaction and complaints about medical services (Andreasen, 1985; Best & Andreasen, 1977; Corrigan, 1990; Heath, Hultberg, Ramey, & Reis, 1984; Singh, 1989). General studies of complaints indicate that consumers complain less about medical services and that these services have lower resolution rates than complaints made about other products and services. Of 21 business groupings put together by the Better Business Bureau, over one-third were service related. These services accounted for almost 50% of the total U.S. activity related to complaints in 1990. Of the 21 categories, medical services ranked 10th in the number of inquiries, but accounted for only 2.37% of complaint activity (Council of Better Business Bureaus, 1991). Relative to other service industries, consumers voice their dissatisfaction about medical services to sellers less often than for other services (Best & Andreasen, 1977; Singh, 1991). Andreasen (1985) found that only 8% of consumers voiced their dissatisfaction to the medical provider, Best and Andreasen (1977) found 22.5% voiced dissatisfaction, and Singh (1991) found that 48% voiced dissatisfaction.

Best and Andreasen (1977) found 56.5% of all service complaints to sellers were resolved but the resolution rate for medical services was only 35.5%. Singh (1991) found that consumers' perceived responsiveness of providers to complaints about medical services was lowest of three categories of services, including grocery and auto-repair. Compared with studies by other researchers, summarized in Gilly (1987), the figures are lower than the number of consumers who stated satisfactory resolution of complaints for products.

Examinations of the incidence of exit (e.g., switching medical providers), found that between 49% (Andreasen, 1985) and 63.2% (Singh, 1991) choose the exit option instead of complaining to the seller. It is the exit option of medical consumerism that may be an important factor in increasing competition in the medical industry, which may ultimately lower medical costs. There have been no studies of the medical industry that examined loyalty of dissatisfied consumers to the same medical provider.

More specific research has found that demographic variables impact on complaining behavior. Increases in age are associated with increases

in patient satisfaction and decreases in complaints (Andreasen, 1985; Corrigan, 1990; Singh, 1991). Beisecker (1988) found that the older a consumer is, the more likely they are to "put themselves in the hands of the provider." Women tend to complain more, to know more about the medical industry, and to have lower expectations about complaint resolution (Andreasen, 1985; Heath et al., 1984; Singh, 1991). More highly educated consumers tend to be more satisfied with mental health care (Corrigan, 1990). But, there is no conclusive evidence that increases in education or income are associated with actual complaints to care providers or with expectations of complaint resolution (Singh, 1991). Consumers who are employed, have children, and have higher incomes are more dissatisfied with medical services (Andreasen, 1985). Interestingly, increases in the prices paid for mental health services are associated with increases in client satisfaction (Heath et al., 1984).

Hirschman (1970) indicates that consumers' reactions to dissatisfaction are related to industrial organization, and medical services are a "loose monopoly." Both Andreasen (1985) and Singh (1991) have interpreted Hirschman's (1970) description of loose monopolies. Some characteristics include limited availability of alternatives, restricted information, long repurchase cycle, consumer's inability to detect poor quality/service, lack of impact of taking action, and inhibitions consumers have about voicing complaints.

A clearer picture is needed of the factors that influence complaining behavior of clients directly to medical providers, those that influence complaint resolution, and characteristics that determine whether clients will switch providers or remain "loyal." We have information about the incidence of complaints and some of the variables associated with complaining. We also have general information on the resolution of complaints. Little is known about the interaction of complaining and complaint resolution. Virtually nothing is known about subsequent purchases of a service once a consumer is dissatisfied and complains. The following model and estimation addresses these issues.

METHODOLOGY

Modelling the Complaint Process

Economic theory describing endogenous changes in tastes (von Weizsäcker, 1971), intertemporal decision making (Blackorby, Nissen, Primont, & Russell, 1973), and habit formation and dynamic demand functions (Pollak, 1970), provides a framework for examining complaining behavior. This framework allows a diverse set of variables to be included in the estimation of complaints, complaint resolution, and subsequent demand. These variables can be drawn from the four major streams of complaint research characterized by Andreasen (1988): the cost/benefit, restraints, learning, and personality/attitude approaches.

