Second, we calculate measures of competitiveness that are a function of these predicted patient flows (rather than actual patient flows or capacity), and assign them to patients based on their probabilistic hospital of admission (rather than their actual hospital of admission). Thus, the measure of competitiveness that we assign to each patient is uncorrelated with unobserved heterogeneity across individual patients, individual hospitals, and geographic hospital markets. We also calculate measures of the geographic density of the size distribution, teaching status, system-membership status, ownership status, and bed capacity per patient using predicted patient flows matched to each patient's area hospital characteristics.

Third, we use these unbiased indices of competitiveness, and interactions between these indices and a measure of patients' health at the time of onset of illness, to estimate the impact of competition on the level and dispersion of adverse health outcomes and utilization, holding other patient and area characteristics constant. In these models, observational units in our analysis consist of individuals $i = 1, \ldots, N_{zst}$ (in zipcode z and state s during year $t = 1, \ldots, T$) who are initially admitted to the hospital with a new occurrence of heart attack. Each patient has observable demographic characteristics X_{ist}: four age indicator variables (70–74 years, 75–79 years, 80–89 years, and 90–99 years; omitted group is 65–69 years), gender, and Black/non-Black race; plus a full set of interaction effects between age, gender, and race; and interactions between year and each of the age, gender, and race indicators. Each patient has health status A_{ist}, where $A_{ist} = 1$ if the patient was high risk (i.e., had an acute care hospital utilization in the year prior to his or her AMI). The patient then receives treatment of aggregate intensity R_{ist}, where R is one of five measures. The patient has a health outcome O_{ist}, possibly affected by the intensity of treatment received, where a higher value denotes a more adverse outcome (O is binary in all of our outcome models).

We match to each patient by zip code and year several measures of the hospital market environment that have been shown to affect treatment and quality of care: the competitiveness of zip code z's hospital market at time t (HHI_{zt} = whether z was in the top or middle quartiles of the distribution of HHIs of predicted patient flows), and whether z had above the median density of patients admitted to large hospitals, teaching hospitals, hospitals that were members of multi-hospital systems, for profit versus nonprofit hospitals, and public versus nonprofit hospitals at time t (J_{zt}). To measure market size and isolate the effects of competition-induced dispersion from the effects of market-size-induced dispersion, we calculate each zip code's bed capacity and population at time t (K_{zt} and P_{zt}). In the presence of fixed costs, larger markets support

a greater number of firms, which can lead to an observed positive correlation between variety and competitiveness even in the absence of any causal effect (see Berry and Waldfogel, 1999, for discussion of these models).

We estimate linear models of outcome and utilization effects as a function of five-digit zip-code and year-fixed effects (α_z and δ_t); demographic characteristics (X_{izt}); health status (A_{izt}); competitiveness (HHI_{zt}); size, teaching, system, and ownership status distribution of area hospitals (J_{zt}); and bed capacity and population at time t (K_{zt} and P_{zt}). We allow the effect of market environment to vary depending on the individual's health status A_{izt}:

$$\begin{aligned}\ln(R_{izt}) \\ O_{izt}\end{aligned} = \alpha_z + \delta_t + X_{izt}\phi + A_{izt}\Phi$$
$$+ I(A_{izt} = 0) * (HHI_{zt}\beta + J_{zt}\gamma + K_{zt}\delta + P_{zt}\eta)$$
$$+ I(A_{izt} = 1) * (HHI_{zt}\beta^A + J_{zt}\gamma^A + K_{zt}\delta^A + P_{zt}\eta^A) + \epsilon_{izt}, \quad (1)$$

where R_{izt} is total hospital expenditures, acute care hospital expenditures, non-acute care hospital expenditures, acute care hospital days, or non-acute care hospital days; O_{izt} is readmission for AMI within 1 year, readmission for heart failure within 1 year, or mortality within 1 year; $I(\cdot)$ is the indicator function; and ϵ_{izt} is an independently distributed error term, with $E(\epsilon_{izt}|\ldots) = 0$.

4. Results

Table I presents trends in the distribution of Medicare expenditures and health outcomes for high-risk and low-risk patients. The fraction of patients whom we classify as high-risk ranges from 31.3% in 1985 (=49441/(108626+49441)) to 28.5% in 1996 (=44337/(111370+44337)). Our proxy for health is strongly and positively correlated with age and subsequent rates of adverse outcomes. High-risk patients are older, almost twice as likely to be readmitted with heart failure in the year after their AMI, and fully 14.7 percentage points more likely to die in the year after AMI (on a sample average mortality of 36.6%).

Although variation in utilization between high-risk and low-risk patients has risen over time in some dimensions, it has fallen in others. In particular, although the gap between the numbers of days spent in an acute care hospital in the year after AMI by high-risk versus low-risk patients rose from 21.3 to 27.1%, the gap between the total expenditures for a high-risk versus a low-risk patient fell from 12.5 to 8.3%. This shrinking of the high-risk versus low-risk expenditure gap is composed of a shrinking of the gap between the acute care expenditures of high-risk versus low-risk patients (in dollar terms, from

TABLE 1.
DESCRIPTIVE STATISTICS OF PATIENTS

	1985			1996		
	Low-risk	High-risk	Difference	Low-risk	High-risk	Difference
AMI Readmission Rate in Year After AMI	5.4%	7.1%	1.7%	4.5%	6.9%	2.4%
HF Readmission Rate in Year After AMI	6.8%	10.9%	4.7%	6.8%	13.3%	6.5%
Mortality Rate in Year After AMI	36.2%	48.7%	12.5%	29.0%	43.7%	14.7%
Age	75.2	76.8	2.1%	76.6	78.1	2.0%
Black	5.3%	6.3%	1.0%	5.9%	8.2%	2.3%
Female	47.9%	53.4%	5.5%	49.1%	54.7%	5.6%
Total Hospital Expenditures	$13,733	$15,447	12.5%	$21,077	$22,827	8.3%
In Year After AMI (1993 $)	(12,412)	(15,086)		(20,785)	(22,626)	
Acute Expenditures	$13,855	$15,270	11.8%	$19,467	$20,378	4.7%
In Year After AMI (1993 $)	(12,238)	(14,905)		(18,706)	(19,967)	
Acute Days	16.8	20.4	21.3%	13.3	16.9	27.1%
In Year After AMI	(15.3)	(19.5)		(12.9)	(16.6)	
Non-acute Expenditures	$119	$179	50.4%	$1,404	$2,452	52.9%
In Year After AMI (1993 $)	(1,224)	(1,276)		(5,874)	(7,189)	
Non-acute Days	2.0	2.7	32.3%	4.7	6.8	44.7%
In Year After AMI	(10.0)	(12.8)		(13.4)	(16.9)	
N	108,626	49,441		111,370	44,337	

Notes: Standard deviations in parentheses. For 1985, number of patients = 158,067, number of zip codes = 7,048; for 1996, number of patients = 155,707, number of zip codes = 7,814.

$1,615 (=$15,270 – $13,655) to $908 (=$20,375 – $19,467)) and an expansion of the gap between the non-acute care expenditures (in dollar terms, from $80 (=$179 – $119) to $848 (=$2,452 – $1,604)) of the high-risk versus the low-risk.

Table II presents estimates of equation (1), the effects of competitiveness and other market characteristics on treatment intensity and health outcomes, allowing the effect of market environment to vary depending on the individual's health A_{ist}. The first row of Table II confirms that prior-year acute care hospital utilization is strongly and positively correlated with subsequent intensity of treatment and rates of adverse outcomes. Holding constant their demographic characteristics, area-fixed effects, and other market characteristics, high-risk AMI patients have approximately 8.3% higher inpatient expenditures, 9.8% more inpatient days, 1.4 percentage points higher rates of readmission for AMI, 4.8 percentage points higher rates of readmission for heart failure, and almost 11 percentage points higher 1-year mortality in the year after their AMI than their low-risk counterparts.

The top panel of Table II shows that competitive markets have lower expenditures for low-risk patients but not significantly worse quality of care. Among the approximately 70% of patients who are low-risk, total hospital expenditures in the year after AMI were approximately 1.3% higher in the least-competitive as compared to the most-competitive hospital markets; living in a moderately-competitive market (the middle two quartiles of HHIs) leads to almost as large of an effect on expenditures. The effect is present in both acute and non-acute care settings, although substantially larger in percentage terms in non-acute care. Effects of competition on outcomes are extremely small and statistically insignificant.

The bottom panel of Table II shows that competitive markets have higher expenditures on and higher quality of care for high-valuation patients. Total hospital expenditures in the year after AMI were approximately 1.2% lower in the least-competitive quartile of hospital markets, as compared to the most competitive markets. This effect is exclusively due to a decrease in acute care; providers in the least-competitive markets actually supply slightly more non-acute care. In addition, competition has large and statistically significant outcome consequences. Patients in the least-competitive hospital markets experience 0.82 percentage points higher 1-year mortality than do patients in the most-competitive markets; this effect is smaller but still significant for patients in moderately-competitive markets.

These effects are substantial. In competitive markets, the difference in expenditures between high-risk and low-risk patients is approximately 2.5% higher (=1.235 – (–1.274)) than in uncompetitive markets;

TABLE II.

EFFECTS OF HOSPITAL MARKET COMPETITIVENESS AND AREA DENSITY OF HOSPITAL CHARACTERISTICS ON MEDICARE UTILIZATION AND HEALTH OUTCOMES OF AMI PATIENTS, 1985–1996, ALLOWING EFFECTS TO VARY FOR PATIENTS WHO ARE HIGH-RISK AND LOW-RISK AT THE ONSET OF ILLNESS

	Dependent Variable							
	ln(Total Hospital Expenditures)	ln(Acute Expends)	ln(Acute Days in Hospital)	ln(Non-acute Expends)	ln(Non-acute Days in Hospital)	AMI Readmit Within 1 Year	HF Readmit Within 1 Year	Dead Within 1 Year
High-risk at Onset of Illness	8.384**	7.088**	9.845**	31.083**	11.525**	1.366**	4.829**	10.965**
	(0.713)	(0.714)	(0.784)	(1.770)	(0.668)	(0.180)	(0.221)	(0.368)
Effects of Competition and Area Hospital Characteristics for Low-risk Patients								
Very Concentrated Hospital Market	1.274**	1.055**	0.585	7.219**	2.353**	−0.014	0.071	0.221
(Top Quartile of HHIs)	(0.525)	(0.526)	(0.577)	(1.308)	(0.492)	(0.132)	(0.163)	(0.268)
Concentrated Hospital Market	0.955**	0.803**	−0.051	4.375**	1.259**	−0.101	0.000	−0.088
(Middle Two Quartiles of HHIs)	(0.382)	(0.382)	(0.420)	(0.947)	(0.357)	(0.096)	(0.118)	(0.197)
Above Median Density of	0.666**	0.692**	0.101	−0.779	−0.218	0.074	−0.011	0.089
Large Hospitals [Median = 0.220]	(0.319)	(0.319)	(0.351)	(0.792)	(0.299)	(0.080)	(0.099)	(0.165)
Above Median Density of	−1.330**	−1.398**	0.292	2.936**	1.404**	0.057	0.170	0.098
For-profit/Nonprofit [Median = 0.012]	(0.381)	(0.382)	(0.419)	(0.947)	(0.357)	(0.096)	(0.118)	(0.197)
Above Median Density of	0.883**	0.956**	−0.006	−1.632*	−0.216	0.028	0.005	0.213
Public/Nonprofit [Median = 0.029]	(0.354)	(0.354)	(0.389)	(0.879)	(0.332)	(0.089)	(0.109)	(0.183)
Above Median Density of	−0.091	−0.186	−0.640*	3.352**	0.846**	−0.055	0.038	−0.369**
Teaching Hospitals [Median = 0.141]	(0.302)	(0.303)	(0.332)	(0.750)	(0.283)	(0.076)	(0.094)	(0.156)
Above Median Density of	−1.335**	−1.225**	−0.748**	−1.377**	−0.334	−0.053	0.149*	−0.136
System Hospitals [Median = 0.525]	(0.262)	(0.262)	(0.288)	(0.649)	(0.245)	(0.066)	(0.081)	(0.135)

