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**Nonprofit Hospital Community Benefits: The Effect of Needs  
Assessment Quality and Monetary Input on Health Outcomes.**

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**Nonprofit Hospital Community Benefits: The Effect of Needs  
Assessment Quality and Monetary Input on Health Outcomes.**

**by**

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**Capstone**

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# **Nonprofit Hospital Community Benefits: The Effect of Needs Assessment Quality and Monetary Input on Health Outcomes.**

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Nonprofit hospitals in the United States are expected to give back to their communities and promote healthy living. In return for providing community services they are recognized as charity organizations and awarded tax exempt status. Concerns that nonprofit hospitals have not fulfilled this expectation have resulted in regulation policies on state and federal levels. Most attempts to quantify community contributions have focused on input-based (monetary) measures. An outcomes-based approach is more desirable for assessing whether the services provided by nonprofits are benefiting their communities. The Affordable Care Act of 2010 introduced new regulations in an attempt to pave the way for quantitative outcome-based measures. Hospitals are now required to perform assessments of their communities and design implementation strategies to address community needs. In this study, I introduce an outcomes-based approach for evaluating the effectiveness of these community assessments and implementation strategies at certain nonprofit Texas hospitals. Using composite Prevention Quality Indicators for these hospitals, I examine if rates of certain preventable health conditions can be linked to a nonprofit hospital's monetary input towards community benefits and to qualitative scores assigned to their community health needs assessments.

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## **List of Abbreviations**

UTMB	University of Texas Medical Branch
CHNA(s)	Community Health Needs Assessment(s)
NPH(s)	Nonprofit Hospital(s)
ACA	Patient Care and Affordable Care Act
AHRQ	Agency for Healthcare Research and Quality
PQI	Prevention Quality Indicator
ICD	International Classification of Disease

## **Introduction**

The need to measure nonprofit hospital (NPH) community contributions, both through input- and outcome-based indicators, arises primarily from the desire to justify the tax-exempt status awarded to NPHs. The specific aim of this research is to introduce a unique approach to understanding the relationship between a health outcomes-based indicator and input-based indicators.

NPH monetary contributions to community benefits serve as an objective indicator of inputs toward NPH communities. Health outcomes serve as an indicator of results or outputs of NPH investment in the community through these activities. We hypothesize that a NPH community health needs assessment (CHNA) of greater quality and increased NPH monetary contributions toward community benefits will have a positive impact on the health outcomes of constituents in the surrounding county. Additionally, we expect increased quality and quantity of these input-based indicators, respectively, will have an additive, positive impact on health outcomes.

## **Background**

Historically, hospitals operated as charity organizations, offering treatment to indigent populations for no charge <sup>1</sup>. The opportunity for tax exemption for NPHs was first instituted by the Internal Revenue Service in 1956 <sup>2</sup>. Income, property, and sales tax were included under the exemption <sup>2</sup>. To qualify, NPHs were required to provide charity care and reduced-cost medical services to those who had difficulty affording treatment <sup>2</sup>. Several years later, the standard was broadened to include community benefits, activities which promoted health for the benefit of the community <sup>3</sup>. Concerns that Medicare and



Medicaid would reduce demand for charity care led to these changes <sup>2</sup>. The vague nature of this community benefit standard made its enforcement through measurement of outcomes difficult <sup>4</sup>.

More recently lawmakers and the public have contended that NPHs have not done well in fulfilling the requirement of providing community benefits. A focus by some NPHs on profitability through aggressive billing and collection practices in addition to reductions in charity care for the poor have helped shape this public perception <sup>5</sup>. Empirical evidence suggests that nonprofits do in fact provide more uncompensated care and unprofitable services than for-profit hospitals <sup>2</sup>. For a majority of NPHs, absolute levels of uncompensated care exceed the value of the tax-exemption <sup>6</sup>. Even so, the difference between for-profit and NPHs in levels of uncompensated care provided is small, leading many to believe tax-exempt status is not justified <sup>2</sup>.

