

# Public–Private Collaboration in Health and Human Service Delivery: Evidence from Community Partnerships

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GROWING RESOURCE CONSTRAINTS HAVE increased the need for, and willingness of, organizations to work together (Alter and Hage 1993; Christianson, Moscovice, and Wellever 1995; Kimberly, Leatt, and Shortell 1983; Pfeffer and Salancik 1978). Across the United States public–private partnerships are forming to develop the community infrastructure for assessment, planning, and evaluation of community health needs and to integrate health and human services into collaborative service networks. Existing research has explored two types of collaborative networks: (1) local *coalitions of public and private stakeholders* that focus on public health and community planning; and (2) *service delivery networks* that seek to coordinate and provide collaboratively a continuum of services. Our research focuses on public–private partnerships that join these two types of networks.

With the failure of the most recent attempt at federal health reform and the growing financial pressures on service providers, public and private community leaders are looking more often to these types of

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partnerships to respond to a broad range of community health needs and to rationalize the allocation of local health and human service resources. Our objectives are to identify the range of collaborative activities in which these broad-based partnerships are engaged and to assess the factors that may affect the types and extent of their collaboration.

Various collaborative public-private partnerships have been examined in the research literature. These include mental health service networks (Alter and Hage 1993; Goldman et al. 1992; Grusky et al. 1985; Morrissey, Tausig, and Lindsey 1991), aged service networks (Bolland and Wilson 1994; Kaluzny and Fried 1986), AIDs services (Dill 1994), child abuse services (Byles 1985; Hochstadt and Harwicke 1985), and trauma networks (Bazzoli et al. 1995; Bazzoli, Harmata, and Chan, forthcoming). In addition, health providers are currently aligning both horizontally and vertically to achieve mutual objectives that include obtaining purchasing advantages (Christianson, Moscovice, and Wellever 1995; Kaluzny and Zuckerman 1992) and providing a continuum of services to facilitate the acceptance and management of financial risk (Burns and Thorpe 1995; Conrad 1993; Dowling 1995; Gillies et al. 1993; and Shortell et al. 1993).

The role of the public health system is also evolving, moving away from the direct provision of services to the formation of partnerships to undertake community health planning and actions to improve community health (Health Resources and Services Administration 1995; Center for Studying Health System Change 1996; Sofaer 1992). In addition to expanding their links with public and private community organizations, public health agencies have reached out to form alliances with managed care organizations, as both share an interest in health promotion and disease prevention (Stoto, Abel, and Dievler 1996). Halversen et al. (1997) recently explored the structure of interactions and relations between public health agencies and managed care organizations and the forces motivating these partnership efforts.

We examine public-private partnerships that applied, in the spring of 1995, to the Community Care Network (CCN) demonstration program, which was designed by the American Hospital Association, the Hospital Research and Educational Trust, the Catholic Health Association, and VHA, Inc. (Funding for the demonstration is being provided by the W.K. Kellogg Foundation and the Duke Endowment.) In all, 283 partnerships applied to the CCN program, and ultimately 25 were selected through a competitive review and selection process. Applicants

each had an average of 10 partnering organizations, representing a wide range of private and public sector institutions that included private health providers, public health departments, human service agencies, local government, educational institutions, health plans and managed care organizations, and business coalitions (Bogue and Hall 1997). The CCN vision speaks to the advancement of four principal goals through these partnerships:

1. *a focus on the health status of communities*, not just patients who receive care or enrollees of a health plan
2. *a seamless continuum of care*, with mechanisms that facilitate service delivery at the right time in the most appropriate setting based on patient need
3. *management within fixed resources* as achieved through capitated payments or global budgets based on the costs of efficient care delivery
4. *community accountability*

The joining of local coalitions and delivery networks is essential to advancing these ambitious goals: local coalitions provide the forum for assessing community health needs and assuring accountability; and, working with coalition-identified objectives, delivery network participants reshape service delivery and enhance cost-effectiveness.

Given the broad-based partnership objectives of the CCN program, partnership applicants provide a unique opportunity for understanding the kinds of collaborative actions and strategies that are being implemented. Our research addresses three main questions:

1. What are the principal dimensions of collaborative activity in which these public-private partnerships participate?
2. How active are the partnerships in these different dimensions?
3. What factors about the partnership and its environment affect collaborative activity?

Examination of these questions provides an important contribution to the literature on organizational collaboration, which has focused largely on forces that motivate partnership formation while neglecting the area of partnership action. Findings from our analysis will also provide insights both to leaders of public-private partnerships as they identify and

develop strategies for future action and to researchers examining issues of collaborative action.

### Framework and Motivation for Community Collaboration

Conceptual insights for modeling collaborative action and the factors likely to influence it are offered by many existing theories in the fields of interorganizational relations, political science, community organization/development, and public finance economics. Alter and Hage (1993) provide an approach for synthesizing these many rich theories. Specifically, they argue that collaborative action depends on the *perceived need* for collaboration and the organizations' *willingness* to collaborate. We use these concepts to identify what can be learned from existing theory and proceed from there to structure an empirical model and approach for examining organizational collaboration.

The two concepts of *perceived need* and organizational *willingness* constitute central themes in resource dependence and interorganizational relations theories. These theories focus on dependencies among organizations and on their environments as they seek to achieve their own objectives (Aldrich 1979; Christianson, Moscovice, and Wellever 1995; Pfeffer and Salancik 1978; Sofaer and Myrtle 1996). Alter and Hage (1993) identified a range of potential dependencies: the need for human or financial resources by a partner organization; the need for working capital; the need to manage business risks; and the importance of maintaining flexibility to allow adaptation in a changing market. These types of dependencies relate to the *perceived need* for collaboration and its consequent influence on organizational *willingness* to collaborate.