Bed Capacity	0.047**	0.051**	0.038**	−0.060**	−0.020**	−0.002**	0.001	0.000
	(0.003)	(0.003)	(0.004)	(0.008)	(0.003)	(0.001)	(0.001)	(0.001)
Population (no. of AMI Patients)	−0.042**	−0.040**	−0.024**	−0.018	0.005	0.008**	0.000	−0.012**
	(0.006)	(0.006)	(0.007)	(0.016)	(0.006)	(0.002)	(0.002)	(0.003)
Effects of Competition and Hospital Characteristics for High-risk Patients								
Very Concentrated Hospital Market	−1.235**	−1.385**	−2.649**	2.974**	0.933**	−0.135	−0.592**	0.822**
(Top Quartile of HHIs)	(0.619)	(0.619)	(0.680)	(1.536)	(0.580)	(0.156)	(0.191)	(0.319)
Concentrated Hospital Market	−1.512**	−1.683**	−2.325**	4.593**	1.263**	−0.233**	−0.349**	0.486**
(Middle Two Quartiles of HHIs)	(0.446)	(0.447)	(0.491)	(1.107)	(0.418)	(0.112)	(0.138)	(0.230)
Above Median Density of	−0.103	0.272	−1.297**	−5.677**	−2.261**	0.132	−0.198	0.439**
Large Hospitals [Median = 0.220]	(0.426)	(0.426)	(0.468)	(1.056)	(0.399)	(0.107)	(0.132)	(0.220)
Above Median Density of	−1.498**	−1.827**	0.716	8.484**	2.838**	0.008	0.055	0.166
For-profit/Nonprofit [Median = 0.012]	(0.442)	(0.442)	(0.486)	(1.096)	(0.414)	(0.111)	(0.137)	(0.228)
Above Median Density of	1.264**	1.522**	−0.588	−2.190**	−0.500	0.096	−0.029	0.334
Public/Nonprofit [Median = 0.029]	(0.411)	(0.411)	(0.452)	(1.020)	(0.385)	(0.104)	(0.127)	(0.212)
Above Median Density of	1.428**	1.167**	1.358**	8.788**	2.843**	0.329**	0.489**	−0.374*
Teaching Hospitals [Median = 0.141]	(0.385)	(0.386)	(0.434)	(0.956)	(0.361)	(0.097)	(0.119)	(0.199)
Above Median Density of	−2.880**	−3.153**	−1.607**	7.605**	2.401**	0.012	0.046	0.208
System Hospitals [Median = 0.525]	(0.327)	(0.327)	(0.359)	(0.811)	(0.306)	(0.082)	(0.101)	(0.169)
Bed Capacity	0.058**	0.066**	0.037**	−0.159**	−0.051**	−0.004**	−0.002	0.000
	(0.004)	(0.004)	(0.004)	(0.010)	(0.004)	(0.001)	(0.001)	(0.002)
Population (no. of AMI patients)	−0.047**	−0.052**	0.025**	0.131**	0.054*	0.015**	0.015**	−0.012**
	(0.007)	(0.007)	(0.008)	(0.018)	(0.007)	(0.002)	(0.002)	(0.004)

Note: All coefficients multiplied by 100 to facilitate interpretation, so coefficients from regressions in logarithms represent approximate percentage changes, and coefficients from outcome models represent percentage point changes. Estimates also control for five-digit zip code fixed effects. $N = 1,736,167$.

competition, then, expands the high-risk versus low-risk difference in expenditures by almost one-third (on a base of 8.3% in 1996, Table I). In competitive markets, the difference in mortality between high-risk and low-risk patients is 0.60 percentage points lower (=−0.822 − (−0.221)) than in uncompetitive markets. In this context, competition shrinks the high-risk versus low-risk difference in mortality by approximately 4% (on a base of 14.7 percentage points in 1996, Table I). However, these extra survivors may be in marginal health: rates of readmission with cardiac complications are significantly higher in competitive hospital markets. This qualification should be interpreted with some caution, because readmission rates measure health outcomes only imperfectly: they represent a combination of the effect of competition on health and the effect of competition on hospital utilization conditional on health.

Other market characteristics affect both quality and expenditures. Most importantly, patients from areas with a high density of teaching hospitals have better health outcomes, regardless of their health status on admission. Low-risk patients from high-teaching-hospital areas have 0.37 percentage points lower mortality, and no higher rates of readmission with cardiac complications; high-risk patients from these areas have approximately the same mortality advantage, although they do suffer from higher complication rates. For low-risk patients, this quality advantage is achieved without any increase in expenditures; for high-risk patients, it is associated with an approximately 1.6% increase in total expenditures.

Hospital ownership affects medical expenditures, but not quality of care. For both high-risk and low-risk patients, areas with an above-median density of public hospitals provide more acute but less non-acute care; conversely, areas with an above-median density of private for-profit hospitals provide more non-acute but less acute care.

Areas with a high density of large hospitals provide more acute care to low-risk patients, but less acute (as measured in days) and less non-acute care to high-risk patients. For high-risk patients, this hospital-size-induced reduction in care has important outcome implications—0.44 percentage points higher mortality. Areas with a high density of system hospitals provide both less acute and less non-acute care to low-risk patients, but less acute and more non-acute care to high-risk patients. For low-risk patients, this hospital-system-induced reduction in care has small but statistically significant outcome implications—0.15 percentage points higher rates of readmission with heart failure.

These estimated effects of competition and other market characteristics are not simply due to market size. The models underlying the estimates in Table II control for both area bed capacity and population. Estimates of the effects of capacity and population are consistent with earlier work (Kessler and McClellan, 2000), which finds that higher levels of bed capacity per patient (approximately equal to the difference between the coefficients on capacity and population from Table II) lead to significantly higher levels of expenditures, lower rates of cardiac complications, and higher rates of mortality.

5. Conclusion

Assessing the role of vertical differentiation in markets for hospital services is an important special case of a difficult general problem in industrial organization. Economic theorists have developed numerous models of the effects of competition on the distribution of qualities in a market, but the conclusions of these models are extremely sensitive to their underlying assumptions. More recently, empirical researchers have begun to investigate the consequences of competition for variety generally (see the literature review in Berry and Waldfogel, 2003), but data limitations have made explicit welfare conclusions difficult (with some important exceptions, such as Berry and Waldfogel, 1999). Because objective measures of health outcomes, such as mortality, are available in observational databases, markets for health care provide an ideal case for study of this issue.

In this paper, we investigate the effects of competition on the level and dispersion of quality and expenditures with longitudinal data on virtually all nonrural elderly fee-for-service Medicare beneficiaries with a new occurrence of a heart attack (AMI) in 1985–1996. Our measure of dispersion is the difference in quality and cost between patients who have different severities of illness, and hence different valuations of quality, but are otherwise demographically and locationally similar. We separate patients into a low-risk or low-valuation and a high-risk or high-valuation group based on the presence of acute care hospital utilization in the year prior to AMI (approximately 30% of elderly AMI patients have prior-year hospital utilization); we control for patient characteristics, the characteristics of area hospital markets, and area-fixed effects.

We find that low-risk patients in competitive markets receive less intensive treatment than in uncompetitive markets, but have statistically similar health outcomes. In contrast, high-risk patients in competitive markets receive more intensive treatment than in

uncompetitive markets, and have significantly better health outcomes. Because this competition-induced increase in variation in expenditures is, on net, expenditure-decreasing and outcome-beneficial according to the estimates in Table II,[3] we conclude that it is welfare-enhancing.

These findings are inconsistent with conventional models of vertical differentiation, although they can be accommodated by more recent models. In conventional models, firms try to relax price competition though differentiation. This implies that oligopoly hospitals lower the quality of care for low-valuation patients in order to be able to charge their high-valuation counterparts more, leading uncompetitive markets in general to have greater variation in quality and expenditures. But empirically, oligopoly hospitals offer a lower quality of care for high-risk patients at lower cost, and offer their low-risk patients roughly the same quality at higher cost, leading uncompetitive markets to have less variation in quality and cost.

The intuition in Anderson and De Palma (2001) explains how oligopoly could lead to lower levels of quality without an increase in its dispersion. Suppose that all hospitals were high-quality, and that this were optimal. If one hospital switched to being low-quality, both its revenues and costs would decline, but the remaining high-quality firms would raise their prices in the sub-game equilibrium, because of the decrease in competition. This secondary effect increases the low-quality hospital's profits because low- and high-quality goods are substitutes. Because the decline in the profits of the switcher would be smaller than the social loss, it may be profitable to switch, even though it is not optimal. Because the same argument applies to all remaining firms, the level of quality could decline without an increase in its dispersion.

Our results support a policy of strict antitrust enforcement in hospital markets. We find no evidence of a welfare downside to competition through increased wasteful treatment variation, as some theoretical models suggest. In addition to confirming that competition is socially beneficial on average (e.g., Kessler and McClellan, 2000), we find no evidence that competition generates aggregate benefits at the expense of a subsample of patients.

If anything, bias due to endogeneity in our measure of illness severity—whether the patient had prior-year utilization—would lead us to the opposite conclusion. To the extent that competition affects utilization before the onset of illness the same way it affects post-onset utilization, higher levels of utilization in uncompetitive markets would

3. Based on 1996 average total hospital expenditures of (Table IB), more concentrated markets lead to expenditure increases (decreases) of approximately $274 per low-risk (high-risk) patient (274 = 0.013 • 21,070 = 0.012 • 22,827), which implies an aggregate expenditure increase of approximately $110 per patient (110 = 0.7 • 274 − 0.3 • 274).

lead marginally low-risk patients to be reclassified as high-risk (because they would be more likely to experience utilization in the year prior to their AMI). In this case, both low-risk and high-risk patients would appear to have better outcomes in uncompetitive markets.

Other market characteristics also affect variation in treatment, and in turn welfare, in hospital markets. The presence of for-profit hospitals in a market, for example, leads to market-wide reductions in various measures of the average level of treatment intensity, but no significant aggregate or differential (between high-risk and low-risk patients) increases in rates of adverse health outcomes. How competition and other market characteristics interact to affect variation in cost and quality, in a model with both horizontal and vertical differentiation, is an important topic for further study. Our results also suggest that some caution may be warranted in the policy debate over variation in medical care. At least for the portion of variation due to competition, variation in quality and cost across patients is socially beneficial.

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THE COMPETITIVE EFFECTS OF NOT-FOR-PROFIT HOSPITAL MERGERS: A CASE STUDY*

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Applying conventional horizontal merger enforcement rules to nonprofit hospitals is controversial. Critics contend that the different objective function of not-for-profits entities should mitigate competitive concerns about mergers involving nonprofit hospitals. We analyze a merger that reduced the number of competitors (both nonprofit) in the alleged relevant market from three to two. We find that the transaction was followed by significant price increases; we reject the hypothesis that these price increases reflect higher post-merger quality. This study should help policymakers assess the validity of current merger enforcement rules, especially as they apply to not-for-profit enterprises.

I. INTRODUCTION

ALTHOUGH RESEARCHERS have made innumerable attempts to analyze the relationship between competition (as proxied by concentration) and performance (e.g., price), empirical evidence on the actual competitive effects of horizontal mergers is scarce. Perhaps this is not surprising. When assessed by contemporary antitrust standards, most mergers (even most horizontal mergers) do not present a serious risk of competitive harm. The handful that do typically either will be blocked in their entirety, or approved conditional on the completion of some remedial action (e.g., the divestiture of a critical competitive asset to a third party) designed to ameliorate the risk of competitive harm. Hence, candidates for the study of (plausibly) anticompetitive mergers will arise only infrequently; when, for example, the enforcement agencies lose a merger challenge in court, obtaining no competitive relief, or when the enforcement agencies do not challenge a transaction for reasons unrelated to the transaction's perceived competitive effects.

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This paper takes advantage of one of these rare opportunities.[1] We provide an econometric analysis of a horizontal merger in a concentrated hospital market, Dominican Santa Cruz Hospital's acquisition of its sole rival in the city of Santa Cruz, California, AMI-Community Hospital. According to the FTC, only two competitors—both not-for-profit—remained in the relevant market after the transaction.[2] Absent substantial efficiencies, or a credible threat of entry, standard antitrust analysis would predict that an increase in concentration of this magnitude likely would lead to higher equilibrium prices for both competitors. Consequently, this transaction would have been challenged by the FTC, had the Commission been able to intervene before the transaction was completed.[3] However, because the transaction was too small (in absolute size) to trigger the Hart-Scott-Rodino filing thresholds, the FTC did not receive prior notification of the transaction, and the parties were able to consummate the acquisition before the FTC could seek a preliminary injunction. Ultimately, the FTC entered into a consent order with Dominican Hospital, but the decree required only that Dominican notify the Commission prior to any further acquisitions in the relevant geographic market—it did not restore the premerger market structure. For this reason, this acquisition provides an excellent opportunity to assess, *ex post*, the actual, as opposed to the predicted, competitive consequences of a horizontal merger.

This study should be of interest for at least two reasons. First, as noted, empirical studies of the price effects of horizontal mergers are comparatively rare, notwithstanding their apparent importance to appraising the efficacy of federal merger enforcement policy. Studies such as this should help policymakers assess whether the enforcement decision rules embodied in the *Merger Guidelines* predict with an acceptable degree of accuracy the competitive consequences of actual horizontal mergers.

Second, and more specifically, the applicability to hospital markets of the antitrust agencies' approach to horizontal merger analysis (i.e., the *Merger Guidelines*) recently has been called into question. A substantial share of hospital output (approximately 90%) is produced by private and public nonprofit hospitals. Critics have contended that the antitrust agencies and courts have assumed that these not-for-profit providers seek maximum profits, notwithstanding the substantial body of theoretical and

[1] Both the Federal Trade Commission and the Department of Justice have unsuccessfully challenged other horizontal hospital mergers. However, these transactions are less amenable to empirical analysis than the Dominican Santa Cruz-Community merger because (1) the transactions are too recent to allow measurement of post-merger market performance, and/or (2) reliable price data do not exist.