In 2017, more than half of the registered hospitals in the United States were listed by the American Hospital Association as non-profit <sup>7</sup>. The value of exemptions from federal taxes has been estimated as being from \$13 billion in 2008 to \$26 billion in 2011 <sup>8,9</sup>. The ability to pursue and collect tax-exempt charitable donations is an additional benefit of being categorized as a NPH. Charitable donations to NPHs were valued at over \$5 billion in 2010 <sup>4</sup>. The value of these exemptions and benefits coupled with public concern for the adequacy of community benefits led to a response by the Internal Revenue Service (IRS). In 2007, the tax document Form 990 was revised to include Schedule H <sup>10</sup>. This new form was designed to promote transparency in reporting of community benefits. On the form, categories defined as community benefit services include: charity care, means-tested government programs including Medicaid,

community health improvement services, health profession education, subsidized health services, research, and cash contributions to community groups (Table 1) <sup>11</sup>. Community health improvement services are of particular interest to those concerned about NPHs' responsibility to their communities. The primary purpose of these services is to respond to a need identified through partnerships with community members <sup>11</sup>. An educational program on smoking cessation is considered a community health improvement service. Marketing a hospital clinic for those with lung cancer is not.

A Senate Finance Committee recommendation called for community benefits to equal no less than 5% of NPH revenue or operating expenses, whichever is greater <sup>10</sup>. The Schedule H does not, however, require a threshold be met and to date has not been revised to do so <sup>10</sup>. In contrast, several states have implemented specific laws which require mandatory minimum standards for the provision of community benefits <sup>5,12</sup>. Prior to changes to Form 990 at the federal level, states had already introduced regulations for community benefit provision by NPHs. Today, 5 of 23 states with laws regarding community benefits have mandatory minimums <sup>12</sup>. Texas introduced such legislation in the early 1990's. The Texas health and safety code §311.045 created several options for fulfilling a mandatory minimum requirement, including charity and community benefits equal to 5% of net patient revenue <sup>13</sup>. Compared to hospitals in California where there was no minimum requirement, Texas hospitals provided three times the amount of charity care <sup>13</sup>.

Unless specified by the state, defining and implementing community benefit activities were largely left up to hospitals. Amendments to the IRS code under the Patient Protection and Affordable Care Act (ACA) of 2010 were added to help bridge the

disconnect between hospital officials and community members by improving transparency and accountability <sup>14</sup>. In addition to policies related to financial assistance and billing and collections, one provision requires NPHs to perform and publicly publish a CHNA every 3 years or face a \$50K excise tax <sup>4</sup>. An implementation strategy is also mandated but is not required to be publically published. Several terms important for the law's implementation and enforcement are vague. For example, neither the term "adopted" nor "implementation strategy" are defined for the phrase "[NPHs must have] adopted an implementation strategy" <sup>4</sup>. Additionally, there is no clear link between this provision and NPHs' other obligations. Specific populations, such as indigent persons, are not required to be the focus of the needs assessments nor need they be the recipients of the resulting strategies implemented to address their needs<sup>4</sup>. Despite this, the CHNA requirement helps establish a much needed approach to investing in community health that is evidence-based and team-oriented.

A well-designed community health assessment is recognized by public health practitioners as a fundamental component in crafting appropriate and successful community interventions. By using quantitative and qualitative community data, these assessments are intended to open doors to collaboration with community members, as is required by the IRS. Importantly, public health and medical models differ in their approach to the patient both in training and in practice. Traditional medicine typically emphasizes medical care while public health incorporates broader social determinants of health and focuses on populations <sup>15</sup>. This is reflected in public health community assessments which place emphasis on these determinants of health. Determinants such as socioeconomic factors and the physical environment contribute significantly more to

individual and community well-being than clinical interventions alone <sup>16,17</sup>. Inclusion of broader community benefit activities on the revised Form 990 suggests NPHs should intervene to address these determinants in addition to providing charity clinical care. Even so, the primary focus of NPHs has been to provide community benefits in the area of direct clinical care <sup>18</sup>. The CNHAs of a number of Texas NPHs were evaluated and found wanting in terms of assessment, planning, and evaluation criteria such as identification and prioritization of issues, clear and measurable objectives, consideration of local context, and use of evidence-based strategies <sup>15</sup>.