Political science largely relates to the organizational *willingness* to collaborate and the ways in which the structure and actions of coalition members may sharpen and enhance this willingness. Political science emphasizes the importance of coalitions in negotiating potential conflicts among members so that collaboration can occur and provide desired benefits to participants (Kimberly, Leatt, and Shortell 1983). The structure of a collaborative partnership and the environment in which it operates affect the strategies that are adopted and the actions taken (Christianson, Moscovice, and Wellever 1995). The political science

literature also suggests that certain organizations are particularly vested in the coalition and hold power that can be used to shape objectives and distribute benefits (Mills 1967; Kingdon 1984; Perruci and Pilisuk 1970).

The community organization/development literature focuses on coalition efforts to improve understanding of *perceived need* and the role of key organizations in maintaining organizational *willingness* to collaborate. Sofaer (1992) identified the importance of building on existing structures that are viewed as credible and legitimate by the community. Community organization/development theory also focuses on the historical structure and configuration of organizations in a community because these reflect the values of community stakeholders.

Public finance economics addresses organizational *willingness* to collaborate based on the nature of the service or activity that organizations seek to produce. In this economic view, public-private collaboration is a form of collective action in which otherwise independent organizations join forces in pursuit of a common objective (Olson 1976). Such collective action will occur when the net benefits of collaboration exceed those of independent, purely private, activity. The public finance economics perspective would predict that collaboration is more likely when one person's consumption of a particular service does not preclude the consumption of that same service by another individual (i.e., a public good) or when the consumption of a service by one person has indirect benefits to others. Collaboration is also more likely when the joint efforts of organizations to produce a service are more efficient or effective than independent action by individual organizations. In such cases, the need to collaborate can be enhanced if other methods for internalizing efficiencies in production (e.g., mergers) are unavailable or impractical.

In addition to the dimensions of *perceived need* and *willingness* to collaborate, we draw on the strategic management literature by considering the differential *ability* of organizations to collaborate. Among other things, strategic management emphasizes the capabilities of organizations to respond to changes in their environment and to engage in collaborative relations with others (Shortell and Zajac 1990). Such capabilities include financial and human resources, specific technical competencies, and underlying capabilities like information systems. An organization's capabilities are important in considering both pooling alliances, in which organizations contribute similar resources for

the benefit of each other, and trading alliances, in which organizations contribute different resources (Nielson 1986; Zajac and D’Aunno 1994).

## Empirical Model of Collaboration

Taken together, the concepts of *perceived need*, *willingness*, and *ability* to collaborate yield a foundation for specifying an empirical model of collaboration. Our conceptual framework suggests that the environmental context in which public–private partnerships operate, the structure and configuration of participating organizations, and the nature of the potential activities will affect collaboration. Figure 1 provides a framework that links these various concepts in a way that facilitates empirical study of collaboration in public–private partnerships.

Environmental characteristics affect the perceived need for collaboration and in turn the willingness of organizations to act together. Environmental characteristics also provide the historical context for the structure of health care delivery and coalition development in a community. As illustrated in figure 1, the environment shapes the organizational structure and composition of the public-private partnership. In turn, the inherent abilities of these organizations and the needs of the community influence the collaborative actions that are adopted.

The box labeled “areas for collaborative action” identifies the dimensions of collaboration relating to the CCN vision. Perceived need, organizational willingness, and ability to collaborate will most likely vary across these dimensions, with organizational willingness likely to show

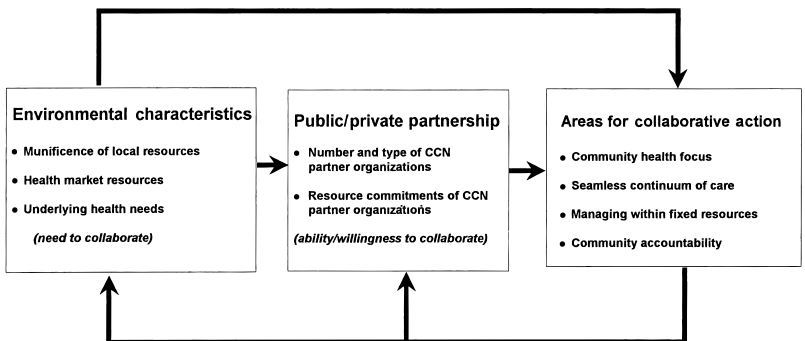


FIG. 1. Conceptual framework for organizational collaboration.

the most variation. For example, organizations may be more willing to collaborate on community health initiatives because this would involve less disruption of their existing domains of power and control than would collaborative attempts to consolidate or eliminate services provided by individual partnership members. In addition, community health improvement efforts may exhibit greater degrees of joint productive efficiency and external consumption benefits relative to organizational efforts to provide traditional health services (e.g., acute primary or institutional care). Thus, collective action may be more desirable for the former.

A final element of figure 1 worth noting is the feedback link between partnership actions and partnership structure and the environment. Ultimately, the objective of the partnership is to affect the context in which it operates, which should in turn affect its future strategies and efforts. In addition, partnership action may result in change in partnership structure because new organizations may be attracted to the partnership and some participating organizations may become disenfranchised. These links suggest a highly complex, time-dependent model of collaboration, which ultimately requires longitudinal analysis. Our study focuses on assessing cross-sectional relations among the variables, emphasizing their associations with each other rather than causation.

