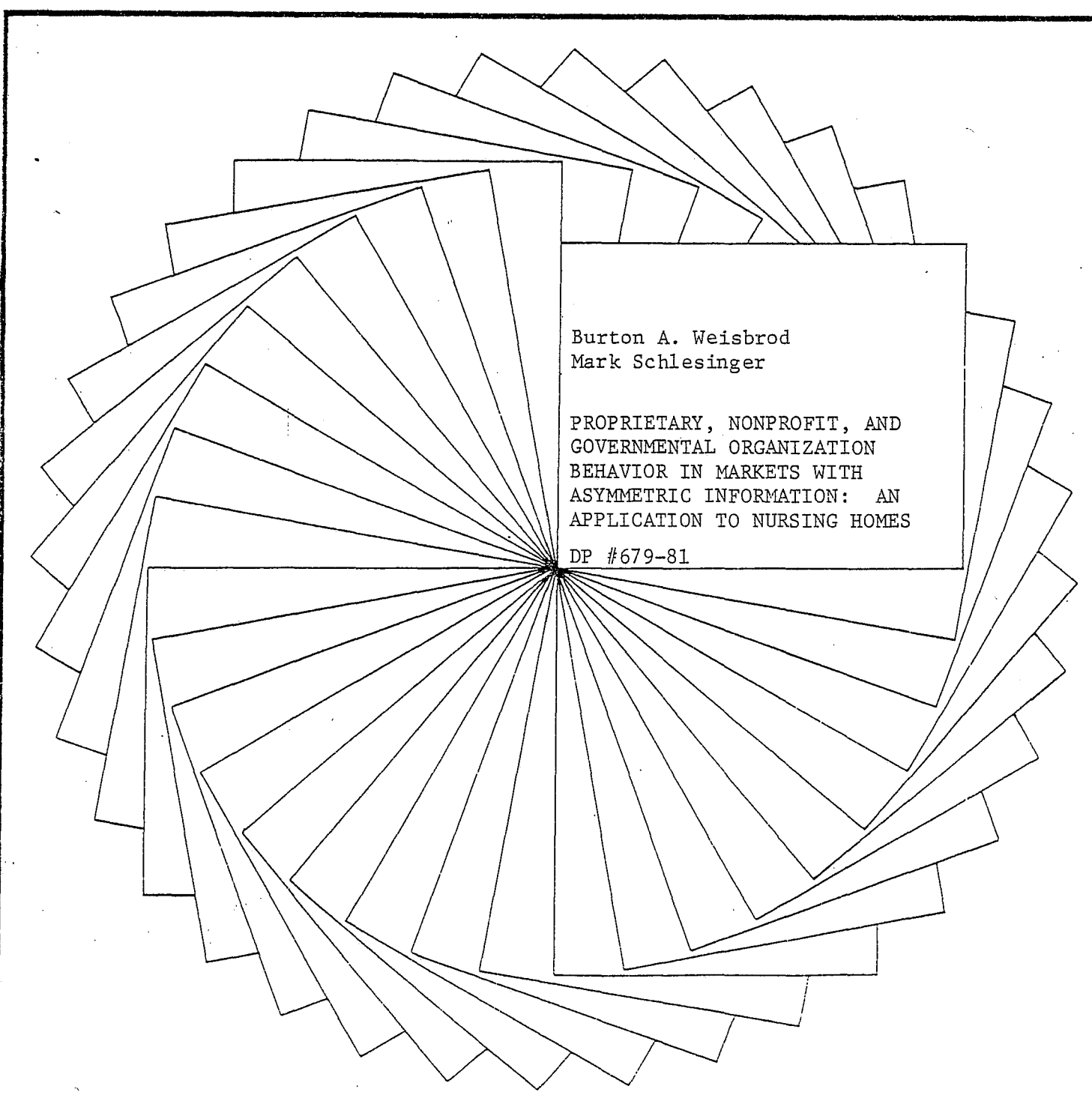




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Discussion Papers



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PROPRIETARY, NONPROFIT, AND
GOVERNMENTAL ORGANIZATION
BEHAVIOR IN MARKETS WITH
ASYMMETRIC INFORMATION: AN
APPLICATION TO NURSING HOMES

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Proprietary, Nonprofit, and Governmental Organization

Behavior in Markets with Asymmetric Information:

An Application to Nursing Homes

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ABSTRACT

This paper focuses on the intersection of two lines of research. One is the behavior of markets with asymmetric information. The other is the comparative behavior of various types of institutions, such as proprietary firms, government organizations, and private nonprofit organizations. It considers two questions: whether these types of institutions differ in the degree to which they actually deliver what they purport to provide, and whether consumers use institutional type as a signal of quality when they lack other information. The empirical work, dealing with the nursing home industry in Wisconsin, suggests that the answer to both questions is yes, although the direction of relationships differs: consumers act as if nonprofit organizations are more "trustworthy" than proprietary organizations, whereas producer behavior indicates that the proprietary firms are more trustworthy.

Proprietary, Nonprofit, and Governmental Organization
Behavior in Markets with Asymmetric Information:
An Application to Nursing Homes

This paper focuses on the intersection of two lines of research. One is the behavior of markets with asymmetric information (Akerlof, 1970; Spence, 1974; Wilson, 1980). The other is the comparative behavior of various types of institutions, such as proprietary firms, government organizations, and private nonprofit organizations.

It seems likely that an increasing portion of GNP is in industries in which consumer information is a notable problem. Scientific advances have made us more aware of informational deficiencies which have long existed but up to now have gone unnoticed (e.g., chemical carcinogens in the environment). Technological changes have brought new problems which most buyers are poorly equipped to detect or comprehend (e.g., the presence of mercury, from industrial discharges, in tuna fish).¹

It is well known that in markets with large transaction costs the knowledge of a transactor's identity can be valuable (Ben-Porath, 1980). The present study asks whether an organization's type of ownership also carries such information.

Given information asymmetries, a variety of reactions can be expected. Consumers will act to minimize the extent to which their own ignorance can be exploited to their disadvantage. These actions may take a variety of forms. Consumers will attempt to acquire information on product quality, to seek out agents (e.g., consumer unions or, in the case of medical care, physicians) or to seek some proxies that are correlated with the qualities that they cannot observe (e.g., the age of the

organization). Consumers may also seek collective responses to the threat represented by their lack of information—for example, through regulation of producers.

Producers will also respond to this asymmetry. Some may seek to exploit consumers by pretending to deliver high-priced goods and services while actually producing less desirable varieties. Other producers, supplying "high-quality" goods, must signal to consumers that they are actually receiving a particular quality output. The performance of such markets depends on the interaction of producer and consumer tactics, both, perhaps, within the constraint of a regulatory system. The extent of misrepresentation that occurs in the industry depends on the ability of consumers to detect it, the willingness of some producers to risk detection, and the ability of other producers to accurately convey the actual quality that they are supplying.

A division is often made between "market" (private, for-profit) and "nonmarket" (public) systems of resource allocation.² This dichotomy is overly simple. Private--nongovernmental--enterprise can take a variety of forms. As Table 1 reveals, in a number of industries a substantial portion of private production occurs in nonprofit firms. Nonprofit or "nonproprietary" production can be divided, in turn, between church-run and other nonprofits, and perhaps in still other ways. This gives rise to the concept of "mixed industries," those in which there is heterogeneity of ownership among suppliers. It is our intention to contribute to an understanding of the manner in which ownership form affects the behavior of the organization under conditions of asymmetric information about product quality.

Table 1

The Distribution of Ownership in Selected Mixed Industries in the 1970s

Industry	Percentage of Output Produced by Sector			Measure of Output:
	Government	Proprietary	Nonprofit	
Nursing Homes ^a	12.8	58.1	39.1	Number of beds
Psychiatric Hospitals ^a	15.4	8.3	76.2	Number of facilities
Homes for Mentally Handicapped ^a	16.1	46.2	37.7	Number of facilities
General Hospitals ^b	31.7	5.5	62.8	Number of beds
Day Care Centers ^c	8.8	50.7	40.5	Population served
Secondary Education ^d	83.0	3.5	13.5	Revenues
Post-Sec. Education ^e (including vocational)	46.9	33.5	19.6	Revenues
Financial Intermediary ^f	0.0	60.0	40.0	Over-the-counter savings
Savings and Loans ^f	0.0	19.7	80.3	Assets
Research & Development ^g	16.1	67.6	16.4	Revenues
Health Insurance ^h	12.0	45.2	42.7	Population served
Life Insurance ⁱ	0.0	92.0	8.0	Population served

Sources: a. 1976 Survey of Institutionalized Persons, 1978.
b. Hospital Statistics, 1978.
c. Keyserling, 1972.
d. Digest of Education Statistics, 1977-78.
e. Bendick, 1977.
f. Savings and Loan Fact Book, 1980.
g. National Patterns of R&D Resources, 1972.
h. Source Book of Health Insurance Data, 1976-77.
i. Life Insurance Fact Book, 1978.