A short-run utility function is maximized in each of several periods to obtain "optimal" levels of demand for a particular good in each period. After demand is ascertained, consumers may learn that their behavior was "sub-optimal." That is, they are dissatisfied with a particular outcome. Preference structures change accordingly and demand becomes a function of demand in a previous period. Such a utility function can be written:

$$(1) \quad U = v(Q_{it}; P)$$

where Q_{it} is consumption of good or service i in period t ($i = 1, 2, \dots, N$; $t = 1, 2, \dots, T$), given preferences, P . A consumer's budget constraint can be written for each period:

$$(2) \quad Y_t = \sum_{i=1}^N (Pq_{it}Q_{it}) + \sum_{i=1}^R (Pc_{it}C_{it})$$

where Y_t is total income in period t , Pq_{it} is the price of good i purchased in period t , Pc_{it} is the price of complaining about good i in period t ($i = 1, 2, 3, \dots, R$), and C_{it} is the number of complaints made about good i in period t . Complaining behavior has been modelled in this way with fairly robust results for the aggregate category of personal and professional services (Kolodinsky & Aleong, 1990). A consumer is dissatisfied with a particular service, complains, and makes or does not make a subsequent purchase.

This model has been expanded upon to include decisions that occur

simultaneously, and has been applied to the aggregate category of personal and professional services (Kolodinsky, 1992). In making a decision about whether and how many times to complain to a seller, a consumer may take into account the type of customer service system employed by a firm. In a world where scarcity of time is prevalent, efficient consumers will consider whether or not their complaint will be effective. Service providers who have set up channels for complaints are more likely to receive complaints from consumers because they are better equipped to handle the complaint. On the other hand, whether or not a seller will resolve a complaint is a function of whether or not, and how many times, a consumer voices a complaint about a particular problem. A consumer who complains until the complaint is resolved, regardless of the number of individual complaints it takes, may be more likely to have a complaint resolved than the consumer who complains once and quits. Bryant (1988) has suggested this scenario. This complicates the basic model in that no longer do we have a simple recursive model, where each event follows one another. The model is now a block recursive one in which complaints and resolution are simultaneously determined, while subsequent purchases are recursively determined.

Conceptually, this model is not difficult to compose. Complaints about a particular incident can be written as a function of the probability of resolution, economic factors including prices and income, preference shifters (including attitudes), indicators of learning, and non-pecuniary and time constraints. The probability of complaint resolution can be written as a function of complaints and characteristics of the service provider that indicate a willingness to respond to a consumer complaint. Subsequent demand of the good or service that originally caused the complaint can be written as a function of complaints, complaint resolution, economic factors, and preference shifters.

Data

To test the model on medical services, data collected by a mail survey sent to a simple random sample of 1500 households residing in a New England state in the United States in the spring of 1989 are used. The questionnaire was developed in three steps. First, questions were developed by examining survey instruments of other researchers interested in consumer complaining behavior and the

quality of services (Ash & Quelch, 1980; Berry, Zeithaml, & Parasuraman, 1985; Day & Bodur, 1977; Day & Landon, 1970; Marketing Science Institute, 1985). Next, the questionnaire was tested using a panel of experts skilled in survey research. Finally, students in a university level consumer motivation course pretested the instrument.

The survey consisted of three sections. The first collected information about satisfaction and complaining behavior associated with services, with one of the service categories being medical services, either in an office or hospital setting. Respondents provided information about up to five services they had been dissatisfied with during the previous 12 months. For example, if respondents were dissatisfied about a visit to a physician's office, they indicated their level of dissatisfaction, the cost of the service, how many times they complained about the service, and their perception of the size and ease of the complaint process. The second section included a list of statements about consumerism and feelings toward the business community. The final section collected demographic information. A total of 509 questionnaires were returned completed. For this study, the first medical service identified was used in the analysis. Of those completed, 91 respondents (17.6%) were dissatisfied with a medical service, and 39 (43%) of those dissatisfied voiced their complaint to the medical provider. In this study, less than 8% of those dissatisfied had contacted a "third party" agency, such as a lawyer or the Better Business Bureau, which tracks complaints, but does not pursue them. To identify whether non-response bias might bias any estimates, 100 non-respondents were contacted to identify whether they differed from respondents in a systematic way.