[2] See Complaint *In the Matter of Santa Cruz Hospital, et al.* 118 F.T.C. 382 (1994).

[3] See Statement of Chairman Janet D. Steiger in Support of Final Issuance of Consent Order *In the Matter of Dominican Santa Cruz Hospital, et al.* 118 F.T.C. 382 (1994).

empirical analyses suggesting that nonprofit entities—or more specifically, certain types of nonprofit entities—will eschew opportunities to profitably exercise market power.[4] For example (see Lynk [1995], pp. 440–41), it is conceivable that a private nonprofit hospital sponsored and administered by the local community, might function something like a consumer cooperative. If so, the incentives of producers and consumers would be aligned, and any incentives the hospital might otherwise have to raise prices anticompetitively would be attenuated. Alternatively, the behavior of a nonprofit hospital whose profits are used to fund some particular set of activities valued by the firm's managers—e.g., providing charity care to the poor—might be indistinguishable from that of an identically situated for-profit entity.

Whether the (potentially) different incentive structure of not-for-profit hospitals could attenuate the exercise of market power is of more than just academic interest. The courts that must adjudicate horizontal merger challenges also have found such arguments compelling. In at least one case,[5] a US Federal District Court found that the nonprofit, community-sponsored status of the merging parties was an important factor in rebutting an otherwise convincing *prima facie* case against the merger of two rival hospitals.

The transaction analyzed here provides an excellent opportunity to explore these possibilities. The acquiring entity (Dominican Santa Cruz Hospital) is part of a chain of Catholic hospitals operating in the western United States. Its sole remaining rival in Santa Cruz county, Watsonville Community, is a locally-sponsored community hospital. According to the arguments set forth above, Watsonville Community would appear to be the type of nonprofit hospital least prone to exercise market power; any such propensity to charge competitive prices would, moreover, place a powerful post-merger competitive constraint on Dominican's ability to raise prices. Consequently, an analysis of both entities' post-merger pricing behavior should provide a valuable insight into the behavior of nonprofit producers.

II. PREVIOUS STUDIES OF HOSPITAL COMPETITION

Many studies of hospital competition have been carried out using a variant of the 'Structure-Conduct-Performance' (S-C-P) paradigm. Early (i.e., pre-1983) studies frequently found a *negative* relationship between hospital

[4] See Lynk [1995] for a more detailed review of the relevant theory and evidence.

[5] See *F.T.C. v. Butterworth Health Corporation and Blodgett Memorial Medical Center* (US District Court, Western District of Michigan, Southern Division), September 26, 1996, slip. op. at 27.

concentration and costs,[6] which usually was interpreted as evidence of insurance-induced moral hazard. Studies using data from the mid–1980s and after typically found a *positive* relationship between concentration and price.[7]

While suggestive, these price-concentration studies do not provide direct evidence of the effects of hospital mergers. One problem with drawing inferences about the competitive effects of mergers from this literature is that the results are almost surely sensitive to the way the geographic markets are defined, since this definition will determine the value of the concentration index.[8]

An alternative empirical strategy for assessing the consequences of merger-induced changes in market structure is to examine directly, through a comparison of the pre- and post-merger prices charged by the merged entity (and, perhaps, its plausible rivals). This 'event study' approach obviates the necessity of defining the 'relevant market.' If the merger creates market power, then (after suitably controlling for other possible shifts in the exogenous determinants of price) one should observe the merged entity raising its price post-merger. It is unnecessary to identify the relevant market to carry out this test—at minimum, one requires only data for the merged entity.

Early applications of the event study method (e.g., Barton and Sherman [1984]; Kim and Singal [1993]) used a relatively simple specification: they analyzed movements in the price of the product affected by the merger, relative to the price of a substitute product hypothesized to face similar demand and cost conditions, but unaffected by the merger. The equality of pre- and post-merger prices was then tested using a simple t test. Later implementations of the event study method (e.g., Schumann *et al.* [1992, 1997]) used a somewhat different approach—they estimated a price equation with data spanning the pre- and post-merger periods.[9] The competitive effect of the transaction was captured with a dummy variable set equal to one for the post-merger period. This method is potentially problematic if there are unobserved exogenous determinants of price that are correlated with the merger dummy. If so, the merger coefficient would reflect the competitive effects of the transaction, as well as movements in

[6] For a comprehensive review of this literature see Pautler and Vita [1994]. For seminal works see Joskow [1980] and Robinson and Luft [1985].

[7] See, e.g., Dranove *et al.* [1993]; Melnick *et al.* [1992]; Keeler, Melnick and Zwanziger [1999]; and Simpson and Shin [1998].

[8] For example, see Keeler and McClellan [1999] and Werden [1989]. Only the former have offered an alternative method for defining antitrust markets. Although there seldom may be good practical alternatives to patient flow data, it is nonetheless true that antitrust markets defined on this basis may lead to incorrect conclusions about the competitive constraints faced by a particular pair of merging hospitals.

[9] The control variables consisted of demand and cost shifters.

these unobserved price determinants, leading one to incorrectly estimate the price effects of the transaction.

Below, we propose an empirical framework that combines elements of the Barton and Sherman, and Schumann *et al.* approaches. We believe that this strategy will provide the best method for identifying accurately the competitive effects of the acquisition. Before setting forth this empirical strategy, we first describe in greater detail the events of the Dominican-Santa Cruz transaction.

III. HISTORY OF THE TRANSACTION

On March 8, 1990, Dominican Santa Cruz Hospital ('Dominican'), a 259-bed, not-for-profit hospital, affiliated with the Catholic Healthcare West system, purchased the only other hospital in the city of Santa Cruz, AMI-Community Hospital ('Community'). Community, which was affiliated with American Medical International, was licensed for 180 beds and was a for-profit entity. Dominican and Community were located about two miles apart. Five months after the acquisition (August 1990), Community was converted completely to a nursing home/rehabilitation facility. The only other hospital in Santa Cruz county was Watsonville Community Hospital, located about 14 miles south of the city of Santa Cruz. The city of Santa Cruz is located about 40 miles south of San Jose, and 80 miles south of San Francisco. Santa Cruz county is bordered on the south and west by the Pacific ocean, and on the north and east by the Santa Cruz mountains.

Contemporaneous data on patient flows showed that the overwhelming majority (about 94%) of the three Santa Cruz county hospitals' patients resided in Santa Cruz county, and that most (about 97%) Santa Cruz residents receiving inpatient hospital care received it from hospitals in that county.[10] The patient flow data also showed that very few—less than 2.5%—of the patients at the next closest set of competitors originated in Santa Cruz county.[11] In short, there was very little evidence to suggest that residents of Santa Cruz county regarded out-of-county hospitals as good substitutes for in-county hospitals, or that Santa Cruz county hospitals sought to attract patients from outside of the county. Accordingly, the FTC's complaint alleged that the relevant geographic market was 'Santa Cruz County and/or portions of Santa Cruz County.' Only two

[10] Nine Santa Cruz county ZIP codes account for over 80% of the privately insured inpatients at the two hospitals.

[11] The next closest competitors (Community Hospital of Los Gatos and Good Samaritan Hospital) were both located in Los Gatos (Santa Clara County). Both hospitals were approximately 25 miles (41 minutes driving time) from Dominican Santa Cruz Hospital. Watsonville Hospital, by contrast, was only 14 miles from Dominican (23 minutes driving time).

hospitals—Dominican and Watsonville Community—remained in this market post-merger. According to the Complaint, the merger increased the market share (of patient-days) of Dominican from 62% to approximately 73%, and increased the market share (of available beds) from 50% to 73%. The Herfindahl-Hirschman Index for the relevant antitrust market increased by over 1,700 points (from approximately 4,620 to approximately 6,350) when measured by patient-days; and by over 2,300 points (from approximately 3,770 to approximately 6,090) when measured by available beds. Under the *Merger Guidelines* enforcement criteria, a transaction generating concentration figures of this magnitude would be presumed anticompetitive. Absent compelling evidence that such a merger would create substantial efficiencies, or that the exercise of market power would be constrained by the threat of entry, normally the FTC would seek to preliminarily enjoin such a transaction.[12] Had the FTC had the opportunity to seek a preliminary injunction in this case, it would have done so.[13] However, as noted earlier, the small absolute size of the transaction failed to trigger the Hart-Scott-Rodino filing thresholds, and the FTC was not able to seek an enforcement action until after the transaction was completed.

In March, 1993, approximately three years after the merger was consummated, the FTC accepted a consent agreement with Dominican Santa Cruz Hospital and Catholic Healthcare West. The consent order did nothing to restore the pre-merger competitive environment; it required only that the respondents obtain the Commission's prior approval before acquiring any other hospitals in Santa Cruz County. Although all of the FTC Commissioners concluded that the merger probably had created significant market power, a majority of the FTC Commissioners concluded that the agency had few good remedies available to it.[14] The acquired hospital, Community, already had been converted to a skilled nursing/rehabilitative care facility. Thus, the effects of the merger could have been reversed only at considerable cost. Further, Sutter Health, a major Northern California hospital chain, had announced plans to construct an acute care hospital in Santa Cruz, and had already purchased a 3.8 acre

[12] According to the 1992 *Merger Guidelines* (§0.51(c)), 'the [FTC] regards markets [with HHIs above 1800] to be highly concentrated . . . [when] the post-merger HHI exceeds 1800, it will be presumed that mergers producing an increase in the HHI of more than 100 points are likely to create or enhance market power or facilitate its exercise.'

[13] As then-FTC Chairman Steiger observed at the time, '[t]he facts of this case provide sufficient reason to believe that this acquisition violates Section 7 of the Clayton Act. Ordinarily, such facts would lead the Commission to seek a preliminary injunction in federal district court.' See Statement of Chairman Janet D. Steiger in Support of Final Issuance of Consent Order *In the Matter of Dominican Santa Cruz Hospital, et al.* 118 F.T.C. 382 (1994).

[14] See Statements of Chairman Steiger, Commissioner Azcuenaga, and Commissioner Yao *In the Matter of Dominican Santa Cruz Hospital, et al.* 118 F.T.C. 382 (1994).

site toward that end.[15] The FTC reasoned that entry by this entity likely would already have occurred by the time divestiture could be completed, thereby moving the market closer to the pre-merger status quo more rapidly than could be accomplished through the FTC's administrative process. As it turned out, some time in the second quarter of 1996, Sutter Health opened the Sutter Maternity and Surgery Center with 30 licensed and 21 staffed beds.

IV. EMPIRICAL ANALYSIS: METHODS AND DATA

IV(i). *Basic Price Regressions*

We begin our empirical analysis by first presenting some basic descriptive information on the behavior of prices at the two remaining Santa Cruz county hospitals. Our measure of price is derived from data supplied by the Office of Statewide Health Planning and Development (OSHPD). For each quarter (1986 through 1996, inclusive) we calculate the average net revenue received per inpatient acute-care admission (or, alternatively, per patient day[16]) for privately insured patients.[17] Of course, hospitals provide numerous inpatient services, some of which may or may not be demand- or supply-side substitutes. Nevertheless, a single measure of inpatient price is consistent with the so-called 'cluster' approach to defining hospital product markets used in virtually all hospital merger investigations.[18]

[15] *Sacramento Business Journal*, March 16, 1992.

[16] All of the estimates carried out with dependent variables defined as per-day values are available at the *JIE* Editorial website.

[17] In the OSHPD data, there are various categories for both gross and net patient revenue. Net revenue is equal to a hospital's gross revenue *minus* any discounts that it offers. In the data, the *gross* revenue figures distinguish between inpatient and outpatient revenue, however, the *net* revenue figures do not. As noted by Dranove *et al.* 1993], failure to account for discounts seriously understates the effect of competition on price. Thus, several adjustments must be done in order to obtain estimates of net inpatient revenue from the gross inpatient data. While OSHPD has been collecting quarterly data from hospitals since approximately 1980, data prior to 1986 did not in any way distinguish revenue by payer group. As a result, observations from prior to 1986 were eliminated. For data from 1986 to 1992, net inpatient price was calculated by multiplying total net revenues from non-Medicare, non-Medicaid patients by the ratio of gross *inpatient* revenue to gross *total* revenue at the hospital. While this net revenue figure eliminates Medicare and Medicaid patients it does include revenue from some patients in various non-Medicaid indigent programs. This net revenue figure is then divided by discharges to obtain the average price paid per non-Medicare, non-Medicaid acute-care inpatient. We also adjusted the number of discharges by the ratio (total revenue-bad debt/total revenue) in order to account for bad debt.

For data after 1992, patient revenue for various indigent programs is reported in a separate category. In order to keep the observations consistent over time, revenue from this category was added to the revenue figures for commercially insured patients. Net price was then calculated using the same methodology as outlined for the 1986 to 1992 data.

[18] For a critical overview of the 'acute care inpatient' product market definition used in hospital merger investigations, see Sacher and Silvia [1998].