A standard for the evaluation of CHNA quality has not been provided by the IRS even though this process represents an important component of the provision of community benefits. A higher quality assessment and plan increases the likelihood of higher quality programs and improved community health outcomes <sup>19</sup>. Instead, most attention has been given to monetary input toward community benefits as a measure for determining whether NPHs should retain tax-exempt status <sup>3</sup>. Input-based measures by themselves fail to show if programs are able to generate real benefit. An evaluation of NPHs would ideally include outcome-based measures in addition to input-based measures like CHNA quality and monetary input. A health outcomes-based approach for evaluation, however, is not without challenges. The most significant include how to measure population-based outcomes and how to attribute these outcomes to interventions by individual hospitals <sup>3</sup>. Finding a consistent way to measure health outcomes remains an area of important research for public health <sup>3</sup>.

This research adds to the previous literature by examining the association between two input-based measures and an outcome-based measure. The input-based measures are

the quality of CHNA and the quantity of NPH monetary expenditures toward community benefits. The outcome-based measure is the difference between rates of discharges of those with preventable conditions in 2013 and 2015. Preventive Quality Indicators, a measure developed by the Agency for Healthcare Research and Quality (AHRQ), are used to calculate rates for several Texas NPHs in the years 2013 and 2015 <sup>20</sup>.

**Table 1.** IRS Form 990 Schedule H: Definitions and Examples.

<b>Schedule Location</b>	<b>Title</b>	<b>Definition or Example</b>
<b>Part I</b>	Charity care and other benefits	Programs or activities that provide treatment or promote health and healing as a response to an identified community need.
<b>Line 7a</b>	Financial assistance at cost (charity care)	Free or discounted services for those who cannot afford to pay and meet the hospital's financial assistance criteria.
<b>Line 7b</b>	Medicaid	
<b>Line 7c</b>	Other means-tested government programs	CHIP, other federal, state, and local programs also qualify.
<b>Line 7e</b>	Community health improvement services and community benefit operations	Extend beyond patient care; do not generate inpatient or outpatient bills (e.g., screenings, support groups, mobile units). Costs associated with planning or operating community benefit programs (e.g., community health needs assessments).
<b>Line 7f</b>	Health professions education	Programs that result in a degree, certificate, training necessary to be certified. Includes continuing education. (e.g., costs for residents).
<b>Line 7g</b>	Subsidized health services	Clinical services provided at financial loss to the organization excluding bad debt, financial assistance, Medicaid and other govern programs (e.g., emergency room, inpatient psychiatric units).
<b>Line 7h</b>	Research	Produces generalizable knowledge available to public and funded by tax-exempt sources (e.g., clinical research).
<b>Line 7i</b>	Cash or in-kind contributions to community groups	Receiving group must be engaged in a community benefit activity; in-kind donations (e.g., donated staff hours, donated food and equipment).
<b>Part II</b>		
<b>Lines 1-10</b>	Community building activities	Activities to protect or improve community's health or safety (e.g., physical improvements and housing, environmental improvements, leadership development and training for community members).

*Note:* IRS = Internal Revenue Service. CHIP = Children's Health Insurance Program.

*Source:* Internal Revenue Service instructions for Schedule H.

## **Methods**

### **Sample population**

NPH hospitals were included in the sample for this study on the basis of being hospitals assigned a CHNA score in the paper by Pennel et al <sup>15</sup>. Prior to applying exclusion criteria, the sample size was 95. Children's hospitals were excluded because we were interested in a health-outcome measure that applied to only those  $\geq 18$  years old. Those hospitals without a 2013 Schedule H on file with Guidestar or without inpatient admission data on file with TDSHS were also excluded. The final sample size was 77. This study accounts for 50% of Texas NPHs in 2013.

Each hospital's CHNA was examined for health and health-related factors considered by the organization to be priorities and/or specific targets of the CHNA. We specifically looked for a focus on any of the following in each CHNA: physical environment (e.g., park development, food deserts), health conditions (e.g., chronic disease), health system (e.g., access to care), health behavior (e.g., smoking, diet, mental health), and socioeconomic factors (e.g., family and social support, unemployment, transportation).

