
Coverage and the Safety Net

Communities and Hospitals: Social Capital, Community Accountability, and Service Provision in U.S. Community Hospitals

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Objectives. The study related community social capital to the level of community accountability and provision of community-oriented services in U.S. community hospitals.

Study Setting. The sample included 1,383 community hospitals that participated in the 1997 American Hospital Association's (AHA) Hospital Annual and Governance Surveys.

Data Sources. (1) The 1997 AHA Annual Hospital Survey, (2) the 1997 AHA Hospital Governance Survey, (3) the DDB Needham Market Facts Survey, (4) the 1996 County Election Data File, and (5) the 1998 Area Resource File.

Research Design. The study used a mix of longitudinal and cross-sectional data.

Key Findings. We identified two distinct indicators of social capital—community participation and voting participation. Community accountability in hospitals was unrelated to either indicator. Hospitals' provision of community-oriented health services was negatively associated with community participation but unrelated with voting participation. The interaction between voting participation and community representation on hospital governance was positively associated with community accountability and provision of community-oriented health services.

Conclusion. Neither community participation nor voting participation was sufficient to influence hospital behavior. The positive finding associated with the interaction between voting participation and community representation on hospital governance underscored the importance of an active political culture in influencing hospital behavior, without which the installation of community representatives on hospital governance might be more symbolic than actually serving the health concerns of community residents.

Key Words. Community accountability, hospitals, social capital, hospital services

Despite its brief existence, the Clinton administration's health care reform gave rise to a renewed interest in containing the self-serving interests of health care organizations and in promoting those organizations' accountability toward serving the health needs of local populations (Bogue et al. 1997).

Community hospitals have been the target of local communities' demand for accountability, in part because of the central role they play in health care delivery (Harshberger 1997). The demand is amplified by the trend of mergers and conversions from nonprofit to for-profit status in the 1990s (Pittman 2003), and the concern that control of many community hospitals by national or regional corporations may sever the ties of those hospitals to local communities and reduce their response to the health needs of local populations (Proenca 1998; Spitz 1997; Steinberg and Baxter 1998).

Whether community hospitals are accountable to local communities has been a political debate and has attracted research attention. Studies have investigated the variation of community accountability in hospitals, focusing on how such variation is related to hospitals' organizational attributes (Alexander, Weiner, and Succi 2000; Lee, Alexander, and Bazzoli 2003; Proenca, Rosko, and Zinn 2000). However, little attention has been paid to community-wide structures and the role of local communities in ensuring hospitals' accountability. It is as though all the efforts to promote or maintain a satisfactory level of community accountability are assumed to originate in the hospital sector; local communities—while their welfare is immediately concerned—are implicitly viewed as an irrelevant or a silent partner in the quest to promote greater responsibility among hospitals for local community health.

In contrast to this assumption, evidence has appeared to suggest a potentially active role of communities in influencing hospital behavior and a strong link between community structures and hospitals' response to local health needs. Steinberg and Baxter (1998), as part of the Community Tracking Study, reported that in places such as Lansing, Michigan; Syracuse, New York; and Boston, Massachusetts, the community's coordinated efforts to promote hospital accountability had influenced individual hospitals' decision making, resulting in better access to care for vulnerable populations and greater responsiveness of hospitals to community standards of performance in cost and quality. Using data from the 1996 Household Survey of the Community Tracking Study conducted in 22 metropolitan areas, Hendryx et al. (2002) found a strong association between reported access to health care and the level of social capital in those areas. The researchers suggested that a high degree of

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social capital in the community might increase residents' access to care, possibly through improved accountability mechanisms (i.e., involvement in the generation, dissemination, and utilization of community health information) in community hospitals.

Despite these findings, several questions remain. First, the results were observed in urban areas. Whether they are applicable to rural communities is unclear. Second, Hendryx et al.'s (2002) speculation that hospitals in communities with greater social capital would be more likely to implement accountability mechanisms remains unexamined. Third, if community social capital is positively associated with hospitals' community accountability, does the relationship vary by hospitals' organizational attributes? For example, governing boards are often considered the locus of community control on hospitals. Thus, hospitals with greater community representation on the board may be more responsive to community social capital and more involved in activities that promote community health.

These questions were addressed in this study. The study sample included community hospitals operating in urban as well as rural areas, ensuring greater generality in our results than studies focusing on urban communities. Building on Hendryx et al. (2002), we examined the relationship between social capital and the accountability mechanisms in community hospitals. To shed light on how social capital might enhance community health through its influence on community hospitals, we included in our dependent variables the actual provision of community-oriented health services in hospitals. Finally, examining the variant effects of community social capital by hospital attributes would help identify opportunities and barriers to improving hospitals' contribution to community health.