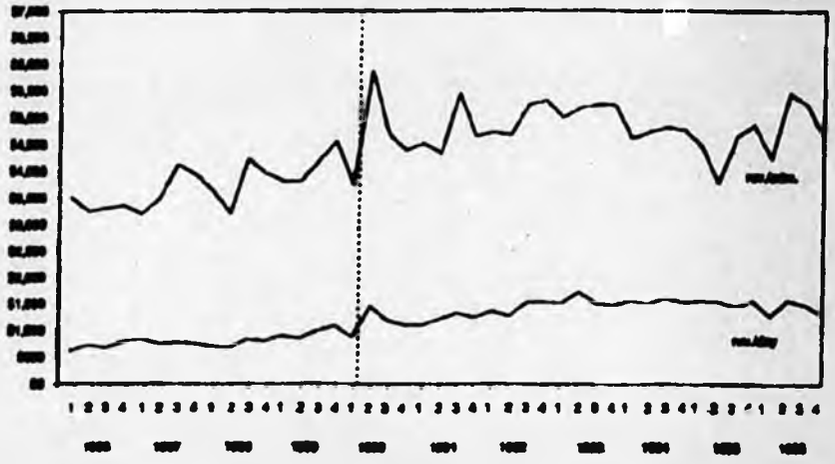

Figure 1
Quarterly Real Price per Admission and per Inpatient Day Dominican Hospital

It should be noted that the price series in Figure 1 does not include information on Community's prices. Normally, we would like to assess the competitive effects of a merger by examining the pre- and post-merger prices of both transaction partners. Unfortunately, that approach is not feasible here because Community was converted to a nursing home/rehab center shortly after the acquisition, and no post-transaction price data are available for it.[19] We have concluded, therefore, that the best available test of the impact of removing this competitive constraint on Dominican's pricing discretion is obtained from comparing Dominican's pre- and post-merger prices; accordingly, the regression results reported in Table III below are based on this comparison. However, to assess the robustness of these results, we also carried out all of regression analyses presented in Table III using (pre-merger) dependent and explanatory variables redefined as weighted averages of the values for Dominican and Community. Our principal findings are robust to this modification.[20]

Figures 1 and 2 depict the behavior of per-day and per-admission prices at Dominican and Watsonville hospitals for the entire sample period. The dashed vertical line indicates the quarter in which the merger occurred. Visual inspection of these series suggests that while there was an upward trend in real prices predating the transaction, prices did increase

[19] The conversion was completed by August 1990. OSHPD ceased reporting separate data for Community after the 1st quarter of 1990.

[20] We experimented with weights based on patient days, patient discharges, and inpatient revenue. All produced essentially the same results. The results reported at the *JIE* Editorial website are derived using inpatient revenue weights.

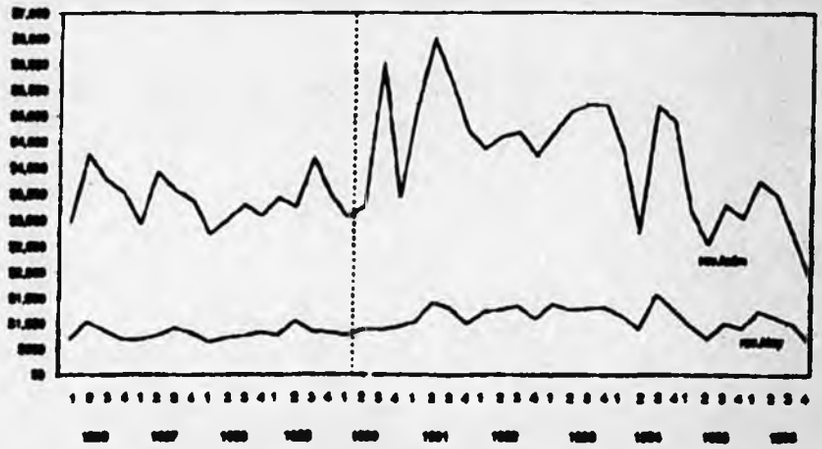

Figure 2
Quarterly Real Price per Admission and per Inpatient Day Watsonville Hospital

in the transaction's aftermath. This assessment is supported by the regression results reported in column (a) of Tables III and IV. Here we present simple regressions of price (real net revenue per admission) on a merger dummy variable (merge) and a time trend (time and time-squared).[21] These regressions suggest a substantial post-merger price increase at both Dominican and Watsonville, on the order of $700 and $1,800 respectively, even when the time trend is controlled for explicitly. We reject the null hypothesis of no merger effect at all conventional significance levels.

While the results contained in Tables III and IV are consistent with a merger-induced increase in price, obviously the simple specification on which they are based will fail to control for many of exogenous determinants of equilibrium prices (except to the extent that they follow a linear-quadratic time trend). If these omitted factors are correlated with merge we will improperly impute their effect to the merger. Similar to Schumann *et al.* (1992, 1997), we next attempt to estimate a more fully specified reduced form price equation.

IV(ii). *Reduced Form Price Equations*

To ensure that the observed price effect of the merger is not merely the

[21] As noted previously, all of the equations reported in the paper also have been estimated with the dependent variable computed on a per-inpatient day basis. In the fully specified version of the price equations, we find that the statistical significance of the coefficient on merge falls in the Dominican equation ($p = 0.18$), but increases in the Watsonville equation ($p = 0.07$).

result of omitted variable bias, it is necessary to control for factors that likely will affect the behavior of prices both over time and across hospitals. It is clear that the unit of output employed in this study—an inpatient discharge or inpatient day—is nonhomogeneous. Patient stays can and do vary substantially in terms of their resource intensity. Consequently, cross-sectional and intertemporal comparisons of the 'price' of this output are meaningless unless one controls somehow for this heterogeneity.

We employ several such controls. First, like other researchers (e.g., Simpson and Shin [1998]), we construct an index of hospital 'casemix.' The Healthcare Financing Administration (HCFA) assigns a 'caseweight' to each diagnostic related group (DRG).[22] This index measures the 'resource intensity,' used, on average, for each DRG relative to other DRGs and over time. The OSHPD discharge data set includes the date of discharge and DRG for each patient. Using these data, we created a quarterly casemix indicator for each hospital used in the empirical analysis. This was done as follows. Each non-Medicare/non-Medicaid discharge at each hospital for each quarter was weighted using the HCFA caseweight index for the relevant DRG. The weighted discharges were then summed and divided by the total number of discharges for each quarter at each hospital to obtain the casemix index.

As a further control for discharge heterogeneity, we also include the average length-of-stay for privately insured patients. The rationale for including this measure is straightforward—each additional day of hospitalization requires the consumption of additional labor and material resources. One cannot compare the price of a discharge across different time periods, or across different hospitals, unless one controls for variations in length-of-stay.

Equilibrium hospital prices also will be affected by exogenous changes in factor prices. We include two variables to control for these shifts. First, HCFA computes a wage index for all urban areas (a county or set of counties) based on the salaries and wages of various health care workers in the relevant locale. This index is used to adjust hospital payments under the Prospective Payment System (PPS) for Medicare. As an additional control variable, we include the BLS Producer Price Index for surgical and medical instruments and apparatus.

It is well-established empirically that the growth of managed care institutions (e.g., HMOs, PPOs) has facilitated more intense price competition among hospitals (e.g., Dranove, Shanley, and White [1993]; Kralewski *et al.* [1992]), as well as greater productive efficiency. Consequently, other things equal, we would expect to observe lower prices

[22] DRGs refer to a system of classifying patients based on medical diagnoses and surgical procedures. Originating at Yale University during the 1970s, the DRG system has been widely adopted by payers and providers as a way of classifying patients.

in markets where selective contracting by managed care organizations is more prevalent. Ideally, we would like to utilize some measure of the market share of managed care institutions in the relevant market. Unfortunately, such data are not readily available. As a proxy, we calculate for each hospital the percentage of total discharges for which the expected payment source is an HMO or other prepaid health plan.[23]

Similar to other empirical studies of hospital mergers (e.g., Lynk [1995], Simpson and Shin [1998]), we include a number of other variables to control for exogenous demand- and cost-side variation. These consist of per capita income, the county-level unemployment rate, county population density, share of admissions covered by Medicare, share of admissions covered by MediCal, and the Producer Price Index for medical and surgical equipment.

Last, we also control for the effects of the October 1989 northern California earthquake, which may have reduced (exogenously) Watsonville's productive capacity, leading to higher prices for reasons unrelated to the Dominican transaction. To capture the competitive effects of this event, we create a dummy variable (quake) equal to 1 for the 4th quarter of 1989 and all subsequent periods, and 0 otherwise. We also include a dummy variable (entry) indicating the entry of the small (21 bed) Sutter hospital in 1996.

We note that the earthquake dummy variable is potentially problematic for us, since it is highly collinear with the merger dummy. Essentially, there are only two quarters of data (1989:Q4–1990:Q1) that differentiate these two variables. This may make it difficult to estimate the respective effects of these two events on price with any precision.[24] That said, there are reasons to doubt that the quake actually had an economically significant impact on Watsonville's productive capacity. Whether measured by total patient days or total discharges, the OSHPAD data suggest that Watsonville's output actually increased in the aftermath of the quake.[25]

Column (b) of Tables III and IV presents the reduced form price regressions for Dominican and Watsonville, respectively. In the case of

[23] We recognize that this managed care index quite plausibly is an endogenous variable jointly determined with our price variable; as a consequence, its inclusion could induce simultaneous equations bias in our estimated coefficients. Accordingly, we estimate our equations both with and without this variable. None of our results are sensitive to this change in specification. These results are reported in full at the *JIE* Editorial website.

[24] We note, however, that in the several of the Watsonville regressions, the coefficients on both merge and quake are individually significant, suggesting that there is sufficient variation in the sample to accurately estimate both parameters.

[25] A regression of total patient days against a time trend and the quake dummy yields a coefficient on quake of 803.51 (s.e. = 480.65). A similar regression using total discharges yields a coefficient (standard error) on quake equal to 53.18 (182.24) The full regression results are available at the *JIE* Editorial website.

Dominican, adding these additional explanatory factors to the reduced form price equations leaves the coefficient on merge essentially unchanged (it actually increases slightly, from $696/admission to $749/admission), but it does increase the standard error of the estimate, from $169 to $474. The corresponding t statistic (1.61) leads one to reject the null hypothesis of no merger price effect at the $p = 0.12$ significance level. For Watsonville,

TABLE I
VARIABLE DEFINITIONS

Variable Name	Description
rprice_d	real net revenue per private admission, Dominican Hospital
rprice_w	real net revenue per private admission, Watsonville Hospital
rprice_p	real net revenue per private admission, peer group hospitals
rpday_d	real net revenue per private day, Dominican Hospital
rpday_w	real net revenue per private day, Watsonville Hospital
rpday_p	real net revenue per private day, peer group hospitals
expadm_d	real expense per admission, Dominican
expadm_w	real expense per admission, Watsonville
expadm_p	real expense per admission, peer group hospitals
expday_d	real expense per inpatient day, Dominican
expday_w	real expense per inpatient day, Watsonville
expday_p	real expense per inpatient day, peer group hospitals
length-of-stay_d	average length-of-stay, Dominican Hospital
length-of-stay_w	average length-of-stay, Watsonville Hospital
length-of-stay_p	average length-of-stay, peer group hospitals
medi-Cal share_d	share of admissions MediCal, Dominican Hospital
medi-Cal share_w	share of admissions MediCal, Watsonville Hospital
medi-Cal share_p	share of admissions MediCal, peer group hospitals
medicare share_d	share of admissions Medicare, Dominican Hospital
medicare share_w	share of admissions Medicare, Watsonville Hospital
medicare share_p	share of admissions Medicare, peer group hospitals
casemix_d	casemix index, Dominican
casemix_w	casemix index, Watsonville
casemix_p	casemix index, peer group hospitals
popdensity_p	population density, peer group counties
popdensity_s	population density, Santa Cruz County
hmo_d	share of admissions HMO insured, Dominican
hmo_w	share of admissions HMO insured, Watsonville
hmo_p	share of admissions HMO insured, peer group
income_s	real per capita income, Santa Cruz County
income_p	real per capita income, peer group counties
ppi_med	producer price index, medical and surgical instruments
unemploy_p	unemployment rate, peer group counties
unemploy_s	unemployment rate, Santa Cruz County
wage_d	HCFA wage index, Dominican
wage_w	HCFA wage index, Watsonville
wage_p	HCFA wage index, peer group
quake	= 1 for 4th quarter 1989 and after, 0 otherwise
merge	= 1 for 2nd quarter 1990 and after, 0 otherwise
entry	= 1 for 2nd quarter 1996 and after, 0 otherwise
time	time trend
timesquared	time trend squared

estimating the price effect of the merger using the expanded set of regressors reduces the estimated merger effect from $1,843 per admission to $496 per admission. In contrast to Dominicus equation, the standard error on the merge coefficient falls with the addition of these regressors to the equation. In this specification, we reject the null hypothesis of no merger effect at the $p = 0.10$ significance level.