### **Variable data sources and definitions**

#### **Data Sources**

To begin evaluating the associations between the different measures, we first linked original datasets for each measure to the respective hospitals. Access to CHNA scores from the study by Pennel et. al was provided by the primary author <sup>15</sup>. Access to Form 990 – Schedule H documents was purchased through Guidestar for 2013 Texas

NPH hospital filings <sup>21</sup>. In order to calculate the health outcome measure, access to inpatient admission data from the years 2013 and 2015 was purchased from the Texas Department of State Health Services (TDSHS). On receiving the inpatient admission data, entries for patients younger than 18 years old were deleted. No primary data collection was used for the purpose of this study. All variables and definitions are listed in Table 2.

Definitions – Input-based measures

CHNA scores were based on the CHNAs performed by hospitals in 2013 and can range from 0 to 80. The monetary input measure for community benefits was divided into three categories based on the categories in a study examining community benefit spending <sup>22</sup>. These categories are total community benefit, direct patient care benefits, and community health initiatives.

Total community benefit includes all expenditures on a hospital's Schedule H reported as community benefit as well as community building activities. Direct patient care benefits include expenditures on financial assistance programs, unreimbursed costs for means-tested government programs such as Medicaid, and subsidized health services <sup>22</sup>. Expenditures on community health improvement services, community benefit operations, and cash and in-kind contributions for community benefit were included under the category of community health initiatives <sup>22</sup>. For this study, community building activities were also included under community health initiatives. Community building activities include those such as physical improvements and housing, community health improvement advocacy, and workforce development. In order to standardize the measures, each was divided by the total operating expenses of the hospital <sup>22</sup>. To account



for the size of hospitals relative to the communities they serve, each expenditure measure was divided by the population of the county in which the hospital was located to create three additional variables (Table 2).

#### Definitions – Outcome-based measure

Prevention Quality Indicators (PQIs) were used to create the outcome-based measure. Prevention Quality Indicator formulas are made publically available by AHRQ. A majority are endorsed by the National Quality Forum. Those not endorsed include PQI 7, 11, and all composite PQIs. PQIs are based on hospital inpatient discharge data and provide insight into the health of the community and into community-based services available outside the hospital setting. Chronic ambulatory conditions such as obesity, diabetes, and heart disease are consistently listed in CHNAs as priority issues. Therefore, PQIs have been suggested as an approach to outcome-based measurement of NPH community assessments and interventions<sup>3</sup>. Of the thirteen PQIs that correspond with distinct disease states, twelve were chosen based on our population of interest, specifically those 18 years and older. These twelve were combined to create three composite measures, overall, acute conditions composite, and chronic conditions composite. Individual and composite PQI's are listed in Table 3.

PQIs for distinct disease states are ratios. The numerator consists of patients who were discharged with one of several principal diagnoses tested and validated to represent each PQI according to AHRQ. AHRQ lists diagnoses for each PQI according to their ICD codes. PQIs can be calculated from either ICD-9 or -10 codes<sup>23</sup>. The transition to ICD-10 occurred between the 3<sup>rd</sup> and 4<sup>th</sup> quartile of 2015. For consistency in the study, PQIs were calculated using ICD-9 for the 1<sup>st</sup> through 3<sup>rd</sup> quartiles of 2013 and the 1<sup>st</sup>

through 3<sup>rd</sup> quartiles of 2015. The denominator is formed by cases from the numerator plus the census county-level population ( $\geq 18$  y/o) for county in which the hospital is located.

Numerator exclusions according to the AHRQ include: transfers (different facility, skilled nursing facility, intermediate care facility), patients whose residence is not in the county where they receive treatment, as well as those with certain non-principal diagnoses specific to each PQI. Due to limited funds, these specific non-principal diagnoses were not excluded from the numerator in our calculations as it would have required purchasing access to all non-principal diagnoses fields. This limitation affects seven of the twelve individual PQIs, specifically 5, 7, 8, 10, 11, 12, and 15.

The 2013 Q1-Q3 composite measures served as a baseline for each hospital's health outcome variable. The 2015 Q1-Q3 composite measures were each subtracted from the 2013 composite number (Table 2). A positive health outcome measure represents an improvement in health outcomes, a decrease in the numerator (number of discharges of patients with preventable conditions). A negative result represents an increase in patients discharged with preventable conditions from the baseline.