Table I describes the entire sample, the sample dissatisfied with medical services, the complainers, and the non-respondents. The dissatisfied sample differs significantly from the entire sample with regard to four variables: price of the item, income, age, and number of young children. Those dissatisfied with medical services spent more on the services, had lower incomes, were somewhat younger, and had fewer young children at home. Non-respondents were significantly older, had less education, and had fewer younger children. Previous research has shown that older consumers and those with less education may have tendencies toward being more satisfied with medical services (Corrigan, 1990; Heath et al., 1984). Only one non-respondent indicated dissatisfaction with a service during the 12 months preceding the survey.

TABLE I
Descriptive Statistics

Variable	Definition	Com-plainers	Dissatisfied Sample	Entire Sample	Non-Response
PRICE	Price of service in U.S. dollars	1993 (6550)	696.33 ^m (3206)	na	na
INCOME	Annual family income in U.S. dollars	31211 (23430)	28166 ^m (16377)	31857 ^m (20833)	na
YNGKIDS	Presence of children under 6 (1 = YES)	0.33 ^p	0.24 ^p	0.16 ^p	0.18 ^p
OLDKIDS	Presence of children 6-18 (1 = YES)	0.43 ^p	0.33 ^p	0.32 ^p	na
SIZE	Company dissatisfied with is large (1 = YES)	0.09 ^p	0.18 ^p	na	na
URGE	Company offers an incentive for consumer voice (1 = YES)	0.33 ^p	0.29 ^p	na	na
AGE	Age of respondent	38 ^m (8.76)	44 ^m (13)	48 ^m (15)	50 ^m (16)
COLL	Completed college	0.52 ^p	0.58 ^p	0.59 ^p	0.23 ^p
DISAT	Respondent was very dissatisfied (1 = YES)	0.19 ^p	0.39 ^p	na	na
FEMALE	Respondent is female (1 = YES)	0.48 ^p	0.49 ^p	0.45 ^p	0.48 ^p
RURAL	Respondent resides in a rural area (1 = YES)	0.43 ^p	0.48 ^p	0.38 ^p	0.38 ^p
HOURS	Hours worked per week	32.14 ^m (16.92)	29.8 ^m	29.1 ^m	na
COMPLAINTS	Number of complaints	1.55 ^m (2.27)	na	na	na
RESOLVE	Was the complaint resolved? (1 = YES)	0.21 ^p	na	na	na
BUYAGAIN	Did the respondent purchase again? (1 = YES)	0.58 ^p	na	na	na
		N = 39	N = 91	N = 509	N = 100

^m Mean value is given.

^p Proportion of the sample is given.

Standard deviations are given in parentheses.

Empirical Specification

A block recursive system of equations is used to estimate the number of times a consumer complains about a particular treatment, the probability of a complaint being resolved, and the probability of subsequent demand of the service by a consumer. The structural equations are written as follows:

- $$(3) \quad \text{COMPLAINTS} = \alpha_0 + \alpha_1 \text{DISAT} + \alpha_2 \text{COLL} + \alpha_3 \text{AGE} + \alpha_4 \text{FEMALE} + \alpha_5 \text{URGE} + \alpha_6 \text{YNGKIDS} + \alpha_7 \text{OLDKIDS} + \alpha_8 \text{PRICE} + \alpha_9 \text{FAMINC} + \alpha_{10} \text{HOURS} + \alpha_{11} \text{BUSINESS} + \alpha_{12} \text{CONSUMER} + \alpha_{13} \text{RESOLVE} + \text{error1}$$
- $$(4) \quad \text{RESOLVE} = \beta_0 + \beta_1 \text{DISAT} + \beta_2 \text{AGE} + \beta_3 \text{FEMALE} + \beta_4 \text{URGE} + \beta_5 \text{SIZE} + \beta_6 \text{PRICE} + \beta_7 \text{COMPLAINTS} + \text{error2}$$
- $$(5) \quad \text{BUYAGAIN} = \delta_0 + \delta_1 \text{DISAT} + \delta_2 \text{COLL} + \delta_3 \text{AGE} + \delta_4 \text{FEMALE} + \delta_5 \text{URGE} + \delta_6 \text{YNGKIDS} + \delta_7 \text{OLDKIDS} + \delta_8 \text{PRICE} + \delta_9 \text{FAMINC} + \delta_{10} \text{RURAL} + \delta_{11} \text{HOURS} + \delta_{12} \text{BUSINESS} + \delta_{13} \text{CONSUMER} + \delta_{14} \text{RESOLVE} + \delta_{15} \text{COMPLAINTS} + \text{error3}$$