One can imagine a variety of influences of ownership. On one hand, different forms of ownership imply different legally defined incentives and constraints, and perhaps even different goals, for managers of the "firms." These may lead individuals in the firms to be more or less likely to exploit the opportunities resulting from information asymmetries. On the other hand, ownership type constitutes a fairly easily observed characteristic of an organization. It thus provides a potentially useful informational signal for consumers. If those purchasing services cannot directly observe product quality, but if they believe that this quality is related systematically to organizational form, they may use ownership as a signal of the reliability of producer claims.

In the section that follows we consider the theoretical basis for linking ownership to behavior. We next turn to empirical analysis. Two questions are examined: (1) Do institutional types vary systematically in the degree to which they actually deliver whatever quality they purport to provide? (2) Do consumers use institutional type as a signal of the quality being supplied when they cannot easily perceive it directly?

ASYMMETRIC INFORMATION AND OWNERSHIP

Differences in institutional form can be thought of as differences in "social constraints"; these are analogous to the technological constraints of neoclassical theory. They include legal restrictions, but also social mores and ethical codes, which entail a variety of penalties when they are violated.

We observe a wide range of forms of ownership: government-owned enterprises, private proprietary firms, quasi-public corporations, regu-

lated utilities, mutual and cooperative organizations, and other types of nonprofits. In the nursing home industry--to which our empirical work applies--a number of these forms are represented. Nationally, the industry is dominated by proprietary ownership, although both private nonprofit and governmental homes have substantial market shares.³ Four forms of ownership--or "institutional forms"--are considered in this study: proprietary, public and two categories of private nonprofits--those that have a religious affiliation and those that do not. The former may embody a somewhat different set of ethical constraints than the latter. These constraints could influence the organizations' behavior.

In both nonprofit and public organizations, there exists what Hansmann (1980) has termed the "nondistribution constraint." This prohibits the distribution of profit to "owners." There are, however, other constraints. For example, nonprofit organizations are limited in their expenditures on political "lobbying." And most public operations have a "guaranteed access constraint"--they cannot turn away those unable to pay for services.

On the other hand, nonprofit and public producers have advantages that proprietary firms do not. The latter are constrained to pay property and income taxes. They cannot solicit donations at a reduced "price" as can those nonprofit firms for which donations are tax deductible. They cannot obtain revenue through taxation, as can publicly owned facilities. Nor can they obtain "free," "public service" advertising and lower postal service charges as can the nonprofits. Along these dimensions it is the proprietary form that is constrained.

It is not, therefore, very useful to conceive of any particular form of ownership as more restricted than another; they are differently constrained. We consider now how the different types of restrictions on nonprofit, for-profit, or public production might influence producer and consumer behavior.

Ownership and Producer Behavior

How do social constraints shape a producer's response to asymmetric information? One can set forth a number of plausible hypotheses. We consider two here as illustrations. They focus on the same constraint on nonproprietary ownership--the nondistribution of profit. The first treats the response to asymmetric information in the context of the choice of output quality. The heart of the analysis is the hypothesis that proprietary and nonproprietary organizations tend to attract employees who differ systematically in their preferences.⁴ If, for example, one group of employees was more concerned about honesty in describing product quality, this could mitigate incentives to pretend to produce high quality while actually producing lower quality.

The second hypothesis is that the inability of nonproprietary organizations to motivate managers by profits creates waste through "organizational slack": reductions in the efficiency of internal administration in such organizations might lead to unintentional divergence between actual and promised quality.

The first hypothesis focuses on managerial preferences for particular nonpecuniary rewards. Because of variation in managers' preferences, even proprietary firms, which are unconstrained in their forms of remuneration,

nerating managers, often use combinations of nonpecuniary and pecuniary rewards. Nonprofit organizations, however, are limited in the combinations they can deliver; profit sharing, for example, violates the nondistribution constraint. Thus, managers who have relatively strong preferences for pecuniary rewards would tend to gravitate to proprietary settings. Those who place a smaller weight on performance-based money income would tend to prefer nonproprietary organizations.

If such a self-selection process were operative, one would observe a difference in objectives of proprietary and nonproprietary producers, as managers at each sought to maximize their utility. The nonproprietary firms might well display a greater concern for product quality. If this were the case, nonproprietary organizations would be less likely, other things being equal, to utilize their informational superiority by misrepresenting quality.

The other model, which emphasizes the disincentive effects of the unavailability of profits in a government or nonprofit firm, has been adopted in most economic analyses of nonproprietary enterprise. It is argued that without the ability to reward managers for increasing organizational profits, the efficiency of internal administration is reduced (Frech, 1980).

Quality in nonproprietary organizations may thus be low simply because of poor planning or inadequate administration. In this case, divergences of actual from anticipated quality (which we sometimes refer to as "promised" quality) would not necessarily reflect conscious misrepresentation. The result is that private nonprofit and public organizations would, other things equal, have greater differences between actual and promised quality than would proprietary firms. If such

inefficiency introduced random errors in the operation, the divergence of actual from "promised" quality could be in either direction. If high-quality production requires more careful monitoring, however, the level of delivered quality would fall below that which was anticipated.

These two models--both of which may be operative--present stylized versions of reality. Actual behavior is of course more complicated. Tax advantages create particular incentives for nonprofit firms. The non-distribution constraints facing public and private nonprofit organizations are not the same; the former often embody a guaranteed-access requirement. Managers are undoubtedly motivated by other considerations than income and product quality. Private nonprofit firms may be able, as a practical matter, to violate the intent of the nondistribution constraint by paying high salaries to managers.

We have highlighted the nondistribution constraint because, while we do not believe that this is the only way by which ownership can affect organizational behavior, we do see this particular constraint as important. It may affect the behavior of consumers as well as of producers. When consumers are aware of their informational inferiority, they may prefer to deal with a producer which, being constrained from capturing profits, is perceived to be less likely to take advantage of its informational superiority (Easley and O'Hara, 1981). We turn now to an examination of consumer behavior.

Ownership and Consumer Behavior

Asymmetric information need not inhibit the smooth functioning of markets. If consumers, or some reliable agent, can unambiguously determine product quality even after consumption, they can form contingent

contracts prior to purchase which protect them from misrepresentation of quality or from other unfavorable outcomes.

Commonly, however, a fully developed pre-contracting option does not exist because of information and transactions costs. The causes of a specific outcome may be sufficiently ambiguous that the cost of establishing the validity of claims about inadequate quality can be high. Contingencies may be too numerous to cover feasibly by formal contracts. The production process may be sufficiently idiosyncratic (that is, tied to subjective characteristics of the individual consumer) that such contracts would lack the necessary objective standards to be legally enforceable (Hahn, 1980, p. 132).

If organizational behavior differed systematically with type of ownership in the manner described above or, more important, if consumers believed that it did--they could use ownership as such an informational proxy. This piece of information has a notable advantage: it is readily observable.

The belief that there is information content in institutional form has often been expressed. Proprietary firms have been claimed to appear less "trustworthy" to donors (Hansmann, 1980). "Unsatisfactory" and "exploitation rather than responsible service" are descriptions that have been used to characterize proprietary firms and markets in the day care, nursing home, and hospital industries (Nelson and Krashinsky, 1973, pp. 55-56; and Greene and Monahan, 1980, p. 87).

Once such consumer expectations are established, they can become self-fulfilling. Knowing that consumers are more willing to accept claims of high-quality services in a nonprofit setting, entrepreneurs interested in that segment of the market have an incentive to associate

with nonprofit organizations. This reinforces any similar incentive created by the nondistribution constraint.

Theory is inadequate to permit unambiguous predictions as to whether claims of higher quality at nonproprietary organizations are more to be expected than the contrary claims that attenuated property rights make nonproprietary organizations inefficient. Empirical study is needed. We turn now to this.

OWNERSHIP AND BEHAVIOR: AN EMPIRICAL ANALYSIS

We pose two basic questions: Does producer behavior with respect to asymmetric information vary systematically with ownership? Do consumers use ownership as an indicator of that sort of behavior? These questions are clearly related, but they need not have the same answer. Consumer anticipations can be wrong. Given time, of course, we would expect these expectations to adapt to actual practices, but there is little reason to anticipate that this would be a speedy process.⁵

The problem in answering our two questions is that, in markets in which it is difficult for consumers to evaluate product quality, it is equally difficult for outside investigators, such as inquisitive economists, to do so. Not only must we determine the quality actually delivered, but also that "promised" by producers and anticipated by consumers.