## Data and Analytical Methods

The conceptual framework and empirical model developed in the prior sections provide a basis for empirically examining collaborative action among the CCN partnerships. This section describes our principal data sources, variable specifications, and analytical approaches.

### *Data and Variable Specifications*

Our principal data came from a mail survey of public–private partnerships that applied to the CCN demonstration program. The survey, which was undertaken in the summer of 1995, was conducted after the due date for program application. Survey recipients were specifically informed that their responses to the survey would not be used for purposes of evaluating partnership applications. Surveys were returned from 172 of the 243 applicants that were judged competitive for the CCN

program (70.8 percent response rate). The partnerships are geographically dispersed across the United States and located in 45 different states and the District of Columbia. Both rural and urban communities are represented.

The applicant survey provided extensive data on how organizations in public–private partnerships work together in assessing, coordinating, and enhancing local human and health service delivery. In all, 53 different services and activities were included in the survey, spanning the four dimensions of the CCN vision: community health status improvement; seamless continuum of care; management within fixed resources; and community accountability. For each service and activity listed, survey recipients were asked to identify whether the service or activity was undertaken independently or collaboratively, or not undertaken at all. *Independent* action was defined as one organization making unilateral decisions about staffing, finances, and management of an activity. *Collaborative* action was defined as two or more organizations within a partnership making joint decisions about staffing, finance, and/or management.

The conceptual framework in figure 1 identified the structure of the public–private partnership as a critical factor in explaining collaborative action. CCN applicant survey recipients were asked to identify all organizations participating in their partnership by name, organizational type (e.g., public health agency, hospital, religious institution), and the level of resource commitment to the partnership. These data were used to identify the core group of organizations that had dedicated staff time and/or financial resources specifically to advance partnership efforts, which the survey defined as full working partners. A variable for the number of full working partners was constructed for each partnership. In addition, variables were constructed for the percent of a partnership's full working partners in each of four major organizational categories: public sector/health department or service provider; educational institution; private sector/nonhealth organization; and private sector/health provider.

Data were extracted from the 1993 Area Resource File (ARF) of the U.S. Bureau of Health Professions to measure several different environmental dimensions identified in figure 1. The definition of each partnership's relevant "community" was taken directly from information supplied in the CCN program applications. Each applicant was asked to identify the specific geographic area that it served. From this informa-



tion, we identified the set of counties in which the partnership was active and used this for selecting relevant county-level data from the ARF.

Munificence of local resources was measured by population density, median income, and percent of the population that was nonwhite. Community health needs were measured by the percent of population over age 65, infant mortality, and heart disease deaths. We used the most recent data reported in ARF to construct variables (typically 1992). In a few instances, we examined the effects of changes in the explanatory variables over time on collaborative action, and these variables reflected changes over the four-year period ending with the most recent reported data in ARF.

ARF data were also used for measuring physician and hospital market resources. The specific variables were physicians per 100,000, percent of physicians in primary care specialties, percent of physicians trained locally (defined as physicians practicing in the same—or a contiguous—state in which they went to medical school), the number of hospital beds per 100,000, and the number of high-tech services provided within a community (defined as kidney transplant, bone marrow transplant, organ transplant, extracorporeal shock, open heart surgery, positron emission, and CT-scan). These characteristics reflected 1992 values.

Finally, we used 1992 measures of health maintenance organization (HMO) market share developed from InterStudy HMO enrollment data. Specifically, we apply an algorithm developed by Wholey, Feldman, and Christianson (1995), in which enrollment for individual HMOs is allocated to specific counties based on each HMO's reported county service areas and the distribution of resident population across these counties. Enrollment data allocated in this fashion were then aggregated for the counties that compose each CCN applicant's service area and divided by total population in these counties. We also constructed a dummy variable for CCN applicants that lacked HMO data in order to retain them in our analysis. This variable captured mostly rural CCN applicants in areas with no HMO activity.

### *Analytical Methods*

Both descriptive and multivariate analysis were undertaken. Descriptive statistics were generated for each of the 53 services and activities to identify patterns of collaboration. Factor analysis utilizing a varimax

rotation was used to examine interrelations among the different services and activities. We selected a subset of the factors resulting from this analysis for further examination based on whether these factors meaningfully explained variation in the data (e.g., had eigenvalues of greater than 1). This led to the selection of seven factors. We created factor values for each of the seven factors by first identifying services and activities strongly associated with it (e.g., those services and activities with a factor loading of greater than .50) and then totaling the number of these services and activities for which a partnership reported collaborative action. We only used partnership data on collaboration that had already occurred, not on their future plans, because these plans may not be realized. As such, the constructed factor values measure the extent of collaborative action that each partnership has undertaken for the collaborative dimensions identified through factor analysis.

Two sets of multivariate analysis were conducted. The first transformed the factor value into zero/one values, depending on whether a partnership collaborated on a particular dimension (e.g., factor value greater than zero) or not (e.g., factor value equals zero). PROBIT analysis was then conducted to assess the relation between environmental and partnership characteristics on the *probability* that a partnership would collaborate for a particular dimension. The second multivariate analysis used the factor values as dependent variables to assess the effect of various factors on the *extent* of collaboration. Either ordinary least squares (OLS) or censored regression analysis was used, and the choice of model depended on the distribution of the dependent variable.

## Findings

In this section, descriptive statistics on the 53 different services and activities and the results of factor analysis are presented, followed by the results of multivariate analysis.

### *The Nature and Scope of Organizational Collaboration*

Tables 1 and 2 provide descriptive statistics on collaboration observed in the CCN partnerships. Table 1 lists alphabetically 26 separate health and human services identified in the CCN applicant survey. Several

TABLE 1  
Continuum of Health and Human Services:  
Percent of Partnerships That Provide Services Collaboratively<sup>a</sup>

Service	Partnerships that provide service collaboratively (%)	Partnerships that do <i>not</i> provide service collaboratively (%)	
		Provide service independently	Do not provide service
Acute care	25	74	1
Adult day care	18	47	35
Assisted living services	23	47	30
Child immunization	62	37	2
Crisis intervention	49	46	5
Family planning	42	49	9
Geriatric health screening	49	45	7
Health education	72	28	0
Home health services	36	59	5
Hospice services	28	51	21
Injury prevention	52	40	8
Job training	36	41	24
Literacy education	29	43	28
Multilingual translation	34	45	22
Nursing-home services	19	57	24
Nutritional programs	45	54	1
Outpatient mental health	35	59	6
Outpatient surgery	16	79	5
Parenting classes	47	50	3
Prenatal care for the uninsured	52	45	4
Primary care	44	56	1
Psychiatric care	35	58	7
Rehabilitative care	30	65	5
Substance abuse counseling	46	50	4
Transportation services	48	40	11
Women's health screening	45	44	2

<sup>a</sup>Collaborative is defined as two or more organizations in the partnership making joint decisions about pertinent staffing, finances, and/or management for the service.

services were prominent in terms of their collaborative provision: health education, child immunization, injury prevention, and prenatal care for the uninsured. Each was provided collaboratively by at least 50 percent of the partnerships. A variety of services had nearly equal proportions of

TABLE 2  
 Activities to Assess and Improve Health and Human Services Delivery:  
 Percent of Partnerships Working Collaboratively<sup>a</sup>

Action	Partnerships working collaboratively (%)		Partnerships not working collaboratively (%)
	Have taken action	Plan to take action	
Actions taken to identify and evaluate community health needs			
Meetings of staff members who provide services	86	13	1
Meetings of providers and community organizations	86	14	0
Focus groups of community residents	52	43	6
Review of existing health data	76	22	2
Local studies			
to examine health problems	60	34	6
to evaluate health resources	58	38	4
to evaluate cultural barriers	33	52	16
Studies to evaluate financial barriers	39	52	9
Procedures developed to assist individuals in obtaining services from more than one source			
Staff assess services needed by individuals	49	45	6
Ability of individual to arrange multiple services is assessed	47	46	7
Case manager assigned to those not able to arrange multiple services	39	54	7
Changes made to reduce redundancy and increase efficiency in health delivery			
Elimination of unused hospital beds	12	33	55
Elimination of selected services	8	29	63
Consolidation of selected services	28	56	16
Consolidation of administrative functions	23	50	27
Merger of organizations with similar activities	19	31	50
Joint purchasing and utilization of technology	39	47	14
Direct contracting on a capitated basis	19	61	21
Direct contracting for Medicaid on capitated basis	19	56	25
Information reported to the community			
Community health status	37	60	3
Special problems of underserved populations	36	61	3
Access barriers of underserved populations	37	61	3
Health care costs of the community	25	63	12
Illness prevention efforts	49	49	2
Health education	54	44	1
Public comments on services	34	58	8
Customer satisfaction surveys	25	63	12

<sup>a</sup>See footnote to table 1.

collaborative and independent provision: crisis intervention, geriatric health screening, job training, parenting classes, substance abuse counseling, and women's health screening. Services that were prominent for independent provision include acute care, outpatient surgery, and rehabilitative care.

Table 2 reports on 27 actions and activities in which partnerships could engage to improve health and human service delivery. These actions and activities were presented in four separate sections within the CCN applicant survey that corresponded with the four CCN dimensions: community health focus, seamless continuum of care, managing within fixed resources, and community accountability. The table reports the percent of partnerships that have taken collaborative action, the percent that plan to take collaborative action, and the residual percent of those that have neither collaborated nor plan to do so. Collaborative action appears to be common for the first area of activities listed: actions to identify and evaluate community health needs. Over two-thirds of the partnerships reported that they had collaborated in convening meetings of staff members involved in service provision, conducting meetings of providers and community organizations, and reviewing existing health data. In addition, future plans were commonly reported, including local studies to evaluate cultural and financial barriers.

In contrast to actions to identify and evaluate health needs, little collaborative action had occurred under the category of changes made to reduce redundancy and increase efficiency, especially those actions required to eliminate unused hospital beds and selected services and to direct contract on a capitated basis. In some instances, future collaborative plans were reported: consolidating selected services, consolidating administrative functions, and direct contracting with employers and/or Medicaid. However, a large share of the partnerships report no past or anticipated future collaboration for many of these activities.

The two remaining categories in table 2 have a mix of past and anticipated future collaboration. Nearly half of the partnership collaborated in assessing service needs and arranging multiple services. Collaborative reports to the community on illness prevention and health education activities were also common. Several partnerships reported plans to work together on many of these activities in the future.

The data reported in tables 1 and 2 suggest that patterns of collaboration were indeed present among the public-private partnerships applying to the CCN program. These patterns were further explored through

factor analysis, which yielded three distinct service factors: (1) preventive health and educational services; (2) traditional acute and chronic care services; and (3) behavioral health services. Recalling the results of table 1, the first factor encompasses an array of services commonly provided on a collaborative basis, whereas factor 2 encompasses services principally provided on an independent basis. Factor 3 falls in between these two cases with moderate levels of collaborative activity.

Factor analysis of the actions and activities to improve health and human service delivery yielded four distinct factors, each of which corresponds to one of the four goals of the CCN model:

1. community reporting activities (i.e., CCN goal of community accountability)
2. cost-effectiveness and expenditure control activities (i.e., CCN goal of managing within fixed resources)
3. study of community health needs (i.e., CCN goal of community health status focus)
4. coordination of health services (i.e., CCN goal of a seamless continuum of care)

### *Factors Related to Organizational Collaboration*

Multivariate analysis was conducted to identify environmental and partnership characteristics associated with collaborative action. We view the multivariate analysis as principally exploratory, identifying correlation rather than causation. Table 3 reports descriptive statistics on all dependent and explanatory variables used in the multivariate analysis. For the dependent variables, we report the average number of collaborative activities for a dimension across the 172 partnerships studied in the first column. Thus, on average, the partnerships implemented 4.88 different collaborative actions within the category of preventive health and education services. The pattern of statistics for the dependent variables reflects many of the patterns identified in tables 1 and 2. For example, the average number of collaborative activities was much higher for community reporting collaboration than for cost-effectiveness and expenditure containment collaboration.

More detailed review of the distributions of the factor values indicated that most had concentrations at lower and/or upper boundaries.

TABLE 3  
Means and Standard Deviations of Variables Examined in  
Multivariate Analysis of Collaboration

	Mean	Standard deviation
<i>Dependent variables</i> (average number of collaborative actions)		
Health and human service delivery collaboration		
Preventive health and education services	4.88	3.17
Traditional acute and chronic care services	1.52	1.77
Behavioral health services	1.09	1.25
Activities to assess and improve health delivery		
Community reporting	2.36	2.19
Cost-effectiveness and expenditure containment	1.40	1.79
Community studies of health needs	2.53	1.74
Coordination of services	1.34	1.35
<i>Independent variables</i>		
Munificence of local resources		
Population density (population per square mile)	1,857.20	6,233.20
Change in population (% change 1987-92)	46,345	170,000
Percent population nonwhite (% change 1987-92)	17.50	17.39
Median income (\$ per resident)	34,650	8,412
Community health needs		
Percent population over 65 (% of residents 1992)	13.46	3.89
Change in % of population over 65 (% change 1987-92)	1.08	1.06
Infant mortality rate <sup>a</sup> (1986-92)	102.38	29.52
Percent deaths from heart disease <sup>b</sup> (1992)	44	4.90
Change in % of deaths from heart disease (1987-92)	-4.62	17.02
Health delivery system (1992)		
MDs per 100,000 population	225.05	159.30
Percent MDs in primary care	39.50	13.39
Percent MDs trained locally <sup>c</sup>	51.08	22.16
Short-term hospital beds per 100,000 population	405.03	223.78
Hi-tech services provided <sup>d</sup>	7.91	14.36
HMO market share	.19	.13
CCN partnership characteristics (1995)		
Number of full working partners	3.9	3.0
Percent full working partners affiliated with educational sector	5.9	12.8
Percent full working partners affiliated with public sector	19.7	24.9
Percent full working partners affiliated with private sector (nonhealth)	15.2	23.7

<sup>a</sup>Five-year average mortality rate of infants under one year old.

<sup>b</sup>Percent of total deaths from ischemic heart disease and other cardiovascular disease.

<sup>c</sup>MDs graduated from the state in which they are currently practicing or in a contiguous state.

<sup>d</sup>The total number of the following services provided by hospitals within a community: kidney transplant, bone marrow transplant, organ transplant, extracorporeal shock, open heart surgery, positron emission, CT scan.

Lower boundary concentrations, implying that several partnerships collaborate on no or only a few activities, occurred for traditional acute and chronic care services, community reporting, and efforts to improve cost-effectiveness and contain health expenditures. Two factors (behavioral health services and efforts to improve the coordination of care) had both upper and lower boundary concentrations, with some partnerships collaborating extensively and others hardly or not at all. Censored regression models were estimated for the three factors with lower boundary concentrations and for the two with upper and lower concentrations. OLS regression was used for the remaining two factors (preventive health and education services and studies of community health needs).

Table 4 summarizes the results of multivariate analysis for the three collaborative service dimensions and the four collaborative action dimensions, respectively. The table reports only those variables that had a statistically significant association with the dependent variable under study ( $p \leq .10$ ). We categorized significant variables by the major groupings of environmental and partnership characteristics shown in figure 1. Results of PROBIT analysis are reported in the first column for each dimension, followed by analysis of the continuous factor values.

The most interesting initial observation for the three collaborative service dimensions (which appear in part A of table 4) is the limited number of explanatory variables that are significant for the first two collaborative factors (preventive health and education services; traditional acute and chronic care services) and the large number that are significant for the third factor (behavioral health services). For preventive health and education services, the proportion of physicians that were locally trained and the proportion of deaths from heart disease were positively associated with the probability of collaboration. No explanatory variables were significantly associated with the extent of collaboration in preventive health and education services. For the traditional acute and chronic care factor, no variables were associated with the probability of collaboration, and only the dummy variable that identifies communities with positive HMO enrollment was related to the extent of collaboration (positive association with  $p \leq .01$ ). Clearly, for these two factors, collaboration is related to forces other than those captured in the empirical models.

Behavioral health service collaboration was significantly related to several environmental and partnership characteristics. Communities with lower population density and relatively smaller elderly populations more



often collaborated in behavioral service provision. Growth in population, however, was correlated with greater likelihood of collaboration and more extensive collaboration. Physician market characteristics were also significantly correlated: the likelihood and extent of collaboration increased with the number of physicians per 100,000 population and the percent of physicians locally trained. The extent of collaboration was also positively correlated with the percent of physicians in primary care specialties. The presence of more high-tech services in a community was negatively correlated with the likelihood and extent of collaboration. Finally, the percent of full working partners associated with educational institutions had a weak positive correlation with the probability of collaboration but not the extent of collaboration.

Table 4, part B, presents multivariate analysis for two of the four collaborative action dimensions. Four variables were marginally significant in their relation to collaboration in community reporting: lower population density, greater nonwhite population, fewer physicians per 100,000 population, and a greater percentage of full working partners from the public sector were associated with greater likelihood of collaboration. Population density, however, had no impact on the extent of collaboration in community reporting, whereas the other variables retained their influence. The proportion of full working partners from educational institutions had a positive association with the extent of community reporting collaboration.

In relation to efforts to increase cost-effectiveness and contain health expenditures, the likelihood of collaboration and the extent of collaboration decreased with the proportion of the population that was nonwhite. The likelihood and extent of collaboration increased with the number of hi-tech services offered in the community. HMO market share had a positive influence on the probability of collaboration but not on the extent of collaboration. Finally, a larger number of physicians per 100,000 had a negative correlation with the extent of collaboration on this dimension.

Part C of table 4 reports analysis on collaborative studies of local health needs. HMO market share had a positive influence on the probability of collaboration but no influence on the extent of collaboration. Similarly, the percentage of the population that is elderly had a significant positive effect on the probability of collaboration. The percent of full working partners that are affiliated with educational institutions had a strong positive effect on the extent of collaboration.

TABLE 4

Summary of Significant Effects from Descriptive Multivariate Analysis (Sign of Significant Effect, Significance Level)

<i>Part A</i>	Preventive health and education services		Traditional acute and chronic care		Behavioral health services	
	Probability of collaboration	Extent of collaboration <sup>a</sup>	Probability of collaboration	Extent of collaboration <sup>b</sup>	Probability of collaboration	Extent of collaboration <sup>c</sup>
Munificence of local resources	None	None	None	None	Population density (-, *) Population change (+, **)	Population density (-, *) Population change (+, **) Median income (-, *)
Health market resources	% MDs trained locally (+, **)	None	None	Communities with some HMO market share (+, ***)	MDs/100,000 (+, ***) % MDs trained locally (+, **) No. of hi-tech services (-, ***)	MDs/100,000 (+, ***) % MDs in primary care (+, *) % MDs trained locally (+, ***) No. of hi-tech services (-, ***) Communities with some HMO market share (+, **)
Underlying health needs	Change in % of deaths from heart disease (+, *)	None	None	None	% population 65+ (-, *) Change in population 65+ (+, **)	Change in population 65+ (+, **)
CCN partnership characteristics	None	None	None	None	% FWP-education (+, *)	None

<i>Part B</i>	Community reporting		Cost-effectiveness and expenditure control	
	Probability of collaboration	Extent of collaboration <sup>b</sup>	Probability of collaboration	Extent of collaboration <sup>b</sup>
Munificence of local resources	Population density (-, *) % population that is nonwhite (+, *)	% population that is nonwhite (+, *)	% population that is nonwhite (-, ***)	% population that is nonwhite (-, ***)
Health market resources	MDs/100,000 (-, *)	MDs/100,000 (-, *)	No. of hi-tech services (+, *) HMO market share (+, *)	No. of hi-tech services (+, **) MDs/100,000 (-, *)
Underlying health needs	None	None	None	None
CCN partnership characteristics	% FWP-public (+, *)	% FWP-public (+, *) % FWP-education (+, **)	None	None
<i>Part C</i>	Study community health needs		Coordination of service	
	Probability of collaboration	Extent of collaboration <sup>a</sup>	Probability of collaboration	Extent of collaboration <sup>c</sup>
Munificence of local resources	None	None	None	None
Health market resources	HMO market share (+, **)	None	No. of hi-tech services (+, ***)	No. of hi-tech services (+, ***) % MDs trained locally (-, **)
Underlying health needs	% population 65+ (+, **)	None	% population 65+ (-, **)	% population 65+ (-, ***)
CCN partnership characteristics	None	% FWP-education (+, ***)	% FWP-education (+, **)	% FWP-education (+, **)

<sup>a</sup>Ordinary least squares (OLS).

<sup>b</sup>TOBIT lower censoring.

<sup>c</sup>TOBIT upper and lower censoring.

<sup>d</sup>FWP = full working partner.

\* $p \leq .10$ ; \*\* $p \leq .05$ ; \*\*\* $p \leq .01$ .

The final collaborative dimension relates to efforts to improve the coordination of care delivery. Collaboration was more likely and more extensive in communities with more high-tech services and with larger shares of full working partners that are educational institutions. Less collaboration was likely when a greater proportion of the population was elderly. Finally, there was less collaboration when more physicians were locally trained.

Although the three parts of table 4 summarize multivariate results, they do not report the specific estimated effects of significantly associated variables on collaboration. It is informative to examine and contrast the magnitude of these effects for variables with several significant associations, especially for variables that are relevant to health policy and the changing health environment. In particular, the growing market dominance of HMOs has raised concern about HMO influence on local care delivery. Our analysis identified several significant associations between collaboration and our HMO measures. Specifically, our empirical results indicate that the presence of HMOs in a market is associated with 1.25 more collaborative activities in the provision of traditional acute and chronic care and .783 more collaborative activities in behavioral health service provision relative to partnerships in markets without HMOs. Since the average number of collaborative actions for these service categories was 1.52 and 1.09, respectively, these increases in collaboration associated with HMO presence are substantial.

Another interesting characteristic studied was the share of the local population that was elderly. Partnerships in communities that had 5 percent higher elderly population proportions were .13 percentage points more likely to collaborate in studying community health needs than comparable partnerships in communities with lower elderly population proportions. Alternatively, this five-point differential was associated with .585 *fewer* collaborative service coordination activities for partnerships located in the high elderly population community relative to those with a lower elderly population concentration. As such, the growing elderly population in the United States may portend a mixture of increased collaboration on some activities and diminished collaboration on others.

Finally, the percent of full working partners from the educational sector for the CCN partnership was significantly associated with several collaborative dimensions. A five-percentage point increase in these partners was associated with an increase in collaborative community reporting by .18 activities, an increase in collaborative studies of community

health needs by .16 activities, and an increase in collaborative service coordination by .11 activities. Although this partnership characteristic had important associations with several collaborative dimensions, the magnitude of its estimated effects was generally much smaller than those identified for health market and community characteristics. Clearly, there is a need for future research that examines the relative role played by market, community, and partnership characteristics and the interaction among these characteristics in motivating collaboration.

## Discussion

Our study examined primary data collected on a unique set of public–private partnerships, in which local coalitions that provide a forum for assessing community health needs and assuring accountability join with service delivery networks that are reshaping health and human service delivery. Three questions were examined:

1. What are the principal dimensions of collaborative activity in which these public–private partnerships participate?
2. How active are the partnerships in these different dimensions?
3. What factors about the partnership and its environment affect collaborative activity?

The discussion below is organized around these three research questions.

1. What are the principal dimensions of collaborative activity in which public–private partnerships participate?

Both the descriptive and multivariate analysis undertaken for this study strongly confirmed that distinct dimensions of collaborative activity were present for the partnerships under study. Some of the 53 different services and activities examined had extensive collaboration, and others did not. Factor analysis revealed that seven dimensions of collaborative action were present:

- preventive health and education services
- traditional acute and chronic care services
- behavioral health services

- community reporting
- cost-effectiveness and expenditure control
- community studies of health needs
- coordination of services

Our multivariate analysis also supported the finding that collaboration was multidimensional, in that different sets of explanatory variables were associated with different factors.

The finding of distinct dimensions of collaboration is an important one, given that some individuals have questioned whether partnerships like those studied actually undertake collaborative action or whether they are simply symbolic (Brown and McLaughlin 1990). Our research suggests that this question is too simplistic and may lead to misleading conclusions if only a limited range of potential collaborative activities is considered. The important question is *what types* of activities these partnerships collaborate on, not *whether* they do so.

## 2. How active are the partnerships in these different dimensions?

The public–private partnerships reported extensive collaborative action to identify and evaluate community health needs, especially convening discussions of staff, providers, and community residents and reviewing health data. Collaborative action to assist individuals in obtaining services from multiple providers and in reporting information to the community was also common among many partnerships, both in prior action and in future plans. Less collaboration was undertaken to reduce redundancy and increase efficiency, although a number of partnerships reported plans to do so in the future.

These patterns of collaboration are very consistent with expectations drawn from theories of resource dependence, interorganizational relations, political science, and public finance economics. Organizations are willing to work together on activities that do not disrupt existing power and control. Also, organizational collaboration is common when individual organizations stand to benefit in terms of added prestige and visibility (through association with community health initiatives or community reporting, for example) and potential increases in client volume and referrals (through efforts to improve service coordination). From a public finance perspective, the greater extent of collaboration in community health studies, community reporting, and preventive health

and education accords with the presence of joint productive efficiencies and external consumption benefits. Furthermore, the potential rewards to collaborating organizations in terms of prestige, visibility, and increased client volume suggest that incentives can be developed to motivate collaborative action among organizations that might otherwise participate in a partnership only for symbolic reasons.

### 3. What factors about the partnership and its environment affect collaborative activity?

When multivariate analysis was undertaken to identify factors associated with the collaborative dimensions, several significant associations were found. Overall, the results reported in table 4 suggest that health market environmental characteristics were important, many with strong levels of association (i.e.,  $p \leq .01$ ). The presence and growth of HMOs appears to be motivating partnerships to collaborate on identifying and reducing costly illnesses for which health and human service providers may bear financial risk. Also, HMO presence may motivate partnerships to reduce redundancies and increase efficiencies collaboratively when faced with the financial pressures that managed care creates.

Another health market characteristic that was associated with some of the collaboration measures was the number of hi-tech services present through hospitals in a community. We found a positive association between the number of these services in a market and collaboration in cost-effectiveness and expenditure control efforts and in coordination of services. Given the financial pressures present for tertiary hospitals in today's market, these hospitals may perceive the greatest benefit from collaboration in integrating and coordinating services that require the use of expensive technologies.

Several physician characteristics were also associated with collaboration, sometimes positively and at other times negatively. This suggests that physicians, either as a stakeholder group and/or as a health care resource, exert influence on collaboration in a community. The potential role of physicians and the physician market on collaborative activity warrants additional study.

Finally, the multivariate results for measures related to munificence of local resources, underlying health conditions, and partnership characteristics were less revealing. Very few variables in these categories were found to be significantly associated with collaboration, and several

of these associations were weak. The first two categories reflect mainly the perceived need for collaboration, whereas the latter relates largely to organizational ability and willingness to collaborate. The fact that the data available to us in this exploratory study were limited was critical to our inability to operationalize these important dimensions. This is particularly true in relation to organizational willingness and ability to collaborate. Specifically, we have no information on the leadership structure, vision, and values of the individual organizations. Nor do we know about their organizational cultures, capabilities, or financial and human resources. These are likely to be important factors affecting the underlying objectives of organizations and thus their desire and ability to share power and control through collaborative action.

Overall, the results of our research suggest that collaboration is multi-dimensional and that distinct patterns of collaboration exist based on the types of activities under consideration. There is clearly a need for longitudinal research to improve our understanding of collaborative action and what motivates this behavior among public-private partnerships. Our study provides a theoretical and empirical base for such continuing investigation. In addition, given growing interest in the strategies and initiatives of private-public partnerships, there is a pressing need to understand better how these collaborative networks operate and sustain themselves. Important areas of inquiry include the processes and mechanisms partnerships establish to plan, implement, and monitor collaborative action; approaches used by partnerships to engage the community and give it a voice; and efforts by partnership to sustain themselves and their collaborative initiatives.

The CCN partnerships provide an important opportunity to examine these areas. For example, research is currently under way to examine CCN governance models. Governance presents a challenge for these voluntary, multisectoral partnerships, but it also provides a means for creating a shared vision, identifying and implementing partnership strategies, promoting community accountability, and positioning the partnership for long-term success. Alexander, Comfort, and Weiner (1997) identified the need for participating organizations to shift their traditional mind-set from institutionally focused governance to one of collaborative, community-focused governance. Their study also identified the importance of balancing the desire for broad inclusion in these expansive public-private partnerships with the need for streamlined governance structures to ensure efficient and timely decision making.



Weiner and Alexander (1997), in a companion study of CCN governance, indicate that there is no “magic bullet” to governance of these partnerships. Instead, governance structures need to evolve incrementally over time as the partnerships begin by getting organizations to the table, go on to build a foundation for trust, and then concentrate on longer-term strategic and operational issues. At times, there may be a need to delay progress in formalizing a governance structure when the CCN partnership adds new members, when there is significant turnover in members, or when critical events demand immediate attention.

A number of preliminary observations can also be made based on our ongoing evaluation of the CCN partnerships:

- CCN partnerships implementing collaborative action that affects the core base of control and power of one or more partnering organizations often are driven by an urgent sense that such action is essential and that avoidance of the action could severely threaten their organizational legitimacy. This sense of urgency can result from external community or political pressure or from critical events that clarify the need for deep structural change. However, even with this heightened sense of urgency, the level of trust among partners probably needs to be high for affected organizations to accept partnership action. Further study is required to assess the validity of these observations about factors that motivate and facilitate actions affecting organizational power and control.
- Since the CCN partnerships do not rely on financial inducements or hierarchical structures to motivate certain actions by participating organizations, they have used recognition of collaborative efforts as a reward for organizational participation. By doing so, the partnership may become invisible so that recognition flows to participating organizations. Although this may achieve a short-term objective, the CCN partnership may place itself in a difficult long-term position as individuals and organizations in the community start to ask the partnership to identify its specific accomplishments. Future research is essential to see if this observed phenomenon continues as the CCN partnerships mature and, if so, how the partnerships balance the needs for organizational and partnership recognition.
- Another critical issue to the CCN partnerships is the need to balance activities essential to maintaining the partnership against

those needed to implement its strategies and initiatives. This is particularly important because the staff resources dedicated to these partnerships are typically small, and thus the potential for burnout is high. We have observed that effective partnership leaders are able to create synergies that both advance maintenance activities and carry out initiatives. In particular, these leaders are able to motivate individuals to invest energy in maintaining a partnership because the partnership has demonstrated that it can get things done. Ongoing studies of how partnerships sustain the balance between attending to maintenance and carrying out initiatives and how they exploit the potential to accomplish both jointly are essential.

- The development of supporting information systems to assess and monitor partnership progress and impact is also a challenge identified by the CCN partnerships. Development of these systems requires time and effort, which can detract from implementation of partnership activities and programs. However, such systems are important to effective coordination across partnering organizations, and the data maintained through these systems can provide a basis for documenting partnership value to participating organizations, potential supporters, and external groups.
- Finally, the issue of the continuing viability and sustainability of partnership efforts is perhaps the most salient of all. We have observed that concern over the issue of sustainability is expressed in many different ways by the CCN partnership organizations, including securing additional funds for ongoing and planned activities, coming to terms with the need for the partnership to grow and thus for control to become more diffuse, managing transitions of leadership, and, finally, addressing the need to stay true to mission and goals as the partnership evolves. Study of how partnerships build capacity and capabilities to maintain their efforts into the future is critically important.

The CCN partnerships and other similar public–private partnership efforts hold great potential for improving community health and enhancing the coordination and effectiveness of local health delivery. The rich base of knowledge that will be gained through continued study of these efforts will provide important guidance and direction to communities as they seek to develop collaborative networks that respond to local needs.

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