Equations (3) and (4) must be simultaneously determined since it is theorized that the number of complaints is dependent on whether a complaint will be resolved and resolution of a complaint is dependent on how many complaints are made. This is the “block” portion of the block recursive specification. Equation (5) is determined after (3) and (4) are estimated and is the “recursive” portion of the block recursive specification.

Several factors must be considered when choosing an estimator for this system. First, simultaneous equation bias that occurs if Ordinary Least Squares (OLS) regression analysis is used to estimate each equation must be prevented. This bias would occur because error1 and error2 are not independent of one another when a dependent variable appears on the right hand side of an equation.

Second, almost 60% of respondents dissatisfied with a medical service did not complain about it. If OLS were used to estimate equations (1) or (2), censored sample bias would occur in addition to simultaneous equation bias because we have observations on the

number of complaints only for those who actually complained. Thus, the dependent variable is censored. However, we have data on the independent variables for ALL observations. The statistical technique used to estimate the system should take into consideration all the information available (Maddala, 1983).

Third, the probability of a particular complaint being resolved and the probability of making a subsequent purchase of the same service are both limited dependent variables. That is, they are reported as 0 or 1; either the complaint was resolved or not, or a subsequent purchase was made or not. OLS is inappropriate when dependent variables are truncated (Maddala, 1983).

Consideration of the above three factors led to the choice of a two-stage maximum likelihood estimator joined with correction for censored sample bias (Maddala, 1983). This estimator has been derived and is relatively easy to implement using the software package LIMDEP (Maddala, 1983; Maddala & Lee, 1976).

The steps involved in the estimation of equations (3), (4), and (5), taking into account the three factors discussed above, include:

1. Estimate reduced form equations, including all independent variables in the system, for equations (3) and (4) to obtain estimates of the number of complaints and the probability of complaint resolution;
 - a. For equation (3), first estimate the probability of making a complaint using Probit and all 91 dissatisfied respondents. Then predict the number of complaints, using the 39 complainers, OLS regression, and including the correction factor, lambda, as an additional independent variable. This corrects for censored sample bias.
 - b. For equation (4) use Logit on the 39 complainers to predict the probability of complaint resolution.
2. Estimate structural equations (3), (4), and (5) using the values predicted for number of complaints and complaint resolution to correct for simultaneous equation bias. At least two variables are unique to each equation to insure identification.
 - a. For equation (3), estimate the probability of complaints using Probit and all 91 dissatisfied respondents. Then estimate the number of complaints using the 39 complainers and OLS regression. The predicted value of complaint resolution becomes an independent variable in the structural equation.

- b. For equation (4), estimate the probability of complaint resolution using the 39 complainers, employing Logit, and including the predicted number of complaints as an independent variable.
- c. For equation (5), estimate the probability of subsequent purchase using the 39 complainers, employing Logit, and using the predicted values for the number of complaints and whether or not the complaint was resolved as independent variables.

Several independent variables are expected to influence complaints, complaint resolution, and subsequent purchase. Economic influences of price of the service (PRICE), and family income (INCOME), each measured on an interval scale, are included in equations that estimate number of complaints and subsequent purchases. PRICE is expected to have a positive influence on complaints and a negative influence on subsequent purchase. Higher out of pocket costs for medical care represents more of a loss to a consumer if there is a problem with it. However, it may be that consumers complain less when prices are higher through rationalizing, "I paid for it therefore I should like it" (Heath et al., 1984). The effect of INCOME will indicate if complaints and the medical service are normal goods.