TABLE II
DESCRIPTIVE STATISTICS

Variable Name	Mean	Minimum	Maximum
rprice_d	4434.55	3212.89	5882.0
rprice_w	3897.98	1794.32	6490.128
rprice_p	5088.39	3526.29	8299.39
rpday_d	1192.75	623.53	1730.41
rpday_w	994.16	593.75	1566.64
rpday_p	1242.72	783.33	1626.55
expadm_d	4118.93	3212.4	4986.1
expadm_w	3343.72	2582.8	3969.6
expadm_p	4038.26	3185.02	4628.92
expday_d	719.92	497.07	962.92
expday_w	756.47	581.91	1064.58
expday_p	810.87	554.70	1116.33
length-of-stay_d	4.01	2.71	5.63
length-of-stay_w	3.99	2.71	6.79
length-of-stay_p	4.28	3.53	4.88
medi-Cal share_d	0.14	0.051	0.17
medi-Cal share_w	0.29	0.10	0.48
medi-Cal share_p	0.21	0.17	0.25
medicare share_d	0.39	0.33	0.44
medicare share_w	0.31	0.22	0.40
medicare share_p	0.39	0.36	0.42
casemix_d	0.85	0.75	1.04
casemix_w	0.76	0.67	0.87
casemix_p	0.94	0.84	1.06
popdensity_p	88.55	78.69	95.69
popdensity_s	516.96	486.10	539.57
hmo_d	0.25	0	0.50
hmo_w	0.06	0	0.25
hmo_p	0.13	0.05	0.23
income_s	16104.97	14464.69	17700.51
income_p	13214.04	12892.70	13504.33
ppi_med	121.19	107.27	131.27
unemploy_p	10.46	8.02	14.23
unemploy_s	8.35	5.37	13.83
wage_d	1.22	0.97	1.42
wage_w	1.20	0.97	1.39
wage_p	1.16	1.12	1.23
quake	0.659	0	1
merge	0.63	0	1
entry	0.11	0	1
time	22.5	1	44
timesquared	667.5	1	1936.8

TABLE III
DOMINICAN HOSPITAL PRICE AND EXPENSE REGRESSIONS
(STANDARD ERRORS* IN PARENTHESES)
Quarterly Data, 1986–96

	net rev./ admission (a)	net rev./ admission (b)	net rev./ admission (difference) (c)	exp./ admission (difference) (d)
merge	696.50‡ (169.31)	749.68 (474.71)	1005.49§ (506.49)	172.74 (139.75)
income		−0.39† (0.12)	−0.16 (0.22)	−0.27‡ (0.07)
popdensity		−5.45 (23.99)	29.86 (34.57)	4.36 (8.45)
unemploy		−72.39† (31.26)	−36.61 (55.09)	16.61 (31.19)
length-of-stay_d		486.26† (177.77)	469.45† (178.71)	39.81 (65.81)
hmo_d		−683.03 (1021.08)	−868.32 (1483.21)	229.97 (652.86)
casemix_d		−1689.06 (1793.83)	1638.76 (1355.49)	−857.21 (908.89)
wage_d		−177.02 (390.12)	−603.42 (905.78)	−616.17† (297.87)
ppi_med		71.25 (70.36)	94.55 (87.17)	−34.73 (38.73)
medicare share_d		3805.44 (2623.12)	5191.34 (3122.95)	−1409.13 (1847.34)
medi-Cal share_d		1076.23 (3032.58)	4752.39 (3579.07)	1581.50 (1862.95)
time	68.60‡ (14.48)	31.19 (88.26)	−170.48 (109.39)	−10.24 (38.01)
timesquared	−1.18‡ (0.25)	−0.54 (1.80)	1.44 (0.96)	0.75† (0.34)
quake		263.89 (290.56)	287.52 (302.42)	407.36‡ (143.69)
entry		634.83† (247.84)	480.23† (219.56)	334.38† (147.97)
intercept	3241.67‡ (120.26)	1110.79 (14136.84)	−21598.48 (19087.31)	2549.66 (5076.65)

*Newey-West heteroskedasticity and autocorrelation consistent standard errors (lag length = 4)
†significant at $p < 0.05$
‡significant at $p < 0.01$
§significant at $p < 0.10$.

TABLE IV
WATSONVILLE HOSPITAL PRICE AND EXPENSE REGRESSIONS
(STANDARD ERRORS* IN PARENTHESES)
Quarterly Data, 1986–96

	net rev./ admission (a)	net rev./ admission (b)	net rev./ admission (difference) (c)	exp./ admission (difference) (d)
merge	1843.47‡ (433.58)	495.92§ (287.58)	671.83§ (389.48)	79.27 (176.02)
income		−0.54‡ (−0.15)	−0.18 (0.21)	−0.22† (0.08)
popdensity		−103.17‡ (22.03)	−51.67 (40.76)	−38.51† (17.73)
unemploy		0.59 (52.02)	77.21 (90.65)	70.60 (45.63)
length-of-stay_w		765.42‡ (170.76)	527.40† (221.85)	308.64‡ (58.56)
hmo_w		−2681.78 (2922.64)	−834.28 (2823.67)	831.62 (1395.01)
commin_w		7281.31‡ (1655.52)	7529.36† (3318.51)	−676.27 (918.54)
wage_w		−554.65 (1080.64)	−666.00 (1788.47)	178.95 (610.52)
ppi_med		290.81† (110.51)	285.55† (123.90)	81.73 (71.53)
medicare share_w		952.24 (5536.11)	6768.92 (5999.19)	2113.03 (1808.28)
medi-Cal share_w		−3653.65§ (2043.66)	−1089.69 (2238.37)	−1723.45† (648.39)
time	49.74 (33.93)	102.91 (82.25)	−185.62§ (109.71)	−33.61 (45.63)
timesquared	−2.32‡ (0.59)	−2.42§ (1.28)	0.91 (1.40)	0.33 (0.63)
quake		−885.24§ (266.57)	−754.18† (281.97)	−472.89‡ (139.17)
entry		105.66 (404.22)	446.43 (426.99)	−46.91 (121.96)
intercept	3199.53 (304.76)	22894.06 (14053.78)	−7145.13 (18614.65)	7779.72 (6938.94)

* Newey-West heteroskedasticity and autocorrelation consistent standard errors (lag length = 4)
† significant at $p < 0.05$
‡ significant at $p < 0.01$
§ significant at $p < 0.10$.

IV(iii). *Reduced Form Price Estimates with 'Peer Group' Controls*

Although we have attempted to specify the reduced form price equation as fully as possible, it is questionable whether this specification fully captures all of the exogenous factors that might affect the equilibrium prices of the merged entity and its competitors.[26] To better capture the effects of these factors, and thus estimate more precisely the equilibrium impact of the merger, we incorporate into our empirical approach elements of the Barton and Sherman [1984] and Kim and Singal [1993] merger studies. These studies analyzed movements in the price of the product affected by the merger, conditional on the price of a substitute product believed to have faced similar demand and cost conditions, but which is unaffected by the merger. By so doing, they controlled for otherwise unobserved demand and cost factors, unrelated to the merger, that might influence intertemporal price behavior at the merging entities.

The State of California has undertaken two studies to categorise hospitals into 'peer groups' for purposes of setting Medi-Cal reimbursement levels, the most recent in 1991 (Department of Health Services, [1991]). These studies form the basis for the construction of the control group used here. The peer grouping method used by the State of California first placed specialty, teaching, and prepaid hospitals in their own separate peer groups. The study then used 'cluster' analysis to group rural hospitals and other 'unusual' hospitals (*see* State of California [1991], § 5). After the latter were classified into these peer groups, only urban short term facilities remained. These facilities were then subdivided into peer groups on the basis of licensed bed size. In the 1982 study, Dominican Santa Cruz and Community Hospital of Santa Cruz were placed in the 'moderately-sized' urban category, while Watsonville was placed in the 'small-urban' hospital peer group. In the 1991 study, Dominican Santa Cruz was placed in the 'medium-sized urban' hospital peer group, which consisted of all hospitals not elsewhere classified with between 170 and 270 licensed beds. Watsonville was placed in the 'moderately small- sized' urban hospital peer group, which consisted of all hospitals not elsewhere classified with between 95 and 170 licensed beds.

We used the following procedure to establish a control group for the current study. First, to ensure that peer hospitals were located in markets as similar as possible to the Santa Cruz market, hospitals located in counties that were part of very large Primary Metropolitan Statistical Areas (PMSAs) were eliminated. This eliminated hospitals located in the following counties: Los Angeles, Orange, Ventura, Riverside, San Bernardino, San Diego, San Francisco, Alameda, Contra Costa, Marin,

[26] Several of the control variables (income, popdensity, unemploy, hmo and wage) vary only on an annual, not quarterly, basis.

San Mateo and Santa Clara. The competitive environment in such large urbanized areas likely is very different from that found in the less urbanized area of Santa Cruz.

Next, the peer group was restricted to those hospitals that were placed in any of the short term urban hospital peer groups in the 1991 California study, and were licensed with between 100 and 300 beds in that year. While somewhat arbitrary, these licensed bed cut-offs would appear to limit the sample to hospitals reasonably comparable to the hospitals in Santa Cruz. This left 41 potential peer group hospitals. We next eliminated those hospitals in this group that were not in the same bedsize category, and/or that did not fall under one of the urban hospital groupings in the 1982 California Peer Group survey. This left 33 potential peer group hospitals. Eight more hospitals were eliminated because (according to the 1996 *AHA Guide*) they did not fall into the appropriate bedsize category. We then eliminated all hospitals that had themselves been involved in a horizontal acquisition as reported in the OSHPD Hospital History Listing database, or were located in a county where a horizontal merger had occurred during the sample period. This group of 16 remaining hospitals constitutes our peer group (*see* Appendix A).

Column (c) of Tables III and IV presents estimates of the reduced form price regressions incorporating the peer group controls. In these equations the dependent and explanatory variables have been redefined as the difference between the own- and peer group value (e.g., in the Dominican equation, the dependent variable equals the Dominican price minus the (mean) peer group price). The results from this specification continue to suggest a fairly large price effect from the transaction ($1,005/admission in the case of Dominican; $672/admission in the case of Watsonville). These estimates are statistically significant at the $p = 0.06$ and $p = 0.10$ levels, respectively.

Many of the other coefficients in this equation have the expected sign, but are not always statistically significant. The coefficient on average length-of-stay (alos_d and alos_w) is positive in both equations, and significant at the $p = 0.02$ level. The medical equipment price index is positive in both equations, as expected, but significant at conventional levels only in the Watsonville equation. Similarly, the estimated parameter on the casemix index is positive and significant only in the Watsonville equation. The HMO share variable is negatively related to price in both equations, as one would expect, but is never significant.

We also observe an interesting pattern of results on the two event variables, quake and entry. In both equations, the coefficient on entry is large and positive; in the case of Dominican, we can reject the null of a zero coefficient at the $p = 0.04$ significance level. Obviously, this is somewhat counterintuitive; one possible explanation is that the entry of Sutter induced Dominican to increase its quality, leading to higher prices

and higher unit costs. This possibility receives some support from the expense regressions reported in column (d), which show that Dominican's expenses per admission increased by about $263 ($p = 0.08$) when Sutter entered the market. However, the results for the Watsonville equation do not support this hypothesis.

The pattern of coefficients on quake (positive in the Dominican price equation, negative in the Watsonville price equation) can be potentially rationalized as an exogenous quality reduction at Watsonville that allowed Dominican to raise its price. The quake coefficient is not significant in the Dominican equation, however, though it is in the Watsonville equation ($p = 0.06$).

V. ALTERNATIVE EXPLANATIONS FOR THE POST-MERGER PRICE INCREASE

While the empirical results presented in Tables III and IV suggest a post-merger price increase—with the evidence strongest in the case of the merged entity, Dominican—our inability to observe and measure quality perfectly means that we cannot rule out the possibility that the price increases reflect improvements in quality, rather than increased price-cost markups with unchanged (or even diminished) quality levels. The evidence on this possibility is mixed. We observe first that the parties to the acquisition made no such claims in defense of the transaction. If significant quality improvements resulted from the transaction, they were not foreseen by the parties at the time of transaction. Rather, the parties claimed that the efficiencies from the transaction would derive from the realization of scale-related production efficiencies.[27] To the extent that such scale economies were realized, we would expect prices to fall, other things held constant.

It is perhaps conceivable that consolidation of particular services at Dominican could lead to volume-related quality increases—for example, because clinical outcomes for some procedures improve as the procedure is performed with higher frequency at a particular location.[28] Then, Dominican might be able to capture some or all of the value of this quality increase in the form of higher prices.

The problem with this explanation is that it fails to explain the post-merger increase in price at Watsonville Hospital. If the elimination of Community Hospital as a provider of the services in question leads to higher (quality-unadjusted) prices at Dominican because of the efficiencies

[27] See Statement of Commissioner Yao. Dominican claimed that Community Hospital was inefficiently small, and that efficiencies could therefore be realized by converting it to a skilled nursing/rehabilitation facility, and channeling its patients to Dominican.