County health population numbers used to calculate both expenditure and PQI variables come from the United States Census Bureau. The Census Bureau publishes annual population estimate updates to the official 2010 census counts. County numbers for the year 2013 were used for calculating expenditure variables. PQI variable calculation requires population by age either by county or by metropolitan area. For this study, estimates for county population for the years 2013 and 2015 were used.

**Table 2.** Study variables.

Variable	Year	Variable Description
<b>Health Outcomes</b>	2013 & 2015	1. Overall Composite = PQI 90 (2013) – PQI 90 (2015) 2. Acute Composite = PQI 91 (2013) – PQI 91 (2015) 3. Chronic Composite = PQI 92 (2013) – PQI 92 (2015) *Positive number indicates a decrease in discharge rate Form 990 – Schedule H
<b>Monetary Input</b>	2013	1. Total Community Benefit = (all expenditures reported as community benefit + community building activities)/(Total operating expense). 2. Direct patient care = (financial assistance programs, Medicaid, other government programs)/(Total operating expense). 3. Community health initiatives = (health improvement services + community building activities)/(Total operating expense). Form 990 – Schedule H + US Census Bureau 4. (Total community benefit)/(2013 county population) 5. (Direct patient care)/(2013 county population) 6. (Community health initiatives)/(2013 county population)
<b>CHNA Score</b>	2013	Scale 0 – 80
<b>Principal Diagnosis</b>	2013 & 2015	ICD-9 code for hospital discharge principal diagnosis
<b>Principal Surgery</b>	2013 & 2015	ICD-9 code for hospital discharge principal surgery
<b>Source of Admission</b>	2013 & 2015	ICD-9 code for source of admission (i.e., transfer from hospital or skilled nursing facility)

**Table 3.** Prevention quality indicators and Health Outcome Variables.

PQI	Description
01	Diabetes Short-term Complications Admission Rate
02	Perforated Appendix Admission Rate
03	Diabetes Long-term Complications Admission Rate
05	Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate
07	Hypertension Admission Rate
08	Heart Failure Admission Rate
10	Dehydration Admission Rate
11	Bacterial Pneumonia Admission Rate
12	Urinary Tract Infection Admission Rate
14	Uncontrolled Diabetes Admission Rate
15	Asthma in Younger Adults Admission Rate
16	Lower-Extremity Amputation among Patients with Diabetes Rate
90	Prevention Quality Overall Composite (PQI 1, 3, 5, 7, 8, 10, 11, 12, 14, 15, 16)
91	Prevention Quality Acute Composite (PQI 10, 11, 12)
92	Prevention Quality Chronic Composite (PQI's 1, 3, 5, 7, 8, 14, 15, 16)

*Note:* PQI = Prevention Quality Indicator.

*Source:* Agency for Healthcare Research and Quality<sup>20</sup>.

### **Analysis**

We first applied bivariate regression to test for the presence of associations between each of the three dependent health outcome variables and CHNA quality scores. Next, the three dependent variables were each regressed (bivariate) on each of the six expenditure variables. Independent variables associated with the dependent variables were identified for inclusion in multivariate models ( $p < 0.20$ ). For the multivariate models, a  $p$ -level  $< 0.05$  was chosen as the desired cutoff for significance.

Secondary analyses were also performed. CHNA scores were regressed on the six categories of monetary variables. Expenditures on total community benefits have been found to be higher if the hospital is a teaching institution rather than a non-teaching institutions<sup>18</sup>. Concerning hospital characteristics such as size and rural-urban continuum

codes, none were shown to have strong associations with variability in the total CHNA score, and were thus not analyzed here <sup>15</sup>.

## Results

### Descriptive Data

Descriptive characteristics of the hospitals in the sample were obtained for 2013, the same year CNHA reports were conducted and published. The size of the sample hospitals, as measured by hospital beds, was evenly distributed. A third had less than 100 beds, another third 101 to 299 beds, and less than a third had over 299 beds. Almost 90% (n=68) were part of a healthcare system. Eighty percent (n=62) were located in metropolitan areas, defined as those with rural-urban continuum codes 1 through 3. A minority, 35% (n=27), were listed as teaching hospitals in 2013 by the Center for Medicare & Medicaid Services <sup>24</sup>. A majority, 65% (n=51), were affiliated with a religious organization.

As listed in Table 4, almost all hospitals in our sample focused on health conditions as a priority in their CHNA and three quarters of the sample also included health system issues in their CHNA. A third planned to address one or several health behaviors. Virtually no hospitals, less than 10%, identified physical environment or socioeconomic factors as priority issues in their CHNA.

**Table 4.** Community Health Needs Assessment Priorities.

Priorities	Physical Environment (parks, food deserts)	Health Condition (chronic disease)	Health System (access to care)	Health Behavior (smoking, healthy eating, mental health)	Socioeconomic Factors (family, social support, unemployment)
Hospitals In Study	6 (8%)	75 (96%)	59 (76%)	27 (35%)	6 (8%)

Note: n = 79 hospitals.

Source: Study data.

## **Bivariate Regression Results**

Using Excel, bivariate regression tests showed linear associations between several independent input variables and the dependent health outcome variables. No significant association was seen between CHNA scores and any of the composite health outcome variables (Tables 5-7). All three health outcome measures, overall composite ( $\beta = -3.5e-4$ ), acute ( $\beta = -2.6e-6$ ), and chronic ( $\beta = -8.5e-5$ ), had an inverse association with community health initiatives as a percent of all hospital expenditures (CHI%). Results are displayed in Tables 5-7. With increased spending on community health initiatives, hospitals were more likely to have an *increase* in admission and discharge of patients with preventable conditions from 2013 to 2015.

Both the overall composite ( $\beta = 4.1e-6$ ) and chronic health measure ( $\beta = 2.0e-6$ ) had a weak positive association with direct patient care expenditures divided by county population (Direct/Cty) as displayed in Tables 5 and 7. With increased spending on direct patient care, hospitals were more likely to have a *decrease* in admission and discharge of patients with preventable conditions from 2013 to 2015.

Using a two-sided t-test, the teaching status of hospitals in this sample was found to have a significant effect ( $p < 0.001$ ) on the amount spent towards total community benefits. Teaching hospitals overall spent more than non-teaching hospitals on community benefits. CHNA scores had an inverse association with total community benefit expenditures as a percentage of all hospital expenditures ( $\beta = -0.69$ ;  $p < 0.05$ ) and direct patient care expenditures as a percentage of all hospital expenditures ( $\beta = -0.97$ ;  $p < 0.001$ ). No significant association was observed between quality scores and the remaining monetary variables.

### **Multivariate Regression Results**

Using these results from the primary analyses, several multivariate models were built. Results are displayed in Tables 5, 6, and 7. For the overall composite health measure, the inverse association with CHI% variable as well as the positive association with Direct/Cty variable persisted in the multivariate model ( $R=0.32$ ). The association with CHI% was below the desired  $p$ -value cutoff ( $p=0.017$ ); however, that with Direct/Cty was not ( $p=0.14$ ). For the chronic health measure, the association with CHI% and Direct/Cty also was similar in the multivariate model ( $R=0.24$ ) though  $p$ -values for both were greater than the desired cutoff ( $p=0.2$  and  $p=0.1$  respectively).

**Table 5.** Linear regression coefficients for change in the overall composite health measure associated with changes in CHNA Score, CHI%, and Direct/Cty.

Overall Health Variable			
Input variable	$\beta$ -Coefficient	95% CI	<i>p</i>
Bivariate			
CHNA score	-8.5e-5	-8.0e-5 to 6.2e-5	0.81
CHI %	-3.5e-4	-6.3e-4 to -6.4e-5	<0.05
Direct/Cty	4.1e-6	-1.3e-6 to 9.5e-9	0.14
Multivariate			
CHI %	-3.4e-4	-6.2e-4 to -6.5e-5	<0.05
Direct/Cty	3.9e-6	-1.3e-6 to 9.2e-6	0.14
Model fit: $R = 0.318$ ; $R^2 = 0.101$ ; $R$ adjusted = 0.077.			

*Note:* CHNA = Community Health Needs Assessment. CHI % = Community health initiatives as a percent of total expenditures. Direct/Cty = Direct patient care expenditures divided by county population.  
*Source:* Study data.

**Table 6.** Linear regression coefficients for change in the acute composite health measure associated with changes in CHNA Score and CHI%.

Acute Health Variable			
Input variable	$\beta$ -Coefficient	95% CI	<i>p</i>
Bivariate			
CHNA score	7.8e-6	-4.0e-5 to 5.5e-5	0.74
CHI %	-2.6e-4	-4.5e-4 to -7.6e-5	<0.05

*Source:* Study data.

**Table 7.** Linear regression coefficients for change in the chronic composite health measure associated with changes in CHNA Score, CHI%, and Direct/Cty.

Chronic Health Variable			
Input variable	$\beta$ -Coefficient	95% CI	<i>p</i>
Bivariate			
CHNA score	-1.6e-5	-4.8e-5 to 1.5e-5	0.3
CHI %	-8.5e-5	-2.1e-4 to -4.5e-5	0.19
Direct/Cty	2.0e-6	-3.7e-6 to 4.4e-6	0.09
Multivariate			
CHI %	-8.2e-5	-2.1e-4 to 4.6e-5	0.2
Direct/Cty	1.9e-6	-3.9e-7 to 4.4e-6	0.1
Model fit: $R = 0.239$ ; $R^2 = 0.057$ ; $R$ adjusted = 0.031.			

*Source:* Study data.



## **Discussion**

### **Interpretation**

The aim of this study was to introduce an approach to assessing associations between a health outcomes-based indicator and input-based indicators. We hypothesized that a higher quality CHNA and increased community benefits spending would result in more effective community interventions and in turn better health outcomes in the surrounding community. The hypothesis that a high quality CHNA and increased monetary input would be associated with improvements in community health outcomes was not supported by the results. Neither was there evidence to suggest that taken together, these input variables might have an additive effect on improving health outcomes.

Our findings suggest CNHA scores are not significantly associated with the changes seen in any of the outcome variables. Contrary to the above assumption underlying the original hypothesis, spending on community initiatives was not significantly associated with fewer discharges related to preventable conditions. Instead, for outcome measures, increased CHI% expenditures were significantly associated with an increase in the number of discharges in 2015 compared to numbers in 2013. Similarly, increased spending on direct patient care was associated with a lower rate of discharges in 2015 as compared to rates in 2013.

While in certain cases the change in discharge rates associated with these input variables was significant, it should also be noted that the coefficients of these associations are quite small. Making recommendations based on these study results is difficult for this reason, along with the fact that they run contrary to a reasonable hypothesis.

### Strengths

This study introduces the notion of including CHNA quality when assessing the outcomes of NPH community benefit provision, adding a unique perspective to the conversation surrounding NPH and community benefit provision by taking into account two important input measures and their effects on health outcomes over time.

### Limitations

A NPH's community was defined in this study as the county in which the NPH is located. The IRS published the final CHNA regulations in December 2014 addressing several concerns including how a hospital defines "community"<sup>30</sup>. Comments on a draft of the regulation called for and ultimately resulted in a "facts-and-circumstances approach," meaning hospitals were recognized as having expertise in defining their own communities<sup>30</sup>. As a result, our definition of a NPH's community has the potential to vary widely from one hospital to another.

Assigning health outcome success (or failures) to any particular institution is fraught with complications. Any number of social or economic factors will influence individual outcomes. Some populations may receive community benefit services from more than one NPH. Health outcome changes due to community-based and preventive initiatives also typically occur over long periods of time. For this study, time between the baseline and most recent outcome measure is short, for several reasons. A lag between data collection and reporting as well as the transition from ICD-9 coding to ICD-10 coding in 2015 limited our ability to look at changes across a longer period of time. These issues further limit the ability to understand change in health outcomes at the NPHs of this study.

### Individual Charity Care vs. Population Health Care

For a number of reasons, NPHs are not currently incentivized to pursue interventions addressing upstream health issues, such as those listed under community building activities. Most, including the NPHs in this study's sample, spend between 0% and 1% of total expenses on community building, with the vast majority spending less than 0.1%<sup>25</sup>. Strategies directed at socioeconomic factors can only be considered community benefits if a direct link to health has been identified<sup>27</sup>. The ability to accurately measure outcomes remains very difficult and so most community benefit expenditures continue to relate to patient care, not disease prevention or population health improvement<sup>18</sup>. A paradox thus exists where population health interventions often result in a lack of illness creating the appearance of a lack of benefit.

A number of urban NPHs included language in their CHNAs reflecting an understanding of the causes of health inequity, yet very few proposed effective strategies aimed at reducing the impact of upstream socioeconomic factors<sup>28</sup>. Questions of how charity care for individuals should be quantified are mired in controversy, giving credence to the argument for increased focus on population health benefits instead of the current focus on individual care<sup>26</sup>. Despite having CHNAs that address population health initiatives, a significant majority of hospitals in this study followed the national trend, investing little to no money in community health initiatives.

### Community Benefit Reporting

NPHs have been reported to vary greatly in their uncompensated care reporting methods, including some choosing to inflate charity care numbers by charging artificially high prices for uninsured patients<sup>26</sup>. In addition, some hospitals may report charity

services rendered as more costly than the actual expenditure amount. For example, processing a lab sample may cost a hospital \$15, yet it is billed to insurance at \$170 in anticipation of partial reimbursement. For a charity case, only \$15 is spent on the patient, however, hospitals may choose to instead report a total of \$170 spent on charity care.

Along with these concerns is the issue of enforcement. In one review, less than 1% of hospital 990 forms were found to be subject to annual audit <sup>29</sup>. In the case that a NPH is found to be noncompliant, simply revoking their tax-exempt status has a number of critical drawbacks, reinforcing a reluctance of the IRS to take action and leading them to instead impose only moderate penalties <sup>26,29</sup>.

## **Summary**

### **Future Study**

The introduction and widespread application of an evaluation standard for CHNAs is an important next step. Based on public health needs assessment principles, this evaluation would help NPHs remain accountable for producing high quality CHNA and implementation strategies. Identifying quantifiable evaluation criteria across short, medium, and long-term outcomes is an important aspect of public health intervention design, and represents a critical, neglected component of the requirement to perform CHNAs <sup>26</sup>.

When evaluating community benefit provision, it may be beneficial to assign variable weights to specific inputs and outputs. Monetary input would be assigned a lower weight to incentivize increased focus on CNHA quality and evidence-based implementation strategies. Additionally, certain factors such as the characteristics of a hospital's patient population (age, race/ethnicity) or the type of payment (private

insurance) rendered by the patient population may influence the hospital's approach to community benefits. Further study would include these as potential confounding or interaction terms.

Finally, other health outcome measures should be tested in addition to PQIs as potential tools for evaluating the effectiveness of NPH community benefit inputs. Other such tools include county health rankings published by the University of Wisconsin Population Health Institute. Solutions have been put forward to circumvent the problem of obtaining measurable outcomes, including measuring surrogates for disease (e.g., obesity prevalence for diabetic disease burden), screening program participation, and general health indicators <sup>26</sup>. A variety of measures would provide a more complete and accurate picture of a NPH's investment in their community.

### Conclusion

Improving health equity and outcomes in their communities is a reasonable expectation of NPHs. While abandoning charity care for individuals is not a viable solution, neither is supplanting public health department operations. Instead, hospital community benefits could be used to fill certain gaps in the provision of population health benefits <sup>26</sup>. The Affordable Care Act contains a number of provisions aimed at prioritizing preventive care and population health through community health improvement activities <sup>14</sup>. By increasing the number of those insured and reducing those requiring charity care, the ACA was expected to help move the focus away from direct patient care to upstream factors. Community and organizational partnerships facilitated through CNHAs have the potential to create greater impact than interventions designed

without community input. Should the ACA be repealed, these provisions should be reintroduced separately or as provisions in whichever bill takes the ACA's place.

Much work lies ahead as healthcare officials of all trades advocate for the unsexy, difficult, and yet critical work of preventive and population health initiatives. Although the results from this study are largely inconclusive, we believe NPHs have a role to play in this pursuit as an obligation to the American public, who continue to subsidize larger and larger patient rooms and hospital modernization to the tune of billions of dollars per year. Widespread health inequities and the resulting outcomes will continue to drive up the costs of care unless healthcare organizations, such as NPHs, continue to make serious efforts to invest in long-term, population based strategies.

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## **Vita**

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