Actual hours a respondent is employed outside the home (HOURS) and the presence of children under the age of six (YNGKIDS), measured as a 0/1 dummy variable, represent time constraints placed on the respondent. These variables are expected to have a negative influence on complaints since market work and presence of young children compete for available time. They are expected to have a positive effect on subsequent purchase of a service since looking elsewhere for a service involves a time cost.

Whether the medical provider offered some sort of outward customer service (URGE) to attract consumer comments, measured as a 0/1 dummy variable, represents a possible softening of constraints associated with loose monopolies. This variable includes a range of activities, from making patient care representatives and suggestion boxes available in a hospital setting, to offering guarantees. URGE should exert a positive influence on complaints (Kendall & Russ, 1975) and subsequent purchases. One of the major reasons for offering customer service programs is to retain customers by keeping them satisfied (Fornell & Wernerfelt, 1987). SIZE, measured as a 0/1 dummy variable, may exert a positive influence on complaint reso-

lution, since larger medical practices and hospitals are more likely to be able to afford customer service personnel such as patient advocates. Research has found that rural consumers (RURAL) may have fewer alternatives to choose from (Liefeld, 1980). Thus those residing in a rural area may remain loyal to their medical providers.

Learning is measured using four variables. First, because learning occurs through time, we can examine the effects of dissatisfaction and complaining on subsequent purchases. The level of dissatisfaction (DISAT) is included in all three equations. Dissatisfaction was measured using a three point scale (very dissatisfied, dissatisfied, more satisfied than dissatisfied). It was recoded into a 0/1 dummy variable to identify those that were very dissatisfied. After contact with a medical service, a consumer ascertains the level of satisfaction or dissatisfaction. If a consumer is very dissatisfied (DISAT), complaints and complaint resolution may increase, and subsequent purchases should decrease. Age of respondent (AGE), gender (FEMALE), and whether or not a respondent completed college (COLL), indicate the extent of knowledge an individual has about the complaint process. Persons with a college degree may be better at problem solving, while older consumers and women have more contact (experience) with the medical industry (Corrigan, 1990). Thus the effect of FEMALE and AGE on complaints may be positive. On the other hand, women and older persons may have learned that complaining about medical services is unlikely to bring about desired results, thus complaints may be negatively affected. This has been suggested by Singh (1991).

Age (AGE) and gender (FEMALE) are also included in the complaint resolution equation. If a complaint is made by telephone or in person, a seller may be able to ascertain the age and gender of the respondent. The direction of effect of age on complaint resolution will give an indication if older persons and women are treated differently by sellers than younger persons. Both age (AGE), gender (FEMALE), and education (COLL) are included in the subsequent demand equation. If older persons are "more set in their ways," then age should exert a positive influence on subsequent purchase. Women have a higher expectation of resolution (Singh, 1991). However, higher expectations may cause them to be dissatisfied with medical providers' attempts to resolve a specific problem. It is difficult to predict how gender might affect loyalty to a medical service provider. The effects of education should be negative, as more highly

educated consumers are better able to sift through alternative sources of medical care.

Of possible personality/attitude variables, in this study two factors are used, extracted from 21 different statements on the basis of a principal components analysis. Examples of representative statements include: "There is a need for consumers in this country to get together to protect their interests," "Most companies are so concerned about making a profit, they don't care about quality," "Consumers can most effectively voice discontent with services by not buying them," and "If people have problems or complaints about things they buy, it is often difficult to have them corrected." These two factors explained 89% of the variation in the data. The two factors were named BUSINESS, a measure of consumer attitudes toward business, and CONSUMER, a measure of consumer attitudes and actions toward consumerism. BUSINESS should impact negatively on complaints because the factor is framed in terms of consumers' perceptions of the unwillingness of business to respond to consumers. CONSUMER should impact positively on complaints as these actions are consistent with positive attitudes toward consumerism.