THEORETICAL BACKGROUND AND HYPOTHESES

Social Capital and Hospital Community Accountability

The concept of social capital was popularized in the 1980s by Bourdieu (1983) and Coleman (1988, 1990), and more recently by Putnam's (2000) seminal book, *Bowling Alone*, that analyzed the transformation of America's civic society. Despite its short history, the concept has been deployed in many fields to examine a wide range of issues such as education, economic development, social mobility, civic engagement, health, community stability, public housing, and organizational competitiveness, and innovation (Baron, Field, and Schuller 2000).

Although social capital has been defined in a variety of ways (Serageldin and Grootaert 1999; Stiglitz 1999), it is generally perceived to be a by-product of social relationships that arises from the reciprocities of members involved in social networks. Unlike physical and human capital that belongs to individuals, it is a public good that serves to facilitate cooperation for the achievement of common goals (Kawachi et al. 1997). Putnam (1996) applied the concept to the community level and defined it as “all features of social life—networks, norms, and trust—that enable participants to act together more effectively to pursue shared objectives” (p. 56). In other words, social capital is a particular kind of resource that unifies the community and facilitates the pursuit of common benefits.

According to this perspective, communities with greater social capital may be more capable of holding community hospitals accountable for the health status of residents and urging community hospitals to participate in community-wide health activities or provide services that promote community health. This may occur for two reasons. First, because of greater civic participation and stronger trust in others, residents in communities with higher social capital may be better informed of community health problems and more active in resolving those problems through grassroots activities and in cooperation with local health care providers. Second, through voluntary associations, close social ties, and improved communications, social capital facilitates the voting participation of community members and encourages community groups to jointly defend their health interests that otherwise might be disregarded by health care providers. Thus,

H1: Hospitals operating in communities with greater social capital would be more likely to implement community accountability mechanisms.

H2: Hospitals operating in communities with greater social capital would be more likely to provide community-oriented health services.

The Contingent Effects of Social Capital

While increased civic participation among community residents and unified community values may influence the strategic decisions of community hospitals, it is important to recognize that community hospitals are diverse and that the impact of social capital may vary by the hospital's organizational attributes. In this study, we focus on three organizational characteristics that have been shown to affect hospitals' community health initiatives—hospital ownership, community representation on the governing board, and

membership in health systems and health networks (Alexander, Weiner, and Succi 2000; Lee, Alexander, and Bazzoli 2003; Proenca, Rosko, and Zinn 2000, 2003).

Whether or not social capital leads to a positive response of hospitals to communities' health needs may differ across ownership forms because of differences in organizational objectives and constraints. While the organizational objectives of nonprofit hospitals are diverse, for-profit hospitals are typically driven by profit maximization (Schlesinger, Gray, and Bradford 1996; Weisbrod 1991). The constraint on for-profit hospitals to distribute profits to investors may limit their financial flexibility to participate in unprofitable and "altruistic" activities that are intended to promote community health. Without such a constraint, nonprofit hospitals may have more freedom to engage in community health activities. In fact, their access to public subsidies and private donations may compel nonprofit hospitals to contribute to community health either through direct service provision or in collaboration with other community agencies (Montoya 1998). Thus, we expected an interaction between community social capital and hospital ownership.

H3: In comparison to for-profit hospitals, nonprofit hospitals would respond more positively to community social capital in implementing community accountability mechanisms.

H4: In comparison to for-profit hospitals, nonprofit hospitals would respond more positively to community social capital in providing community-oriented health services.

The governing board of a community hospital represents the principal means by which the community oversees the mission and decision making of the hospital and informs the hospital of local health needs (Griffith 1995; Weiner and Alexander 1998). Board members that are drawn from the community have a direct touch on the pulse of community needs and can relay that information to hospital managers in shaping the hospital's service configuration (Alexander, Weiner, and Succi 2000). Their ability to speak for the community's health needs and to hold the hospital accountable for community health may be enhanced if they have a strong presence on the board and if they represent a unified voice as in communities with high social capital. Community representatives on the board also help create linkages between the hospital and community agencies, thus facilitating the hospital's participation in activities such as gathering and disseminating community health information and using that information in designing community outreach

programs or preventive and health promotion services (Gamm 1998; Proenca 1998).

- H5:** Community hospitals with a stronger presence of community representatives on the board would respond more positively to community social capital in implementing community accountability mechanisms.
- H6:** Community hospitals with a stronger presence of community representatives on the board would respond more positively to community social capital in providing community-oriented health services.

A majority of community hospitals are in health systems or health networks (Succi, Alexander, and Lee 2002). Participation in health systems and networks effectively expands the environment of the community hospital (Lee, Alexander, Bazzoli 2003), which may insulate the hospital from the immediate influence of the local community and hamper the positive effect of social capital on the hospital's accountability for community health. Thus, we hypothesized that:

- H7:** In comparison to freestanding hospitals, hospitals affiliated with a health system or network would be less responsive to community social capital in implementing community accountability mechanisms.
- H8:** In comparison to freestanding hospitals, hospitals affiliated with a health system or network would be less responsive to community social capital in providing community-oriented health services.

METHODS

Data

The study sample was drawn from the 2,079 community hospitals that participated in the 1997 American Hospital Association's (AHA) Annual and Governance Surveys (American Hospital Association 1997a, 1997b). We excluded specialty hospitals and those that restricted services to children because their missions varied from a general community orientation and because they competed under different market conditions. In addition, 294 hospitals were dropped due to missing data, resulting in a final sample of 1,383 hospitals. Compared to the population of community hospitals, the sample

underrepresented investor-owned hospitals (9 percent versus 15 percent) and rural hospitals (35 percent versus 43 percent), and overrepresented hospitals with HMO and PPO contracts.

The AHA Annual Survey provided information on community hospitals' organizational characteristics, bed capacity, service pattern, staffing, participation in community health activities and interorganizational linkages. The survey was sent to all U.S. hospitals and had more than a 90 percent response rate (Wells, Lee, and Alexander 2001). The Governance Survey was designed to assess hospitals' governance structure and composition, as well as their management strategies and priorities. Additional data sources included the DDB Needham Market Facts Survey (DDB Worldwide of Chicago 2000), the 1996 County Election Data,¹ and the 1998 Area Resource File (ARF) (Bureau of Health Professions 1998). The DDB Market Facts Survey, beginning in 1975, collected information on individual social, economic, political values and behaviors. With an annual and nationally representative sample of 3,500–4,000 individuals, it accumulated a pooled cross-sectional database of more than 87,000 respondents over the later quarter of the twentieth century (Putnam 2000). The 1996 County Election Data included county-level tabulations of voter participation statistics from November 1996 general elections for the highest executive office and legislative branch officials. The data were used to compile county voting turnout rates as an index of community social capital. The ARF contained multiple years of health and demographic statistics for all U.S. counties. We used the 1996 data from the file to measure hospitals' market characteristics.

We assumed a county-based definition of the hospital market area. Although different market area definitions have been used in the literature (Garnick et al. 1987), comparative analyses have not produced substantially different results (Goody 1993). Social capital has also been measured at the regional, state, and county levels (Kawachi et al. 1997; Putnam 1996, 2000; Rosenheck et al. 2001). For the purpose of this study, a county-level measure was considered appropriate because both health planning and public health services were mostly organized on a county-wide basis (Proenca, Rosko, and Zinn 2000).

Dependent Variables

Two dependent variables—community accountability and provision of community-oriented services—were examined to assess different aspects of community accountability in hospitals. *Community accountability* indicated

organization-wide generation, dissemination, and use of community intelligence to address the health needs of local communities (Lee, Alexander, and Bazzoli 2003; Proenca, Rosko, and Zinn 2000). Nine questions in the 1997 AHA Annual Survey were designed to assess hospitals' engagement in these activities.² Factor analysis showed that all but one item—"mission statement including a focus on community benefit"—loaded on a common factor. Eliminating that variable, the remaining had a Cronbach's alpha coefficient of 0.80, indicating sufficient reliability. The sum of those eight dichotomous variables was used to represent the level of community accountability in community hospitals. *Provision of community-oriented services* was measured based on hospitals' report of providing a set of 17 distinct community-oriented services in the Annual Survey (Bazzoli et al. 1997; Lee, Alexander, and Bazzoli 2003). A composite index based on the sum of those 17 service variables was used. The Cronbach's alpha coefficient for the index was 0.90.

Independent Variables

The main independent variable was social capital. Two measures of social capital were constructed using information from the DDB Market Facts Survey and the County Election Data.³ The first measure was based on three items in the DDB survey: (1) the number of club meetings attended in the last year; (2) the number of community projects worked on last year; and (3) the number of times participated in volunteer work in the last year. Factor analysis confirmed the internal consistency of the three items and found a Cronbach's alpha coefficient of 0.71. To create a composite indicator, we first converted the item responses of 28,128 participants in 1990–1997 to standardized scores (*z*-scores) and averaged them.⁴ We then followed a procedure developed by Kawachi et al. (1997) to create poststratification weights to adjust for the fact that the DDB sample was representative at the national rather than county level. The stratum-specific weights were calculated based on the distribution of four variables that were significantly correlated with the composite indicator—that is, the survey respondent's age, race, educational attainment and gender—and according to the following formula:

$$w_{i,j,k,l,m} = P_{i,j,k,l,m} / p_{i,j,k,l,m}$$

where $w_{i,j,k,l,m}$ is the poststratification weight for the survey respondents residing in the i th county and being of j th age group, k th race, l th level of educational attainment, and m th sex category; and $P_{i,j,k,l,m}$ is the proportion of individuals with these characteristics residing in the i th county; and $p_{i,j,k,l,m}$ is the corresponding proportion of such respondents in the DDB survey.⁵

These weights were then used to aggregate individual responses to create a county-level indicator of social capital, termed *community participation*.

A second measure of social capital, termed *voting participation*, was the proportion of adults in each county who voted in the 1996 November general election. Voting is a key indicator of civic culture. People vote when they have a strong sense of mutual responsibility and support, even with no prospect of personal gain (Putnam 1993; Coleman 1990).

Several variables were used to examine the contingent effects of social capital on hospitals' community accountability. *Ownership* contained two categories—not-for-profit and for-profit hospitals, with for-profit being the reference group. *Community representation on hospital governance board* was the percentage of board members drawn from local community agencies or groups. *Systems and network affiliation* was represented by two dummy variables indicating whether the hospital was a member of a health system/network.

Control Variables

Following previous research and to account for differences across communities in the demand for community accountability and community-oriented health services, we included two categories of control variables in the analysis. The first were organizational attributes—hospital size (total number of hospital beds) and managed care contracts (whether the hospital had contracts with HMOs and PPOs). The second included market conditions—urbanicity (whether the community hospital was located in a metropolitan county), market competition (one minus the Herfindahl index, or the sum of the squared market share of all community hospitals in the county) (Lee and Alexander 1999), unemployment rate (percentage of people in the county who were in the labor force and who were unemployed), percentage of nonwhite population, and percentage of adults with high school diploma.

Descriptive statistics (means and standard deviations) and correlations of variables included in the analysis are available in appendix of the electronic version of the paper available at www.blackwell-synergy.com.

Analysis

A total of 959 counties were included in our analysis and the number of hospitals clustered in these counties ranged from 1 to 23. Hospitals residing within the same county boundaries serve a similar mix of patients and operate under similar socioeconomic and political conditions. Ignoring such intra-county correlation or the cluster effect may bias the estimation of regression

coefficients. To estimate the cluster effect, we first ran the unconditional means model for both dependent variables (Singer 1998). For community accountability, the analysis showed a nonsignificant intracounty correlation and a small proportion of total variance (5.9 percent) attributable to the cluster effect, suggesting that OLS regression would yield reliable estimates of coefficients. For provision of community health services, the intracounty correlation was statistically significant and accounted for a substantial portion of total variance (25 percent). Thus, the two-level hierarchical linear modeling (HLM) is preferred over OLS (Bryk and Raudenbush 1992; Singer 1998).

Hierarchical linear modeling, or the mixed-effects model, can simultaneously estimate effects within clusters (i.e., to account for the county cluster effect) and test hypotheses about cross-level effects (i.e., to examine the relationship between community social capital and hospital provision of community-oriented services). To accomplish this, HLM uses submodels to express relationships among variables within a given level and specify how variables at one level are related to relations occurring at another. In this study, the level-1 model related hospital provision of community-oriented services to hospital level covariates (e.g., ownership, size). This procedure produced a unique intercept (β_{0j}) and level-1 coefficients (β_{qj}). In the level-2 model, which captured the influence of county factors, the intercept (and coefficients, if the relationships between level-1 covariates and the dependent variable vary across counties) from the level-1 model became the dependent variable, as a function of county-level variables (e.g., social capital indices, market competition). A simplified representation of the two-level models is as follows:

$$\text{Level 1 : } Y_{ij} = \beta_{0j} + \sum \beta_{qj} X_{ij} + r_{ij}$$

$$\text{Level 2 : } \beta_{0j} = \gamma_{00} + \sum \gamma_{0s} W_j + \mu_{0j},$$

where Y_{ij} is the provision of community-oriented services in hospital i in the county j ; β_{0j} is the intercept (i.e., the average provision of community-oriented services for community hospitals in county j after controlling for the effects of hospital-level covariates); β_{qj} is the set of level-1 estimated regression coefficients; r_{ij} is the unique contribution of each hospital i in the county j ; γ_{00} is the average provision of community-oriented services (or community accountability) for all community hospitals; γ_{0s} was the set of regression coefficients for county-level covariates in county j ; and μ_{0j} was the level-2 error term or the unique contribution of each county.

To examine the contingent effects of social capital (**H3–H8**), we incorporated interaction terms in the OLS and two-level model. We assessed the statistical significance of results at three levels (i.e., $p < 0.10$, $p < 0.05$, and $p < 0.01$) based on a two-tailed test.

RESULTS

Main Effects of Social Capital

In the first set of hypotheses (**H1** and **H2**), we postulated that hospitals in communities with greater social capital were likely to implement more community accountability mechanisms and provide more community-oriented health services. Results from the OLS regression regarding community accountability did not support our hypothesis. Neither of the two indicators of social capital was related to hospital community accountability (Table 1). To

Table 1: Main Effects of Social Capital on Hospital Community Accountability and Hospital Provision of Community-Oriented Services, Controlling for Organizational and County Characteristics ($n = 1,383$)

<i>Covariates</i>	<i>Community Accountability</i>		<i>Provision of Community-Oriented Services</i>	
	β	<i>S.E.</i>	β	<i>S.E.</i>
Intercept	4.04***	0.61	3.12***	0.91
Community participation	– 0.01	0.02	– 0.08***	0.03
Voting participation	– 0.72	0.90	0.70	1.37
NFP ownership	0.58***	0.20	1.54***	0.29
Community representation on board	0.03	0.27	0.23	0.41
Systems membership	0.43***	0.12	1.15***	0.18
Network membership	0.40***	0.11	0.99***	0.17
Hospital size (100s)	0.18***	0.04	0.68***	0.06
HMO contracts	0.53***	0.15	0.59**	0.24
PPO contracts	0.07	0.18	0.98***	0.27
Urbanicity	0.05	0.15	0.34	0.24
Market competition	0.48**	0.24	1.89***	0.37
Unemployment rate	1.66	2.38	– 2.60	3.61
Percent nonwhite population	– 1.00**	0.46	– 0.41	0.69
Percent adults with high school diploma	1.17	1.07	5.54***	1.61

* $p < 0.10$;

** $p < 0.05$;

*** $p < 0.01$.

verify, we reran the model in HLM and obtained the same results. Only one social capital indicator—community participation—was correlated with hospital provision of community-oriented health services. The coefficient was negative, suggesting that in counties where there was greater engagement in community activities and volunteer work among residents, hospitals tended to provide fewer services that were aimed to promote community health.

Consistent with previous research (Lee, Alexander, and Bazzoli 2003; Proenca, Rosko, and Zinn 2000), several organizational and market variables were correlated with the dependent variables. In general, hospitals with the following characteristics were likely to implement more community accountability mechanisms and provided more community-oriented services: not-for-profit ownership, membership in health systems and health networks, larger size, and contracts with managed care organizations. Further, hospitals located in counties with greater market competition and a higher percentage of adults with high school diploma were more involved in providing community-oriented health services.

Contingent Effects of Social Capital

We posited that in comparison to for-profit hospitals, not-for-profit hospitals would respond positively to community social capital in community accountability as well as provision of community-oriented services (**H3** and **H4**). We tested the hypotheses with interaction terms in the models, allowing the slope of hospital ownership to vary by social capital indices.⁶ Results did not support our predictions; the interaction terms were not significantly associated hospitals' community accountability or provision of community-oriented health services (Table 2).

Hypotheses 5 and 6 predicted that community hospitals with a stronger presence of community representatives on the board would respond more positively to community social capital in the implementation of community accountability and provision of community-oriented health services. Results showed no evidence that hospitals with differing presence of community representative on the board varied in their reaction to the level of community participation among local residents in terms of their community accountability or provision of community-oriented health services (Table 3). However, the interaction between voting participation and community representation on the board was significantly and positively associated with hospital

Table 2: The Interactive Effects of Social Capital and Hospital Ownership on Hospital Community Accountability, Controlling for Organizational and County Characteristics ($n = 1,383$)

<i>Covariates</i>	<i>Community Accountability</i>		<i>Provision of Community Health Services</i>	
	β	<i>S.E.</i>	β	<i>S.E.</i>
Intercept	4.07***	0.62	3.14***	0.92
Community participation	0.10	0.08	-0.12	0.12
Voting participation	-1.24	2.39	1.68	3.40
NFP ownership	0.55***	0.21	1.52***	0.30
Community representation on board	0.01	0.27	0.23	0.41
Systems membership	0.44***	0.12	1.15***	0.18
Network membership	0.39***	0.11	0.99***	0.17
Hospital size (100s)	0.18***	0.04	0.68***	0.06
HMO contracts	0.53***	0.15	0.58**	0.24
PPO contracts	0.08	0.18	0.98***	0.27
Urbanicity	0.04	0.15	0.34	0.24
Market competition	0.46*	0.24	1.90***	0.38
Unemployment rate	1.81	2.38	-2.58	3.62
Percent nonwhite population	-1.02**	0.46	-0.42	0.69
Percent adults with high school diploma	1.17	1.07	5.54***	1.61
NFP*Community participation	-0.12	0.08	0.03	0.13
NFP*Voting participation	0.55	2.49	-1.11	3.55

* $p < 0.10$;

** $p < 0.05$;

*** $p < 0.01$.

community accountability and provision of community-oriented health services (Table 3).

Finally, we anticipated that system and network membership would temper community hospitals' response to social capital in implementing accountability mechanisms and provision of community-oriented health services (H7 and H8). Results indicated that hospitals with system/network membership did not differ in their response to community social capital when it came to their provision of community-oriented services (Table 4). However, hospitals with system membership were more likely to implement community accountability mechanisms in relation to a greater level of community participation among community residents. The interactions between network membership and social capital indices were not statistically significant.

Table 3: The Interactive Effects of Social Capital and Community Representation on Hospital Community Accountability, Controlling for Organizational and County Characteristics ($n = 1,383$)

<i>Covariates</i>	<i>Community Accountability</i>		<i>Provision of Community Health Services</i>	
	β	<i>S.E.</i>	β	<i>S.E.</i>
Intercept	4.05***	0.61	3.16***	0.91
Community participation	-0.01	0.02	-0.09***	0.03
Voting participation	-0.68	0.90	0.78	1.37
NFP ownership	0.58***	0.20	1.55***	0.29
Community representation on board	-0.03	0.28	0.16	0.42
Systems membership	0.43***	0.12	1.14***	0.18
Network membership	0.40***	0.11	0.99***	0.17
Hospital size (100s)	0.18***	0.04	0.68***	0.06
HMO contracts	0.53***	0.15	0.60**	0.24
PPO contracts	0.07	0.18	0.97***	0.27
Urbanicity	0.05	0.15	0.34	0.24
Market competition	0.47**	0.24	1.87***	0.37
Unemployment rate	1.71	2.38	-2.80	3.61
Percent nonwhite population	-1.00**	0.46	-0.40	0.68
Percent adults with high school diploma	1.18	1.06	5.51***	1.61
Community representation*Community participation	-0.09	0.10	0.17	0.17
Community representation*Voting participation	7.61**	3.79	9.74*	5.80

* $p < 0.10$;

** $p < 0.05$;

*** $p < 0.01$.

DISCUSSION

As organizational changes sweeping through the health care sector gradually undermine the historic accountability mechanisms employed by community hospitals (Emanuel and Emanuel 1997; Proenca, Rosko, and Zinn 2000), questions have been raised about how to hold hospitals accountable to local communities and how to guarantee their involvement in community health services. In a departure from most existing research that focused on the organizational determinants of community accountability in hospitals (e.g., Lee, Alexander, and Bazzoli 2003; Proenca, Rosko, and Zinn 2000), we examined whether a prominent feature of community structure—that is, social capital—might be related to hospital accountability, as evidenced in their employment of community accountability mechanisms and provision of community-

Table 4: The Interactive Effects of Social Capital and System/Network Membership on Hospital Community Accountability, Controlling for Organizational and County Characteristics ($n = 1,383$)

<i>Covariates</i>	<i>Community Accountability</i>		<i>Provision of Community Health Services</i>	
	β	<i>S.E.</i>	β	<i>S.E.</i>
Intercept	4.12**	0.61	3.16***	0.92
Community participation	- 0.03	0.02	- 0.09***	0.03
Voting participation	- 0.59	1.25	1.85	1.91
NFP ownership	0.58***	0.20	1.56***	0.29
Community representation on board	0.02	0.27	0.22	0.41
Systems membership	0.45***	0.12	1.17***	0.18
Network membership	0.39***	0.11	0.98***	0.17
Hospital size (100s)	0.18***	0.04	0.68***	0.06
HMO contracts	0.55***	0.15	0.60**	0.24
PPO contracts	0.05	0.18	0.97***	0.27
Urbanicity	0.04	0.15	0.34	0.24
Market competition	0.45*	0.24	1.87***	0.38
Unemployment rate	1.71	2.38	- 2.68	3.62
Percent nonwhite population	- 1.01**	0.46	- 0.42	0.69
Percent adults with high school diploma	1.06	1.07	5.48***	1.61
System membership*Community participation	0.11*	0.06	0.09	0.09
System membership*Voting participation	- 1.27	1.54	- 2.63	2.31
Network membership*Community participation	0.005	0.055	- 0.003	0.088
Network membership*Voting participation	0.75	1.54	- 0.15	2.32

* $p < 0.10$;
 ** $p < 0.05$;
 *** $p < 0.01$.

oriented health services. We also examined the contingencies based on hospital attributes so as to identify opportunities and barriers to improving hospitals' contribution to community health.

Although most of the hypotheses were not supported in the analysis, several of the specific findings are worth noting. First of all, contrary to Hendryx et al.'s (2002) prediction, neither of the two social capital indicators—community participation and voting participation—was associated with hospitals' community accountability. In fact, results indicated that the level of community accountability, or the collaboration of hospitals with other community groups in gathering, using, and disseminating health information, reflected more what the hospitals were (e.g., nonprofit hospitals), whom they

were affiliated with (e.g., healthcare systems), and how competitive the local hospital market was, rather than the sociopolitical milieu within which they operated (e.g., communities with high social capital). It could be that hospital involvement in health information collection and usage was widely expected across communities, hence the existence of limited geographic variation. Whether a hospital was willing to, or could, live up to that expectation depended, instead, on their mission, their slack resources, their access to the required know-how and suitable partner organizations through interorganizational linkages, as well as the pressure they faced in competing for patients. However, it is important to note that the absence of a direct relationship in the analysis does not necessarily preclude the indirect association of social capital with hospitals' community accountability through the distribution of different types of hospitals. For example, we found a significant correlation between voting participation and nonprofit hospital ownership ($r = 0.14$, $p < 0.0001$). Thus, in communities where the residents were more politically active, there might be a greater presence of nonprofit hospitals and a higher level of community accountability.

Second, voting participation and community participation had different relationships with the provision of community-oriented health services in hospitals; the former was negatively correlated while latter unrelated. The findings are interesting in both theoretical and practical perspectives. In terms of theory, as critics have pointed out, the idea of social capital may be too encompassing and current research that uses a single composite measure of social capital may conflate distinct concepts in one variable (Schuller, Baron, and Field 2000). Lending support to this criticism, we identified two empirically and conceptually different dimensions of social capital that displayed different associations with our dependent variable. Whether or not these two dimensions are applicable in the context of other health and social issues awaits further verification. Nevertheless, our analysis suggests the importance of refining the concept of social capital and identifying empirically meaningful and useful indicators of social capital.

It is also interesting to note the practical implications of the findings. Based on qualitative observations in selected cities, Steinberg and Baxter (1998) suggested that local initiatives represented an effective approach to bringing health care organizations together to resolve local health care problems. Our quantitative analysis of hospitals in urban and rural counties furthered their argument and identified conditions under which local communities might or might not have an impact on hospital activities. Interestingly, we found a significant yet negative association between community

participation and hospital provision of community-oriented services. A possible explanation is that communities with higher participation in social activities and voluntarism may find other health service outlets in community venues, thus decreasing the demand for hospitals' direct involvement in community service provision or compensating for the lack of commitment among hospitals to promoting community health.

Despite limited support for the contingency hypotheses we posed, the interaction between community representation and voting participation appeared to be significantly and positively associated with hospitals' community accountability and provision of community-oriented health services. Note that neither community representation on the hospital board nor voting participation, singularly, had a significant association with the dependent variables. An implication, in light of the longstanding debate about community influence through hospital governing boards (Donnelly 1979; Griffith 1995; Orlikoff and Totten 1998), is that without the reinforcement of a politically active culture in the community, community representatives on governing boards may be just a symbol of community control and have limited influence to hold hospitals accountable to the health of the community. One could also argue that voting participation of community residents may have little relevance to hospitals' commitment to community health unless the community's health concerns could be aired, heard, and integrated in hospital decision-making through strong community representation on the governance board. Thus, effective community interventions to promote hospitals' involvement in community health may require change in the community as well as concurrent adjustment in hospital governance structure.

Study Limitations and Future Research

As with most research, our study is limited in several ways. Although the social capital indices in our study were constructed based on either longitudinal data or events occurred one year prior to the collection of information for the dependent variables, discerning causality is difficult. Use of time-series data, particularly data that allow the assessment of change in hospitals' involvement in community accountability activities and provision of community-oriented health services would help resolve the causality issue. Also problematic is the potential bias in hospitals' self-report data that were used to construct the dependent variables. Assuming there was no systematic reporting bias based on hospital attributes and a tendency for hospitals to overreport their activities in promoting community health, the observed variation might be smaller than

actual variation. Therefore, results in our analysis might be under-rather than overestimated.

Another limitation is associated with the geographic unit of social capital measurement. Although county-based indicators of social capital were used in previous research (e.g., Rosenheck et al. 2001), they could be problematic because of their inability to account for intracounty variations. For example, voting participation among adults may be more meaningful in a township than at the county level and may have stronger correlations with the dependent variables than what was found in our analysis, particularly if the majority of the hospital's patients were concentrated in that smaller geographic unit. Data restrictions, unfortunately, prevented us from assessing this possibility.

In this study, we have tried to take into account community conditions—urbanicity, local economy (based on employment rate), educational level, and ethnic makeup—that might influence the demand for hospital accountability and that might promote or hamper hospitals' commitment to community health. Of these variables, community educational level (based on the percentage of adults with high school diploma) and ethnic composition (percentage of nonwhite population) displayed significant associations with hospital provision of community-oriented services and community accountability, respectively. These two variables may reflect the ethnic and religious history of the community, the stability of local populations, and the distribution of income and wealth among residents, which may have direct bearing on hospital accountability. Future assessment of those factors may help policymakers determine whether it is advisable to focus on social infrastructure as opposed to, or in complement to, direct interventions on hospital behavior.

Although our findings suggested that voting participation itself may be insufficient in influencing hospital behavior, citizen's participation in voting constitutes an essential component in community interventions to contain the self-serving interest of hospitals and to ensure hospitals' accountability toward meeting the health needs of local populations. A fundamental and interesting research question is how to promote or engender such active voting participation in local communities. Fukuyama (1999) suggested that a socially stable and safe environment might be a requisite for bringing out voting participation and collective actions, for “[p]eople cannot associate, volunteer, vote, ... if they have to fear for their lives when walking down the street.” Other factors may include education and employment. Thus, a topic for future research would be to examine environmental conditions that are conducive to increased participation in political activities among community residents.

Furthermore, it would be useful to expand measures of community accountability in hospitals. The two measures used in our analysis indicated whether or not hospitals were involved in collecting, using, and disseminating community health information and the availability of community-oriented health services in hospitals. Neither of them necessarily assessed the quantity of resources invested by hospitals in those activities or services. Community accountability could also be reflected in the provision of charity care as well as services to disadvantaged populations. Future research should consider these measures to provide a more comprehensive assessment of community accountability in hospitals.

Finally, it would be important to evaluate whether and to what extent there exists a match between hospital services provided and the actual need of the community as a function of hospital attributes as well as community structures. After all, an ideal circumstance of hospital services planning should be based on mutual commitment and goal alignment between the hospital and the community. In this light, our finding that community voting participation, in conjunction with strong community representation in hospitals' governance, had direct and indirect relationships with hospitals' involvement in community health activities may suggest a useful approach to realizing the ideal.

NOTES

1. Available for purchase from Election Data Service Inc. (<http://www.electiondata-services.com/home.htm>).
2. For detailed lists of community accountability activities and community-oriented health services, see Lee, Alexander, and Bazzoli (2003).
3. Rosenheck et al. (2001) combined the two measures to form a single indicator for social capital. We separated them in the analysis, because they were poorly correlated ($r = 0.03$, $p = 0.22$) and had independent effects on the dependent variables.
4. Our measure differed from that of previous research in two regards. First, instead of including all the available responses from 1975 to 1997 as in Rosenheck et al. (2001), we limited the survey data to the most recent years from 1990–1997 because research has found significant temporal variation in civic engagement in the United States over the past four decades (Fukuyama 1999; Putnam 1996, 2000). Second, unlike previous research, we did not include an item, “general belief that other people are honest,” in the composite indicator because it did not load on the same latent factor as the other three variables.
5. The following county information was used in constructing post-stratification weights: “% White (versus nonwhite) population in 1990,” “% male (versus female) population in 1990,” “% population with high school degree in 1990,” and “% 65

and older (versus under 64) population in 1996." All those variables were available in the 1998 ARF.

6. We found a high degree of multicollinearity when all the interaction terms were included in the same model. To avoid the problem, we centered all the interval variables involved in the interaction terms (i.e., voting participation and community representation) and tested the contingent hypotheses in separate models.

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Appendix. Descriptive Statistics and Correlations of Study Variables (N=1,383 Hospitals)

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Community accountability	6.25	2.08	--															
2. Provision of community-oriented services	10.41	3.70	0.44	--														
3. Community participation	-0.05	2.92	-0.02	-0.05	--													
4. Voting participation	0.65	0.07	-0.00	0.04	0.03	--												
5. NFP ownership	0.91	0.29	0.06	0.08	0.04	0.14	--											
6. Community representation on board	0.88	0.20	0.00	0.00	0.01	-0.02	0.06	--										
7. System membership	0.46	0.50	0.16	0.30	-0.02	-0.03	-0.28	-0.09	--									
8. Network membership	0.39	0.49	0.12	0.18	-0.01	-0.05	0.02	-0.04	0.11	--								
9. Hospital size (100s)	1.88	1.81	0.24	0.47	-0.00	-0.07	0.05	0.01	0.28	0.10	--							
10. HMO contracts	0.79	0.41	0.17	0.25	-0.03	-0.01	-0.04	0.03	0.16	-0.02	0.19	--						
11. PPO contracts	0.88	0.33	0.08	0.18	0.01	-0.06	-0.06	0.03	0.08	0.04	0.07	0.39	--					
12. Urbanicity	0.62	0.49	0.17	0.36	-0.00	-0.03	-0.12	0.02	0.30	0.04	0.43	0.37	0.13	--				
13. Market competition	0.78	0.29	0.17	0.37	0.01	-0.03	-0.11	0.07	0.26	-0.01	0.40	0.29	0.13	0.59	--			
14. Unemployment rate	0.06	0.03	-0.06	-0.16	-0.08	-0.23	-0.02	0.06	-0.10	-0.08	-0.09	-0.07	-0.07	-0.17	-0.06	--		
15. Percent non-white population	0.15	0.14	0.01	0.10	0.01	-0.37	-0.21	0.02	0.17	0.05	0.29	0.06	0.05	0.28	0.24	0.28	--	
16. Percent adults with high school diploma	0.45	0.06	0.10	0.23	0.04	0.48	0.13	-0.04	0.09	0.02	0.18	0.08	-0.01	0.17	0.17	-0.44	-0.23	--