[28] For a large number of clinical procedures there is empirical evidence that outcomes improve with patient volume. See, e.g., Begg *et al.* [1998] and Selby *et al.* [1996].

described in the preceding paragraph, Watsonville would either have to (1) reduce its price (assuming that its quality remained unchanged); or (2) match Dominican's quality increase. If Watsonville captured some of the patient flow that otherwise would have patronized Community, then it too might be able to realize volume-related quality increases. But if this occurred, then it is unclear why prices would rise unless the transaction also had adverse competitive effects.[29] In a competitive market, prices are determined by cost, not demand (demand determines the equilibrium quantity, but price will be determined by marginal cost). If the quality of certain services increases at both hospitals (but costs remain unchanged), then there will be a market-wide increase in demand for the service, leading to an increase in the total quantity sold. But if marginal costs are constant, and prices are determined competitively, the price at which this service is sold would not change. If prices increase, it suggests that the transaction has increased market power, even if it simultaneously yielded efficiencies.

It perhaps is conceivable that the merger led to other types of quality increases at both Dominican and Watsonville that are not related to volume, but which manifest themselves in greater resource use per patient. If so, we might observe a post-merger increase in expenses per admission or expenses per day—hence prices—at both hospitals, other things held constant. We carry out two tests of this hypothesis. First, we construct dependent variables equal to the difference in per admission expenses between Dominican (Watsonville) and the peer group, and regress this difference against the same explanatory variables employed in the column (c) regressions. Column (d) of Tables III and IV reports the results of these regressions. The results of this test do not support the hypothesis of higher post-merger quality. In the Dominican equation, the coefficient on merge suggests only a small increase in per-admission expenses; we cannot reject the hypothesis that there was no post-merger increase in per-admission expenses. Similarly, in the Watsonville expense regressions we find only a small ($79) post-merger increase in per-admission expenses; as with Dominican, we cannot reject the hypothesis that the true coefficient on merge equals zero.

We conduct a second test of the efficiency hypothesis by examining data on patient flows. If the transaction improved the quality of hospital care provided in Santa Cruz County, relative to that provided in hospitals outside the county, we would expect to observe (*ceteris paribus*) an increase in the proportion of Santa Cruz County residents who seek hospital care within Santa Cruz county. To test the efficiency hypothesis,

[29] The other possibility is that marginal cost increases with output. This possibility is difficult to reconcile with the efficiency claims actually put forth by the parties; i.e., that the merger allowed the merged entity to enjoy scale-related reductions in unit cost.

TESTIMONY

Presented to the

Interim Health Committee on Certificate of Need

October 8, 2007 @ 3:00-4:00 p.m.

by

Wes Cleveland, JD, American Medical Association

Chairman Foster, Chairman Michael and ladies and gentlemen of the Interim Health Committee on Certificate of Need (Committee), my name is Wes Cleveland. I am an attorney who works in the American Medical Association's (AMA) Department of State Legislation. For the past four years I have spent much of my time monitoring national legislative and regulatory certificate of need (CON) developments. I appreciate the opportunity to share with you some of the trends that I have seen, and some of the information I have gathered about CON from reviewing the academic literature and recent state legislative CON studies. I also want to give you a brief sense of how your state's CON program compares with other states.' I hope that the information I will share with you will be useful as you think about your state's CON program and its future direction.

A. Landscape of CON programs and trends

Before I discuss the findings of CON studies, I would like to give you a sense of the differing types of CON programs out there and legislative and regulatory trends. Although 36 states have some type of CON program, state programs can vary widely. Some CON programs apply to a broad range of health care facilities and health services. Within these states, there can, however, be a significant difference in the monetary

thresholds that trigger the application of CON requirements, with some thresholds being "dollar zero" and others being set at millions of dollars, both for facilities and major medical equipment acquisition. A number of other states have, however, more narrowly circumscribed statutes. For example, Florida's program only applies to hospitals, long-term care facilities, hospices, and ICF-MRs. Nebraska's, Oklahoma's, and Ohio's CON programs only apply to long-term care facilities. Illinois' program applies only to health care facilities. At the extreme is Wisconsin, which while having a CON program "on the books," has not had an active CON program for the last 12 to 15 years.

In terms of regulatory and legislative trends, very little has occurred in terms of CON expansion. There have been legislative proposals to reintroduce CON programs in repeal states, but these have made very little headway. At the same time, there has also been little in the way of restricting the scope of CON programs.

Concerning your state's CON program, it appears to me that it is one of the most comprehensive state CON programs. For example, only Alaska, New York, and North Carolina regulate more services (28 to West Virginia's 27). In terms of restrictiveness, the American Health Planning Association ranks the West Virginia CON program as the fifth most restricting CON program in the U.S. ***As you will see, restrictiveness correlates with increased health care costs.***

I would now like to share some thoughts with you about the central findings of a wealth of study concerning CON.

A. CON does not control health care costs.

There is a compelling body of peer-reviewed academic research spanning over three decades, and state legislative-commissioned CON studies, demonstrating that CON programs have failed to achieve their purported purpose-- to restrain health care costs. In fact, there is evidence showing that CON programs have actually *increased* health care costs. A few examples will be sufficient to prove this point, and while there is a wealth of academic CON literature showing that CON has not achieved its objectives, I will generally confine my references to recent state legislative CON studies with the hope that they might be the most relevant to you.

The only academic study I will mention today was the result of a major research project. Published in 1998 in the Journal of Health Politics, Policy and Law by Conover and Sloan, this study was entitled "Does Removing Certificate-of-Need Regulations Lead to a Surge in Health Care Spending?" The study examined the purported cost-control claims of CON over a twenty-year period, and focused on whether *CON repeal led to increased health care costs*. The study concluded, "There is no evidence of a surge in acquisition of facilities or in costs following removal of CON regulations." A number of state legislative-commissioned studies have reached similar findings. For example, a February 2007 CON study prepared by the Lewin Group at the request of the Illinois Legislature and entitled "An Evaluation of Illinois' Certificate of Need Program," concluded that "A review of the evidence indicates that CONs rarely reduce health care costs, and on occasion, increase cost in some states." [Page 16]. In November 2006, pursuant to a request from the Georgia Legislature, the Center for the Report of Data Analyses of

Georgia State University submitted a 264-page "Report of Data Analyses to the Georgia Commission on the Efficacy of the CON Program" (the Georgia Legislature created the Commission). This report concluded, "Across all markets, states ranked as having the most rigorous CON regulation have statistically significantly less competition than non-CON states....Lower levels of competition are associated with higher costs." [Page 7]. That report also found that "CON regulation is associated with higher private inpatient costs." [Page 8]. Still another example is the CON study performed by the Missouri Senate Interim Committee on Certificate of Need released in December 2006. This study found that "Certificate of need acts as an artificial barrier to entry stifling competition and innovation in the healthcare market... Not only does this lead to higher healthcare costs but it also limits patient choice." [Page 13]. There are many other peer-reviewed academic studies that I could cite that have concluded that CON has either failed to control, or has actually increased, health care costs, and I will be happy to provide you with references if that would be helpful to you.

B. CON is not an effective quality improvement mechanism.

Although CON programs were not developed to address quality concerns, some have proposed that CON can promote quality. These quality claims have also been closely examined, and the results are, at best, inconclusive. For example, the Georgia legislative study referenced earlier stated, "There is considerable variation on a number of dimensions of quality across markets. However, there is no apparent pattern with respect to Certificate of Need regulation and no statistical correlation." [Page 9]. The Lewin

Group's report for the Illinois Legislature similarly concluded that, concerning the ability of CON laws to increase the quality of care,

> even the strongest supporters of maintaining the program agree that the area where CON can directly influence quality is narrow....CON laws' impact on quality and care is limited.

[Page ii]. An earlier study from 1999 performed by the Washington State Joint Legislative Audit and Review Committee entitled "Effects of Certificate of Need and Its Possible Repeal," likewise stated, "The evidence is weak regarding the ability of CON to improve quality by concentrating volume of specialized services." [Page 3].

C. CON does not improve access to care.

There is little evidence that CON positively affects access to care. For example, in 2003 the Michigan Department of Community Health commissioned two noted CON public policy scholars at Duke University to evaluate Michigan's CON program. That study, entitled "Evaluation of Certificate of Need in Michigan," found that "CON has limited ability to impact the overall cost of health care or to address issues raised by care for the uninsured and underinsured." [Page 132]. The 2007 Illinois legislative study performed an extensive economic analysis that compared the profit margins of safety-net hospitals in CON-states with safety-net hospitals in non-CON states. The study concluded that its collective research and analysis "do not support the argument that CONs provide a protective effect for safety-net hospitals' financial status" [Page 28] The Georgia legislative commission study found that CON's affect on access was no more than "mixed." [Page 72]. Academic literature examining CON's purported affect on access has reached similar conclusions.

D. Conclusion

In summary, 36 states have some form of CON law. Of those states, West Virginia ranks in the top five in terms of restrictiveness, which is contrary to the national trend of not expanding CON programs. Therefore, based on state legislative CON activity that I have been following for several years, I can tell you that West Virginia's recent decision to authorize a more restrictive CON rule is not in the norm.

I applaud the West Virginia Legislature for its willingness to evaluate its CON Laws, as a number of other state legislatures have recently done. Such an evaluation may be particularly appropriate now, since conclusive evidence demonstrates that CON does not control and may add to health care costs, CON is not an effective means of quality improvement, and CON does not promote access to health care. As the Illinois legislative report perhaps stated best "our results are consistent with a body of literature that indicates CON rarely achieves its stated goals." [Page 28]. I hope that you find this information useful as you think about your own state's CON program.

Thank you

Certificate of Need hinders health care innovation

1. **Posted by The Birmingham News October 14, 2007 2:00 AM**

By MICHAEL MORRISEY and MICHAEL CIAMARRA

Entrepreneurs and innovators are developing new ways to deliver health care that are more convenient, higher in quality and less costly than currently available health services. The level of scientific knowledge that will be discovered over the next 25 years will be four to seven times greater than the past 25 years, and we can expect dramatic breakthroughs and discoveries in health care that stagger the imagination.

Unfortunately, bureaucratic relics of the past often stand in the way of developing a 21st century, intelligent health system.

Alabama's Certificate of Need is an amazing program that requires hospitals, nursing homes and other medical facilities such as ambulatory surgery centers and diagnostic imaging facilities to have the explicit approval of the state before they can operate. When implemented in the 1960s and 1970s, CON was intended to control rising health-care costs that resulted from cost-based reimbursement.

What is amazing is that there is virtually no rigorous empirical evidence that the program has been effective in reducing hospital or health-care costs and some evidence that it increases costs. This was true in the heyday of the program in the 1980s and is still true in more recent evaluations. Yet, CON continues to exist for hospitals in Alabama and 25 other states and effectively limits new hospital construction and even needed renovation.

Consumers don't save money as a result of the CON program. Currently, hospitals and other protected providers argue that CON

keeps new providers from coming in and taking the profitable patients. It certainly does. Another way to say this is that existing providers are collecting prices which are higher than their costs and probably higher than the new entrants would charge. So, by their own admission, we pay higher prices.

CON provides less choice and less innovation.

Entry of new ambulatory surgical providers is no trivial issue. We all have friends or family members who have had an ambulatory procedure performed that only a few years ago would have required a day or more in the hospital. The American Hospital Association reported that in 2004, there were more than 1.7 outpatient surgeries conducted in U.S. hospitals for every one surgery that required an overnight stay. Ambulatory surgery centers represent a competitive alternative to hospitals for these outpatient procedures.

Nationally, recent research suggests that on average, every free-standing ambulatory center per 100,000 population in a metropolitan area is associated with a reduction of 4.3 percent in the number of hospital-based outpatient procedures. The battle in Georgia was over entry of new providers and choices and ultimately over who gets the patients. In states like Georgia, North Carolina and Alabama, the CON agency plays a big role in deciding who gets the patients and what access those patients have to new technology.

CON is not only focused on keeping out new forms of health care delivery, it is also concerned with how, or even if, existing providers can serve their communities. One need look no further than the burgeoning U.S. 280 corridor in Birmingham or the growth in Madison County near Huntsville to appreciate that many people in increasingly congested areas of the state now have longer travel times to get to a hospital.

In both communities, existing hospitals (and new providers) would

almost certainly be willing to build in the growth corridor. Much of what stops them is the CON process. Any proposed action will be opposed by existing hospitals in the community because of the threat to their established patient flow. So, in addition to the usual construction and operating costs, an effort to expand will be tied up with CON hearings, decisions, appeals and more appeals.

Finally, Alabamians needn't be reminded of the embarrassment of a former governor and a former hospital CEO who were convicted in a federal bribery case associated with an appointment to the Alabama CON board.

Regulatory agencies that provide protection from market competition and thereby offer the potential for substantial profits are tempting targets for unscrupulous politicians, bureaucrats and businesses. These temptations can be overcome with sufficient monitoring and careful processes, but it seems foolish to go through all of that for a program that doesn't provide benefits to the citizens of the state.