The nursing home industry is an attractive one in which to examine the links between ownership and behavior. The mix of ownership is much like that found in a variety of other industries, including homes for the mentally handicapped, day care centers and health insurance. Regulation

is extensive, though no more than in the markets for hospital care or secondary education.

Most important, substantial informational asymmetry seems to exist. The buyer of nursing home services--whether regarded as the patient-resident or some friend or relative--is generally poorly informed about important dimensions of quality. Purchasing the service infrequently--perhaps once or twice in a lifetime--knowing few people who have purchased the service, facing great uncertainty about the probability distribution of various service "needs" in the future, the consumer faces large informational handicaps when selecting a home. Nor are most potential residents readily able to make decisions even with more adequate information. They may well be too infirm to detect service quality that is below expectations or below "required" levels. Estimates suggest that between 55 and 86 percent of nursing home residents are to some extent mentally impaired (Doctors in Nursing Homes, 1975, p. 323). Patients, moreover, have limited support from outside parties. Few homes advertise at all (Fraundorf, 1977, p. 606) and even professional social welfare workers have difficulty correctly placing a potential resident (Long Term Care Regulation, 1976, p. 9). Nor do physicians play the active supporting role they often assume in general hospitals (Doctors in Nursing Homes, 1975, pp. 322-332).

To conduct this investigation, we must develop some operational measure of (a) the divergence between promised and actual quality, and (b) the expectations of this divergence held by consumers. We believe that one useful proxy for the former is the number of regulatory violations--suitably adjusted.

We assume that every purchase of nursing home services involves an implicit contract that regulatory standards will be met. Thus, the number of violations that actually occur reflects the extent to which delivered quality falls short of this promised level.

We also explore another measure of expectations: the number of "complaints" raised with state officials against a particular facility (again, suitably adjusting for exogenous factors). Each complaint, we will argue, represents a violation of expectations. To the extent that one can standardize for variations in the actual performance of the nursing homes, different levels of complaints will reflect consumer perceptions of differences between promised and delivered outputs.

Regulations and the Divergence of Promised and Actual Quality

State-enforced regulations cover a range of aspects of nursing home performance. We assume that the standards promulgated in regulatory codes represent the sort of behavior sought by a well-informed consumer, at least with respect to the easily monitored aspects of quality.

This being the case, one can conceive of an implicit contract between producer and purchaser, guaranteeing that these standards will be met. The exact relationship between the frequency of violations and the extent of violation of this implicit contract is, however, complicated.

Let us assume that quality can be measured along a single dimension, as in Figure 1. Assume further, for simplicity, that (1) regulatory standards are set at a particular level of quality, Q ; (2) institutions differ in the quality of output they promise (P_i); (3) the number of violations detected is proportional to the difference between Q and the quality of care actually provided by a home (A_i); (4) there exist three

types of homes ($i = 1, 2, 3$); and (5) all facilities underprovide quality to some extent (though not necessarily equally), in the sense that consumers expect one level of quality but receive a lower one.

In this simple sort of world, the actual number of violations (deficiencies) may not be a good measure of underprovision. In Figure 1, for instance, nursing home type 1 misrepresents--that is, P differs from A --to a greater extent than does a type 2 home, yet the latter has more deficiencies because its quality "base" is lower ($P_2 < P_1$). Type 3 homes have the most underprovision yet no violations, because they operate in a high-quality market "niche." If various ownership types were not randomly distributed across the quality spectrum, then violations would poorly proxy the relative divergence of actual from promised quality.

Let us say, however, that we can standardize for the promised level of quality, and allow only institutional form to vary. This would create a situation as pictured in Figure 2, in which, after standardization, $P_1 = P_2 = P_3$. In this case, the relative number of recorded violations would be correlated positively with the extent of underprovision. Detection of the presence or absence of systematic differences across institutional types is our goal.

Complaints and Consumer Expectations of Quality

Granted that the market for nursing home services is characterized by both consumer ignorance and uncertainty, it is not surprising to find numerous instances in which consumers discover actual practices that do not match their expectations. These discoveries need not be limited to those aspects of output quality that are captured by regulatory codes. Those codes are likely to encompass only easily monitored dimensions of

FIGURE 1

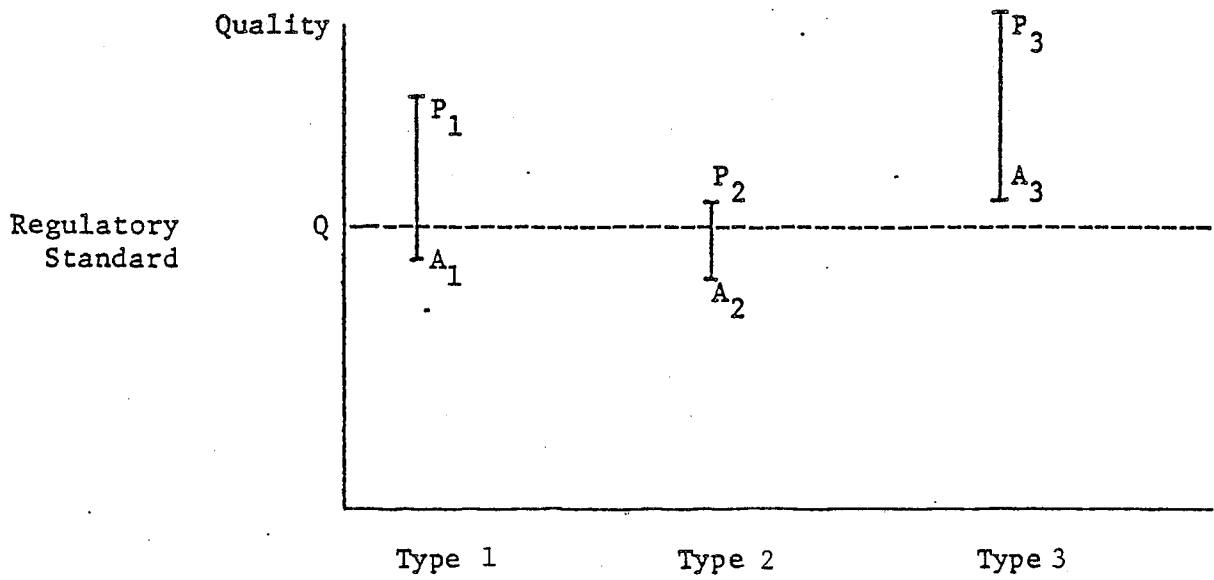
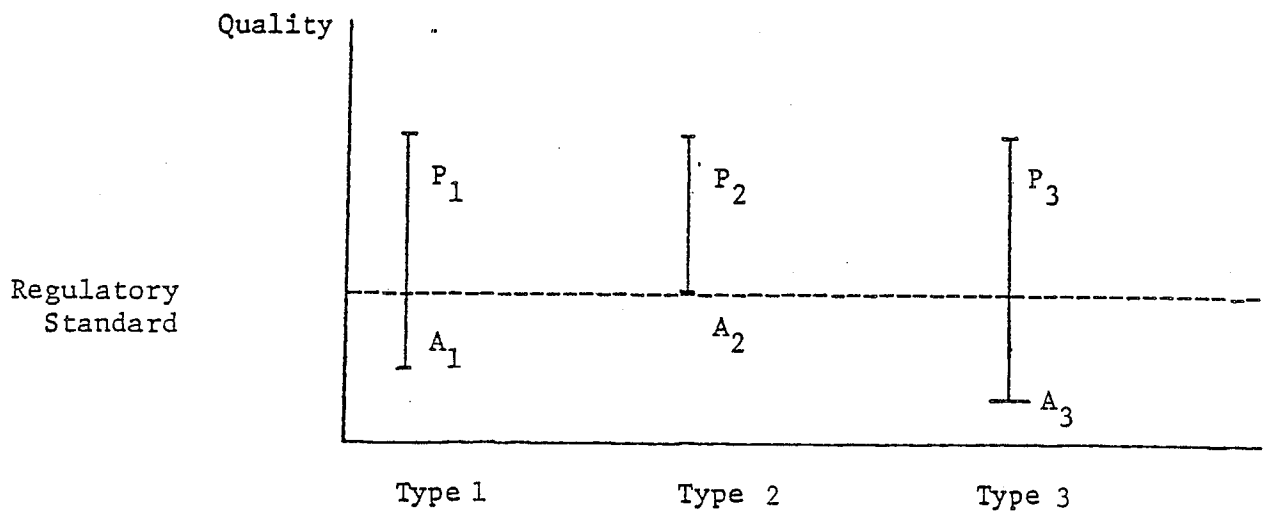


FIGURE 2



quality. The subtler dimensions--especially those involving, in the nursing home case, "tender, loving care"--are likely to be omitted from prescribed conduct. Patients and their agents may, however, make formal complaints about them.