RESULTS

Results of structural equation estimates are provided in Table II. The Probit equation is used to correct for censored sample bias and estimates the probability of making a public complaint about a specific service. Being very dissatisfied (DISAT), presence of young children (YNGKIDS), and perceiving that businesses did not care about consumers (BUSINESS) negatively effect the probability of complaining about a particular unsatisfactory encounter with a medical service. Increases in the price (PRICE) of the service and increases in the probability of the provider resolving the complaint (RESOLVE) positively affect the probability of complaining.

The number of complaints made to a medical provider are positively influenced by increases in the number of hours worked (HOURS), being female (FEMALE), and if the provider appeared receptive to complaints (URGE). Number of complaints are negatively influenced by higher education (COLL) and perceptions that providers do not care about consumers (BUSINESS). Lambda is significant, indicating that censored sample bias was corrected.

TABLE II
Structural Parameters

Variable	Probit	Complaints	Resolve	Buy again
INTERCEPT	-0.033 (1.42)	-0.050 (3.49)	4.47*** (1.81)	7.24*** (2.75)
DISAT	-0.939** (0.483)	0.643 (0.840)	-0.292 (0.701)	-1.30** (0.665)
COLL	-0.173 (0.391)	-1.83*** (0.662)	- -	1.16 (0.827)
AGE	-0.020 (0.022)	-0.033 (0.062)	-0.103*** (0.039)	-0.054 (0.036)
FEMALE	-0.300 (0.474)	1.56** (0.833)	-1.32* (0.745)	-1.726*** (0.684)
URGE	-0.276 (0.446)	1.26* (0.796)	-0.775 (0.827)	-1.34* (0.884)
SIZE	-	-	-17.26 (18.7)	-
YNGKIDS	-0.479* (0.282)	-0.091 (0.350)	- -	-0.170 (0.447)
OLDKIDS	-0.041 (0.265)	-0.493 (0.492)	- -	-0.107 (0.398)
PRICE	0.0006** (0.0002)	-0.00001 (0.00008)	-0.0017 (0.0015)	-0.00026 (0.0004)
FAMINC	-0.000013 (0.000015)	-0.0003 (0.00003)	- -	-0.00006 (0.00004)
RURAL	-	-	-	-0.183 (0.524)
HOURS	0.008 (0.013)	0.076*** (0.020)	- -	-0.014 (0.029)
BUSINESS	-0.508** (0.269)	-0.427** (0.255)	- -	-0.168 (0.448)
CONSUMER	-0.023 (0.206)	0.864 (0.722)	- -	-0.054 (0.335)
COMPLAINTS	-	-	0.142 (0.169)	-0.139 (0.349)
RESOLVE	2.34*** (0.746)	1.03 (1.40)	-	-4.62** (2.12)
LAMBDA	-	1.299* (0.787)	-	-
LOGLIKELIHOOD	-32.79	-	-33.27	-46.61
N	91	39	39	39

* Significant at < 0.10 level

** Significant at < 0.05 level

*** Significant at < 0.01 level

Only two variables are found to be significant in estimating the probability of complaint resolution. Being older (AGE) and female (FEMALE) are both associated with decreases in the probability of complaint resolution.

Increases in the level of dissatisfaction (DISAT), being female (FEMALE), making it easier for a consumer to complain (URGE), and actual resolution of a complaint (RESOLVE) negatively affect subsequent purchase of medical services.

DISCUSSION

The complaint process is not driven purely by economic factors, though an economic framework seems viable in estimating the complaint process for medical services. Price (PRICE) is important in getting a consumer to make at least one complaint, as shown by its significance in the probability of complaining equation. It has little effect on increasing the number of times consumers complain, or whether or not the complaint is resolved, as shown by its insignificance in the number of complaints and resolution equations.

Consumers do not appear to be risk averse in that the more expensive the service, the less likely they will be to purchase it again. The explanation may have to do with the medical industry. It is difficult to ascertain the price of a particular service in the entire scheme of medical care (nursing care as part of a hospital stay, for example). Itemizing bills to include personnel as well as physical care items might aid consumers in sorting out prices associated with specific medical services.

Time constraints are not a driving force in the complaint process. Complaints do not compete with family commitments (YNGKIDS, OLDKIDS) or employment (HOURS), except that once a consumer decides to complain, the more hours worked, the more complaints are made. Perhaps consumers pressed for time rationalize that once the complaint process is begun and time has been invested, it is better to pursue the problem until it is resolved.

The finding that attitudes toward business, including businesses were “out only to make a buck” and “did not care about the consumer” (BUSINESS), negatively affected consumer complaints was expected, in part because these consumers felt that their complaint would not be resolved. Indeed, if sellers are more likely to resolve the com-

plaint (RESOLVE), consumers are more likely to complain. These variables, however, do not affect switching behavior (by not using that provider again for medical services), not boding well for medical consumerism as a method for increasing quality. Perhaps because the current medical system is one of limited information and in many cases limited choice, attitudes have little effect on complaint decisions.

The learning variables have the most impact on the complaint process. Gender (FEMALE) and age (AGE) are important indicators of learning, since women and elders use the medical system to a greater extent than others, and should have more knowledge, given increased exposure. This research confirms other studies (e.g., Singh, 1991) that have found that females are more likely to complain. They are also less likely to repurchase a service, regardless of the outcome of the complaint process. In addition, females and older consumers may be discriminated against by medical providers in that being older or female decreases the probability that a complaint will be resolved. Or, it may be that women's higher expectations of resolution cause them to perceive unsatisfactory resolution, regardless of how a service provider may handle a complaint. This supports other research that found that females believe that complaints in the medical industry are less likely to be resolved (Singh, 1991). This is unfortunate since as mentioned, women and older persons utilize the health care system to a greater extent than males (Health Insurance Association of America, 1991).

Having completed college (COLL) negatively affects the number of complaints made, once dissatisfied. One explanation for this is that more highly educated persons are treated better by the medical profession and, once dissatisfied, tend to "let it go." However, the data did not reveal any significant differences between those dissatisfied with medical services by level of education. A simple t-test to test the hypothesis that having a college education is unrelated to being dissatisfied was not rejected at the 0.05 level. And, over half of those who complained completed college.

The above findings do not support medical consumerism as a way to increase quality and competition in the industry. The overriding message to medical providers with regard to the learning model is that the medical profession should "get it right the first time" or risk losing clients. When consumers are very dissatisfied, they appear to be less likely to repurchase from the same service provider *even if their*

complaint was resolved (RESOLVE) or the seller offered some kind of customer service program (URGE). If consumers believe their complaint will be resolved, they will complain, but they won't purchase the service again. And, providing customer service (URGE) encourages consumers to complain, but may increase expectations about resolution. Increased expectations may disappoint some consumers, making them less likely to repurchase the service again. Thus, consumers tend to "learn" that when they are dissatisfied, they might be better off trying a new medical provider even if their complaint was resolved.

CONCLUSIONS

What can be gleaned from the above discussion about complaining as a way to increase quality and competitiveness in the U.S. health care industry? Unfortunately, most of the news is not encouraging. The practice of complaining as a form of consumerism is not likely to have the effect of increasing the quality of medical care. Many consumer characteristics are insignificant in increasing complaints. And, even though females tend to complain more, their complaints are resolved less often. Those with more education, who might be better able to deal with service providers, actually complain less, given dissatisfaction. Older consumers, who have on average more physician visits than younger consumers (Health Insurance Association of America, 1994), are less likely to have complaints resolved. Perhaps older consumers could be educated in "the art of complaining." However, given the current results on complaint resolution, it appears their complaints won't be dealt with satisfactorily.

The glimmer of good news is that consumers do appear to be more likely to switch medical care providers when dissatisfied, even if their complaints are resolved. This practice may increase quality as the poor quality providers lose clients. It may also increase competition as medical providers improve quality in order to remain competitive. Switching, however, places real costs on the consumer. Not only are there increases in time costs associated with "doctor shopping," for which little information is available, there are also pecuniary costs in that consumers must pay for medical services a second time if quality is not up to par the first time.