The CON program never controlled costs and has become a mechanism to limit competition in health care, making all of us worse off. Alabama's CON is a hindrance. Seven years ago, The Birmingham News noted, "It's time Alabama consider whether CON should be tossed into the dump heap." It's past time. It's time now for the Legislature to dismantle CON completely.

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Competition in Healthcare and Certificates of Need

MARK J. BOTTI
Chief, Litigation I Section
U.S. Department of Justice, Antitrust Division

Before A Joint Session of
The Health and Human Services Committee of the State Senate
and
The CON Special Committee of the State House of Representatives
of the General Assembly of the State of Georgia

February 23, 2007

Good afternoon. I want to thank Chairman Thomas and Chairman Cooper for their invitation to the Antitrust Division of the U.S. Department of Justice to appear before you today and to share our views on the impact of Certificate of Need ("CON") laws on healthcare markets.

My name is Mark Botti. I am the Chief of the Litigation I Section of the Antitrust Division. My group has approximately 30 attorneys and additional staff dedicated to enforcement of the antitrust laws and advocacy of the importance of competition in a number of sectors of the nation's economy. In particular, we focus to a substantial degree on

healthcare markets. In doing that work, we confer closely with a large team of Antitrust Division economists holding doctorates in the study of markets and their performance, including a number with specialization in the performance of healthcare markets. We also confer closely with the attorneys and economists at the Federal Trade Commission, who also have dedicated time to the study of healthcare markets.

My remarks today are built on the work of these professionals and the Antitrust Division's decades long focus on healthcare markets. Over those years, we have brought many antitrust cases in markets across the country involving hospitals, physicians, ambulatory surgery centers, stand-alone radiology programs, medical equipment, pharmaceuticals and other healthcare products. Through that work we understand the competitive forces that drive innovation in and contain the costs of healthcare. We consult regularly with federal and state agencies responsible for the delivery of healthcare services and the setting of healthcare policy. Our attorneys and economists study the latest academic and policy works in healthcare on an ongoing basis. We have on many occasions met informally and formally with experts in the field. For example, in the first half of the 1990s, the Federal Trade Commission and the Antitrust Division committed substantial resources to the study of competitive markets, out of which effort we prepared a series of nine antitrust enforcement principles that guide industry behavior today.[(1)] I worked on those enforcement statements and am directly responsible for their application. More recently, in 2003, we conducted 27 days of hearings on competition and policy concerns in the healthcare industry, heard from approximately 250 panelists, elicited 62 written submissions, and generated almost 6,000 pages of transcripts.[(2)] As a result of that effort, we published an extensive report, entitled *Improving Health Care: A Dose of Competition*, in July 2004.[(3)] I oversaw the Antitrust Division's work on those hearings and that report and am the designated point of contact at the Division regarding the report.

I. Scope of Remarks

The Antitrust Division's experience and expertise has taught us that Certificate of Need laws pose a substantial threat to the proper performance of healthcare markets. Indeed, by their very nature, CON laws create barriers to entry and expansion and thus are anathema to free markets. They undercut consumer choice, weaken markets' ability

to contain healthcare costs, and stifle innovation. We have examined historical and current arguments for CON laws. They do not provide an economic justification for depriving consumers of the benefits of free markets. To the extent non-economic goals are pursued, the use of CON laws to help pursue them imposes substantial costs. Those goals can be better achieved through other mechanisms. I will explain our reasoning in more detail in just a moment; but first allow me to respectfully suggest to you our bottom line -- we hope you will carefully consider the substantial costs that CON laws impose on consumers as you evaluate whether to reform those laws in your state.

I have not come here today to discuss the details of any particular proposal before you for the reform of Georgia's CON laws. I am, however, generally familiar with the issues before you and recognize them as issues that CON laws present in other states and other markets. My remarks, accordingly, will focus on the impact of and justifications for CON laws generally. For your convenience, I am leaving with you the written text of these remarks with citations to relevant sources included.

In offering these remarks, please understand that it is not the Antitrust Division's intent to "favor any particular procompetitive organization or structure of health care delivery over other forms that consumers may desire. Rather, [our] goal is to ensure a competitive marketplace in which consumers will have the benefit of high quality, cost-effective health care and a wide range of choices . . . ."[4] Our overall mission is to preserve and promote competition, rather than to preserve any particular marketplace rival or group of rivals.

II. Importance of Competition and the Harm Caused by Regulatory Barriers to Entry

A. The Benefits of Competition in Healthcare

Let me set the stage for explaining our concerns about the harm from CON laws by talking for a moment about competition in healthcare generally. No doubt there are aspects of the delivery of healthcare services that make healthcare different from other sectors of the economy. The health of any individual is a sensitive and very important matter. But in our concern over the health and well-being of our fellow citizens, we as government officials should not lose sight of a basic truth -- market forces improve the quality and lower the costs of healthcare services. Increased competition in healthcare markets

does not require us to choose between obtaining the benefits of competition or the delivery of high-quality healthcare. Competition drives innovation and ultimately leads to the delivery of better healthcare. Government intervention can undermine the ability of markets to deliver that benefit.

The proposition that competition cannot work in healthcare is simply not true. Similar arguments, made by engineers and later by lawyers, that competition fundamentally does not work in their industries and is harmful to public policy goals, have been soundly rejected and private restraints on competition have long been condemned.(5) Indeed, at least since the Supreme Court's seminal 1943 decision in a case brought by the Department of Justice against the American Medical Association, competition has played a critical role in shaping the delivery of healthcare in this country. The Antitrust Division and the Federal Trade Commission have worked diligently to make sure that private barriers to that competition do not arise.(6)

During our extensive healthcare hearings in 2003, we obtained substantial evidence about the role of competition in our healthcare delivery system and reached the conclusion that vigorous competition among healthcare providers "promotes the delivery of high-quality, cost-effective healthcare." Competition results in lower prices and broader access to health care and health insurance, and in particular non-price competition can promote higher quality.(7)

This finding is not surprising. We saw in the 1990s the growth of managed care and the impact it had on the cost and availability of insurance. Competition among and between hospitals and physicians intensified with the development of managed care organizations. In addition to putting pressure on costs, managed care plans have pressured providers to use shorter hospital stays and to offer alternative outpatient treatments. This evolution in health care purchasing led to lower costs and increased choice without sacrificing quality. Moreover, lower costs and improved efficiency made health insurance more affordable and available.

Competition also helped bring to consumers important innovations in healthcare technology. For example, health plan demand for lower costs and "patient demand for a non-institutional, friendly, convenient setting for their surgical care" drove the growth of Ambulatory Surgery Centers.(8) Ambulatory surgery centers offered patients more

"convenient locations, shorter wait time, and lower coinsurance than a hospital department."[9] Important to the success of these competitive forces in improving the delivery of care to consumers was the availability of technological advances, such as endoscopic surgery and advanced anesthetic agents.[10] Thus, competition harnessed this new technology and brought it to consumers in the lower cost, more convenient setting of ambulatory surgery centers. The impact on traditional general acute care hospitals led to those hospitals responding to the competition by delivering more care, in a better manner, in an outpatient setting, both at their own campuses and at ambulatory surgery centers in which they invested.

This type of competitive success story has occurred again and again in healthcare in the area of pharmaceuticals, urgent care centers, and elective surgeries such as Lasik procedures, to name just a few. Without private or governmental impediments to their performance, we can expect healthcare markets to continue to deliver these benefits.

For example, we are on the cusp of a potentially significant advance in how competition empowers consumer choice, thus delivering more quality and containing costs. In an August 22, 2006 Executive Order, the President ordered executive agencies to take steps to promote transparency in healthcare quality measures and pricing and to facilitate the development of health information technology.[11] In implementing that directive, the Department of Health and Human Services (HHS), has launched a transparency initiative for value-driven health care that aims to facilitate the delivery of better care at lower costs. Similarly, private health plans have developed products that give consumers greater choice and more information, with an eye toward improving quality while controlling costs. And new companies are entering the market seeking to provide more information and empower consumer choice in healthcare markets.[12] Capturing the promise of these initiatives, HHS has observed that "[c]onsumer choice creates incentives at all levels, and motivates the entire system to provide better care for less money."[13]

B. CON Laws Create Barriers to Beneficial Competition

CON laws are a classic government-erected barrier to entry. As such, they are anathema to competitive markets. Accordingly, in *A Dose of Competition*, the Department of Justice and the Federal Trade

Commission urged the states to rethink their CON laws.[14]

1. Original Cost-Control Reasons For CON Laws No Longer Apply

We made that recommendation in part because the original reason for the adoption of CON laws is no longer valid. Many CON programs trace their origins to a repealed federal mandate, the National Health Planning and Resources Development Act of 1974, which offered incentives for states to implement CON programs. At the time, the federal government and private insurance reimbursed healthcare expenses predominantly on a "cost-plus basis." This is a very important point. The original reason for CON laws was not, as some have argued, that competition inherently does not work in healthcare or that market forces promote over-investment. Instead, CON laws were desired because the reimbursement mechanism, i.e., cost-plus reimbursement, incentivized over-investment. The hope was that CON laws would compensate for that skewed incentive.

In considering this historical justification for CON laws, we need to keep clear that a number of other arguments made in support of CON laws were not part of the rationale for their original adoption:

- CON laws were not adopted around the country as a means of cross-subsidizing care;
- CON laws were not adopted in order to have centralized planning of the location and nature of healthcare facilities; and,
- CON laws were not adopted to protect the health and safety of the population from poor quality medicine.

Instead, CON laws were adopted because excessive capital investments, spurred by the then-current cost-plus method of reimbursement, were driving up healthcare costs. There was concern that, since patients were not price-sensitive, providers engaged in a "medical arms race" by unnecessarily expanding their services to offer the perceived highest quality services.[15]

CON laws appear not to have served well even their intended purpose of containing costs. Several studies examined the effectiveness of CONs in controlling costs. The empirical evidence on the economic effects of CON programs demonstrated near-universal agreement

among health economists that CON laws were unsuccessful in containing healthcare costs.(16)

In addition to the fact that CON laws have been ineffective in serving their original purpose, CON laws should be reexamined because the reimbursement methodologies that may in theory have justified them initially have changed significantly since the 1970s. The federal government no longer reimburses on a cost-plus basis. In 1986, Congress repealed the National Health Planning and Resources Development Act of 1974. Health plans and other purchasers routinely bargain with healthcare providers over prices. Essentially, government regulations have changed in a way that eliminates the original justification for CON programs.(17)

2. Protecting Revenues of Incumbents Does Not Justify CON Laws

I want to address directly one of the most prominent rationales advanced for keeping CON laws, namely, that incumbent hospitals should be protected against additional competition so that they can use their profits to cross-subsidize care for uninsured or under-insured patients.(18) Under this rationale, CON laws would impede the entry of such healthcare providers as independent ambulatory surgery centers, free-standing radiology or radiation-therapy providers, single- or multi-specialty physician-owned hospitals, because if these new competitors were to enter the marketplace, community hospitals could not continue to exploit their existing market power over consumers. Put another way, without CON laws, we would see new, higher-quality, low cost providers in the marketplace, which would put competitive pressure on incumbent providers.

The cross-subsidization rationale essentially turns these laws on their head. What started as laws intended to control costs have become laws intended to inflate prices. Ironically, proponents of CON laws now would use these barriers to entry to accomplish precisely what economic theory would predict barriers to entry usually accomplish -- stifle competition, protect incumbent market power, frustrate consumer choice, and keep prices and profits high.

Please do not misunderstand my point here. We are not accusing community hospital proponents of CON laws of seeking these barriers to entry for some improper purpose. We fully appreciate the laudatory

goal of trying to make sure that community hospitals have sufficient funding so that they can provide healthcare services to those who cannot afford them and for whom government payments are either unavailable or too little to cover the cost of care. But we also want to make clear that the use of government barriers to entry to fund this laudatory purpose has costs. Importantly, to the extent legislatures choose to help cover health care costs for the indigent, there are more efficient ways to accomplish this goal, without incurring the costs of impeding the proper functioning of health care markets. Essentially, by protecting incumbent hospitals from competition, CON laws allow them to tax consumers through the exercise of market power in order to pursue the charitable goal of providing care to other, less fortunate consumers. In using that funding mechanism, however, the CON laws may do more harm than good.

First, CON laws harm the consumers who would have chosen alternative, lower priced, higher quality, or more convenient sources of care.

Second, CON laws impose that cost without any clear evidence that other desired social goals are advanced. Put another way, the evidence to date indicates that new competition does not undercut community hospitals' ability to fulfill their charitable mission. Last year, the federal government studied just this issue in connection with the emergence of single-specialty hospitals around the country. The study found that, for several reasons, specialty hospitals did not undercut the financial viability of rival community hospitals.[19] One substantial reason for this was that specialty hospitals generally locate in areas that have above average population growth. Thus, they are competing for a new and growing patient population, not just siphoning off the existing customer base of the community hospitals.