In most markets, consumers can express dissatisfaction in two ways--by protesting to the producer, or by switching to another source of supply. In Hirschman's terminology, the consumer has the option of "exit" or "voice." In nursing homes, however, the first option is generally proscribed by health considerations. Elderly residents who are transferred from one facility to another frequently display what is termed "transfer trauma" (Enforcing Quality of Care in Nursing Homes, 1978, p. 58), and the mortality rate of the transferred resident increases precipitously. This leaves "voice" (complaints) as the generally preferred option.

Residents of nursing homes will sometimes observe practices which appear to them to be of dubious value or perhaps even counterproductive. If they believe that the administrator is acting or attempting to act in their best interests, they will either trust that the problem will soon be corrected or complain to the management to encourage such action. If they believe, however, that the operators will not rectify the problem, and also believe that an outside complaint will prompt a preferred response (taking into account the probability and consequences of reprisal), they will likely turn to an outside agency. We quantify this exercise of voice by the number of complaints against a home received by state regulators.

We model the complaints process as follows: A complaint is postulated to occur when, and only when, these conditions are met: (1) the

resident is "dissatisfied" with services--that is, actual quality of service, in some dimension, is perceived as less than anticipated; (2) there is some reason to believe that the management within the home is not acting as it would if the patient were fully informed; and (3) it is expected that a complaint to state officials will prompt action which will rectify the matter.⁶ We are primarily concerned here with how this second factor--consumers' confidence in managerial performance--varies with ownership. In order to isolate this factor, we will identify a particular subset of complaints, described in the next section.

THE LINK BETWEEN OWNERSHIP, MISREPRESENTATION AND EXPECTATIONS: REGRESSION ANALYSIS

The Violations Regression

One portion of our analysis involves estimating a reduced-form equation in which the frequency of a home's regulatory violations is regressed on (a) a set of variables reflecting the quality of its promised services, and (b) its institutional ownership type. That is, on the basis of our analysis of the previous section, we proxy the divergence of actual from promised quality by the number of regulatory violations, standardizing for the promised level of quality. This standardization will involve each of the following. First, a variable recording the home's average revenue per patient day. This is based on the assumption that the higher the price the higher the promised level of services.⁷ It is useful, however, to incorporate some of the complexities of the nursing home industry into the standardization. Thus, a

number of control variables will be included in addition to the home's average revenue.

Different homes face different sets of regulations. A facility may be certified as either skilled nursing, intermediate, personal, or residential care (in decreasing order of stringency requirements). Homes must also be certified to accept large numbers of mentally retarded residents. The number of recorded violations reflects in part the stringency of the requirements. Dummy variables are therefore included in the regression to reflect each type of certification. (Personal and residential care homes, which have very similar requirements, are grouped.)

Violations can create two sorts of penalties: legal sanctions and market sanctions. The former depend on the nature of the enforcement process and its penalties. The latter depend on consumer responses to adverse information about a seller.

State governments enforce quality standards as part of the process of licensing nursing care facilities. These regulations reflect in part federally mandated standards, and in part those initiated by the individual state. In Wisconsin, each nursing home has an annual inspection, conducted with some forewarning, so that the administrator usually knows at least the month of the inspection. Annual inspections are supplemented by additional investigations upon the receipt of a complaint of a sufficiently severe condition.

A variety of penalties may be levied by the state upon those that violate regulations, including fines, adverse publicity, temporary closing, and loss of license. In fact, any of these is used only occasionally. It does not follow, however, that the regulation has no effect, for the threat of punishment--indeed, even the information that a viola-

tion has been observed--often proves sufficient to bring corrective action.⁸

As best we can determine, there exists no serious bias in enforcement based on the ownership of the home (Zitske, 1979; McKenzie, 1979). It is well-known, however, that authorities are reluctant to enforce sanctions against rural facilities which may have a local monopoly (Feder, 1977, pp. 16-19; Enforcing Quality of Care in Nursing Homes, 1978, p. 11). As this reduces the expected penalties of violations, it may lead to more violations. Thus, a dummy variable is included for urban location to capture this effect.

Another control variable is for the size of the nursing home--as proxied by the number of licensed beds. Larger homes may be more, or less, likely to commit regulatory violations. In addition, larger homes may be more or less likely to be detected if they are in violation. For example, the size of, and time allocated to, inspection teams is not fully adjusted to reflect the size of the institution. Hence larger homes may receive more cursory inspections. Were this the case, then, since the size of homes does vary systematically with institutional type, omission of a size variable could attribute to institutional type the effects of size. (Why size varies with institutional type is a matter worthy of attention.)

Much of the potential cost to the home of regulatory violations involves adverse publicity. The willingness of an administrator to risk the discovery of a violation thus depends on the sensitivity of potential customers to revealed deficiencies. This is partly captured by the location dummy. It may also depend on whether the potential resident pays for services through private funds (and is therefore likely to be more

sensitive to reduced quality), and whether the nursing home is affiliated with a hospital (giving it something of a captive population). Variables recording the proportion of revenue from private pay and Medicaid sources are therefore also included in the regression. Finally, a dummy variable for whether the home has a hospital affiliation is incorporated as well. With all these controls, we believe that we can reasonably isolate the effects of ownership on regulatory violations.⁹

The Complaints Regression

Formal complaints to a state agency may be thought of as a proxy for consumer attitudes toward the seller (nursing home) if we standardize for (a) differences between actual and promised performance, and (b) any differences across institutional types in the anticipated efficacy of complaining to state officials. Our interpretation of complaints is that the more numerous they are--assuming further that each complaint can be counted meaningfully as a unit--the less the complainers believe that administrators of the home are acting in the patients' best interests. We take two alternative approaches to this standardization. In the first, all complaints filed with the state are used. We attempt to capture consumer expectations regarding what they were "promised" by including, as before, variables on level of certification and average revenues. Actual performance is measured in various ways--by average cost,¹⁰ by an index of the variety of services provided and, in some specifications of the regression, by the number of regulatory violations. In this approach, we assume that regulators are equally likely to investigate complaints against homes of each form of ownership. (As

noted previously, this is in accord with observations by expert observers of the industry.)

Nonetheless, it is quite possible that dissatisfaction with homes under a particular type of ownership is concentrated in areas that are not covered by regulatory codes (e.g., they were too difficult to measure objectively). It would certainly be less useful to bring these to the attention of state officials. Differences in complaints would, under these circumstances, reflect differences in organizational behavior rather than consumer perceptions of that behavior. To better capture differences in consumer belief, we examine a subset of complaints--those which, upon investigation, were discovered to be violations of regulatory codes, termed by regulatory officials "complaints substantiated."

Complaints of this type will be enforced by the state. Residents would therefore be as likely to expect action by regulators against the home, whatever its ownership. Again standardizing for the deviation of actual from promised quality, as was done above, this isolates the relationship between the attitude of consumers toward management and the ownership of the home.

Once more, the complexities of the nursing home industry necessitate the inclusion of additional exogenous variables, to control for actual and promised quality. Many of the same variables that are included in the violations regression are also included in the complaints regressions.

The likelihood that each individual resident or his/her agent complains is a function of the treatment he or she receives. There is some evidence--albeit much of it apocryphal--that residents who pay their own way are treated better than those who are supported by government

programs (Levey et al., 1975, p. 68; Nursing Home Care in the United States, 1974, pp. 200-202). Thus, variables are included in the complaints regressions to reflect the proportion of residents whose care is paid from private sources (PRPAY) and from Medicaid (MCDPAY). (These variables replace the variables PPREV and MCDREV, which captured the proportions of revenue, rather than of residents.) Treatment may also be less careful--generating more complaints--if the nursing home is affiliated with a hospital, and thus has a more secure supply of patients. Therefore, a dummy variable is included in the complaints regression to capture this effect of hospital affiliation.

The location of the nursing home also likely affects the propensity to complain. One reason is that facilities located in urban areas are more likely to have other institutions nearby and, thus, to have more competition. Comparisons are facilitated, which may either increase or decrease the residents' expectations. The proximity of alternate facilities also brings down the cost of moving to another home, even given the limited mobility of residents. By providing an outlet for dissatisfaction, this probably decreases the number of complaints against urban nursing homes. Therefore, a variable is used to identify the size of the community in which the institution is located.

The total number of complaints against a home clearly depends on the size of the facility, since the more residents there are, the greater the number of potential complaints. Therefore, the size of the facility, measured in beds, is included as an exogenous variable.

Holding these factors constant, this analysis should identify the connection between complaints and ownership, ceteris paribus. It is hoped that this will enable us to say something useful about the

existence of any differential attitudes of consumers towards the various types of organizational ownership.¹¹

Our data apply to the 601 nursing homes in the State of Wisconsin in the year 1976. Table 2 provides descriptive statistics.

EMPIRICAL RESULTS AND ANALYSIS

A priori we have no expectations as to the impact of ownership type on the degree of underprovision, i.e., on the differences between actual and expected (or "promised") quality. It is possible to construct models that imply that nonproprietary firms will have either a smaller or larger divergence of promised from actual quality than do their proprietary counterparts.

Popular opinion seems to anticipate that the nonproprietary organizations deviate less and, in this sense, are more trustworthy. Economists' views tend to reflect more confidence in market forces and less confidence in the efficiency of altruistic behavior. As noted above, the inability of government and private nonprofit organization managers to capture profits is often seen as a source of inefficiency and, accordingly, of behavior that is less likely to serve well the demands of consumers.

The "popular" view is consistent with the crude statistics on regulatory violations and complaints presented in Table 2. Proprietary nursing homes on average do have more violations and more complaints than their public or private nonprofit counterparts. For-profit operators do appear to underprovide product quality more.

These simple statistics ignore, however, the considerable influence of the various factors discussed above that may not be directly related

Table 2

Regulatory Violations and Complaints
Against Wisconsin Nursing Homes, 1976

	Government	Proprietary	Nonprofit Nonchurch	Nonprofit Church- Related
Number of Facilities	104	292	155	50
Regulatory Violations, 1976				
Mean Deficiencies per Home	161.0	169.8	163.2	144.0
Standard Deviations of Deficiencies per Home	106.5	115.2	124.4	119.4
Complaints Against Wisconsin Nursing Homes, 1976				
Mean Issues Complained About per Home	1.65	2.45	1.21	0.92
Mean Complaints per Home	.36	.52	.25	.19

Source: See Appendix.

to type of ownership but are correlated with it and with our dependent variables. We incorporate these factors in the regression functions we estimate for violations, complaints, and complaints substantiated. In each equation, ownership is captured by dummy variables representing whether the home is a government home (GOVLIC), a private nonprofit home not affiliated with a religious body (NCHLIC), or a private nonprofit home that has a religious affiliation (CHLIC). (For-profit, "proprietary" homes constitute the omitted group.) The estimated equations have the following form (the appendix contains a glossary of definitions):

$$\begin{aligned} \text{VIOLAT} &= f(\text{CONSTANT}, \text{GOVLIC}, \text{CHLIC}, \text{NCHLIC}, \text{SKLD}, \text{PRSRES}, \text{MRCERT}, \\ &\quad \text{CITY}, \text{HOSBAS}, \text{LICBED}, \text{PPREV}, \text{MCDREV}, \text{AVREV}) \\ \text{COMPS} &= f(\text{CONSTANT}, \text{GOVLIC}, \text{CHLIC}, \text{NCHLIC}, \text{SKLD}, \text{PRSRES}, \text{MRCERT}, \\ &\quad \text{CITY}, \text{HOSBAS}, \text{LICBED}, \text{AVREV}, \text{PRPAY}, \text{MCDPAY}, \text{SRVIND}, \\ &\quad \text{AVCOST}) \end{aligned}$$

In specifying a regression technique we noted that a number of nursing homes have zero recorded violations or complaints. (Some 7 percent of the homes had zero violations during the year, and 60 percent had zero complaints.) If these zeros are interpreted as reflecting a truncation of an otherwise normal distribution of the dependent variables, ordinary least squares, being linear, would not be appropriate. Thus, we used an alternative technique, Tobit, which adjusts for this truncated distribution. Our regressions should be viewed as reduced form equations from an unspecified structural model.¹²

We present in Table 3 the results of both ordinary least squares and Tobit estimation (the latter being appropriate if the distributions of dependent variables are truncated at zero).¹³

Table 3

Coefficients and t-Statistics (in Parentheses)
 from Violations Regressions and Complaints
 Regressions, Wisconsin Nursing Homes, 1976

Dependent Variable: Violations

N=431

Independent Variables	OLS (1)	Tobit (2)
CNSTNT	212.80 (14.2)	206.41 (11.64)
GOVLIC	14.43 (1.00)	15.96 (0.95)
CHLIC	5.42 (0.29)	-0.47 (-0.03)
NCHLIC	30.72 (2.41)	31.64 (2.14)
SKLD	-56.71 (-4.51)	-58.95 (-4.21)
PRSRES	-166.43 (-9.81)	-228.64 (-10.43)
MRCERT	-68.21 (-3.04)	-77.74 (-3.10)
CITY	19.50 (1.92)	25.42 (2.17)
HOSBAS	-18.7 (-1.14)	-17.5 (-0.95)
LICBED	0.02 (1.32)	0.03 (1.46)
PPREV	7 23 (1.04)	7.14 (0.94)
MCDREV	-4.65 (-0.61)	-5.65 (-0.71)
AVREV	-0 00 (-0.27)	-0.00 (-0.25)

(table continued)

Table 3 (continued)

Dependent Variable: Complaints

Independent Variables	OLS (3)	Tobit (4)
CONSTNT	1.65 (2.39)	-1.91 (-1.12)
GOVLIC	-0.99 (-2.37)	-2.25 (-2.26)
CHLIC	-1.29 (-2.45)	-3.98 (-2.80)
NCHLIC	-0.92 (-2.48)	-2.74 (-2.87)
SKLD	1.33 (3.60)	3.38 (2.97)
PRSRES	-1.13 (-2.31)	-7.49 (-3.83)
MRCERT	0.35 (0.54)	0.97 (0.52)
CITY	0.09 (0.32)	0.38 (0.47)
HOSBAS	-1.36 (-2.55)	-4.07 (-2.81)
LICBED	0.00 (0.48)	0.00 (0.17)
AVREV	0.00 (0.26)	0.00 (0.23)
PRPAY	-0.05 (-1.05)	-0.17 (-1.41)
MCDPAY	0.05 (1.05)	0.13 (1.10)
SRVIND	-0.84 (-1.07)	-1.62 (0.73)
AVCOST	0.00 (0.26)	0.00 (0.80)

Note: See Appendix for sources and definitions.

Several conclusions emerge. Overall, we find that ownership does make a difference. Once we have controlled for other factors, nonproprietary homes of all three types--governmental (GOVLIC), church-owned nonprofits (CHLIC), and other nonprofits (NCHLIC) tend to have more violations than proprietary homes (see the coefficients of GOVLIC, CHLIC, and NCHLIC in columns 1-3 of Table 3), although only the coefficients on nonchurch nonprofits are significant. The estimates were similar in both regression specifications. Our findings are in contrast to the simple comparison of means, in Table 2, which showed proprietary homes to have the most violations. The most important source of the change seems to be the effects of the types of certification (variables 5-7 in Table 3). Intermediate care facilities--the omitted class, between SKLD and PRSRES--are the recipients of the greatest number of violations, and these are predominately proprietary. Measured in the dimension of regulatory violations, proprietary homes appear to exploit their informational superiority over consumers less than do other types of ownership.¹⁴ Not only do the proprietary homes have significantly fewer violations than do the nonchurch nonprofits, but the magnitudes are substantial--about 20 percent fewer than the mean of 169.8 reported in Table 2.

The finding of any significant difference is notable, given the fact that a selection process is at work tending to eliminate them.

The estimates of the complaints equations are particularly interesting. Recall that we have two versions of the complaints equation. One is based on total complaints, the other on only those complaints that were later found to be violations of regulations ("Complaints Substantiated"). Estimates from the first version are pre-

sented in Table 3, columns 3-4; those from the second are found in Table 4.

The two complaints regression exhibit a marked contrast to those estimated on regulatory violations. In both versions of the complaints function, nonproprietary organizations--public and private--had fewer complaints than did proprietary firms (and the differences are statistically significant at the 10 percent level or better). The signs of the estimates were consistent across both specifications of the total complaints regression. The indicated effect of institutional type on complaints was quantitatively remarkable. The finding that each of the three forms of nonproprietary homes were associated with approximately one less complaint per home per year suggests a powerful differential effect between proprietary and other types, given that the mean number of complaints per home was considerably less than one (Table 2).

The contrast between our findings regarding the effects of ownership on violations and on complaints is intriguing. If we simply compare the results presented in Table 3 (i.e., ignore complaints substantiated) one might be tempted to conclude that residents complained about a range of issues not covered by regulations, and that proprietary nursing homes were particularly prone to annoy residents on these matters.¹⁵

Examination of complaints substantiated (Table 4), however, suggests that this interpretation is at most only partly correct. The larger number of complaints substantiated against proprietary homes, around one-half per home per year, was very large relative to the means in Table 2, and was significant at the 10 percent level against governmental homes, and at the 1 percent level against nonprofit homes without religious affiliation. Consumers (residents and their families and friends) appear

Table 4

Coefficients and t-Statistics from Complaints-Substantiated
Regressions, Wisconsin Nursing Homes, 1976

Dependent Variable: Complaints Substantiated

N=431; Tobit Estimates

Independent Variable	Coefficient	t-Statistic
CNSTNT	-0.83	2.13
GOVLIC	-0.35	1.67
CHLIC	-0.48	1.57
NCHLIC	-0.62	2.82
SKLD	-.57	2.85
PRSRES	-0.80	1.53
MRCERT	0.61	1.83
CITY	-0.75 (-.02)	0.05
HOSBAS	-0.13	0.42
LICBED	-0.34 (-.03)	1.41
AVREV	0.96 (-.05)	0.38
PRPAY	-0.59 (-.02)	0.22
MCDPAY	-0.42 (-.01)	0.22
SRVIND	0.34	0.59
AVCOST	0.14 (-.04)	0.61

Note: See Appendix for sources and definitions.

to be more willing to accept (that is, not to complain to outside officials about) illegal practices (violations) in nonproprietary settings.¹⁶ Appropriately or not, suspicion of the profit motive does appear to exist in this asymmetrically informed market. But as we have judged in terms of frequency of actual violations of regulatory standards, proprietary firms do not merit the suspicion, since, ceteris paribus, they have fewer violations.

Is the difference that we have observed between consumer attitudes and producer behavior consistent with long-run equilibrium? It seems likely that the answer is no. Through time, consumers can be expected to learn that their perceptions of systematic behavioral differences across types of institutions are incorrect, and to alter their purchase decisions accordingly. The learning process may be a slow one, however, when the frequency of purchase of a commodity is very low, when the characteristics of the commodity are costly to discern, and when the importance of the various characteristics varies substantially among consumers, making transference of information difficult. The process of consumer adjustment may also be slow because of the limited mobility of consumers. In the case of nursing home services, a consumer who learns that a mistake has been made may find the cost of moving to another home excessive. Thus, the combination of a slow learning process and low mobility leads to the expectation that the apparent disequilibrium that we have discerned may be slow in disappearing.

At the same time that consumers are adjusting, producers can also be expected to adjust their behavior. Insofar as firms learn that consumers have more confidence in nonprofit firms, there will be a tendency for even profit-motivated firms to seek nonprofit status. Because of regula-

tory (especially IRS) constraints they may be limited in their ability to organize as nonprofits, but the tendency will be there. To the extent that profit-oriented firms take on the nonprofit mantle, the adjustment process will alter the average behavior of the nonprofit sector and, in the long run, alter consumers' perceptions. It is interesting to note, in this context, that the total number of nonprofit organizations has been growing rapidly; the number of tax returns filed by nonprofit organizations has grown from some 100,000 in the early 1950's to more than 500,000 twenty years later (Internal Revenue Service, various years). Moreover, the number of new applications for nonprofit, tax-exempt status, has increased from about 5,000 per year in the late 1950's and early 1960's to 15,000 in 1968 and to 35,000 in 1979.

INFORMATION ASYMMETRY AND TRUST

It is commonplace in the workaday world to refer to one's "trust" in some individual or institution. The need for such trust--that is, for relying on some agent for coping with informational asymmetry--exists when one individual cannot monitor the behavior of another at low cost. In this paper we have analyzed behavior in a market in which there exist large asymmetries of information. It might, therefore, prove useful to interpret our results in terms of the concept of trust.

When each party to a transaction knows which one has an informational superiority, the less well-informed party will seek a mechanism for minimizing the loss suffered as a result of the opportunity open to the better-informed party to underprovide--that is, to provide lower quality than was promised.¹⁷

There are many potential or alleged informational mechanisms--including competition, expert agents, governmental regulation, and industry or professional ethics codes. How effectively each functions under specified conditions requires a good deal more study. The mechanism considered here is the knowledge of the supplier's ownership type. Like brand name advertising, institutional type may or may not signal relevant information. We have viewed this mechanism from two perspectives--the degree to which customers behave as if they believe that some types of ownership act more in the customers' interest than do others, and the degree to which actual behavioral differences among institutional types justify these expectations. The latter can be termed "trustworthiness," the former, "trust," where both refer to the information content in the identity of the other party (Ben-Porath, 1980).¹⁸

Among the types of organizations examined--governmental, church-affiliated nonprofits, other nonprofits, and proprietary--we found that the proprietary had the lowest frequency of regulatory violations, ceteris paribus. In this sense, proprietary organizations were the most trustworthy, at least in the Wisconsin nursing home industry. By contrast, the proprietary homes had significantly more formal complaints lodged against them--and in that sense they were less trusted.

The importance of this phenomenon should not be underestimated. In markets in which product quality is difficult to assess--including, for example, much of the health and education industries as well as the quality of corporate reports, information about occupational health and environmental hazards--intervention by regulation is often a costly exercise of questionable efficacy. The design of institutions to reduce the

cost of monitoring outputs could enhance the efficiency of markets by reducing information costs.

On the other hand, trust can be misplaced. If consumers believe erroneously in some informational signal--such as institutional type or the existence of a government regulator--and as a result they conclude that additional monitoring is not needed, inefficiencies and inequities will result.¹⁹ Whether informational mechanisms that generate trust are best left to the private market to supply is an important question. It is one, however, which has been given little attention.

There is a second important implication of this study, unrelated to the matter of trust: the role of regulation in markets with limited consumer information. Such regulation has increased rapidly in recent years. From 1960 to 1974, laws involving general hospitals increased by over 400 percent (Hospital Regulation, 1977, p. 19). In roughly the same period, regulations affecting institutions of higher education grew by an order of magnitude (Bureaucrats and Brainpower, 1979, p. 4).

Rule-making often is prompted by a concern to protect the consumer. Regulations can be effective, however, primarily where they can be formulated with sufficient objectivity that they can be enforced in a court of law. Thus, many aspects of organizational performance remain uncovered by regulation. The extent of this limitation is illustrated in our regression coefficients. Of the difference in complaints lodged against proprietary and nonproprietary nursing homes, fewer than 20 percent were associated with regulatory violations (that is, with substantiated complaints). These figures understate, however, the importance of regulations. Undoubtedly there would be more complaints about factors covered by regulations if those rules did not exist. At the same time,

consumer satisfaction is not guaranteed by sellers' compliance with regulations. Thus, it is important to examine additional informational mechanisms.

It remains to be seen whether our findings that institutional form does make a difference will be sustained for other industries, geographic areas, and times. In a world where the seeming--although undocumented--growth of complexity of goods is leading to an accelerated search for mechanisms to cope with informational asymmetries, it is important to examine the effectiveness of alternative information mechanisms as well as the process by which new mechanisms are developed. Apparent world-wide growth in the relative size and influence of the public and private nonprofit sectors of the economy may be explainable in part by consumers' greater trust in them relative to that in the proprietary sector--but this is only a conjecture.

Our empirical analysis has dealt with nursing homes, but our approach has broader applicability in two senses. One is that it highlights the potential for studies of the behavior of alternative institutional forms in mixed industries; this is useful in order to predict the effects of alternative organizational structures, and to assess public policy toward them.²⁰ Second, our approach, which involved analysis of data on regulatory violations and consumer complaints, can be extended--to other states, for nursing homes, and to other regulated industries where an institutional mix exists, e.g., electric power production and the industries listed in Table 1, above.

NOTES

¹Conditions that make it difficult for consumers to evaluate product quality also make it difficult in many cases for producers to judge the quality of their own output. In this paper we concentrate, however, on markets in which producers have informational advantages.

²For example, Charles Wolf (1976) divides the world into "market" and "nonmarket" components. The former is equated with private, profit-maximizing organizations. The latter is implicitly defined as "public bureaucracies." There is no recognition of producers without a profit motive or nonmarket allocation outside of government.

³In Wisconsin, the source of our data, the industry is also dominated by proprietary homes, providing 49.4 percent of the beds, but government-run (largely county) homes are relatively more important, with 28.3 percent of the beds, and private nonprofits provide 27.3 percent of the beds (Nursing Homes: Wisconsin, 1976, 1978). See Table 1 for the national data.

⁴William Niskanen recently conjectured that "the set of potential bureaucrats probably have higher preferences for perquisites [compared to money income] relative to managers of other economic organizations."

⁵Institutional reputations apparently change quite slowly. Cyert, for instance, believes that in education a reputation has a half-life on the order of several decades (1975, p. 12).

⁶We will ignore here the possibility that residents might use complaints as a strategic weapon, threatening to force the home to incur costs even if it were actually honoring its commitments. It is possible that such practices occur, but unlikely that they do so with any

regularity or, most important for our purpose, in a manner that is systematically related to ownership.

⁷There is in fact some debate about whether price is associated with quality in the nursing home industry. Most analysts appear to believe that a positive correlation exists between price and delivered quality.

⁸In Wisconsin, as throughout the nation, however, it is common practice for homes to accumulate large numbers of violations and to operate with deficiencies that have been on the books for several years.

⁹There are still some problems with the use of data on regulatory violations. Most relate to the difference between our theoretical concept of a "violation" and that which actually gets recorded. There are differences between the quality standards as modeled and those that produce regulatory violations. First, regulations deal with only a subset of the quality dimensions that consumers regard as relevant. In order to be enforceable, regulatory standards must be readily and objectively quantifiable; this leads to an overemphasis on what is easily measured, drawing resources within the home away from other dimensions of quality (Long Term Care Regulations, 1976, p. 5). (Note, however, that those aspects of quality that are observed at low cost by regulators may not correspond exactly to those which are easily identified by consumers.) Second, violations data are, in general, dichotomous; there is no measure of the disparity between actual and mandated practice. The data, which are on aggregate violations for a home, do not permit differential weighting that distinguishes a life-threatening violation from an error in paperwork.

¹⁰Again, there is debate about the extent to which average cost is a reasonable measure of quality. If ownership affects the efficiency of

internal organization, input costs do not serve as a good proxy for outputs. Positions range from the opinion that there is virtually no relationship (Long Term Care Regulation, 1976, p. 8) to the stand that the relationship is fairly clear (Levey et al., 1975, p. 68).

¹¹Here too, however, the data contain some problems, chief among them the manner in which a complaint is recorded. In this paper, we assume that all complaints are from residents or their agents. This is approximately the fact--76 percent are from residents or their relatives. (Seven percent of these are officially labeled "anonymous" though virtually all are probably from residents or their families who fear retaliation.) The other 24 percent, however, come from employees of the home or from other sources. We assume that this does not bias our analysis. Actual complaints do not always represent care that is unambiguously of low quality except, of course, in the judgment of the complainer. Residents may complain about a practice that they believe is "paternalistic" (Zitske, 1979) but that an outside observer might consider "stimulating."

Another problem is that not all complaints are recorded. This measurement problem occurs because most complaints are sent initially to a person or organization other than the state regulatory agency that eventually accumulates and acts on them. Some contacts pass on all the complaints they receive. Others "screen" the complaints and forward only those which they believe are violations of law. This screening process does not appear to have biased the recording of complaints against any type of ownership (Zitske, 1979), but it is difficult to determine this conclusively.

¹²The direction of causality between violations and complaints in the structural model is worthy of comment. There may be a feedback between the processes generating complaints and violations. Complaints of particularly severe conditions do prompt an investigation and thereby potentially increase the number of recorded violations. Just as complaints can affect violations, so causation can run in the opposite direction. Inspections might not only disclose violations but also might stimulate residents' concerns and hence their complaints. Alternatively, though, successful pressure from regulators to correct violations might reduce complaints.

Several factors lead us to believe that these feedback effects are negligible. Discovery of violations is not likely to affect the number of complaints for two reasons: first, residents and their families are generally unaware of the results of state inspections for violations (Zelasak, 1979). Their attitudes towards the administration of the home would thus remain unaffected by violations detected by state investigators. Second, the discovery of a violation often does not lead to an immediate remedy. Since deficiencies are often "carried" by homes over a number of years, detection of violations does not immediately produce a reduction in complaints. Third, given the way our data were collected, any influence of violations on complaints is further reduced: if it is assumed that both complaints and inspections are distributed uniformly through the year, the complaints in about half of the homes (those inspected before the first of July) could not have been influenced by the discovery of violations in the second half of the year.

Similarly, complaints are not likely to have a material effect on violations. Inspections that are initiated by complaints are typically

targeted only at the practice that prompted the dissatisfaction. Given the far higher mean values for violations than for complaints (Table 2), any increment to violations generated by complaints is not likely to be significant.

¹³Instrumental-variables estimates of the two-equation, simultaneous equation system have also been made. Coefficients on the institutional form variables are broadly similar to those given in Table 3. The two-stage least squares estimates (and t-statistics) are as follows: GOVLIC--13.11 (0.89); CHLIC--5.62 (0.31); NCHLIC--28.4 (2.21). The estimates for the other variables in the equations are available from the authors.

¹⁴This does not, of course, explain why for-profit organizations tend to concentrate in a particular level of certification. Exploration of this matter would, however, take us outside of the focus of this paper.

¹⁵This is in accord with a very crude model of profit maximization. Factors covered by regulations entail possible penalty payments and adverse publicity. Those that only bother residents have fewer potential costs. The residents can rarely leave and typically lack the means to communicate their displeasure in a manner which might discourage future patrons. A profit-maximizing firm would devote few resources to these matters.

¹⁶It is quite possible that residents in public facilities are less able to communicate complaints, even if they had them. In many health care facilities, high cost patients without the means to support themselves (and therefore likely to be without family to aid in communications) are "dumped" on public institutions (Greenfield, 1975,

pp. 51-55). These are often those with alcohol or drug abuse problems, who are likely to be handicapped in their ability to communicate.

¹⁷The problem is analytically equivalent to a law enforcement problem. In the type of case discussed in this paper, a contract of sale is agreed upon, with the buyer confronting costs of monitoring performance by the seller. In general, the law enforcement problem involves the law violator's informational superiority, which the law enforcer can overcome, if at all, only at some positive cost. Law enforcement authorities (presumably) seek low-cost sources of information. The Internal Revenue Service, for example, uses a variety of signals such as taxpayer income level and occupation to allocate funds for auditing. Consumers, too, can be expected to seek efficient informational signals for adjusting to their known informational inferiority.

¹⁸The terms "trust" and "trustworthiness," as commonly used, have various meanings:

1. An organization (or person) may be thought trustworthy if the information it conveys to the potential purchasers is not false. This standard appears to guide FCC regulation of media advertising--companies making pain pills need not proclaim that their capsules are filled with aspirin, as long as they do not claim anything erroneous.

2. Trustworthiness depends not only on communicating accurately, but also completely. This is the standard applied in legal proceedings, in which witnesses are required to "tell the truth, the whole truth, and nothing but the truth."

3. In this paper our use implies a third, broader definition of trustworthiness. An organization will be judged fully trustworthy only if it conveys or utilizes the information as if it were an efficient

agent for its principal. Only when all these conditions hold does an organization's behavior replicate that of an optimally informed consumer and, in that sense, only then is the organization a perfect agent.

¹⁹For further discussion of this issue, see Snow and Weisbrod, 1982.

²⁰There have been other relevant studies. See, for example, Caves and Christensen (1980) on government and proprietary railroads; Davies (1971) on government and proprietary airlines; etc. These studies, however, have not focused on informational variables. Two recent articles claiming important differences in behavior across ownership types have examined public and private electric utilities. Pescatrice and Trapani (1980) conclude from their quantitative findings that "society might be 'better off' with publicly owned and operated utilities than private regulated firms producing the same product" (p. 259). Meyer (1975) found, similarly, lower unit costs of production for publicly owned electric utilities.

APPENDIX

Data and Variables Used in Regression
on Regulatory Violations

The data were obtained from two sources. General information on the characteristics of staff and resident characteristics was obtained from the 1976 Annual Survey of Nursing Homes in Wisconsin (Nursing Homes: Wisconsin 1976, 1978). These surveys are conducted by the Wisconsin Bureau of Health Statistics. Data were available for all 601 homes operating during this period. Of these, 104 were operated by government and 292 under proprietary ownership. The remainder were controlled by nonprofit organizations, slightly over 75 percent without religious affiliation.

Information on regulatory violations, complaints and certification levels was supplied by the state's Bureau of Quality Compliance. Merging these two data sets and eliminating observations with missing data reduced the number of usable observations to 431. This reduction did not seriously distort the ownership mix of the sample.

The construction of the variables used is described below.

GOVLIC: A dummy variable

1 = Owned by government.

CHLIC: A dummy variable

1 = Owned by a private nonprofit organization with
religious affiliation.

NCHLIC: A dummy variable

1 = Owned by a private nonprofit organization with no
religious affiliation. These are typically local
groups, formed by community leaders.

SKLD: A dummy variable

1 = Certified to provide "skilled" (high quality) care.

PRSRES: A dummy variable

1 = Certified as a personal or residential care facility.

These fact the least stringent regulatory requirements.

MRCERT: A dummy variable

1 = Certified to care for a resident population more than
50 percent of whom are mentally retarded.

CTIY: A dummy variable

1 = Home is located in a community with more than 10,000
residents.

HOSBAS: A dummy variable

1 = The home is affiliated with a short-term general
hospital.

LICBED: The number of licensed beds in the home. This varies from
the actual beds in less than 10 percent of the homes and
then only by a few beds in each facility.

PPREV: The proportion of revenues coming from private services.
Calculated as the average private pay rate multiplied by
the number of private pay residents divided by total
revenues.

MCDREV: The proportion of revenues coming from Medicaid. Calculated
as the average Medicaid rate multiplied by the number of
residents using Medicaid divided by total revenues.

AVREV: The average revenue received by the home. Calculated as
total revenues divided by number of residents.

COMPS: Number of complaints lodged against the home.

VIOLAT: Number of violations (or deficiencies) detected in a home
by state inspectors.

PRPAY: Proportion of residents at the home funded from private
sources.

MCDPAY: Proportion of residents at the home funded from Medicaid.

SRVIND: A service index. Calculated as the full-time equivalent
number of care-delivering personnel in the home divided
by the number of residents.

AVCOST: Total cost divided by number of residents.

DEFTOT: The number of recorded violations against the home.

Table A.1

Ownership Distribution and Characteristics of
Wisconsin Nursing Homes, 1976

Type	Percentage of Homes	Mean Beds	Deficiencies per Home	Complaints per Home	Percentage of Complaints Substantiated
	(1)	(2)	(3)	(4)	(5)
<u>Government</u>	15	143	161	1.65	45
<u>Nonprofit</u>					
Church	8	85	144	0.92	46
Other	25	73	163	1.21	63
<u>Proprietary</u>	<u>51</u>	<u>88</u>	<u>170</u>	<u>2.45</u>	<u>62</u>
<u>All</u>	100	93	164	1.86	59

REFERENCES

- Akerlof, George, "The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism," Quarterly Journal of Economics, 84, 3 (August 1970), 488-500.
- Bendick, Marc, "Essays on Education as a Three-Sector Industry," Ph.D. Dissertation, University of Wisconsin, 1975.
- Ben-Porath, Yoram, "The F-Connection: Families, Friends, and Firms, and the Organization of Exchange," Population and Development Review, 6, (March 1980), 1-30.
- Bureaucrats and Brainpower: Government Regulation of Universities, ed. Paul Scabury, Institute of Contemporary Studies, San Francisco, 1979.
- Caves, Douglas, and Christensen, Laurits, "The Relative Efficiency of Public and Private Firms in a Competitive Environment: The Case of Canadian Railroads," Journal of Political Economy, 88, (October 1980), 958-976.
- Cyert, Richard, The Management of Nonprofit Organizations. Lexington Books, Lexington, Mass., 1975
- Davies, David, "The Efficiency of Public vs. Private Firms: The Case of Australia's Two Airlines," Journal of Law and Economics, 14, (April 1971), 149-165.
- Digest of Education Statistics, 1977-78, National Center for Education Statistics, U.S. Government Printing Office, 1978.
- Doctors in Nursing Homes: The Shunned Responsibility, Supporting Paper No. 3 to Nursing Home Care in the United States: Failure in Public Policy, U.S. Government Printing Office, Washington, D.C., February 1975.

- Easley, David, and O'Hara, Maureen, "Optical Contracts and the Nonprofit Firms," Cornell University, Economics Department, mimeo, April 1981.
- Enforcing Quality of Care in Nursing Homes, National Association of Attorneys General, Committee on the Office of Attorney General, Raleigh, N.C., February 1978.
- Feder, Judith, Medicare: The Politics of Federal Hospital Insurance, Lexington Books, Lexington, Mass., 1977.
- Fraundorf, Kenneth, "Competition and Public Policy in the Nursing Home Industry," Journal of Economic Issues, 11, (September 1977), 601-634.
- Frech, H. E. "Health Insurance: Private, Mutual or Government," in The Economics of Nonproprietary Organizations, ed. K. Clarkson and D. Martin, JAI Press, Greenwich, Conn., Supplement 1, 1980.
- Greene, Vernon, and Monahan, Deborah, "Predicting Quaility of Care in Skilled Nursing Facilities: A Multivariate Analysis," Paper presented at the 33rd Annual Meeting of the Gerontological Society, San Diego, Calif., November 21-25, 1980.
- Greenfield, Harry, Health Efficiency and Public Policy. New York: Praeger, 1973.
- Hahn, Frank, "General Equilibrium Theory," Public Interest, Special Issue, 1980, pp. 123-138.
- Hansmann, Henry B., "The Role of Nonprofit Enterprise," The Yale Law Journal, 89, (April 1980), 835-901.
- Hirschman, Albert, Exit, Voice, and Loyalty: Responses to Decline in Firms, Organiztions and States. Cambridge, Mass.: Harvard University Press, 1970.

Hospital Regulation: Report of the Special Committee on the Regulatory Process, American Hospital Association, Chicago, 1977.

Hospital Statistics, 1978, American Hospital Association, Chicago, 1978.

Internal Revenue Service, Tax Commissioner's Annual Report, various years.

Keyserling, M., Windows on Day Care, National Council of Jewish Women, New York, 1972.

Levey, Samuel; Stotsky, Bernard; Kinloch, David; Rachlin, Hirsch; and Oppenheim, William, "Nursing Homes in Massachusetts: Industry in Transition," American Journal of Public Health, 65 (January 1975).

Life Insurance Fact Book, 1978, American Council of Life Insurance, Washington, D.C., 1978.

Long Term Care Regulations: Past Lapses, Future Prospects. Summary Report of the New York State Moreland Act Commission on Nursing Homes and Residential Facilities, Albany, N.Y., April 1976.

McKenzie, Greg (Executive Director of the Wisconsin Association of Nursing Homes), Personal interview, August 2, 1979.

Meyer, R. A., "Publicly Owned versus Privately Owned Utilities: A Policy Choice." Review of Economics and Statistics, 4 (1975), 391-399.

National Patterns of R&D Resources, National Science Foundation, Washington, D.C., Report NSF70-46, 1972.

Nelson, Richard and Krashinsky, Michael, "Two Major Issues of Public Policy: Public Subsidy and the Organization of Supply," in Public Policy for Day Care for Young Children, eds. Dennis Young and Richard Nelson, Lexington Books, Lexington, Mass., 1973.

Niskanen, William, "Bureaucrats and Politicians," Journal of Law and Economics, 13 (December 1975) 617-643 at p. 623.

Nursing Home Care in the United States: Failure in Public Policy, U.S.

Senate, Special Committee on Aging, Washington, D.C.: U.S.

Government Printing Office, December 1974.

Nursing Homes: Wisconsin 1976, Bureau of Health Statistics, Wisconsin

Department of Health and Social Service, Madison, Wis., April 1978.

Pescatrice, D. R., and Trapani, J. M., III. "The Performance and

Objectives of Public and Private Utilities in the United States."

Journal of Public Economics, 13 (1980), 259-276.

Savings and Loan Fact Book, 1980, United States League of Saving

Associations, Chicago, 1980.

Source Book of Health Insurance Data, 1976-77, Health Insurance

Institute, New York, 1977.

Snow, Arthur, and Weisbrod, Burton. 1982. "Consumer Interest

Litigation: The Case Study of Nader vs. Allegheny Airlines."

Journal of Consumer Affairs, forthcoming.

Spence, Michael, Market Signalling: Information Transfer in Hiring and Related Processes, Cambridge, Mass., Harvard University Press, 1974.

1976 Survey of Institutionalized Persons, Current Population Reports,

Special Studies Series P-23, No. 69, U.S. Government Printing Office, Washington, D.C., 1978.

Wilson, Charles, "The Nature of Equilibrium in Markets with Adverse Selection," The Bell Journal of Economics, 11, 1 (Spring 1980).

Zelasak, Gregory (Wisconsin State Nursing Home Ombudsman's Office),

Personal interview, November 16, 1979.

Zitske, Judith (Wisconsin State Nursing Home Ombudsman's Office),

Personal interview, March 8, 1979.