What this indicates is that medical consumerism may not be able

to help the plight of the medical industry, given current market structure. Perhaps society and policy makers as a group should think twice about placing the burden of improving medical care on the consumer. This points to the need for market oriented controls, some of which include incentives for increasing competition, price regulation, increases in information, and increasing the availability of new services (White-Means, 1989), and separation of information provision from the sale of services. All of these are on the current agenda for medical care policy in the U.S. (Health Insurance Association of America, 1991). For example, managed care is being increasingly used. Managed care involves having a neutral third party evaluate whether services recommended by a medical professional are needed. Perhaps society is also correct in questioning the rationing process the American Medical Association uses to create "barriers to entry" in the medical field, the standard practices of limiting information about medical care to patients, and the reasons behind selective choice in service provision by competing hospitals. It appears that until the structure of the U.S. medical industry is changed to accommodate consumer voice, consumer voice often falls on deaf ears.

LIMITATIONS AND FUTURE RESEARCH

This study has provided some insight into the relationship between complaints, complaint resolution, and subsequent purchases of medical services by consumers. Using an economic framework appears appropriate, and estimates of structural parameters give fairly clear paths of interpretation. There are two limitations to this study, however, that clearly make it exploratory. First, the size of the sample is limiting. While it is a random sample, it is taken from only one state. Second, the sample used is "upscale" with regard to educational attainment. While 22% of the U.S. population has completed four years of college, over half of the sample used in this study has completed college. However, with regard to income, the average income of the sample is actually about 20% lower than that of the general U.S. population (U.S. Bureau of the Census, 1991). Thus, while the approach seems to be a viable one to examine the complaint process, future research should include a more representative sample of the U.S. population.

A final limitation regards censored sample bias. This research corrected for the censored sample bias caused by the fact that only 40%

of the dissatisfied sample complained. Correction of this bias is in congruence with the objectives of this research since it was formulated to explain complaining behavior, complaint resolution, and subsequent purchase, given dissatisfaction. However, given the nature of the data, there is another level of censored sample bias. An extension of this research may examine dissatisfaction as an additional dependent variable. In this case, correction should be made for the bias that may be caused by the fact that of the entire sample of 509 respondents, only 18% expressed dissatisfaction with a medical service. Thus, to provide a more complete picture of the dissatisfaction and complaint process, and to use all the information available in the data, one might consider estimating the probability of dissatisfaction, and then, based on these estimates, go on to estimate consumer and service provider actions once dissatisfied.

The above mentioned limitations do not minimize the importance of the findings of this study. Given the current structure of the medical industry in the United States, shifting the burden of cost containment on to the shoulders of the consumer without parallel changes in national medical policy won't "fix what ails" the U.S. medical industry.

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ZUSAMMENFASSUNG

Unzufriedene Konsumenten medizinischer Dienstleistungen: Beschwerden, Nachbesserung und wiederholte Inanspruchnahme. Verbraucherbeschwerden wegen unzulänglicher ärztlicher Dienstleistungen werden als eine von mehreren Methoden zur Anhebung des Leistungsniveaus und zur Förderung des Wettbewerbs auf diesem Sektor angesehen. Der Beitrag prüft die Eignung dieser Methode anhand von Daten aus einer Stichprobe von 509 Haushalten. Geschätzt wurde dabei die Wahrscheinlichkeit einer Beschwerde über eine bestimmte ärztliche Leistung, die Zahl der Beschwerden, die Wahrscheinlichkeit ihrer befriedigenden Lösung und die Wahrscheinlichkeit einer wiederholten Inanspruchnahme derselben ärztlichen Leistung. Berücksichtigt wurden außerdem Variablen, die Lernprozesse, Hemmungen, Einstellungen und Nutzen/Kosten-Aspekte erfassen. Die Ergebnisse zeigen, daß die Variablen Alter, Erziehung und Geschlecht am engsten mit dem Vorgang der Beschwerde verbunden sind. Insgesamt zeigt sich, daß es angesichts der Struktur des amerikanischen Marktes für ärztliche Leistungen wenig aussichtsreich ist, die Aufgabe der Kontrolle von Kosten und Qualität ärztlicher Leistungen den Konsumenten aufzubürden.

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