A third reason why CONs may do more harm than good results from the beneficial effect that new competition has on community hospitals. In studying the effect of single-specialty hospitals, MedPAC found that the community hospitals responded to the competition by improving efficiency, adjusting their pricing, and expanding profitable lines of business.[20] Community hospitals encouraged physicians to perform procedures on the hospital campus by developing centers of excellence and building physician offices on campus.[21] Overall, community hospitals affected by specialty hospital entry maintained profit margins in line with national averages. Rather than undercutting

community hospitals, we have seen that new entry drives them to do a better job. Thus, CON laws harm society in general by depriving it of the increased efficiency that competition would have brought to the health care market.(22)

3. CON Laws Impose Other Costs and May Facilitate Anti-Competitive Behavior

CON laws appear to raise a particularly substantial barrier to entry and expansion of competitors because they create an opportunity for existing competitors to exploit procedural opportunities to thwart or delay new competition. Such behavior, commonly called "rent seeking" conduct, is a well-recognized consequence of regulatory intervention in the market.(23) Essentially, an existing competitor uses the hearing and appeals process to cause substantial delays, leading both the existing competitor and the new entrant to divert significant funds away from delivering healthcare and to spend them on legal fees, consulting fees, and lobbying efforts. Moreover, much of this conduct, even if exclusionary and anticompetitive, is unlikely to be subject to legal challenge as a violation of the antitrust laws because it involves petitioning of the state government by the existing competitor.(24) Indeed, during our hearings, we received evidence of the widespread recognition that existing competitors use the CON process "to forestall competitors from entering an incumbent's market."(25)

We have found that existing competitors at times go further and enter into agreements not required by the CON laws but nonetheless facilitated by them. Two examples arise from West Virginia, and a third comes from Vermont.

In the first West Virginia case, we found that a Charleston, West Virginia hospital used the threat of objection during the CON process, and the potential ensuing delay and cost, to induce a hospital seeking a certificate of need for an open heart surgery program not to apply for it at the location that would have well served Charleston consumers and provided greater competition for their business.(26) Instead, the Charleston hospital successfully prevented the possibility of this competing open heart program. The state authorities never had the opportunity to decide whether under the CON laws that second program would have been approved because of the unlawful

agreement among the hospitals.

In the second West Virgina case, two closely competing hospitals decided to use the CON process to allocate healthcare services between themselves.[27] The hospitals agreed unlawfully that only the one hospital would apply for an open heart program and only the other would apply to provide cancer services. Again, the state took no official action and consumers were deprived of the potential competition between these hospitals.

A third example comes from the State of Vermont. There, home health agencies entered into territorial market allocations, again under cover of the state regulatory program, to give each other exclusive geographic markets.[28] That state's CON laws prevented competitive entry, which normally might have disciplined such cartel behavior. We found that Vermont consumers were paying higher prices than were consumers in states where home health agencies competed against each other.

We have learned from these matters and others that CON laws have the potential to impede competition in ways well beyond what is intended by their supporters.

4. CON Laws Lead To Less Competition and Higher Prices

It is not surprising, given that the prevalent justification for CON laws is to protect the exercise of market power by existing hospitals, that studies show that the removal of CON regulation does not consistently lead to a surge in medical expenditures.[29] Indeed, as one would expect, several studies have concluded that the presence of CON regulations may be responsible for increases in healthcare costs.[30] These findings were supported by the recent study by Georgia State University conducted as part of your state's review. That study showed that rigorous CON regulation is associated with less competitive markets and higher prices for private inpatient care.[31]

III. Framework for Evaluation of CON Laws

My remarks are intended to convey to you our belief that CON laws impose substantial costs on consumers and healthcare markets. In light of these costs, the Antitrust Division believes that Georgia should

carefully consider whether, and if yes, to what degree, its CON laws continue to serve the citizens of this state. We offer the following framework for your consideration:

First, we suggest that the enactment or continuation of CON laws should have a significant, clearly articulated justification, because they are government intervention in the marketplace that create barriers to entry into healthcare markets. That substantial justification should have a basis in serious and persuasive market studies that demonstrate that the market has failed in some significant way.

Second, any evaluation of a proposed CON law should consider not only the justification for the law but also identify and weigh the harm to consumers that is likely to result from creating the barrier to entry. The consideration of these potential harms should include the ways in which the regulations could distort the market, affect incentives, or diminish competition. A state should enact or maintain a CON law only if it finds that the justification does more good than harm.

Third, in cases where the evidence does show a greater benefit than harm from a CON law, we urge you to consider whether you can address the problem in an alternative fashion that preserves competition, or at least is narrowly tailored to remedy only the demonstrated need and preserve as much competition as is possible. A state should only use CON laws to address some problem if that problem cannot be addressed without government intervention in the form of a barrier to entry. If a state must erect a barrier to entry, select the approach that accomplishes the objective with the least disruptive effect on competition.

Let me close by encouraging you not to accept without careful scrutiny claims that elimination of CON laws will visit significant harm on your state. We are unaware of evidence that those states which have eliminated CON laws have suffered such harm. The studies, cited above, in fact suggest that elimination of CON laws leads to improved markets. Accordingly, we encourage you to consider carefully whether the maintenance of those laws or the enactment of new ones best serves your citizens.

Thank you again for the opportunity to discuss our views on how CON laws affect competition and consumers in healthcare. I would be happy to take your questions.

FOOTNOTES

1. Statements of Antitrust Enforcement Policy in Health Care, August 1996, Introduction, pg. 3 (available at http://www.usdoj.gov/atr/public/guidelines/1791.htm) ("1996 Statements").

2. This extensive hearing record is largely available at http://www.ftc.gov/bc/healthcare/ research/healthcarehearing.htm.

3. *Improving Health Care: A Dose of Competition* (July 2004) available at http://www.ftc.gov/reports/healthcare/040723healthcarerpt.pdf. ("*A Dose of Competition*").

4. *See* 1996 Statements, pg. 3.

5. *F.T.C. v. Superior Court Trial Lawyers Ass'n*, 493 U.S. 411 (1990); *National Society of Professional Engineers v. U.S.*, 435 U.S. 679 (1978).

6. *American Medical Association v. U.S.*, 317 U.S. 519, 529 (1943).

7. *A Dose of Competition*, ch. 3 § VIII and Executive Summary at 4.

8. *Id.*, Ch. 3 at 25.

9. Medicare Payment Advisory Commission (MedPAC), Report to the Congress: Medicare Payment Policy § 2F, at 140 (2003), available at http://www.medpac.gov/publications/ congressional_reports/Mar03_Entire_report.pdf.

10. A Dose of Competition, Ch. 3 at 24.

11. http://www.whitehouse.gov/news/releases/2006/08/20060822-2.html.

12. See http://www.revolutionhealth.com.

13. See http://www.dhhs.gov/transparency.

14. *A Dose of Competition*, Executive Summary at 22.

15. *A Dose of Competition*, Ch. 8 at 1-2.

16. David S. Salkever, Regulation of Prices and Investment in Hospital in the United States, in 1B Handbook of Health Economics, 1489-90 (A.J. Culyer & J.P. Newhouse eds., 2000) ("there is little evidence that [1970's era] investment controls reduced the rate of cost growth").

17. *A Dose of Competition* at 1-6.

18. *Id.*, Ch. 3 at 36-40.

19. *See* MedPAC 2006 Report.

20. Other studies have found that the presence of for-profit competitors leads to increased efficiency at nonprofit hospitals. Kessler, D. and McClellan, M., "The Effects of Hospital Ownership on Medical Productivity," RAND Journal of Economics 33 (3), 488-506 (2002).

21. Greenwald, L. et al., "Specialty Versus Community Hospitals: Referrals, Quality, and Community Benefits," *Health Affairs* 25, no. 1 (2006): 116-117. *See also* Stensland, J. and Winter, A., "Do Physician-Owned Cardiac Hospitals Increase Utilization?" *Health Affairs* 25, no. 1 (2006): 128 (some community hospitals have responded to the presence of specialty hospitals by recruiting physicians and adding new cardiac catheterization labs).

22. For similar reasons, we have not found persuasive other arguments, such as community planning or quality of care as reasons for erecting barriers to entry through CON laws.

23. Joskow, Paul and Rose, Nancy, "The Effects of Economic Regulation." *Handbook of Industrial Organization*, vol. 2, Schmalensee and Willig, eds., Amsterdam: North-Holland, 1989.

24. The *Noerr-Pennington* doctrine of antitrust law holds that under the First Amendment, it cannot be a violation of the federal antitrust laws for competitors to lobby the government to change the law in a way that would reduce competition. *See Eastern Railroad Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127 (1961) ("no violation of the [Sherman] Act can be predicated upon mere attempts to influence the passage or enforcement of laws"); *United Mine Workers v. Pennington*, 381 U.S. 657 (1965) ("joint efforts to

influence public officials do not violate the antitrust laws even though intended to eliminate competition").

25. *A Dose of Competition*, Executive Summary at 22.

26. *United States v. Charleston Area Medical Center, Inc.*, Civil Action 2:06 -0091 (S.D.W.Va. 2006) (available at: http://www.usdoj.gov/atr/cases/f214400/214477.htm).

27. *United States v. Bluefield Regional Medical Center, Inc.*, 2005-2 Trade Cases ¶ 74,916 (S.D. W.Va. 2005).

28. Department of Justice Statement on the Closing of the Vermont Home Health Investigation (Nov. 23, 2005) (available at http://www.usdoj.gov/atr/public/press_releases/ 2005/213248.htm).

29. Christopher Connover and Frank Sloan, Evaluation of Certificate of Need in Michigan (2003) (available at http://www.michigan.gov/mdch/0,1607,7-132-2945_5106-83771--,00.html).

30. Daniel Sherman, Federal Trade Commission, "The Effect of State Certificate-Of-Need Laws On Hospital Costs: An Economic Policy Analysis" (1988) (strong CON programs may increase costs); Christopher Connover and Frank Sloan, Evaluation of Certificate of Need in Michigan (2003) (available at http://www.michigan.gov/mdch/ 0,1607,7-132-2945_5106-83771--,00.html) (CON in some instances may have raised costs).

31. The Effect of Certificate of Need Laws on Cost, Quality, and Access (Georgia State University, Oct. 2006); Report of Data Analyses to the Georgia Commission on the Efficacy of the CON Program, at 9 (Nov. 2006).

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About *PH&S*

About Providence Health & Services in Alaska

May 10, 2007

Providence Health & Services (PH&S) is positioned to dominate the state's health care market indefinitely with three times more operating revenue than its closest competitor, $321 million budgeted to build new facilities between 2005 and 2008, and the former Alaska Commissioner of Health and Social Service in charge of strategic development.

PH&S Alaska operates four hospitals and many other ventures in south-central Alaska. The company has no presence outside of south-central Alaska.

According to PH&S's newly released 2006 financial statement, PH&S Alaska produces the highest profit margins of all PH&S regions. In 2006, Providence Alaska created $57 million in total profit for a 9.6% margin. While the Alaska division produces 10% of PH&S operating revenue, it generates 16% of the system's operating profit.

Providence Alaska Medical Center in Anchorage alone accounts for almost half of all hospital admissions in the state. The company employs more than 4,000 people, making it Alaska's largest private employer.

Operations

Anchorage:

Anchorage is the base for PH&S in Alaska. The company operates one of the city's two general acute care hospitals as well as long term care and assisted living facilities, the Providence Physician Service Organization, and an ambulatory surgery facility (Providence Surgery Centers, LLC). The company also recently opened the 60-bed St. Elias Specialty Hospital as a for-profit joint venture with BridgeCare, an Alabama based firm.

PH&S Alaska Hospitals – 2005*		
	PH&S hospitals avg.	Alaska hospitals avg.
Alaska Market Share by admissions	17%	n/a
Operating profit margin	8.7%	5.9%
Total profit margin	9.3%	8.5%
Occupancy Rate**	67%	58%

NOTE: PH&S Alaska figures are only for their acute care hospitals in 2005. Neither complete figures for PHS Alaska in 2006 nor hospital-level information for 2006 are available to date.
*The state of Alaska does not collect or distribute hospital financial or utilization data. Audited financial statements from each of Alaska's thirteen acute care hospitals were used to compute these figures.
** Occupancy rates were calculated using total inpatient days reported in audited financials divided by available bed days as reported in Medicare cost reports.

Providence Alaska Medical Center (PAMC)
PAMC is the largest hospital in Alaska. The 363-bed facility accounted for 42% of the state's total acute care hospital admissions in 2005—and more than half of all hospital profit in the state. PAMC provides a full range of medical, surgical, and tertiary services at the main hospital, Providence Children's Hospital, Providence Cancer Center, Providence Heart Center, and Providence Maternity Center. Providence LifeGuard Air Ambulance transports patients by helicopter from facilities around the state to PAMC. In 2005 PAMC posted $29.5 million in net profit, or a 6.8% total margin.

Mary Conrad Center
This 90-bed nursing home has been managed by Providence since 1986. PH&S Alaska describes the skilled nursing and rehabilitation services facility as a "home-like environment."

Providence Extended Care Center
This 224-bed long-term care facility is the largest in Alaska.

Beyond Anchorage: