ASSESSING CONVERGENCE OF COMMUNITY BENEFIT PROGRAMS
AND COMMUNITY HEALTH NEEDS AMONG NORTH CAROLINA'S
TAX-EXEMPT HOSPITALS

by

Elmer B. Fos

A dissertation submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in
Health Services Research

Charlotte

2018

Approved by:

_____
Dr. Christine A. Elnitsky

_____
Dr. Michael E. Thompson

_____
Dr. Elena A. Platonova

_____
Dr. Jennifer L. Troyer

_____
Dr. Joanne G. Carman

ABSTRACT

ELMER B. FOS. Assessing convergence of community benefit programs and community health needs among North Carolina's tax-exempt hospitals. (Under the direction of DR. CHRISTINE A. ELNITSKY and DR. MICHAEL E. THOMPSON)

The Internal Revenue Service (IRS) requires tax-exempt hospitals to conduct Community Health Needs Assessment (CHNA) every three years, formulate implementation strategies, and report yearly to the IRS and the public the progress of their work. The IRS CHNA incentivizes hospitals to provide programs responsive to community health needs. The purpose of this study was to examine the relationship between community benefit programs and prioritized community health needs in the context of a national IRS reporting requirement through analysis of published community benefit reports among North Carolina's (NC) tax-exempt hospitals.

This study employed quantitative research that analyzed longitudinal and cross-sectional data; qualitative research that reviewed published documents; and mixed-methods research that analyzed the integrated quantitative and qualitative results. The findings indicate that performing IRS-mandated CHNA did not substantially increase the alignment of community benefit programs with prioritized community health needs but did clearly highlight those needs. NC tax-exempt hospitals continue to focus on providing patient care financial assistance than population health, a strategy misaligned with community health needs. Although the hospitals are beginning to address population health and access to care concerns, their dollar expenditures in these areas paled in comparison to patient care financial assistance. If the IRS' purpose in mandating CHNA was to spur a shift in community benefit priorities toward population health needs and away from the traditional patient care financial assistance, then, the evidence from 4

years after the requirement's implementation, indicates it is currently failing in North Carolina. As elucidated in the articles, their ingrained patient-level intervention perspective and desire to recover high unreimbursed costs or lost revenues for providing care to Medicare, Medicaid, and poor patients likely influence the hospitals' community benefit programming to favor individual welfare over population health. Nevertheless, policymakers should continue to direct community benefit programs toward population health because it is a step in the right direction. Organizational change takes time and the desired results of policy interventions are usually incremental. Thus, conducting CHNA must remain a legal obligation by non-profit hospitals for maintaining their privileged tax status to facilitate organizational paradigm shift in community benefit programming toward population health programs or community building activities and away from individual welfare.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

Article 1

Article 2

Article 3

LIST OF FIGURES

Article 1

Article 2

Article 3

LIST OF ABBREVIATIONS

ACA	Affordable Care Act
AHD	American Hospital Directory
CHA	Catholic Health Association
CHNA	Community Health Needs Assessment
CHRR	County Health Rankings and Roadmaps
CMS	The Centers for Medicare and Medicaid Services
IRS	Internal Revenue Service
NC	North Carolina
NCHA	North Carolina Hospital Association
SEM	Socio-Ecological Model
US	United States

INTRODUCTION

Nearly two-thirds of hospitals in the United States (U.S.) are non-profit hospitals that are exempt from paying taxes under Internal Revenue Service (IRS) Code Section 501(c)(3) (Burke et al., 2014; Hellinger, 2009; Rubin, Singh, & Young, 2015; Singh, Bakken, Kindig, & Young, 2016). In exchange, tax-exempt hospitals provide community benefit in various forms of charitable activities, which on average are estimated to be equivalent to 7.5% of their operating expenses (Rosenbaum, Kindig, Bao, Byrnes, & O'Laughlin, 2015; Young, Chou, Alexander, Lee, & Raver, 2013). Traditionally, most community benefit programs are in the form of charity or discounted care to poor patients (Singh, Young, Daniel Lee, Song, & Alexander, 2015; Young et al., 2013).

Background of the Study

When the Affordable Care Act (ACA) was signed into law in 2010, the ACA effectively added Section 501(r) to the Internal Revenue Code, which imposed a new mandate on tax-exempt hospitals. The new IRS tax policy requires tax-exempt hospitals to conduct Community Health Needs Assessments (CHNA) every three years, formulate implementation strategies, and communicate to the public the progress of their outreach programs and activities through yearly publication of community benefit reports effective March 23, 2012. Failure to comply with the law could result in a loss of tax-exempt status (Bazzoli, Clement, & Hsieh, 2010; Crossley, 2016; Rubin et al., 2015). The IRS instructs the conduct of CHNA to direct tax-exempt hospitals to be more conscious of

the health needs of communities and address those needs by investing and engaging more in population health programs (Crossley, 2016; Leider et al., 2016; Rubin et al., 2015; Singh et al., 2016). Public health professionals welcomed the tax policy with optimism. They thought that it would enable public health agencies and healthcare systems organizations to converge and deliver adequate preventive care services to address a wide array of population health needs such as obesity, diabetes, substance abuse, mental health, and care for aging population (Crossley, 2016; Rubin et al., 2015).

On state-level, there have been substantial variation among state laws regarding providing community benefit as an obligation for maintaining tax-exempt status (Hellinger, 2009). In North Carolina, there are no state laws that explicitly require tax-exempt hospitals to provide community benefit, conduct CHNAs, or submit implementation strategies. However, the state does require tax-exempt hospitals to submit annually the community benefit information contained on IRS Form 990 to the state's health department (Nelson, Tan, & Mueller, 2015).

Statement of the Problem

When it comes to healthcare spending, the U.S. ranks first compared to other nations. In 2016, the U.S. spent 17.2% of its GDP on healthcare, or about $9,892 per person, yet it performs worse than other developed nations in terms of health outcomes (OECD, 2018). Compared to Canada, France, Germany, the Netherlands, the United Kingdom, New Zealand, Norway, Sweden, and Switzerland, adults in the U.S. are sicker, poorer, and continue to face an arduous struggle with access to care (Osborn, Squires, Doty, Sarnak, & Schneider, 2016). Additionally, racial and ethnic minorities in the U.S. disproportionately encounter lack of access to healthcare services and experience poorer

health outcomes from preventable chronic diseases despite the nation's state-of-the-art practice of medicine and advancements in public health (Jackson & Gracia, 2014).

Of the $3.36 trillion the U.S. spends yearly on healthcare, only 3% of it, or $255 per person, was allocated to public health (Himmelstein & Woolhandler, 2016; Keehan et al., 2017; TFAH, 2018). The U.S. federal government also cut funding for disease prevention and health improvement activities by $580 million, and state budgets for public health have remained level since 2010. Consequently, many U.S. communities lack financial resources to support population health programs while the nation's healthcare costs continue to increase (TFAH, 2017, 2018). In this context, tax-exempt hospitals could potentially infuse much-needed funds to increase the supply of population health programs if they were to shift even a tiny portion of their community benefit expenditures away from the traditional patient care financial assistance and toward population health initiatives through the implementation of IRS-mandated CHNA policy (Crossley, 2016; Leider et al., 2016; Pennel, McLeroy, Burdine, & Matarrita-Cascante, 2015; Rauscher & Vyzas, 2012; Rubin et al., 2015; Singh et al., 2016)

Research Questions

Five years have passed since IRS Code Section 501(r) took effect, yet little is known in the literature whether this policy intervention has altered tax-exempt hospitals' spending pattern on community benefit. Studies in peer-reviewed literature were completed years before or just around the time when IRS Code Section 501(r) became effective (Singh et al., 2015; Young et al., 2013). The study was performed to answer the following questions:

1. Did the implementation of IRS CHNA directives incentivize tax-exempt

hospitals to shift community benefit spending away from patient care financial

assistance and toward community health programs? Specifically,

(A) Did the tax-exempt hospitals' spending on community health programs

increase after IRS Section 501(r) took effect in terms of dollar value and

as proportion relative to expenditures on financial assistance?

(B) Did community benefit spending vary among tax-exempt hospitals?

2. How did tax-exempt hospitals invest in community health programs?

3. Is community benefit spending increasingly aligned with stated community

health needs and priorities?

The succeeding three articles communicate and discuss the answers to the above-

mentioned questions. The first article examines whether performing IRS-mandated

CHNA has brought about a shift in priorities in community benefit spending away from

traditional financial assistance and toward population health programs. The second

article explores qualitative description from published documents on how well the tax-

exempt hospitals addressed the health needs prioritized by their communities. Lastly, the

third article assesses the alignment between community benefit programs and the

prioritized community health needs using a mixed-methods research.

Significance of the Study

The field of health services research (HSR) is multidisciplinary and covers broad

areas of study. Despite the wide ranging research areas it covers, it has only but one

fundamental goal: "to provide information that will eventually lead to improvements in

the health of the citizenry" (Steinwachs & Hughes, 2008, p. 163). This study adds value

to the field of HSR on both theoretical and methodological levels. On the theoretical

level, it contributes knowledge on tax-exempt hospitals' investments in community

benefit and understanding on whether such spending is aligned to the health needs of

communities. Particularly, it sheds light on whether IRS Code Section 501(r), as a health

policy intervention, has incentivized tax-exempt hospitals to spend and engage more in

programs and activities that address broad population health needs. On the

methodological level, its application of mixed-methods research introduces qualitative

research methodology to the study of community benefit.   The insights from applying

qualitative research methodology enrich quantitative research findings, thereby

producing a holistic and comprehensive approach to the study of community benefit.

ARTICLE 1

DID PERFORMANCE OF COMMUNITY HEALTH NEEDS ASSESSMENTS
INCENTIVIZE NORTH CAROLINA'S TAX-EXEMPT HOSPITALS TO INCREASE
INVESTMENT IN COMMUNITY HEALTH PROGRAMS?

Abstract

Objective

The Internal Revenue Service (IRS) requires tax-exempt hospitals to conduct community

health needs assessments (CHNA) every three years. The purpose of the study was to

determine whether the IRS CHNA directives incentivized North Carolina's tax-exempt

hospitals to increase investments in community health programs.

Data Source

I gathered community benefit reports of 53 North Carolina private, non-profit hospitals

from North Carolina Hospital Association. I combined the reports with other data from

American Hospital Directory and County Health Rankings and Roadmaps.

Study Design

I compared the community benefit spending during the period CHNA was completed

against the community benefit spending two years later. I analyzed the data using paired

t-test among matched subjects. I also performed multivariate analysis to explore what

hospital-level and community characteristics are related to community benefit spending.

Results

Matched hospitals showed no significant increases in community health programs

 spending (*p*=0.6920) or in providing financial assistance (*p*=0.0934). Among all

community benefit items, only the unreimbursed cost for treating Medicare patients

increased significantly (*p*=0.0297). The proportion of spending in community health

programs relative to financial assistance decreased significantly (*p*=0.0338). Case mix

index is significantly associated with community health programs spending (*p*=0.0059).

Tax-exempt hospitals with ≥ 300 beds spent significantly more money providing

community health programs than tax-exempt hospitals with < 300 beds (*p*=0.0266).

Conclusion

IRS-mandated CHNA did not incentivize tax-exempt hospitals to commit more resources

for community health programs. Instead, the aggregate investment in community health

programs declined despite the conduct of CHNA, particularly those relating to

community outreach programs and community building activities, which is a troubling

development. Tax-exempt hospitals continued to spend heavily on financial assistance

and little on population health-focused programs. The performance of CHNA may have

become more likely a demonstration of compliance to preserve a privileged tax status

than a means for improving the health of communities.

1.0 Introduction

        Nearly two-thirds of hospitals in the United States (U.S.) are non-profit hospitals

that are exempt from paying taxes under Internal Revenue Service (IRS) Code Section

501(c)(3) (Burke et al., 2014; Crossley, 2016; GAO, 2008; Hellinger, 2009; Rubin,

Singh, & Jacobson, 2013; Rubin et al., 2015; Singh et al., 2016; Singh et al., 2015). The

congressional Joint Committee on Taxation reported that the U.S. government gave up

$12.6 billion of tax revenues in 2002, equivalent to $25 billion in 2011 dollars, for

granting tax-exempt status to non-profit hospitals (Rosenbaum et al., 2015; Rubin et al., 2013; Young et al., 2013). For their part, tax-exempt hospitals provide community benefit in various forms of charitable activities to legally justify their privileged tax status (Abbott, 2011; Crossley, 2016). A nationwide study that used the 2009 IRS tax filings estimated that, on average, U.S. tax-exempt hospitals provide community benefit that is equivalent to 7.5% of their operating expenses (Young et al., 2013). However, a considerable proportion of their community benefit expenditures was in the form of financial assistance, with little allocated to community health programs (Rubin et al., 2013; Rubin et al., 2015; Singh et al., 2015; Young et al., 2013). Historically, tax-exempt hospitals spent around 85% of community benefit on patient care financial assistance, with only 5% invested in community health programs (Leider et al., 2016; Singh et al., 2015; Young et al., 2013). In North Carolina, the community benefit spending of tax-exempt hospitals follows a similar pattern (Wade & Matthews, 2014).

The U.S. spent less than 5% of its total health care expenditures on prevention and public health programs even though more than 80% of its healthcare spending was related to preventable chronic health conditions (Mays & Smith, 2011; TFAH, 2017). Concurrently, the U.S. government cut the funding reserved for state and local public health programs by $580 million due to a weak economy and its plan to increase defense spending (Mays & Smith, 2011). Consequently, many communities in the U.S. lack financial resources to support community health programs while the nation's healthcare costs continue to increase (Mays & Smith, 2011). In this context, tax-exempt hospitals could potentially infuse much-needed funds to increase the supply of community health programs if they were to shift even a tiny portion of their community benefit

expenditures away from the traditional patient care financial assistance and toward disease prevention and community health improvement programs (Crossley, 2016; Leider et al., 2016; Pennel et al., 2015; Rauscher & Vyzas, 2012; Rubin et al., 2015; Singh et al., 2016).

The IRS has nudged tax-exempt hospitals to invest more in activities that promote community health by requiring them to conduct Community Health Needs Assessments (CHNA) every three years. The IRS also instructs tax-exempt hospitals to prepare responsive implementation strategy plans and report yearly their community benefit spendings and activities on IRS Form 990 Schedule H. The requirements became valid for tax years after March 23, 2012 per IRS Code Section 501(r) following Section 9007 of the Affordable Care Act (ACA) (Bazzoli et al., 2010; Burke et al., 2014; Crossley, 2016; IRS, 2016; Leider et al., 2016; Nikpay & Ayanian, 2015; "H.R.3590 - 111th Congress (2009-2010)," 2010; Pennel et al., 2015; Principe, Adams, Maynard, & Becker, 2012; Rubin et al., 2015; Young et al., 2013). Tax-exempt hospitals must comply with the IRS requirements to maintain their tax-exempt status and avoid a $50,000 excise tax penalty per hospital unit per year for non-compliance (Crossley, 2016; IRS, 2016; Leider et al., 2016; Nikpay & Ayanian, 2015; Principe et al., 2012; Rubin et al., 2015; Young et al., 2013). The IRS instructs the conduct of CHNA to direct tax-exempt hospitals to be more conscious of the health needs of communities and address those needs by investing and engaging more in disease prevention and community health improvement programs (Crossley, 2016; Leider et al., 2016; Rubin et al., 2015; Singh et al., 2016; Singh et al., 2015).

State laws regarding providing community benefit as an obligation for

maintaining tax-exempt status vary widely (GAO, 2008; Hellinger, 2009). In North

Carolina, no state laws explicitly require tax-exempt hospitals to provide community

benefit, conduct CHNA, or submit implementation strategies. However, North Carolina

does require non-profit hospitals to submit annually the community benefit information

contained on IRS Form 990 to the state's health department as required by NC State Law

2015-241 House Bill 97 (Nelson et al., 2015).

Five years have passed since the IRS Code Section 501(r) took effect, yet little is

known in the literature about whether the tax policy has altered the community benefit

spending pattern among tax-exempt hospitals. Studies in peer-reviewed literature were

completed years before or just around the time when the IRS Code Section 501(r)

became effective (Singh et al., 2015; Young et al., 2013). Therefore, this study

endeavored to answer the following questions: (a) Did the tax-exempt hospitals'

expenditures on community health programs increase after they assessed and identified

the health needs of the communities they serve pursuant to IRS Code Section 501(r)? (b)

Additionally, did expenditures on community benefit vary among tax-exempt hospitals

and was the variation associated with hospital and community characteristics?

1.1 Methods

This study focused on tax-exempt hospitals that operate in North Carolina. I

included 53 study hospitals out of the 70 identified private, non-profit hospitals that are

tax-exempt under IRS Code Section 501(r). The 53 study hospitals are members of the

North Carolina Hospital Association (NCHA) and represent 76% of all the identified

private, non-profit hospitals listed in the NCHA directory. Figure 1 shows the selection

process of the non-profit hospitals that were included in the study following the

purposive census method.
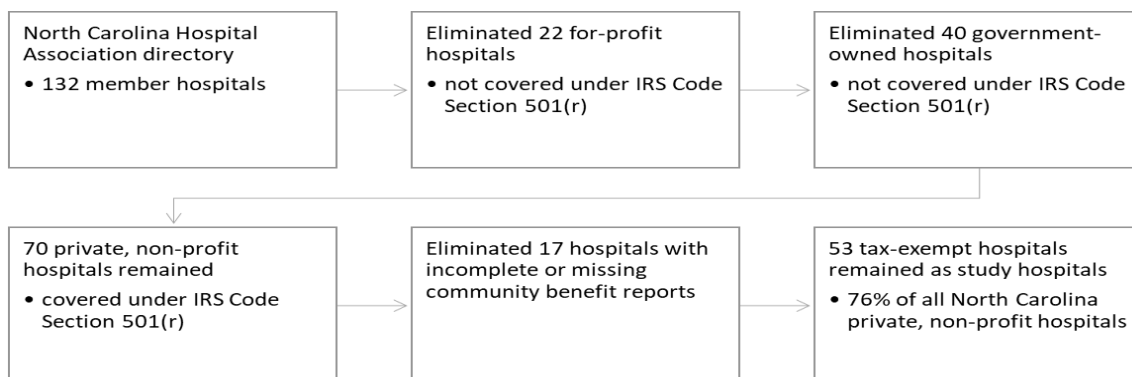
Figure 1. Selection of Hospitals Included in the Study

Table 1 compares the hospital characteristics of the study hospitals with all

private, non-profit hospitals with tax-exempt status in North Carolina. In general, the 53

study hospitals represented North Carolina's tax-exempt hospitals based on system

affiliation, urban-rural location, teaching status, bedsize capacity, and hospital market

area. Figure 2 depicts the hospital market area or district classification in North Carolina

as classified by the North Carolina Hospital Association (NCHA).

Table 1. *Characteristics of Private, Non-Profit Hospitals in North Carolina*

Characteristic	All Private, Non-Profit NC Hospitals[a] N = 70	Hospitals Included in the Study N = 53
	Percent	
System affiliation		
Independent	24	26
Affiliated	76	74
Location		
Rural	54	55
Urban	46	45
Teaching status		
Non-teaching	70	60
Teaching	30	40
Bedsize		
≤ 100	49	36
101 - 299	30	32
≥ 300	21	32
Hospital market area		
District 1	17	17
District 2	29	26
District 3	10	13
District 4	7	8
District 5	23	17
District 6	14	19

[a] Source: North Carolina Hospital Association directory

Data Source

I gathered the study hospitals' community benefit reports from North Carolina Hospital Association (NCHA) and combined it with the data from the American Hospital Directory (AHD), and County Health Rankings and Roadmaps (CHRR).
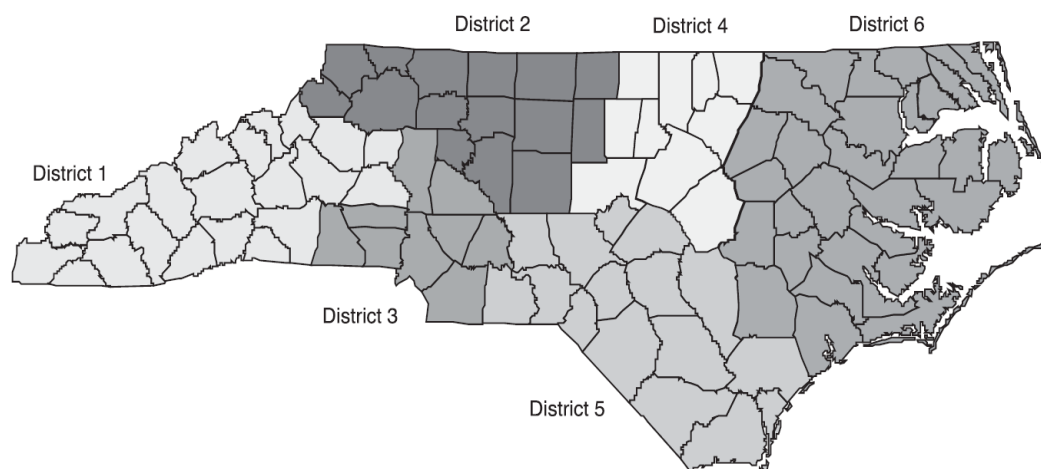
Figure 2. Hospital Market Area Based on NCHA District Classification
Source: North Carolina Hospital Association

Design and Analysis

I performed longitudinal and cross-sectional studies. For the longitudinal study, I determined the year the study hospitals first completed their CHNA after the effectivity of IRS Code Section 501(r). Majority (87%) of the study hospitals, or 46 out of 53, completed CHNA in 2013. Three study hospitals completed CHNA in 2012, and the remaining four study hospitals completed CHNA in 2014. I tabulated the NCHA community benefit reports in an electronic spreadsheet and imported the spreadsheet into Statistical Analysis Software (SAS). I compared the community benefit expenditures of the study hospitals during the period they first completed the CHNA requirement (Base-Year) against their community benefit expenditures two years later (Then-Year) accounting for the effect of inflation. I analyzed the inflation-adjusted dollar changes in spending between the Base-Year and the Then-Year using paired *t-test* among matched subjects applying upper-tail test with .05 confidence level. I used descriptive statistics to describe the differences in spending data.

For the cross-sectional study, I made use of the community benefit spending data of the study hospitals two years after they completed their CHNAs and associate it with hospital-level characteristics and community characteristics. I performed descriptive statistics to describe the distribution of data. Afterwards, I ran multiple regression analyses using generalized linear model to examine the level of variations in community benefit spending among study hospitals and to determine whether hospital-level and community characteristics are associated with community benefit expenditures (measured in dollars and as a percentage of operating expenses).

Study Variables

The longitudinal study examined whether the performance of CHNAs in compliance with the IRS Code Section 501(r) (independent variable) resulted to an increase in community health programs expenditures (dependent variable); and whether it lead to an increase in the proportion of community health programs spending relative to financial assistance (dependent variable) among North Carolina's tax-exempt hospitals. Specifically, the longitudinal study had the following dependent variables: (a) the dollar differences of community benefit expenditures of the items listed in Table 2; and (b) the difference in proportion of community health programs category in relation to financial assistance category. Table 2 lists and describes the community benefit spending by category and type based on NCHA guidelines (NCHA, 2014).

Table 2. *Community Benefit Categories and Items According to NCHA*

Community Benefit	Description	Location on NCHA CB Report
Financial Assistance Category		
Cost of treating charity care patients	Free or discounted care to poor patients	Line A
Unreimbursed cost of treating Medicare patients	Reduced reimbursements for treating Medicare patients	Line B
Unreimbursed cost of treating Medicaid patients	Reduced reimbursements for providing care to Medicaid patients	Line E
Unreimbursed cost of treating patients from other means-tested government programs	Reduced reimbursements from means-tested government programs; example: CHIP	Line H
Subsidized health services	Services that are continued to be offered despite financial losses because the community needs them; examples: obstetrics, psychiatric services	Line M
Community Health Programs Category		
Community health improvement programs and services	Costs of activities that improve community health; examples: health education, screenings	Line K
Health professions education	Educational costs to increase supply of local healthcare clinicians	Line L
Research costs	Costs for supporting research activities	Line N
Cash and in-kind contributions	Cash and staff-time donated to help other community groups	Line O
Community building activities	Activities that protect or improve safety or health of community	Line P

The cross-sectional study probed whether hospital-level characteristics and community characteristics (predictor variables) are associated with community benefit spending (dependent variables). The dependent variables are the total dollar expenditures and the dollar expenditures as a percentage of operating expenses of the two community benefit spending categories -- financial assistance and community health programs (see Table 2). The independent variables are the hospital-level and community characteristics that are listed and defined in Table 3. I considered the hospital market area or district classification (see Figure 2) as a community characteristic because it describes or

captures the diverse social, economic, political, cultural, and market environment of a group of communities (counties) in North Carolina. Hospital systems customarily provide healthcare services and compete with other hospital systems within the bounds of their hospital market area or district.

I built the regression models following the Andersen's Behavioral Model and Access to Care Framework, which theorizes that healthcare services utilization or outcome is a function of the external environment (healthcare system), population characteristics (predisposing characteristics, enabling resources, needs), and health behavior (use of healthcare services) (Andersen, 1995). Applying the Andersen's Behavioral Model and Access to Care Framework to this study, I considered the community benefit expenditures as healthcare services utilization or outcomes as functions of the external environment and population characteristics. The hospital-level and community characteristics data I collected represented the external environment and population characteristics, respectively. I also selected the independent or predictor variables based on the regression models of the Young et al (2013) study.

Table 3. *Definition and Source of Predictor Variables*

Predictor Variables	Type	Operational Definition	Source
Hospital characteristics			
Affiliation	Categorical	hospital system affiliation; 0 = independent 1= affiliated	NCHA
Location	Categorical	urban-rural hospital classification based on Metropolitan Statistical Area; 0 = rural 1 = urban	AHD
Teaching status	Categorical	hospital's teaching status; 0 = non-teaching 1 = teaching	AHD
Bedsize	Categorical	hospital size based on number of beds; 1 = ≤ 100 2 = 101-299 3 = > 299	AHD
Case mix index	Ratio	the value assigned to a diagnosis-related group which reflects the patient mix among levels of clinical complexity; diagnosis with high case mix index is reimbursed more than with low case mix index	AHD
Profit margin	Ratio	hospital's ability to generate profit from operations; indicates operating profit per dollar of net patient revenue	AHD
Community characteristics			
Access to care	Interval	composite z-score[a] of: percentage of adults under 65 without insurance, ratio of population to primary care providers, dentists, and mental health providers; number of hospital stays for ambulatory-care sensitive conditions per 1,000 Medicare enrollees; percentage of diabetic Medicare enrollees ages 65-75 that receive HbA1c monitoring; percentage of female Medicare enrollees ages 67-69 that receive mammography screening	CHRR
Market area	Categorical	counties that are near one another and serviced by a group of competing hospitals; composed of six market areas or districts (Figure 2)	NCHA

[a] *reverse-coded so that a score having a negative (-) sign indicates better outcome and a score with positive (+) sign indicates poor outcome*

1.2 Results

I examined the differences in community benefit spending between the Base-Year and the Then-Year among the 53 study hospitals to determine whether community benefit expenditures increased significantly two years after the study hospitals completed their first CHNAs in compliance with IRS Code Section 501(r).

Results of the Longitudinal Study

Table 4 presents the dollar differences in community benefit spending between the Base-Year and the Then-Year among the 53 study hospitals. Overall, the total community benefit spending increased by 5.6% percent, or by $135.2 million. The 15.2% rise in unreimbursed cost for treating Medicare patients ($150.7 million) accounted for much of the increase in total community benefit spending as well as the financial assistance spending. In contrast, the community health programs expenditures decreased by 4%, or by $15.8 million, mainly due to the reduced spending in health professions education by $16.4 million, or a decline of 7.4%. Among the items under community health programs category, only the spending in cash and in-kind contributions increased. It went up by 17.2% or by $ 9.1 million.

Table 4. *Dollar Differences in Community Benefit Spending by Category*

Community Benefit Categories	Base-Year[ab]	Then-Year[a]	Difference	% Change
Cost of treating charity care patients	592.8	561.2	-31.6	-5.3
Unreimbursed cost - Medicare patients	989.5	1140.2	150.7	15.2
Unreimbursed cost - Medicaid patients	377.4	411.5	34.2	9.1
Unreimbursed cost - other means-tested government programs	22.1	7.5	-14.5	-65.9
Subsidized health services	59.6	71.8	12.3	20.6
Financial assistance category	2041.3	2192.3	151.0	7.4
Community health improvement services	93.6	87.2	-6.4	-6.8
Health professions education	222.6	206.1	-16.4	-7.4
Research costs	5.1	5.1	0.0	-0.4
Cash and in-kind contributions	53.0	62.1	9.1	17.2
Community building activities	19.1	17.0	-2.1	-10.8
Community health programs category	393.3	377.5	-15.8	-4.0
All	2434.6	2569.8	135.2	5.6

[a] in million US dollars
[b] inflation adjusted

Figure 3 illustrates the community benefit spending by category during the Base-

Year and the Then-Year among the 53 study hospitals exhibiting that spending in

financial assistance category increased while spending in community health programs

category decreased. Additionally, it highlights the differences in spending between the

two categories illustrating that most of the community benefit expenditures were in the

form of financial assistance with notably smaller amount invested in community health

programs during both periods.
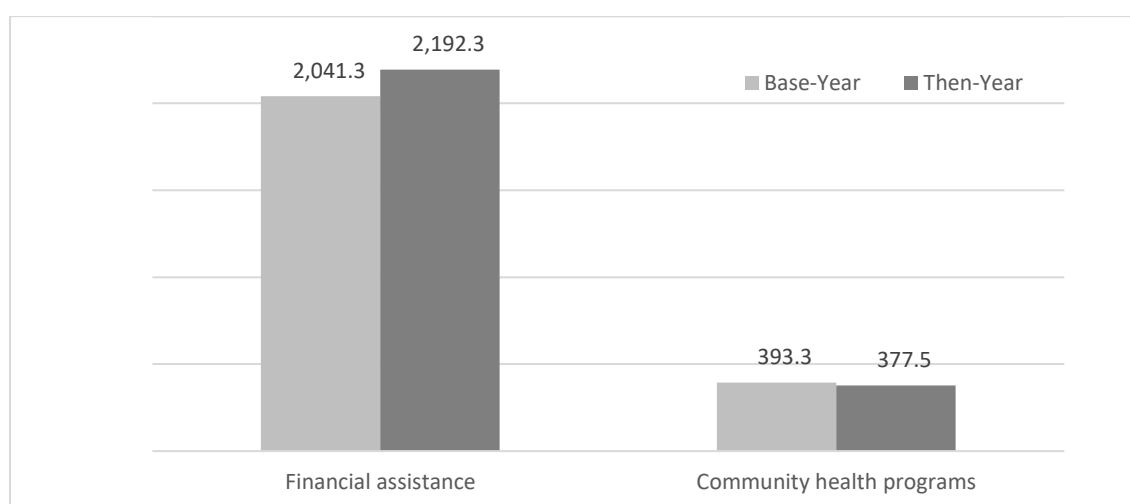
Figure 3. Community Benefit Spending by Category in Million US Dollars Base-Year
Vs. Then-Year

Figure 4 illustrates the community benefit spending by type between the Base-

Year and the Then-Year. The chart shows that the unreimbursed cost for treating

Medicare patients, unreimbursed cost for treating Medicaid patients, subsidized health

services, and cash and in-kind contributions all increased while the other types of

community benefit spending declined.   The unreimbursed cost for treating Medicare

patients had the highest difference, an increase of $150.7 million as shown in Table 4.
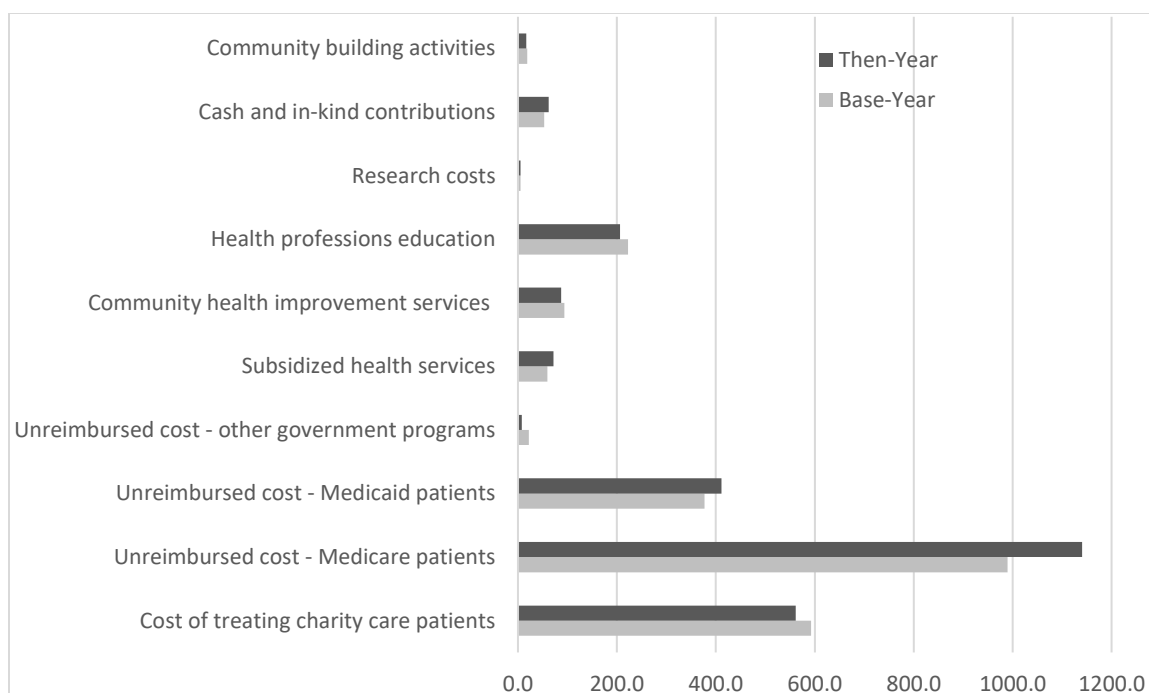
Figure 4. Community Benefit Spending by Type in Million US Dollars Base-Year Vs. Then-Year

Table 5 shows a $2.55 million mean difference between the Base-Year and the Then-Year for the total community benefit expenditures. A substantial portion of the difference came from the unreimbursed cost for providing care to Medicare patients which had a mean difference of $2.84 million. In contrast, the mean difference in community health programs category was a negative $0.3 million, which was mainly due to the negative mean difference of $0.42 million from health professions education. Table 5 also shows that 19 out of 53 study hospitals, or 36% of study hospitals, provided subsidized health services and just 9 study hospitals, or 17% of study hospitals, expended cash for research.

Table 5. *Mean Differences in Community Benefit Spending Between Base-Year and Then-Year*

Community Benefit	Pairs	Mean Difference[a]	SD	95% CL Mean LL	95% CL Mean UL	t-value	p-value[b]
Cost of treating charity care patients	53	-0.60	2.05	-1.07	Infinity	-2.12	0.9807
Unreimbursed cost - Medicare patients	53	2.84	10.74	0.37	Infinity	1.93	0.0297
Unreimbursed cost - Medicaid patients	53	0.64	8.04	-1.21	Infinity	0.58	0.2811
Unreimbursed cost - other means-tested government programs	53	-0.27	0.82	-0.46	Infinity	-2.42	0.9906
Subsidized health services	19	0.67	1.78	-0.03	Infinity	1.65	0.0577
Financial assistance	53	2.85	15.51	-0.72	Infinity	1.34	0.0934
Community health improvement programs and services	44	-0.13	1.91	-0.61	Infinity	-0.44	0.6693
Health professions education	39	-0.42	4.95	-1.75	Infinity	-0.53	0.6989
Research	9	0.00	0.28	-0.18	Infinity	-0.02	0.5073
Cash and in-kind contributions	48	0.19	1.72	-0.23	Infinity	0.76	0.2268
Community building activities	36	-0.06	0.40	-0.06	Infinity	-0.83	0.7943
Community health programs	53	-0.30	4.29	-1.28	Infinity	-0.50	0.6920
All	53	2.55	15.13	-0.93	Infinity	1.23	0.1126

[a] *in million US dollars*
[b] *upper tail paired t-test*

The paired *t-test* reveals that there was no significant increase in community benefit expenditures among matched study hospitals between the Base-Year and the Then-Year (*M*=2.551, *SD*=15.129); $t(52)$=1.23, *p*=0.1126. Community health programs spending did not significantly increase between the Base-Year and the Then-Year (*M*=-0.297, *SD*=4.291); $t(52)$=-0.50, *p*=0.6920. Moreover, the financial assistance spending did not significantly increase between the Base-Year and the Then-Year (*M*=2.849, *SD*=15.505); $t(52)$=1.34 *p*=0.0934. Among all community benefit items, only the spending for the unreimbursed cost for treating Medicare patients increased significantly between the Base-Year and the Then-Year (*M*=2.843, *SD*=10.735); $t(52)$=0.374,

p=0.0297. I also analyzed the data to determine if proportion of community health

programs spending relative to financial assistance increased significantly between the

Base-Year and the Then-Year using a paired-samples *t-test*. Table 6 shows that the

proportion of spending in community health programs relative to financial assistance did

not increase (*M*=-0.04, *SD*=0.12); *t*(52)=-2.17, *p*=0.9825. Instead, the proportion of

spending in community health programs relative to financial assistance decreased from

0.15 during the Base-Year to 0.12 during the Then-Year.

Table 6. *Mean Difference in Proportion of Community Health Programs to Financial Assistance*

Proportion	Number of Pairs	Mean Base-Year	Mean Then-Year	Mean Difference	SD	95% CL Mean LL	95% CL Mean UL	t-value	p-value[a]
Community health programs to financial assistance	53	0.15	0.12	-0.03	0.12	-0.062	Infinity	-2.17	0.9825

[a] *upper tail paired t-test*

Results of the Cross-Sectional Study

I performed a cross-sectional study to examine the level of variations in

community benefit spending among the study hospitals two years after they completed

their CHNAs. I ran multivariate regression analyses using generalized linear model to

determine whether hospital-level and community characteristics are associated with

community benefit expenditures. I also explained the distribution of data using

descriptive statistics.

Table 7 shows the distribution of community benefit spending by category and

type two years after the study hospitals completed their CHNAs. The study hospitals

collectively spent close to $2.6 billion in community benefit. Around $2.2 billion or

85.3% of which were in the form of financial assistance and $377 million or 14.7% were expended on community health programs. Among the items under financial assistance category, the unreimbursed cost for other means-tested government programs was the lowest ($7.5 million) and the unreimbursed cost for providing care to Medicare patients was the highest ($1.14 billion). For the items under community health programs category, the expenditures for research was the lowest ($5.1 million) while the spending in health professions education was the highest ($206.1 million).

Table 7. Distribution of Community Benefit Spending by Category

Community Benefit	Spending[a]	Percent
Cost of treating charity care patients	561.2	21.8
Unreimbursed cost - Medicare patients	1140.2	44.4
Unreimbursed cost - Medicaid patients	411.5	16.0
Unreimbursed cost - other means-tested government programs	7.5	0.3
Subsidized health services	71.8	2.8
Financial assistance	2192.3	85.3
Community health improvement services	87.2	3.4
Health professions education	206.1	8.0
Research cost	5.1	0.2
Cash and in-kind contributions	62.1	2.4
Community building activities	17.0	0.7
Community health programs	377.5	14.7
All	2569.8	100.0

[a] in million US dollars

Figure 5 exhibits the percentage distribution of the $2.6 billion community benefit spending by type showing that a substantial portion of the expenditures were accounted for by the following: (a) 44% of the expenditures went to unreimbursed cost of providing care to Medicare patients, (b) 22% to unreimbursed cost for providing charity care, and (c) 16% to unreimbursed cost for treating Medicaid patients. The result of this study is

consistent with the findings of Young et al.'s (2013) nationwide study of US tax-exempt

hospitals' provision on community benefit that used the 2009 IRS tax filings except that

in that study, the unreimbursed cost for treating Medicare patients was not accounted for

(Young et al., 2013).
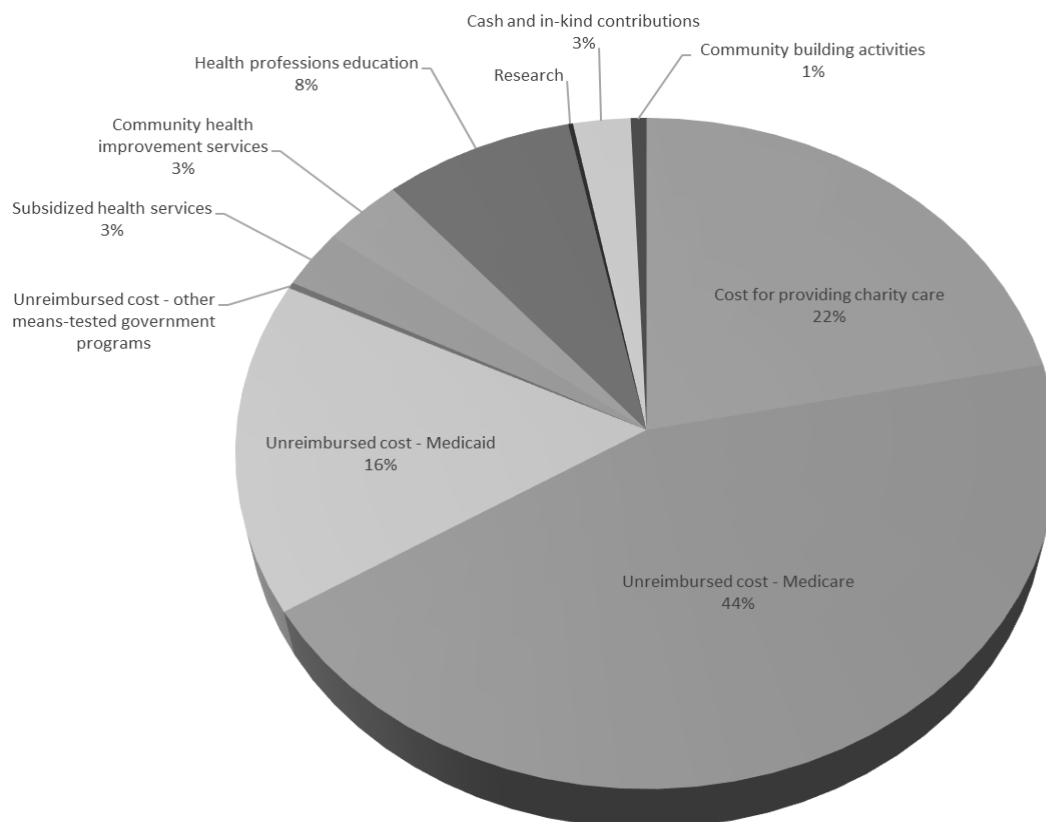
Figure 5. Distribution of $2.6 Billion Community Benefit Spending by Type

To determine the study hospitals' proportion of community benefit spending in

relation to total operating expenses, I calculated the hospitals' community benefit

expenditures as a percentage of operating expenses. I summarized the results in Table 8.

On average, the study hospitals' community benefit spending is equivalent to 14.6% of

operating expenses. The study's average of 14.6% is higher compared to the study by

Young et al. (2013) which estimated the average community benefit spending of US tax-exempt hospitals at around 7.5% of operating expenses (Young et al., 2013). The previous study, however, did not account for the unreimbursed cost of treating Medicare patients while this study did include this item in the analysis following NCHA guidelines. If the unreimbursed cost of treating Medicare patients had not been accounted for as a community benefit, the average community benefit spending as a percentage of operating expenses by the study hospitals would have been around 8.2%, which makes it very close to the 7.5% nationwide average.

Table 8. *Community Benefit Spending as a Percentage of Operating Expenses*

Community Benefit	Mean Percent[a]	SD	95% CL Mean LL	95% CL Mean UL
Costs of treating charity care patients	3.7	2.3	3.1	4.3
Unreimbursed costs - Medicare patients	6.4	6.2	4.7	8.2
Unreimbursed costs - Medicaid patients	3.4	1.9	2.8	3.9
Unreimbursed costs - other government programs	0.0	0.0	0.0	0.0
Subsidized health services	0.6	1.5	0.2	1.0
Financial assistance category	13.6	8.3	11.3	15.9
Community health improvement services	0.4	0.9	0.1	0.6
Health professions education	0.4	1.0	0.2	0.7
Research costs	0.0	0.1	0.0	0.0
Cash and in-kind contributions	0.3	0.7	0.1	0.5
Community building activities	0.1	0.1	0.0	0.1
Community health programs category	1.2	1.6	0.7	1.6
All	14.6	8.5	12.3	16.9

[a] *Mean percentage of operating expenses*

Table 9 provides the measures of central tendency of community benefit expenditures by category according to hospital characteristics. Without adjusting for the

effects of the other covariates, dollar expenditures for financial assistance vary

significantly based on the following: (a) location with urban hospitals having higher cost

of financial assistance than rural hospitals ($M=76.1$, $MD=33.2$, $SD=77.2$); $p=<.0001$; (b)

teaching status with teaching hospitals having higher cost of providing financial

assistance than non-teaching hospitals ($M=83.8$, $MD=68.3$, $SD=81$); $p=<.0001$; (c)

bedsize with hospitals having ≥ 300 beds absorbing higher cost in providing financial

assistance than hospitals with <300 beds ($M=97.5$, $MD=68.3$, $SD=82.7$); $p=<.0001$; and

(d) hospital market area showing that tax-exempt hospitals in district 4 incurred the

highest cost in providing financial assistance compared to hospitals in other hospital

market areas or districts ($M=134.5$, $MD=141.3$, $SD=95.1$); $p=<.0118$.

Table 9. *Mean and Median Community Benefit Spending by Category According to Hospital Characteristics*

Characteristics	N	Financial Assistance				Community Health Programs			
		Mean[a]	Median[a]	SD	p-value[b]	Mean[a]	Median[a]	SD	p-value[b]
Affiliation					0.3620				0.2183
Independent	14	28.3	10.4	57.5		2.0	0.4	4.0	
Affiliated	39	46.1	20.1	63.5		9.0	0.6	20.5	
Location					<.0001				0.0037
Rural	29	12.0	6.7	16.0		0.8	0.5	1.1	
Urban	24	76.8	33.2	77.2		14.8	3.1	24.8	
Teaching status					<.0001				0.0013
Non-teaching	32	13.5	8.9	13.4		0.9	0.4	1.8	
Teaching	21	83.8	68.3	81.0		16.6	3.8	26.0	
Bedsize					<.0001				0.0330
≤ 100	19	12.7	5.1	18.1		0.5	0.2	1.1	
101 - 299	17	17.3	13.4	17.2		0.7	0.5	1.0	
≥ 300	17	97.5	68.3	82.7		21.0	6.4	27.3	
Market area					0.0118				0.5601
District 1	9	12.1	3.5	21.5		8.0	0.6	22.7	
District 2	14	52.0	15.2	80.5		9.0	0.3	22.7	
District 3	7	55.0	34.2	48.2		2.6	1.3	3.3	
District 4	4	134.5	141.3	95.1		21.4	13.1	25.9	
District 5	9	27.1	17.1	29.6		1.6	0.1	2.0	
District 6	10	18.9	6.9	35.3		6.2	0.8	16.7	

[a] *in million US dollars*

[b] *one-way analysis of variance*

Table 9 also shows that, without adjusting for the effects of the other covariates, dollar expenditures on community health programs vary significantly based on the following: (a) location with urban hospitals expending more in community health programs than rural hospitals (*M*=14.8, *MD*=3.1, *SD*=24.8); *p*=<.0.0037; (b) teaching status with teaching hospitals investing more in community health programs than non-teaching hospitals (*M*=16.6, *MD*=3.8, *SD*=26); *p*=<.0013; (c) bedsize with hospitals having ≥ 300 beds investing more in community health programs than hospitals with <300 beds (*M*=21, *MD*=6.4, *SD*=27.3); *p*=<.0330.

Table 10 shows the measures of central tendency of community benefit expenditures by category as a percentage of operating expenses. Without adjusting for the effects of the other covariates, community benefit spending for financial assistance as a percentage of operating expenses vary significantly based on the following: (a) affilitation with affiliated tax-exempt hospitals having greater proportion of financial assistance as a percentage of operating expenses than independent hospitals (M=14.4, MD=11.8, SD=8.6); p=<.0007; (b) location with urban hospitals having higher proportion of spending than rural hospitals (M=16.9, MD=14.8, SD=9); p=<.0.0107; and (c) hospital market area showing that tax-exempt hospitals in district 3 provided the highest financial assistance as a percentage of operating expenses compared to hospitals in other hospital market areas or districts (M=22.7, MD=21.9, SD=7.2); p=<.0007.

Table 10 also shows that without adjusting for the effects of the other covariates, expenditures on community health programs as a percentage of operating expenses vary significantly based on the following: (a) location with urban hospitals having higher community health spending as a percentage of operating expenses than rural hospitals (M=1.8, MD=0.7, SD=2.1); p=<.0171; (b) teaching status with teaching hospitals having higher proportion of community health spending as a percentage of operating expenses than non-teaching hospitals (M=1.9, MD=0.7, SD=2.2); p=<.0084; and (c) bedsize with hospitals having $\geq$ 300 beds having higher proportion than hospitals with <300 beds (M=2.5, MD=1.8, SD=2.2); p=<.0001.

Table 10. *Mean and Median Community Benefit Spending by Category as a Percentage of Operating Expenses According to Hospital Characteristics*

Characteristics	N	Financial Assistance				Community Health Programs			
		Mean[a]	Median[a]	SD	p-value[b]	Mean[a]	Median[a]	SD	p-value[b]
Affiliation					0.0007				0.1104
Independent	14	11.7	10.5	7.3		0.6	0.3	0.8	
Affiliated	39	14.4	11.8	8.6		1.4	0.7	1.7	
Location					0.0107				0.0171
Rural	29	11.1	10.1	6.7		0.7	0.6	0.6	
Urban	24	16.9	14.8	9.0		1.8	0.7	2.1	
Teaching status					0.6256				0.0084
Non-teaching	32	13.2	10.6	8.3		0.7	0.6	0.7	
Teaching	21	14.3	12.0	8.3		1.9	0.7	2.2	
Bedsize					0.9807				<.0001
≤ 100	19	13.2	10.6	8.3		0.6	0.6	0.7	
101 - 299	17	14.3	12.0	8.3		0.5	0.4	0.5	
≥ 300	17	7.6	5.5	4.4		2.5	1.8	2.2	
Market area					0.0007				0.2301
District 1	9	7.3	5.5	5.4		1.4	0.6	2.1	
District 2	14	15.1	12.6	7.9		1.0	0.3	1.7	
District 3	7	22.7	21.9	7.2		0.9	0.4	1.0	
District 4	4	19.9	18.5	9.9		2.5	2.5	2.0	
District 5	9	11.5	11.8	8.5		0.3	0.1	0.3	
District 6	10	10.6	10.5	2.8		1.7	1.1	1.4	

[a] *percent of operating expenses*

[b] *one-way analysis of variance*

Table 11 summarizes the results of two multiple regression analyses using generalized linear model. The first regression model with r^2 of 0.63 has financial assistance expenditures as the dependent variable. Table 11 shows that, after adjusting for the effects of the other covariates, financial assistance expenditures vary among study hospitals based on bedsize. Study hospitals with 101-299 beds provided significantly lower financial assistance than tax-exempt hospitals with ≥ 300 beds (*p=0.0396*), or conversely, tax-exempt hospitals with ≥ 300 beds incurred a significantly higher cost in providing financial assistance than tax-exempt hospitals with 101-299 beds (*p=0.0396*).

After adjusting for the effects of other covariates, financial assistance expenditures among the study hospitals did not vary significantly based on affiliation (*p=0.9382*), location (*p=0.6587*), teaching status (*p=0.0873*), and hospital market area (*p=0.0998 to 0.9891*).

Table 11 also shows that after adjusting for the effects of other covariates, case mix index (*p=0.1547*), profit margin (*p=0.8765*), and access to care (*p=0.9838*) are not associated with financial assistance expenditures. Although the three predictor variables' strength of relationship to financial assistance spending is not strong, the directions of their linear relationship with financial assistance expenditures are noteworthy. For instance, the regression model with $r^2=0.63$ predicts that for every one-unit increase in case mix index, the financial assistance expenditures will also increase by $45.5 million. In contrast, a one-unit increase in profit margin, will lead to a decrease in financial assistance expenditures by $0.6 million. The access to care was reverse-coded so a unit increase in access to care means poor outcome. From Table 11, I can see that for every one-unit increase in access to care (outcome of access to care deteriorates), financial assistance expenditures will increase by $1.6 million.

Furthermore, Table 11 shows that after adjusting for the effects of the other covariates, community health programs expenditures did not vary significantly among the study hospitals based on affiliation (*p=0.9254*), location (*p=0.8012*), teaching status (*p=0.2320*), bedsize (*p=0.1789 and 0.2897*), and hospital market area (*p=0.998 to 0.9891*). Also, Table 11 shows that after adjusting for the effects of the other covariates, case mix index is significantly related to community health programs expenditures (*p=0.0059*). The regression model predicts that for every one-unit increase in case mix

index, community health programs expenditures will increase by $30.35 million

(*p=0.0059*). Additionally, the regression model shows that although the relationship of

profit margin to community health programs spending is not significant, the model

predicts that for every one-unit increase in profit margin, community health programs

expenditures will also increase by $0.35 million (*p=0.7679*). Similarly, the regression

model predicts that for every one-unit increase in access to care (outcome of access to

care deteriorates), community health programs expenditures will increase by $5.75

million (*p=0.8275*).

Table 11. *Association Between Community Benefit Spending, Hospital Characteristics, and Community Characteristics*

Characteristics	Financial Assistance[d] r²=0.63				Community Health Programs[d] r²=0.52			
	Parameter Estimate[c]	SE[c]	t-value	p-value[a]	Parameter Estimate[c]	SE[c]	t-value	p-value[a]
Hospital Characteristics								
Affiliation[b]								
Independent	-1.2	15.9	-0.1	0.9382	0.50	5.3	0.09	0.9254
Affiliated	0				0			
Location[b]								
Rural	-8.6	19.4	-0.5	0.6587	1.63	6.4	0.25	0.8012
Urban	0				0			
Teaching status[b]								
Non-teaching	-31.5	18.0	-1.8	0.0873	-7.23	6.0	-1.21	0.2320
Teaching	0				0			
Bedsize[b]								
≤ 100	-33.5	20.8	-1.6	0.1152	-7.41	6.9	-1.07	0.2897
101 - 299	-41.9	19.7	-2.1	0.0396	-8.94	6.5	-1.37	0.1789
≥ 300	0				0			
Case mix index	45.5	31.4	1.5	0.1547	30.35	10.4	2.92	0.0059
Profit margin	-0.6	3.5	-0.2	0.8765	0.35	1.2	0.30	0.7679
Community characteristics								
Access to care	1.6	79.0	0.0	0.9838	5.75	26.2	0.22	0.8275
Market area[b]								
District 1	-0.7	21.8	0.0	0.9733	6.06	7.2	0.84	0.4085
District 2	34.4	20.4	1.7	0.0998	3.25	6.8	0.48	0.6338
District 3	17.2	23.1	0.7	0.4622	-10.57	7.7	-1.38	0.1757
District 4	45.7	30.7	1.5	0.1440	-8.05	10.2	-0.79	0.4337
District 5	-0.3	22.6	0.0	0.9891	-5.38	7.5	-0.72	0.4783
District 6	0				0			

[a] *regression analysis using generalized linear model*
[b] *categorical variable, coefficient refers to differences between groups in relation to a reference group*
[c] *in millions*
[d] *dependent variable, community benefit spending in US dollars*

Table 12 summarizes the results of the other two multiple regression analyses using generalized linear model. It shows that after adjusting for the effects of the other covariates, the tax-exempt hospitals in district 3 provided a significantly higher financial assistance as a percentage of operating expenses than tax-exempt hospitals in district 6 ($p=0.0057$). From Table 12, I can see that financial assistance expenditures as a percentage of operating expenses did not vary significantly among the study hospitals based on affiliation ($p=0.1232$), location ($p=0.3430$), teaching status ($p=0.9838$), and bedsize ($p=0.1213 \text{ and } 0.2276$). Moreover, it shows that case mix index ($p=0.4209$), profit margin ($p=0.6778$), and access to care ($p=0.8115$) are not significantly associated with community health programs expenditures as a percentage of operating expenses.

Table 12 also shows that after adjusting for the effects of the other covariates, community health programs expenditures as a percentage of operating expenses vary among study hospitals based on bedsize. It shows that tax-exempt hospitals with ≤ 100 beds ($p=0.0392$) and with 101-299 beds ($p=0.0266$) provided significantly lower community health programs expenditures as a percentage of operating expenses than tax-exempt hospitals with ≥ 300 beds, or conversely, tax-exempt hospitals with ≥ 300 beds spent significantly more cash as a percentage of operating expenses in providing community health.

Table 12. *Association Between Community Benefit as a Percentage of Operating Expenses, Hospital Characteristics, and Community Characteristics*

Characteristics	Financial Assistance[c] r2=0.47				Community Health Programs[c] r2=0.46			
	Parameter Estimate	SE	t-value	p-value[a]	Parameter Estimatec	SEc	t-value	p-value[a]
Hospital Characteristics								
Affiliation[b]								
Independent	-0.04	0.03	-1.6	0.1232	-0.003	0.005	-0.60	0.5518
Affiliated	0				0			
Location[b]								
Rural	-0.03	0.03	-1.0	0.3430	-0.001	0.006	-0.20	0.8436
Urban	0				0			
Teaching status[b]								
Non-teaching	0.00	0.03	0.0	0.9838	-0.002	0.005	-0.38	0.7091
Teaching	0				0			
Bedsize[b]								
≤ 100	0.05	0.03	1.6	0.1213	-0.014	0.006	-2.14	0.0392
101 - 299	0.04	0.03	1.2	0.2276	-0.014	0.006	-2.31	0.0266
≥ 300	0				0			
Case mix index	0.04	0.05	0.8	0.4209	0.010	0.010	1.05	0.3015
Profit margin	0.00	0.01	0.4	0.6778	0.000	0.001	0.31	0.7573
Community characteristics								
Access to care	0.03	0.12	0.2	0.8115	0.002	0.024	0.07	0.9442
Market area[b]								
District 1	-0.04	0.03	-1.2	0.2572	0.000	0.007	-0.07	0.9485
District 2	0.04	0.03	1.2	0.2426	-0.005	0.006	-0.79	0.4337
District 3	0.11	0.04	2.9	0.0057	-0.012	0.007	-1.73	0.0910
District 4	0.08	0.05	1.6	0.1179	-0.005	0.009	-0.56	0.5784
District 5	0.02	0.04	0.5	0.6432	-0.013	0.007	-1.93	0.0610
District 6	0				0			

[a] multivariate regression analysis using generalized linear model
[b] categorical variable, coefficient refers to differences between groups in relation to a reference group
[c] dependent variable, community benefit spending as a percentage of operating expenses

1.3 Discussion

This study is the first to assess the pattern and growth of community benefit spending made by tax-exempt hospitals after IRS Code Section 501(r) took effect. It integrates a longitudinal perspective and a cross-sectional description of the community

benefit provided by North Carolina's tax-exempt hospitals as they comply with the requirements of the law. It provides insights on whether the implementation of IRS-mandated CHNA has become an effective tool in incentivizing tax-exempt hospitals to address a broad set of identified health needs of their communities or has become just a mere demonstration of compliance to preserve an advantaged tax status.

Longitudinal Perspective

The CHNA is a tool for improving population health. Thus, many public health professionals and health services researchers were optimistic when the IRS mandated the conduct of CHNA as a legal requirement for private, non-profit hospitals to maintain their tax-exempt status per IRS Code Section 501(r). Many in the public health profession believed that these assessments would somehow usher a new era in which the healthcare systems and public health agencies would converge to deliver meaningful population-health focused healthcare services rather than just providing care to sick individuals. Public health professionals and health services researchers expected that this convergence would decrease overall healthcare costs significantly (Crossley, 2016).

In the five years since IRS Code Section 501(r) became effective, North Carolina's tax-exempt hospitals have shown no sign that they have shifted expenditures toward improving the health of the communities they serve. Our analysis of the community benefit expenditures data of matched study hospitals reveals that not only did investment in community health programs not increase from the year they completed the CHNA to two years then, but aggregate expenditures in community health programs effectively decreased by 4%, from $393.3 million to $377.5 million (Table 4). Except for the cash and in-kind contributions, spending in all other types of community health

programs declined. The decrease in spending for the following items despite the IRS-mandated performance of CHNA is a troubling development: (a) community health improvement services, which decreased by 6.8%, represent spending on community outreach programs; (b) community building activities, which decreased by10.8%, pertain to expenditures on programs and activities that improve the health of community or provide a safe, healthy environment.

In contrast, the study hospitals' overall financial assistance expenditures rose by 7.4%, from $2.04 billion to $2.19 billion. A substantial portion of the increase came from the unreimbursed cost for treating Medicare patients, which increased by 15.2%, from $989.5 million to $1.14 billion; and from the unreimbursed cost for providing care to Medicaid patients that increased as well by 9%, from $377.4 million to $411.5 million (Table 4). I did not examine the causes underlying the upsurge in unreimbursed cost for providing care to Medicare and Medicaid patients. I presume that payment cuts from Medicaid disproportionate share payment (mandated by the ACA when the law assumed that states would expand Medicaid coverage) and payment reductions from the pay-for-performance structures instituted by The Centers for Medicare and Medicaid Services (CMS) – namely the Hospital Value-Based Payment Program, Hospital Acquired Infection Reduction Program, and Hospital Readmissions Reduction Program – all negatively impacted North Carolina's tax-exempt hospitals. Nevertheless, it is discouraging to see the glaring difference between the high costs of providing financial assistance that increased over time as opposed to the little amount invested in community health programs that declined over time (Figure 3).

The disparity in the amount and growth of spending between the two categories of

community benefit in favor of patient care financial assistance over community health programs suggests six things. First, North Carolina's tax-exempt hospitals continue to function as safety-net for the poor and the uninsured than active partners in disease prevention and community health programs (Singh et al., 2016). Second, tax-exempt hospitals are more inclined to provide free or discounted medical care to patients with financial difficulties than to improve the health of their communities because providing medical care has been their core competency (Singh et al., 2015). Third, their experience of incurring high unreimbursed costs for providing financial assistance to the indigents and the Medicaid/Medicare patients may have given the non-profit hospitals a sense of sufficient legal justification for their tax-exempt status, which makes performing CHNA or investing in community health programs as a legal requirement moot. A quote from NCHA guidelines succinctly summarizes the perceived justification:

> "*No hospital or health system could survive financially if its only patients were ones with government payers. Governments recognize this and expect hospitals to subsidize the cost difference. The financing of this unpaid government debt is a large part of community benefits.*" (NCHA, 2014))

Fourth, the tax-exempt hospitals' provision of community benefit is incongruent to the health needs of communities. Even if their offering of financial assistance, a large part of it they considered "unpaid government debt," provides a crucial safety-net for the poor, they do not contribute to promote preventive care and improve population health, which are the key priorities of the tax policy and the ACA (Leider et al., 2016; Singh et al., 2015; Young et al., 2013). Fifth, the performance of IRS-mandated CHNA failed to bring about a shift in priorities in community benefit spending – away from the traditional provision of financial assistance and towards population health-focused programs. Sixth, all of the above ideas considered, the conduct of IRS-mandated CHNA

may have become more likely a mere exercise of compliance to preserve a privileged tax status than a means for improving the health of communities (Crossley, 2016).

Cross-Sectional Description

Among the variables I examined that possibly explain the variation in community health programs expenditures among North Carolina's tax-exempt hospitals, only the *case mix index* emerged as significant (Table 11). The rest, notably the community characteristic *access to care*, was neither associated with community health programs spending nor financial assistance expenditures. The significant association between *case mix index* (hospital indicator for disease severity) and community health programs spending suggests that tax-exempt hospitals with substantial volume of patients that require complex clinical care invested more in community health programs. Their exposure to and experience of treating a large volume of patients with chronic diseases may have made them realized the importance of and the need for instituting disease prevention programs to avoid costly avoidable hospitalizations. However, this study does not claim certainty of the causal connection between case mix index and investment in community health programs since it uses a correlational research methodology. The lack of connection between access to care and community benefit spending suggests that some communities with already improved or better access to care may have been the ones that received higher level of community benefit funding than communities with poor access to care. This finding is consistent with the results of previous studies that also observed the same lack of correspondence between community characteristics and provision of community benefit (Singh et al., 2015; Young et al., 2013).

In the case of community health programs spending as a percentage of operating

expenses, only the *bedsize* variable emerged as significant (Table 12). This study found

that tax-exempt hospitals with ≥ 300 beds expended more cash as a percentage of

operating expenses in community health programs than hospitals with < 300 beds.

Similarly, only the *bedsize* variable emerged as having a significant association with

financial assistance expenditures (Table 11). These findings suggest that tax-exempt

hospitals that possess significant resources provided a higher level of community benefit

spending. The findings are consistent with the results of previous studies (Alexander,

Young, Weiner, & Hearld, 2009; Bazzoli et al., 2010; Ferdinand, Epane, & Menachemi,

2014).

The pioneering study by Young et al. (2013) that used the 2009 IRS tax filings

revealed that tax-exempt hospitals on average spent an amount equivalent to 7.5% of

their operating expenses on community benefit. They also found that around 85% of

total community benefit was expended on providing patient care financial assistance with

only about 5% of the overall community benefit spent on community health improvement

programs. Young et al.'s study made use of community benefit spending data before the

IRS mandated the conduct of CHNA as a legal requirement for maintaining tax-exempt

status. This study used the community benefit spending data several years after the

implementation of IRS Code Section 501(r) and found that hospitals still do exhibit a

similar spending pattern as observed in Young et al.'s study. That is, North Carolina's

tax-exempt hospitals continue to spend heavily on financial assistance and less on

community health programs (Table 7, Figure 5). Therefore, regardless of the level of

variation in community benefit spending among North Carolina's tax-exempt hospitals,

two things are clear. First, the hospitals' community benefit spending pattern has

remained largely directed towards financial assistance than population health-focused programs. Second, there is lack of correspondence between access to care community characteristic or need and what the tax-exempt hospitals provided as community benefit.

Controversy in Measuring and Reporting of Community Benefit

The addition of unreimbursed cost for providing care to Medicare patients as a community benefit has been controversial because excluding this item as a community benefit will cause significant reduction in the amount of total community benefit being reported (Bazzoli et al., 2010; GAO, 2008; Hellinger, 2009). The controversy can be traced back to the lack of standard definition as to what is community benefit and what items should be legally considered to fall under it (Bazzoli et al., 2010; Burke et al., 2014). The IRS does not include the unreimbursed Medicare costs as a community benefit on Part I of IRS Form 990 Schedule H, indicating that the agency does not consider the mentioned item as a type of financial assistance or a community benefit for that matter. However, the item is reported separately on Part III of IRS Form 990 Schedule H together with bad debts expenses. This manner of reporting gives the impression that the agency has given tax-exempt hospitals some latitude as to what activities count as a community benefit (Bazzoli et al., 2010). Consequently, North Carolina's tax-exempt hospitals do not report the same items and costs of community benefit as shown in Part I of IRS Form 990 Schedule H when they publish their community benefit reports. Instead, their measurement and reporting are based on the NCHA guidelines, which consider the unreimbursed cost for providing care to Medicare patients as one of the items under financial assistance (NCHA, 2014). Therefore, their published total community benefit costs are significantly higher compared to the total

community benefit costs found in Part I of IRS Form 990 Schedule H.

Policy Recommendations

Since the provision of community benefit is the legal standard from which non-profit hospitals are granted tax-exempt status, the IRS should articulate an explicit stance regarding what items should be rightfully and legally counted toward community benefit. The IRS should issue clear pronouncements on how the items should be measured and reported to the public to avoid confusion in determining the *true* cost of community benefit. In the same manner that for-profit hospitals are held accountable by the IRS for measuring, reporting, and paying the correct amount of taxes so does the private, non-profit hospitals with privileged tax status should be held accountable by the IRS for measuring and reporting the *true* cost of community benefit. The public deserves to be supplied with valid and reliable community benefit reports. It would be helpful also if the accountancy profession develops a set of generally accepted accounting principles regarding the measurement, reporting, and auditing of community benefit.

If non-profit hospitals can continue to justify their tax-exempt status by self-reporting high volume of "unreimbursed costs" from "unpaid government debt" as community benefit that are measured using internal cost-to-charge ratio and not be held accountable for reporting the *real* cost of community benefit to the public, then the investment in community health programs may remain stagnant or anemic. Directing community benefit on population health is a step in the right direction and conceptually more sensible than focusing it on individual welfare; charity care given to individual patient does not necessarily translate into community benefit (Berg, 2009). It is about time for the policymakers, healthcare systems organizations, and the community to work

together and bring the word "community" back to the concept of community benefit.

Furthermore, I recommend that the current CMS prospective payment algorithm for paying inpatient hospitalizations be modified by the addition of a premium factor for *Costs of Providing Population Health Programs*. It will function like the *Indirect Costs of Graduate Medical Education* (IME) payment where teaching hospitals are reimbursed more than non-teaching hospitals. The addition of *Costs of Providing Population Health Programs* to the algorithm will afford additional payment to hospitals that invest more in preventive care and population health programs. The addition of this payment premium factor will motivate hospitals to spend and engage more in disease prevention programs that will hopefully translate into better community health outcomes leading to a substantial decrease in the nation's cost of healthcare.

Study Limitations and Call for Future Studies

Since this study is limited to analyzing quantitative data before and after certain time periods, I encourage studies that examine how the tax-exempt hospitals addressed the prioritized health needs of their communities. Analyzing qualitative data on how the tax-exempt hospitals of North Carolina provide programs, services, and activities to cater to the identified health needs of their communities may offer another layer of insights as to why the investment in community health programs did not grow over time. Additionally, I recommend for the conduct of studies that examine the magnitude of differences in how community benefit items are categorized, measured, and published based on hospital associations' guidelines vis-à-vis the items measured and reported on the IRS Form 990 Schedule H. Lastly, the study is bounded within the context of tax-exempt hospitals that operate in North Carolina. Future studies with expanded scope and

coverage offer more insights to the study of community benefit after the implementation of IRS Code Section 501(r).

1.4 Conclusion

Performing CHNA did not increase North Carolina's tax-exempt hospitals' level of expenditures for promoting preventive care and improving population health. Instead, the aggregate investment in community health programs declined despite the conduct of CHNA, particularly those relating to community outreach programs and community building activities, which is a troubling development. The community benefit spending pattern of North Carolina's tax-exempt hospitals has remained largely directed towards providing patient care financial assistance with little amount invested in providing disease prevention and community health improvement programs. There is lack of correspondence between the access to care community needs and what the tax-exempt hospitals provided as community benefit. The performance of IRS-mandated CHNA failed to bring about a shift in priorities in community benefit spending – away from the traditional provision of financial assistance and towards population focused programs. The conduct of IRS-mandated CHNA may have become more likely a demonstration of compliance to preserve a privileged tax status than a tool for improving population health.

REFERENCES

Abbott, A. L. (2011). Community Benefits and Health Reform: Creating New Links for Public Health and Not-for-Profit Hospitals. *Journal of Public Health Management and Practice, 17*(6), 524-529. doi:10.1097/PHH.0b013e31822da124

Alexander, J. A., Young, G. J., Weiner, B. J., & Hearld, L. R. (2009). How do system-affiliated hospitals fare in providing community benefit? *Inquiry: A Journal of Medical Care Organization, Provision and Financing, 46*(1), 72-91. doi:10.5034/inquiryjrnl_46.01.72

Andersen, R. M. (1995). Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? *Journal of Health and Social Behavior, 36*(1), 1-10. doi:10.2307/2137284

Bazzoli, G. J., Clement, J. P., & Hsieh, H.-M. (2010). Community Benefit Activities of Private, Nonprofit Hospitals. *Journal of Health Politics, Policy and Law, 35*(6), 999-1026. doi:10.1215/03616878-2010-036

Berg, J. W. (2009). *Population Health and Tax-Exempt Hospitals: Putting the Community Back into the 'Community Benefit' Standard* (ID 1243963). Retrieved from Rochester, NY: https://papers.ssrn.com/abstract=1243963

Burke, J. G., Truong, S., Albert, S., Steenrod, J., Gibert, C., Folb, B., . . . James, E. (2014). What Can Be Learned from the Types of Community Benefit Programs that Hospitals Already Have in Place? *Journal of Health Care for the Poor and Underserved, 25*(1), 165-193. doi:10.1353/hpu.2014.0058

Crossley, M. (2016). Health and Taxes: Hospitals, Community Health and the IRS. *Yale Journal of Health Policy, Law, and Ethics, 16*(1), 51-110.

Ferdinand, A. O., Epane, J. P., & Menachemi, N. (2014). Community benefits provided by religious, other nonprofit, and for-profit hospitals: a longitudinal analysis 2000-2009. *Health care management review, 39*(2), 145-153. doi:10.1097/HMR.0b013e3182993b52

GAO. (2008). *Nonprofit Hospitals; Variation in Standards and Guidance Limits: Comparison of How Hospitals Meet Community Benefit Requirements* (GAO-08-880 ed.): DIANE Publishing.

Hellinger, F. J. (2009). Tax-exempt hospitals and community benefits: a review of state reporting requirements. *J Health Polit Policy Law, 34*(1), 37-61. doi:10.1215/03616878-2008-991

IRS. (2016). New Requirements for 501(c)(3) Hospitals Under the Affordable Care Act. *IRS*.

Leider, J. P., Tung, G. J., Lindrooth, R. C., Johnson, E. K., Hardy, R., & Castrucci, B. C. (2016). Establishing a Baseline: Community Benefit Spending by Not-for-Profit Hospitals Prior to Implementation of the Affordable Care Act. *Journal of public health management and practice: JPHMP*. doi:10.1097/PHH.0000000000000493

Mays, G. P., & Smith, S. A. (2011). Evidence Links Increases In Public Health Spending To Declines In Preventable Deaths. *Health Affairs, 30*(8), 1585-1593. doi:10.1377/hlthaff.2011.0196

NCHA. (2014, 2017). NCHA Hospital Community Benefits Report. *North Carolina Hospital Association.* Retrieved from https://www.ncha.org/healthcare-topics/community-benefit

Nelson, G. D., Tan, B., & Mueller, C. H. (2015). The Hilltop Institute: Hospital Community Benefit Program: Community Benefit Laws. *The Hilltop Institute*.

Nikpay, S. S., & Ayanian, J. Z. (2015). Hospital Charity Care--Effects of New Community-Benefit Requirements. *The New England Journal of Medicine, 373*(18), 1687-1690. doi:10.1056/NEJMp1508605

Patient Protection and Affordable Care Act, Pub. L. No. 111–148: H.R.3590 - 111th Congress (2009-2010). (2010).

Pennel, C. L., McLeroy, K. R., Burdine, J. N., & Matarrita-Cascante, D. (2015). Nonprofit hospitals' approach to community health needs assessment. *American Journal of Public Health, 105*(3), e103-113. doi:10.2105/AJPH.2014.302286

Principe, K., Adams, E. K., Maynard, J., & Becker, E. R. (2012). The Impact of the Individual Mandate and Internal Revenue Service Form 990 Schedule H on Community Benefits From Nonprofit Hospitals. *American Journal of Public Health, 102*(2), 229. doi:10.2105/AJPH.2011.300339

Rauscher, S., & Vyzas, M. (2012). Assessing the validity of self-reported community benefit expenditures: evidence from not-for-profit hospitals in California. *Journal of public health management and practice: JPHMP, 18*(4), 346-354. doi:10.1097/PHH.0b013e3182470578

Rosenbaum, S., Kindig, D. A., Bao, J., Byrnes, M. K., & O'Laughlin, C. (2015). The Value Of The Nonprofit Hospital Tax Exemption Was $24.6 Billion In 2011. *Health Aff (Millwood), 34*(7), 1225-1233. doi:10.1377/hlthaff.2014.1424

Rubin, D. B., Singh, S. R., & Jacobson, P. D. (2013). Evaluating Hospitals' Provision of Community Benefit: An Argument for an Outcome-Based Approach to Nonprofit Hospital Tax Exemption. *American Journal of Public Health, 103*(4), 612-616. doi:10.2105/AJPH.2012.301048

Rubin, D. B., Singh, S. R., & Young, G. J. (2015). Tax-Exempt Hospitals and Community Benefit: New Directions in Policy and Practice. *http://dx.doi.org.librarylink.uncc.edu/10.1146/annurev-publhealth-031914-122357*.

Singh, S. R., Bakken, E., Kindig, D. A., & Young, G. J. (2016). Hospital Community Benefit in the Context of the Larger Public Health System: A State-Level Analysis of Hospital and Governmental Public Health Spending Across the United States. *Journal of Public Health Management and Practice, 22*(2), 164-174. doi:10.1097/PHH.0000000000000253

Singh, S. R., Young, G. J., Daniel Lee, S.-Y., Song, P. H., & Alexander, J. A. (2015). Analysis of Hospital Community Benefit Expenditures' Alignment With Community Health Needs: Evidence From a National Investigation of Tax-Exempt Hospitals. *American Journal of Public Health, 105*(5), 914-921. doi:10.2105/AJPH.2014.302436

Trust for America's, H. (2017). A Funding Crisis for Public Health and Safety: State-by-State Public Health Funding and Key Health Facts, 2017 - Trust for America's Health. *Trust for America's Health*.

Wade, K., & Matthews, G. (2014). Report on Review of North Carolina Hospitals' Community Health Needs Assessments and Implementation Strategies. *The Network for Public Health Law*.

Young, G. J., Chou, C.-H., Alexander, J., Lee, S.-Y. D., & Raver, E. (2013). Provision of Community Benefits by Tax-Exempt U.S. Hospitals. *New England Journal of Medicine, 368*(16), 1519-1527. doi:10.1056/NEJMsa1210239

APPENDIX A: SAS CODES FOR COMMUNITY BENEFIT SPENDING DATA

```
*Import Excel dataset from USB drive into SAS and label variables;
PROC IMPORT DATAFILE ='F:\RQ1dataset.xlsx' DBMS=XLSx OUT=RQ1data;
      label affiliation = 'hospital system affiliation (0=independent
1=affiliated)';
      label alos = 'average length of stay';
      label ave_dc = 'average daily census';
      label beds = 'number of hospital beds';
      label beds_cat = '1= equal to or less than 100 2= 101-299 3=
greater than 299';
      label ccr = 'cost-to-charge ratio';
      label clinic_care = 'access to clinical care';
      label cmi = 'case mix index';
      label discharges = 'number of inpatient discharges (all payors)';
      label district = 'NCHA hospital districts classification 1 to 6';
      label facility = 'type of facility (0=critical access 1=short-
term acute care)';
      label hlth_behav = 'community health factor: health behavior';
      label ipps_case = 'number of IPPS claims for the Base MS-DRG';
      label lv = 'low volume hospital (0=no 1=yes)';
      label pat_revenue = 'total patient revenues (inpatient &
outpatient)';
      label patient_days = 'number of patient days (all payors)';
      label phy_env = 'community health factor: physical environment';
      label yr_chna1 = 'year CHNA completed';
      label post_a = 'Then-Year: cost of treating charity care
patients';
      label post_d = 'Then-Year: unreimbursed cost - Medicare
patients';
      label post_g = 'Then-Year: unreimbursed cost - Medicaid
patients';
      label post_j = 'Then-Year: unreimbursed cost - other government
programs';
      label post_m = 'Then-Year: subsidized health services';
      label post_k = 'Then-Year: community health improvement
services';
      label post_l = 'Then-Year: health professions education';
      label post_n = 'Then-Year: research costs';
      label post_o = 'Then-Year: cash and in-kind contributions';
      label post_p = 'Then-Year: community building activities';
      label post_r_tcb = 'Then-Year:total community benefits';
      label post_bad = 'Then-Year: bad debts expenses';
      label post_chp = 'Then-Year: total community health programs';
      label post_fa = 'Then-Year: total financial assistance';
      label post_chp_fa = 'Then-Year: community health program to
financial assistance ratio';
      label pre_a = 'Base-Year: cost of treating charity care
patients';
      label pre_d = 'Base-Year: unreimbursed cost - Medicare patients';
      label pre_g = 'Base-Year: unreimbursed cost - Medicaid patients';
      label pre_j = 'Base-Year: unreimbursed cost - other government
programs';
      label pre_m = 'Base-Year: subsidized health services';
      label pre_k = 'Base-Year: community health improvement services';
```

```
      label pre_l = 'Base-Year: health professions education';
      label pre_n = 'Base-Year: research costs';
      label pre_o = 'Base-Year: cash and in-kind contributions';
      label pre_p = 'Base-Year: community building activities';
      label pre_r_tcb = 'Base-Year: total community benefits';
      label pre_bad = 'Base-Year: bad debts expenses year CHNA
completed';
      label pre_chp = 'Base-Year: total community health programs';
      label pre_fa = 'Base-Year: total financial assistance';
      label pre_chp_fa = 'Base-Year: community health program to
financial assistance ratio';
      label profit_m = 'operating profit margin';
      label roe = 'return on equity';
      label rrc = 'rural referral center (0=no 1=yes';
      label sch = 'sole community hospital (0=no 1=yes)';
      label socio_econ = 'socio-economic factors';
      label teach = 'teaching status (0=nonteaching 1=teaching)';
      label urb_rur = 'location (0=rural 1=urban';
      label percent_a = '% change cost of treating charity care
patients';
      label percent_d = '% change unreimbursed cost - Medicare
patients';
      label percent_g = '% change unreimbursed cost - Medicaid
patients';
      label percent_j = '% change unreimbursed cost - other government
programs';
      label percent_m = '% change subsidized health services';
      label percent_k = '% change community health improvement
services';
      label percent_l = '% change health professions education';
      label percent_n = '% change research costs';
      label percent_o = '% change cash and in-kind contributions';
      label percent_p = '% change community building activities';
      label percent_chp = '% change community health programs';
      label percent_fa = '% change financial assistance';
      label per_tcb = '% change total community benefits ';
      label diff_a = '$ change cost of treating charity care patients';
      label diff_d = '$ change unreimbursed cost - Medicare patients';
      label diff_g = '$ change unreimbursed cost - Medicaid patients';
      label diff_j = '$ change unreimbursed cost - other government
programs';
      label diff_m = '$ change subsidized health services';
      label diff_k = '$ change community health improvement services';
      label diff_l = '$ change health professions education';
      label diff_n = '$ change research costs';
      label diff_o = '$ change cash and in-kind contributions';
      label diff_p = '$ change community building activities';
      label diff_chp = '$ change community health programs';
      label diff_fa = '$ change financial assistance';
      label diff_tcb = '$ change total community benefits ';
      label post_a_opex = 'cost of treating charity care patients as %
of opex';
      label post_d_opex = 'unreimbursed cost - Medicare patients as %
of opex';
      label post_g_opex = 'unreimbursed cost - Medicaid patients as %
of opex';
```

```
      label post_j_opex = 'unreimbursed cost - other government
programs as % of opex';
      label post_m_opex = 'subsidized health services as % of opex';
      label post_k_opex = 'community health improvement services as %
of opex';
      label post_l_opex = 'health professions education as % of opex';
      label post_n_opex = 'research costs as % of opex';
      label post_o_opex = 'cash and in-kind contributions as % of
opex';
      label post_p_opex = 'community building activities as % of opex';
      label post_chp_opex = 'community health programs as % of opex';
      label post_fa_opex = 'financial assistance as % of opex';
      label post_tcb_opex = 'total community benefits as % of opex';
run;


*Generate contents of imported data;
PROC CONTENTS DATA=RQ1data;
      RUN;


*Examine frequency distributions;
PROC FREQ DATA=RQ1data;
      TABLES affiliation urb_rur teach beds_cat district;
      RUN;


*Examine data distribution of % changes in total community benefit
spending;
      PROC UNIVARIATE DATA=RQ1data mu0=0 loccount;
      VAR post_tcb_opex post_fa_opex post_chp_opex;
      HISTOGRAM post_fa_opex post_chp_opex / normal;
      RUN;


*Calculate totals of community benefit spending Base-Year;
proc tabulate data=RQ1data;
      var pre_a pre_d pre_g pre_j pre_m pre_k pre_l pre_n pre_o pre_p
pre_fa pre_chp pre_r_tcb
            pre_chp_fa;
      table pre_a pre_d pre_g pre_j pre_m pre_k pre_l pre_n pre_o pre_p
pre_fa pre_chp pre_r_tcb
            pre_chp_fa;
      run;


*Calculate totals of community spending Then-Year;
proc tabulate data=RQ1data;
      var post_a post_d post_g post_j post_m post_k post_l post_n
post_o post_p post_fa post_chp post_r_tcb
            post_chp_fa;
      table post_a post_d post_g post_j post_m post_k post_l post_n
post_o post_p post_fa post_chp post_r_tcb
            post_chp_fa;
      run;


*==Calculate means, SD, and CLM of differences in spending;
proc means data=RQ1data  mean median std clm;
      var diff_a diff_d diff_g diff_j diff_m diff_k diff_l diff_m
diff_n diff_o diff_p diff_fa diff_chp diff_tcb
            diff_chp_fa;
      run;
```

```sas
proc means data=RQ1data  mean median std clm;
      var post_a post_d post_g post_j post_m post_k post_l post_m
post_n post_o post_p
            post_fa post_chp post_r_tcb;
      run;


*Paired t-test upper tail;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_a*pre_a;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_d*pre_d;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_g*pre_g;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_j*pre_j;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_m*pre_m;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_fa*pre_fa;
    run;
proc ttest data=RQ1data  alpha=0.05 h0=0 sides=U;
      paired post_k*pre_k;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_l*pre_l;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_n*pre_n;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_o*pre_o;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_p*pre_p;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_chp*pre_chp;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_r_tcb*pre_r_tcb;
      run;


*=====Perform paired t-test CHP-to-FA ratio post vs. pre =========;
proc means data=RQ1data mean std clm;
      var post_chp_fa pre_chp_fa;
      run;
proc ttest data=RQ1data alpha=0.05 h0=0 sides=U;
      paired post_chp_fa*pre_chp_fa;
      run;
```

```
*==Calculate means, SD, and CLM of % change in community benefit
spending===;
proc means data=RQ1data mean std clm;
      var percent_a percent_d percent_g percent_j percent_m percent_k
percent_l percent_n percent_o percent_p percent_fa percent_chp per_tcb;
      run;


*====Calculate means of community benefits as percentage of operating
expenses=====;
proc means data=RQ1data mean std clm;
      var post_a_opex post_d_opex post_g_opex post_j_opex post_m_opex
post_fa_opex post_k_opex post_l_opex post_n_opex post_o_opex
post_p_opex post_chp_opex post_tcb_opex;
      run;


*=====Calculate totals of community benefit spending by type ======;
proc tabulate data=RQ1data;
      Title 'Total Community Benefit Spendings 2 Years After CHNA by
Type';
      var post_a post_d post_g post_j post_m post_n post_o post_p
post_r_tcb;
      table post_a post_d post_g post_j post_m post_n post_o post_p
post_r_tcb;
      run;


      *one-way ANOVA;
proc glm data=RQ1data;
      class affiliation urb_rur teach beds_cat district;
   model post_r_tcb = district;
      run;


*MULTIVARIATE REGRESSION ANALYSIS;
proc glm data = RQ1data;
  class affiliation urb_rur teach beds_cat district;
   model post_fa post_chp = affiliation urb_rur teach beds_cat
      cmi profit_m district clinic_care hlth_behav socio_econ phy_env /
solution ss3;
  manova h=_ALL_;
run;
quit;


*====Perform regression analysis using PROC GLM FA ==============;
proc glm data=RQ1data;
      class affiliation urb_rur teach beds_cat district;
   model post_fa = affiliation urb_rur teach beds_cat cmi profit_m
district clinic_care hlth_behav socio_econ phy_env  /ss3;
      run;
proc reg data=RQ1data;
       model post_fa post_chp = affiliation urb_rur teach beds_cat
            cmi profit_m clinic_care district / stb clb vif;
      run;
proc corr data=RQ1data plots=matrix;
      var cmi profit_m clinic_care phy_env ;
      run;
```

```
*Calculating standardized beta coefficients;
proc glmselect data=RQ1data;
     class affiliation urb_rur teach beds_cat district;
   model post_fa = affiliation urb_rur teach beds_cat
     cmi profit_m clinic_care district/selection=none stb showpvalues;
     run;


*====Perform regression analysis using PROC GLM chp ============;
proc glm data=RQ1data;
     class affiliation urb_rur teach beds_cat ;
     model post_chp = affiliation urb_rur teach beds_cat
                cmi ccr socio_econ phy_env /ss3;
     run;
proc reg data=RQ1data;
     model post_chp = affiliation urb_rur teach
                        mi ccr socio_econ phy_env / stb clb vif;
     run;
proc glmselect data=RQ1data;
     class affiliation urb_rur teach beds_cat ;
     model post_chp = affiliation urb_rur teach beds_cat
                              cmi ccr socio_econ phy_env
/selection=none stb showpvalues;
     run;


*PROC MEANS by hospital characteristics;
proc sort data=RQ1data;
     by district;
     run;
proc means data=RQ1data mean median std clm ;
     var post_chp;
     by district;
     run;
*proc ANOVA by hospital characteristics;
proc glm data=RQ1data;
     class affiliation urb_rur teach beds_cat district;
   model post_chp = district;
     run;
proc corr data=RQ1data plots=matrix;
     var pre_a post_a clinic_care;
     run;
```

ARTICLE 2

IMPLEMENTATION STRATEGIES OF NORTH CAROLINA'S TAX-EXEMPT
HOSPITALS TO ADDRESS THE PRIORITIZED HEALTH NEEDS OF
THEIR COMMUNITIES: A QUALITATIVE INQUIRY

Abstract

Objective

The Internal Revenue Service (IRS) requires tax-exempt hospitals to conduct Community

Health Needs Assessments (CHNA) every three years, formulate implementation

strategies, and report yearly to the IRS and the public the progress of their work. The

purpose of this study was to understand how the North Carolina's (NC) tax-exempt

hospitals invest in community health programs in the context of a national IRS reporting

requirement through analysis of tax-exempt hospitals' community benefit reports.

Methods

This qualitative exploratory study uses a descriptive case study approach. I selected 14

NC tax-exempt health systems using purposive stratified sampling technique from all 6

NC hospital districts. Collectively, the 14 study health systems cover 39 hospitals – 20

rural hospitals and 19 urban hospitals, representing 56% of all NC private, non-profit

hospitals. I gathered the published 2015/2016 community benefit reports of the study

hospitals that are accessible online from their websites to the NVivo software package for

analysis. I analyzed the reports using qualitative content analysis to determine emerging

themes or categories.

Results

Community benefit reports revealed rich descriptions on how the study hospitals

addressed the health needs of their communities. Four themes or categories of

implementation strategies emerged in the analysis: (1) provide preventive care services;

(2) improve population health; (3) increase access to care; and (4) address socio-

economic determinants of health. Increasing access to care encompasses all the other

community benefit implementation strategies while preventing chronic diseases is the

prevalent implementation strategy, adopted by 13 out of 14 study health systems. Mental

health, maternal and infant care, and care for aging population comprise the population

health needs category.

Conclusion

When analyzed from the Socio-Ecological Model perspective, the implementation

strategies of NC tax-exempt hospitals to address the complex health needs of their

communities appear to: (a) focus on individuals rather than communities or populations;

(b) prioritize tertiary or secondary prevention efforts than primary; (c) offer "Band-Aid"

remedies where broad, systemic solutions are needed; (d) risk widen health disparities

instead of reducing it; and (e) reflect the US access to care problem. If the tax-exempt

hospitals intend to meaningfully contribute to the nation's access to care problem, then

they need to prioritize also the socio-economic-related health needs of their communities

and expand their community benefit programs and services to include systemic, broad

solutions that tackle health disparity such as the delivery of more community building

activities. When viewed from SEM, the offering of community outreach programs that

are more directed towards addressing individual factors and reliant on self-serving,

"Band-Aid" solutions contribute little in addressing the access to care problem in the US and the health needs of communities. Considering the current US political milieu, impending changes to the ACA, planned budget cuts for public health programs, and revisions to the IRS tax code, it is vital that hospitals and policymakers recognize the healthcare needs and challenges faced by community members and design community benefit programs and policies that support their access to care.

2.0 Introduction

Section 9007 of the Affordable Care Act (ACA) imposed a new mandate on tax-exempt hospitals by the addition of Section 501(r) to the Internal Revenue Code. Effective after March 23, 2012, the Internal Revenue Service (IRS) requires tax-exempt hospitals to conduct Community Health Needs Assessments (CHNA) every three years, formulate strategies to address the identified community health needs, and communicate to the public the progress of their work through publication of community benefit reports. The penalty for non-compliance with the law is the loss of tax-exempt status (Bazzoli et al., 2010; Crossley, 2016; Rubin et al., 2015).

The ACA had two essential priorities when it added Section 501(r) to the Internal Revenue Code. They were to promote preventive care and improve population health (Leider et al., 2016; Singh et al., 2016; Singh et al., 2015; Young et al., 2013). Public health practitioners welcomed the tax policy with optimism. After all, CHNA is a public health tool that is designed to improve population health. Many believed that this tax policy would enable public health agencies and healthcare systems to converge and deliver an ample supply of preventive care services to address a variety of population health needs, including diabetes, obesity, cancer, and heart disease (Crossley, 2016;

Rubin et al., 2015).

The United States (U.S.) spent approximately 5% of its total health care expenditures on public health programs even though more than 80% of healthcare spending was attributable to preventable chronic diseases (Mays & Smith, 2011; TFAH, 2017). The US government also cut the funding earmarked for state and local public health programs by $580 million because of the sluggish economy and its plan to increase expenditure on defense. As a result, many communities in the United States have insufficient funding to support public health programs while the nation's healthcare costs continue to skyrocket (TFAH, 2017, 2018).

Historically, U.S. tax-exempt hospitals spent, on average, 85% of the total cost of community benefit provision on patient care financial assistance. Half of which was used to subsidize the cost of care for Medicaid patients. The investment of just around 5% of the entire community benefit resources in community health programs suggests that the provision of community benefit is not aligned to the health needs of communities because even if the offering of financial assistance provides a safety-net for the poor, it neither promotes preventive care nor improves population health (Leider et al., 2016; Singh et al., 2015; Young et al., 2013). North Carolina's (NC) tax-exempt hospitals exhibited the same spending pattern (Wade & Matthews, 2014).

Policymakers thought that tax-exempt hospitals could increase the supply of needed disease prevention and community health services if the hospitals were to transfer even a small portion of their community benefit spending from financial assistance to community health programs (Crossley, 2016; Leider et al., 2016; Pennel et al., 2015; Rubin et al., 2015; Singh et al., 2016). The IRS has taken favorable steps to align the

provision of community benefit to the health needs of communities by requiring tax-exempt hospitals to conduct CHNAs (Bazzoli et al., 2010; Crossley, 2016; Nikpay & Ayanian, 2015; Pennel et al., 2015; Principe et al., 2012; Rubin et al., 2015).

Purpose and Research Question

In the five years since the IRS CHNA requirement took effect, scant research has assessed whether tax-exempt hospitals addressed the community health needs identified by their CHNAs. The purpose of this qualitative exploratory study is to understand how NC tax-exempt hospitals invest in community health programs in the context of a national IRS reporting requirement through analysis of the hospitals' published community benefit reports. Additionally, I sought to understand the hospitals' priorities for different types of community benefit programs. To clarify community benefit, I explored a better understanding of what hospitals are doing and how they prioritize community benefit programs. The following questions guided the study:

1. What community benefit programs are reported by NC tax-exempt hospitals to address the identified health needs of their communities?

2. How do tax-exempt hospitals in NC prioritize community benefit programs?

Theoretical Framework: The Socio-Ecological Model

The Socio-Ecological Model (SEM) guides the analysis of the findings of this qualitative exploratory research. SEM posits that an individual's health is determined not only by the individual's personal characteristics (genetics, health behavior, beliefs, income, education) but also by the individual's social and ecological environment (family, community, work, society, politics, policy) (Golden & Earp, 2012; McLeroy, Steckler, Bibeau, & Glanz, 1988; Stokols, 1996). SEM views the individual and socio-

ecologic factors as "nested in a manner similar to Russian dolls, and bi-directional within and between levels" (Daley et al., 2011; McLeroy et al., 1988). The socio-ecological factors have cumulative effect on an individual's health (Golden & Earp, 2012; Stokols, 1996). Thus, SEM assumes that a single-level factor alone cannot explain an individual's health behavior or outcome. SEM suggests that disease prevention and health improvement programs are effective when they are multi-dimensional rather than unidimensional (Golden & Earp, 2012) and emphasizes incorporating solutions to socio-ecological factors that shape disease patterns to the overall plan to improve population health (Fielding, Teutsch, & Breslow, 2010). Figure 6 shows the SEM depicting a multi-level approach of addressing a population health problem.
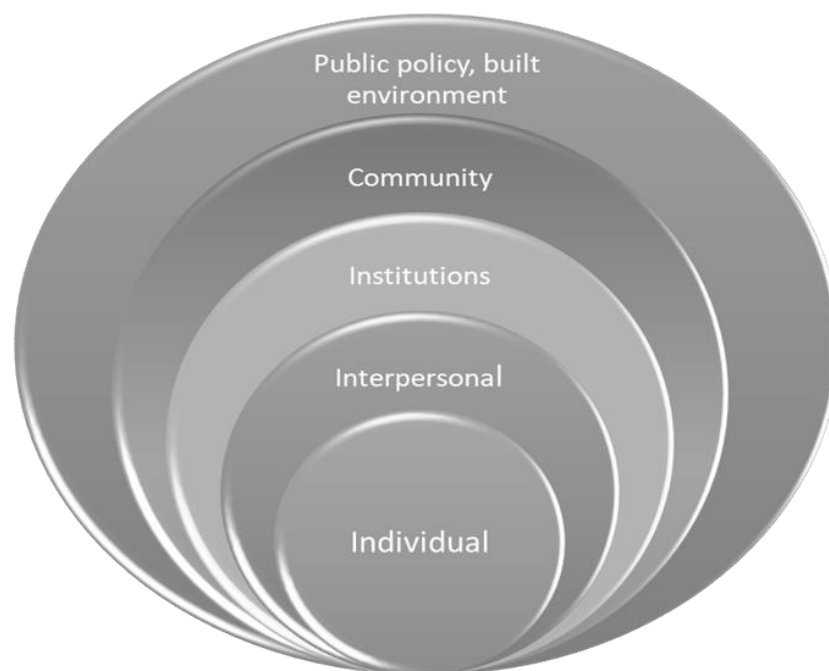
Adapted from McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Educ Q* 1988, 15:351–377.

Figure 6. The Socio-Ecological Model

Examining NC tax-exempt hospitals' implementation strategies (community benefit programs) to address the health needs of their communities with a SEM perspective is appropriate because community health needs and community benefit programs operate across and within the various aspects of SEM (Daley et al., 2011). For instance, the community health need for obesity stems from *individual* factors like genetics and lifestyle practices while *interpersonal and organizational* factors (family, school, work, health agencies) affect the individual's health behavior practices. Additionally, *community* factors (access to healthcare services, affordability of healthy food, availability of recreational facilities) also influence health behavior and lifestyle practices. Broad health *policy* related to sale of food (packaging, chemicals, nutritional contents) impact the individual's health as well (Ruderman, 2013). This qualitative exploratory research used SEM in discussing the effectiveness of NC tax-exempt hospitals' implementation strategies to address the prioritized health needs of their communities.

Levels of Prevention

In tandem with the SEM perspective, this study also examined the disease prevention levels where the study hospitals' focused interventions to address the health needs of their communities. According to Leavell and Clark (1953), there are three levels of disease prevention (primary, secondary, tertiary). *Primary* prevention strategies avoid the development of disease or being infected by a pathogen. Primary prevention strategies are mainly preventive or promotion measures such as wellness programs, health information campaigns, improvement in the physical environment, vaccinations, and health policy. *Secondary* prevention strategies aim to diagnose and treat a disease

during its early stages, before it progresses into a debilitating condition. Secondary

prevention measures include health screenings, health education on managing a disease,

disease monitoring, and clinical follow-ups. *Tertiary* prevention strategies are treatments

to lessen the harmful effects of a prevailing disease. Tertiary prevention measures,

typically referred to as clinical medicine, are intended to restore function and reduce

disease-related complications (Leavell & Clark, 1953; Sosa-Estani, Colantonio, &

Segura, 2012). The three levels of prevention (primary, secondary, tertiary) function

throughout the various levels of SEM.

2.1 Methods

This qualitative exploratory study uses a descriptive case study approach to

understand community benefit prioritization among tax-exempt hospitals in NC. I applied

document review processes to explore reports of community benefit programs and to

obtain a broad range of hospital perspectives. I designed the document review, conducted

between December 2017 and March 2018, to collect and analyze the community benefit

reports for rural and urban hospitals in all six North Carolina hospital districts. I selected

14 NC health systems using purposive stratified sampling based on hospital district

location (Figure 7). I included health systems for document review if they were private,

non-profit organizations and they posted completed community benefit reports on the

organization's public website. I excluded health systems (n=2) if they did not make their

community benefit reports available on their websites.

Ethical Considerations

This study was approved by the University of North Carolina at Charlotte

Institutional Review Board.

Sample and Data Sources

I identified NC private, non-profit hospitals using the roster of hospitals from NCHA directory. I then identified the web location of published reports and obtained and compiled the 2015/2016 community benefits reports of selected NC hospitals. Recognizing that hospitals comprise different hospital systems, and hospital system characteristics directly relate to community benefit program spending (Alexander et al., 2009; Bazzoli et al., 2010; Ferdinand et al., 2014), I categorized hospitals within health systems (n=14) to form the cases for this analysis. Collectively, the 14 study health systems encompass 39 hospitals – 20 rural hospitals and 19 urban hospitals, representing 56% of all NC private, non-profit hospitals. Table 13 shows the characteristics of the 39 hospitals included in the 14 study health systems.
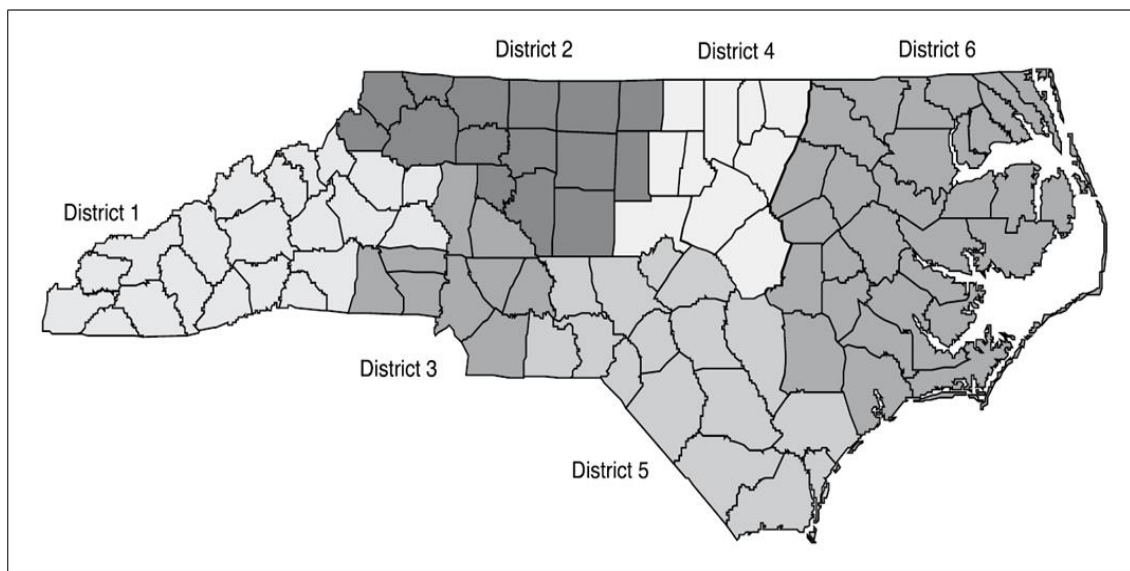
Source: North Carolina Hospital Association

Figure 7. Hospital Districts Based on NCHA Classification

Table 13. *Characteristics of Private, Non-Profit Hospitals in North Carolina*

Characteristic	All Private, Non-Profit NC Hospitals N = 70	NC Hospitals Covered by the Study N = 39
	Percent	
System affiliation		
affiliated	75.7	82.1
independent	24.3	17.9
Location		
rural	54.3	51.3
urban	45.7	48.7
Teaching status		
non-teaching	70.0	59.0
teaching	30.0	41.0
Bedsize		
≤ 100	48.6	35.9
101 - 299	30.0	35.9
≥ 300	21.4	28.2
Hospital district		
district 1	17.1	17.9
district 2	28.6	20.5
district 3	10.0	15.4
district 4	7.1	10.3
district 5	22.9	12.8
district 6	14.3	23.1

Data abstraction and analysis

I uploaded the full text versions of 2015/2016 community benefit reports of the selected hospitals to NVivo software package for analysis. I abstracted data from the documents using a standardized template. I pilot-tested the data abstraction tool, using it to review a community benefit report from one hospital selected at random.

2.2 Results

Figure 8 shows the prioritized community health needs and the list of codes depicting the various community benefit programs strategies the study health systems adopted to address each need.
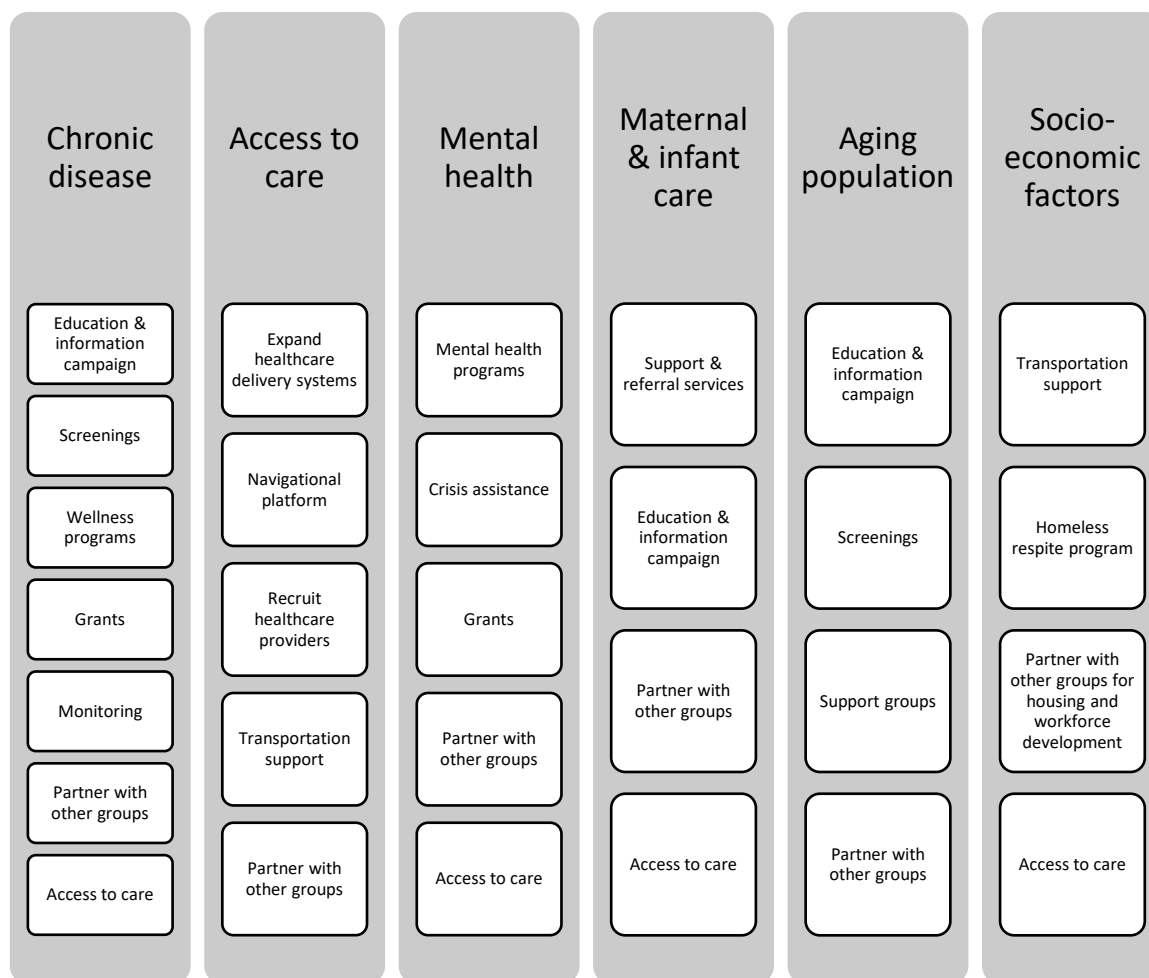

Chronic disease	Access to care	Mental health	Maternal & infant care	Aging population	Socio-economic factors
Education & information campaign	Expand healthcare delivery systems	Mental health programs	Support & referral services	Education & information campaign	Transportation support
Screenings	Navigational platform	Crisis assistance	Education & information campaign	Screenings	Homeless respite program
Wellness programs	Recruit healthcare providers	Grants	Partner with other groups	Support groups	Partner with other groups for housing and workforce development
Grants	Transportation support	Partner with other groups	Access to care	Partner with other groups	Access to care
Monitoring	Partner with other groups	Access to care			
Partner with other groups					
Access to care					

Figure 8. Prioritized Community Health Needs and Implementation Strategies

I determined that the study health systems' community benefit program implementation strategies fell into four broad themes: (1) provide preventive care services; (2) improve population health; (3) increase access to care; and (4) address socio-economic

factors. While the four categories appear to be distinct from one another, the reality is that

they are interconnected. Figure 9 depicts the four categories of implementation strategies and

highlights addressing access to care need as the common thread that connects all the other

implementation strategies together.
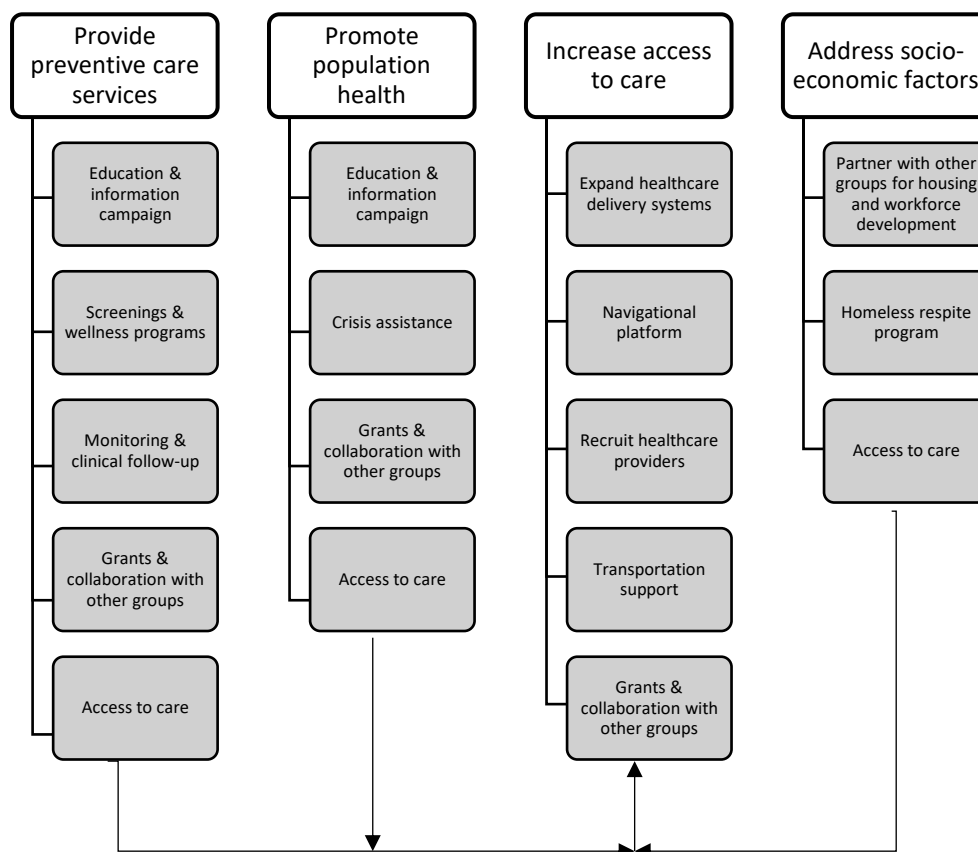
Figure 9. Categories of Implementation Strategies

Provide preventive care services

Preventing chronic disease was the prevalent community health need prioritized by 13

out of 14 study health systems. The study health systems' implementation strategies in

preventing chronic diseases and promoting healthy living focused on: (a) delivering education

and information campaign; (b) conducting screenings and wellness programs; (c) monitoring

of at-risk patients; (d) providing grants and collaborating with other groups; and (e) increasing

access to healthcare services.

Providing health education classes and launching health information campaign

emerged as the principal strategies in addressing the chronic disease health need of

communities. Moreover, most health education classes focused on managing diabetes. A

study health system (name changed to Hospital 1 and the county where it is located changed

to X County) emphasized the importance of educating patients about this debilitating chronic

disease:

> *Staff of the clinic also provide monthly diabetes education classes at Hospital
> 1. The free classes are designed to help diabetics manage their chronic
> condition. Uncontrolled diabetes can lead to foot and skin problems,
> amputations, stroke and death… An important factor in managing diabetes is
> diabetes education, of which there exists a significant resource gap in X
> County and surrounding communities.* (H1)

Sending a message of urgency in addressing diabetes, Hospital 2 offered day and night

health education classes to diabetic patients and provided healthcare workers from different

disciplines to conduct individualized and group diabetes education sessions:

> *The Diabetes Education Program at Hospital 2 … provides group classes and
> individual diabetes education sessions and self-management through dietician
> nutritional counseling. Education is provided by a multidisciplinary staff
> including a certified diabetes educator nurse, certified diabetes educator
> dietitian, podiatrists, exercise physiologists and pharmacists. Participants are
> offered both day and night options for classes.* (H2)

Aside from providing community benefit programs and activities within the premises

of the hospitals, the study health systems also addressed chronic diseases by delivering

activities outside the walls of the hospitals, reaching out to various locations. These

community outreach activities offered a combination of screening services, disease

monitoring, and health education sessions. Hospital 4's community outreach activities

described below exemplifies such type of a multi-faceted program.

Hospital 4's Wellness on Wheels (WOW) mobile unit, in cooperation with multiple community partners, brought free health screenings to more than 150 locations and thousands of patients. In particular, WOW's 35 special events reached over 1,000 low-income, medically underserved people in Y County and parts of Z County. Screenings included cholesterol, glucose, HTN, BMI, bone density, EKG and PSA (prostate). WOW also provided free community health education programs. (H4)

The study health systems also partnered with other local organizations to offer wellness programs related to addressing weight management and healthy living. For instance, Hospital 3 partnered with local schools in implementing a wellness program designed for kids:

To help curtail habits of physical inactivity and obesity early on, Hospital 3 took an innovative approach to engaging area youth. It partnered with XYZ Schools to implement a motivating eight-week, health-and-wellness program for third-graders called Fit for Motion. Hospital 3 health team partnered with the school's physical education teachers through weekly lessons and activities to empower them to implement the Fit for Motion curriculum in their own classrooms throughout the school year. (H3)

The lack of access to healthcare services aggravates the health condition of individuals with chronic disease (Elnitsky et al., 2013). Hospital 3's community outreach project demonstrates how Hospital 3 tackles the crucial access to care need that is intertwined with the chronic disease health need.

A department of Hospital 3, the Solomon House offers free health education, crisis assistance and referrals to community resources, such as hospital services, free community clinics and social service agencies, for those who might not have full access to healthcare in the XYZ area. In 2016, 2,777 individuals were served through the Solomon House's services. Eighty-five percent of those served were minorities of lower socioeconomic status, many of whom were identified as having food insecurities (79 percent) or were in need of healthcare services (12 percent). (H3)

The study health systems also collaborated with local governments and other community groups by donating funds. Hospital 4's collaborative outreach projects with other groups demonstrate this type of community response.

Hospital 4 partnered with numerous community organizations to enhance opportunities for healthy lifestyle and exercise programs. The hospital sponsored the Girls on the Run program of ... that had 1,115 participants, and the Z County Senior Games that had 130 participants. The hospital contributed $70,000 to the Z County Parks and Recreation department for the construction of the new park/soccer facilities and community playground to promote exercise and sports programs including a Regional Hispanic Soccer League. (H4)

Improve Population Health

The study health systems identified and prioritized three population health needs: (1) mental health; (2) maternal and infant care; and (3) care for an aging population.

Mental Health

Five of 14 study health systems prioritized mental health need. Four of them are serving mostly in urban areas. The study health systems' implementation strategies to address the mental health need of their communities were: (a) conduct education and information campaign; (b) provide crisis assistance; (c) provide grants and collaborate with other groups; and (e) increase access to mental healthcare services.

Hospital 3 described how it offered crisis assistance to people with behavioral and mental health problems as follows:

Hospital 3 provides community education focused on stress management, as well as community based behavioral services through our 24-hour behavioral health outpatient assessment center and mobile crisis team. All programs and services are intended to assist the community with varying needs of mental health support at times when they are needed most. (H3)

In addition, the study health systems also collaborated with and supplied funding to other local community organizations to support behavioral and mental health programs. Hospital 5 described this type of activity as follows:

Each year Hospital 5 provides $100,000 to support X Center Access, an inpatient treatment facility for mental health, developmental disability and substance abuse services. (H5)

The study health systems also provided mental health programs externally

(community) or internally (employees). Hospital 3 describes a mental health program that is intended to reach out to those in the community.

>*Hospital 3 chaplains and community outreach therapists provide multiple programs and support groups on topics such as grief counseling, caregiver support, depression, stress management and emotional well-being.* (H3)

Hospital 7 provides an example of a mental health program that is aimed at addressing the mental health needs of its own employees.

>*Hospital 7 provides service to its own employee base to guide managers and employees to use services as a resource for a variety of behavioral health issues. By promoting access to these services, Hospital 7 is able to stabilize and maintain employees who would otherwise lose employability and enter the ranks of the unfunded/unemployed.* (H7)

Increasing access to mental healthcare services plays an essential role in promoting mental health. To increase access to mental healthcare services of its community, Hospital 7 "*works with the local mental health management entity (LME) to provide care coordination and to facilitate treatment for Medicaid and uninsured patients.*"

Maternal and Infant Care

Three study health systems prioritized maternal and infant care need. Two of them are providing healthcare services in mostly rural areas. The study health systems supported the new moms and their infants by providing or assisting them with: (a) education and information campaign; (b) home visits and clinical follow-up; (c) grants and collaboration with other groups; (d) increasing access to care.

Hospital 3's implementation strategies consisted of visiting newly moms in their homes after discharge for clinical follow-up, connecting the low-income and uninsured moms to community support services, and providing health information sessions. Hospital 3 also partnered with other local organizations in delivering prenatal, infant, and maternal support

services. Hospital 3 described its maternal and infant care implementation strategies below.

> *Through the program, registered nurses schedule home visits with every new mother. The nurses provide clinical follow-up and provide community referrals based on the needs of mom and baby. As of December 2016, the program has had an average of 68 percent home visit acceptance rate. Across the Hospital 3 system, various classes are provided at all our facilities to expectant mothers and families. These classes include breastfeeding education, childbirth preparation, infant care, sibling and family preparation, and infant CPR.* (H3)

Access to healthcare services plays a vital role in providing maternal and infant care.

Hospital 4 supported the newly moms and their infants by increasing their access to maternal

and infant healthcare services.

> *Hospital 4's Women's Services is a hospital medical practice that serves large numbers of Medicaid, uninsured and minority patients. The hospital and the medical practice provided prenatal care to medically-underserved Spanish speaking women through Hospital 4's nurse midwife program. A partnership with, and financial donation to, the XYZ Pregnancy Support Services provided free, onsite early prenatal care-including ultrasounds-to medically underserved women.* (H4)

Access to healthcare services plays a vital role in providing maternal and infant care.

Hospital 4 supported the newly moms and their infants by increasing their access to maternal

and infant healthcare services.

> *Hospital 4's Women's Services is a hospital medical practice that serves large numbers of Medicaid, uninsured and minority patients. The hospital and the medical practice provided prenatal care to medically-underserved Spanish speaking women through Hospital 4's nurse midwife program. A partnership with, and financial donation to, the XYZ Pregnancy Support Services provided free, onsite early prenatal care-including ultrasounds-to medically underserved women.* (H4)

Care for an Aging Population

The two study health systems that prioritized the need to care for an aging population

provided support groups, health education sessions, and screenings services to senior living

facilities. Hospital 3 described below how it offered care to the elderly.

> *Hospital 3 provides ongoing outreach services to the aging population across*

our footprint. Health educators, nurses and physicians deliver relevant education and screenings on topics including osteoporosis, senior wellness and nutrition, fall prevention and geriatric behavioral health. We interacted with more than 4,165 seniors in 2016 through these screenings and education services… In addition, Hospital 3 chaplains and community outreach therapists provide multiple programs and support groups on topics such as grief counseling, caregiver support, depression, stress management and emotional well-being. (H3)

Increase Access to Care

Seven out of 14 study health systems prioritized access to care need of their communities. Four of them are providing healthcare services in mostly urban areas while the remaining 3 are mostly serving rural areas. The study health systems' implementation strategies to address the access to care need of their communities, addressed: (a) expanding healthcare delivery systems; (b) increasing navigational platform; (c) recruiting healthcare providers; (d) improving transportation; and (e) providing grants to and collaborating with other groups.

"Navigational platform" strategy as described by Hospital 13 refers to the system of helping and directing low-income and uninsured patients acquire health insurance coverage or avail of healthcare services. The strategy's main objective is "*to effectively navigate patients through the continuum of care to prevent hospitalization and/or readmissions.*" Hospital 1 provides a concrete example of this strategy when it "*assisted refugees navigate the complex process of having insurance coverage.*" Hospital 7 also used this strategy.

> *Further, for patients needing assistance with follow up care, Hospital 7 has hired 2 FTE's as patient navigators to help patients get the care they need in the community post-discharge.* (H7)

> *Hospital 7 initiated a program to help high utilizers and uninsured patients in the community find a primary care medical home and connect with social support services. Services include, but are not limited to food pantries, shelters for housing, substance abuse programs, care programs, prescription drug programs, etc. This program focuses on the utilization of analytics to identify Hospital 7's highest risk patients and work with them to access health care and*

address the often complicated social, psychiatric and addiction related barriers to care. The program also helps patients who qualify get insurance coverage and disability assistance. (H7)

Access to care also means having healthcare providers in the community when needed. The study health systems utilized two strategies to increase the supply of healthcare providers in their communities: (a) recruitment; and (b) providing health profession educational grants. Hospital 3 hired a licensed mental health professional to "*increase the number of underserved community members receiving mental health treatment and decrease barriers of access to mental health services.*" Hospital 5 "*contributed over $3 million toward the training and teaching of tomorrow's healthcare professionals*" to increase the supply of healthcare providers in the community.

Another strategy to increase access to care is to expand healthcare delivery systems. Hospital 9, in partnership with other local organizations, developed 3 rural health centers and collaborated in expanding the county's Free Clinic operations. Similarly, Hospital 5 partnered with local community health centers to expand healthcare delivery systems in the community.

> *X Community Health Center is a federally qualified community health center that provides primary care services for about 40,000 patients each year. Approximately 80 percent of X patients are uninsured and living at or below the poverty level. In addition to generous financial support, Hospital 5 provides engineering, environmental, laboratory, pharmacy and radiology services. The total Hospital 5 contribution to X in fiscal year (FY) 2015, including monetary and in-kind services, was more than $7.5 million.* (H5)

Furthermore, the lack of transportation is a concern that is highly related to access to care problem (Elnitsky et al., 2013). To address the transportation concern of some of its patients, Hospital 7 partnered with local transport companies. Hospital 7 communicated the program as follows:

> *Hospital 7 observed that some of its patients were facing hardship because they were wheelchair bound but did not have access to appropriate transportation or office visits or procedural care. These patients were often*

using ambulance services to find transportation and were being billed by those services due to the lack of medical necessity for transport. To provide appropriate transportation services to match patient needs, Hospital 7 contracted with area transport companies to ensure patients had access to care. The goal of reducing occasions where ambulance was requested, and the patient did not meet medical necessity has been achieved. (H7)

Address Socio-Economic Factors

Socio-economic factors pertain to the needs of communities for safe and affordable housing, employment, education, and poverty. For instance, Hospital 4 addressed its community's need for safe and affordable housing by partnering with another community organization, Habitat for Humanity.

Continue partnership with Habitat for Humanity of X County. The organization builds affordable housing communities in X County and provides homeowner education programs. Study Health System provides volunteers and serves on the organization's advisory board. (H4)

To address poverty, one large urban hospital provides a respite housing program for the homeless, supports its city's transportation services, and assists low-income and uninsured patients acquire health insurance coverage or supplemental food and income benefits. Hospital 5's description of its community outreach programs to address poverty is presented below.

SSI/SSDI Outreach, Access and Recovery (SOAR): helps patients who are chronically homeless, or at risk of homelessness access health insurance, a stable income, and medical care by assisting these individuals in applying for Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI). The homeless population and those reentering the community from an institution face numerous challenges in accessing services. (H5)

The qualitative results suggest that NC tax-exempt hospitals started to address population health needs. Their community benefit implementation strategies appeared to include collaboration with other community groups such as schools, non-profit organizations, and local health agencies to address access to care problem and reduce the frequency of

hospital readmissions for the poor and medically underserved patients. The four broad themes of community benefit implementation strategies that emerged from the study – provide preventive care services; improve population health; increase access to care; and address socio-economic factors – reflect the SEM where health outcome is viewed as the effect of the interactions between individual factors and socio-ecological forces, specifically organizations (Golden & Earp, 2012; McLeroy et al., 1988).

2.3 Discussion

I evaluated the community benefit program implementation strategies of NC tax-exempt hospitals qualitatively using the lens of the Socio-Ecological Model. Under SEM, an individual's health is determined not only by individual characteristics but also by the individual's social and ecological environment (Golden & Earp, 2012; McLeroy et al., 1988; Stokols, 1996). The SEM theory is applicable and relevant to this study because community health needs and health interventions do operate across and within the various aspects of SEM (Daley et al., 2011; Golden & Earp, 2012; McLeroy et al., 1988). Thus, the implementation strategies (community outreach programs and services) of tax-exempt hospitals are deemed effective when they are multifaceted rather than unidimensional (Golden & Earp, 2012; McLeroy et al., 1988). This analysis led to 5 thematic findings.

1. *Most interventions focus on individuals rather than communities or populations*

The IRS-mandated CHNA policy is a step in the right direction: it is a public policy intervention designed to impact across several layers of the SEM. At first glance, the tax policy appeared to have incentivized tax-exempt hospitals to respond to the health needs of their low-income and underprivileged patients. However, when viewed from the lens of SEM, the implementation strategies adopted by NC tax-exempt hospitals and summarized in

Figure 4 appear to be mostly one-dimensional; that is, focused more on addressing individual factors affecting health with little emphasis on other SEM levels, in much the same way as clinical medicine largely focuses on an individual level transactional paradigm. While the low-income and uninsured patients critically need the community outreach programs and services provided by tax-exempt hospitals, these strategies may be less effective or sustainable if unsupported by community building activities like reducing poverty or providing safe and healthy environment that target other levels of socio-ecological model (Eyler & Dreisinger, 2010; Golden & Earp, 2012). NCHA defined community building activities to include: (a) Physical improvements and housing; (b) Economic development; (c) Community support; (d) Environmental improvements; (e) Leadership development and training for community members; (f) Coalition building; (g) Community health improvement advocacy; (h) Workforce development (includes recruitment expenses for physicians and other health professionals in underserved and medical shortage areas); and Other community building activities that protect or improve the community's health and safety (NCHA, 2014). These activities relate more to public health and the SEM's broader community and policy levels (Trocchio, 2011). These community building activities are scarce in the current mix of implementation strategies.

2. *Most Interventions Focus on Tertiary or Secondary Prevention efforts*

Reflecting the individual focus/clinical paradigm bias described above, the study health systems appear to be more focused on providing secondary and tertiary prevention measures than primary ones. For instance, most study health systems prioritized diabetes as a community health need and provided free glucose screenings, distributed testing supplies, and sponsored diabetes education to individuals affected by this chronic disease. One study health system prioritized diabetes by stating that it is aligned with the "organization's vision,

commitments, and key strengths." The statement implies that the prioritized community health needs and implementation strategies are shaped more by the study health system's demands than to meet the health demands or needs of communities. Consequently, providing secondary prevention measures is more appealing to study hospitals than primary prevention as the former directly enhance revenues than the latter. For example, outreach programs that provide screenings for identifying individuals at risk of developing diabetes give hospitals potential revenue streams. Monitoring and managing the diabetes condition of low-income and uninsured individuals would enable hospitals to prevent incurring costly treatments and avoid stiff financial penalties for readmissions or frequent inpatient hospitalizations. Although the diabetic patients benefited from secondary prevention measures for achieving improved health outcomes, the tax-exempt hospitals gained more financial benefits than they would have accrued had they focused on community and policy efforts to prevent individuals from developing diabetes in the first place. While secondary prevention strategies play an important role, they may be less effective and impactful on overall health if not supplemented by adequate primary prevention measures – health campaign to effect changes in health behavior, promote healthy living – and other community building activities like economic development and physical improvements (Eyler & Dreisinger, 2010; Golden & Earp, 2012; Towne, 2017).

3. *"Band-Aid" Remedies Prevail Where Broad, Systemic Solutions Are Needed*

Furthermore, the study hospitals focused more on providing temporary or "Band-Aid" remedies rather than sustainable, empowering solutions. Most of the reported access to care strategies (e.g., expand delivery healthcare services, provide navigational platforms, recruit healthcare providers, support transportation services) appear to be "Band-Aid" solutions. They could be the right solutions to alleviate the access to care need of the underprivileged

patients given present realities; still they are just temporary remedies. The "Band-Aid" strategy's shortcoming is that it fails to acknowledge the complex nature of access to care as part and parcel of health disparity problem, which requires systemic solutions than a patch (Mouradian, 2006).

For instance, Hospital 5 addressed the access to care need of its community in the following way.

> *X Community Health Center is a federally qualified community health center that provides primary care services for about 40,000 patients each year. Approximately 80 percent of X patients are uninsured and living at or below the poverty level. In addition to generous financial support, Hospital 5 provides engineering, environmental, laboratory, pharmacy and radiology services. The total Hospital 5 contribution to X in fiscal year (FY) 2015, including monetary and in-kind services, was more than $7.5 million.*

Viewing these efforts from the broad ecological level leads to the following observations. First, Hospital 5's $7.5 million cash and in-kind contribution went directly to X Community Health Center, not to poor patients. Second, some poor and the uninsured patients benefited from the services provided by X Community Health Center. Third, the very nature of the strategy itself – donation through third party – did nothing to empower the poor patients to become self-sufficient, and possibly increased medically underserved patients chronic dependence on X Community Health Center. Also, the strategy does not ensure continuing access to care: Hospital 5 could reduce, or all together stop donating funds to X Community Health Center. Such "Band-Aid" remedies address an immediate and urgent need, but do not necessarily produce a sufficient supply of healthcare delivery services nor provide an adequate number of healthcare providers to meet the needs of the rising number of low-income, uninsured patients (Mouradian, 2006).

Furthermore, opting for a "Band-Aid" solution appears to be organizationally-driven, and may be more aligned to hospital organizations' goals than to correspond or meet the

needs of the poor patient population (Mouradian, 2006). Hospital 7, for example, addressed

the access to care need of its community in the following way.

> *Hospital 7 observed that some of its patients were facing hardship because they*
> *were wheelchair bound but did not have access to appropriate transportation or*
> *office visits or procedural care. These patients were often using ambulance*
> *services to find transportation and were being billed by those services due to*
> *the lack of medical necessity for transport. To provide appropriate*
> *transportation services to match patient needs, Hospital 7 contracted with area*
> *transport companies to ensure patients had access to care. The goal of reducing*
> *occasions where ambulance was requested, and the patient did not meet*
> *medical necessity has been achieved.*

On surface level, Hospital 7 appeared to have rendered a valuable service to its

patients. However, Hospital 7's efforts to provide transport arrangements for wheelchair

bound patients might have been motivated more toward avoiding steep readmission penalties

than to improve its patients access to care (Boccuti & Casillas, 2015; Russell, 2016). Patients

with difficulty accessing routine care have more emergency room visits, higher rates of

hospitalization for chronic diseases, higher risk of readmission within 30 days after discharge,

and more care needs when readmitted (Bindman et al., 1995; Dolton & Pathania, 2016; Dupre

et al., 2018; Russell, 2016). Also, the Centers for Medicare and Medicaid Services (CMS)

impose stiff penalties on hospitals in the form of reduced reimbursements of <u>all</u> their future

Medicare payments if they exhibit higher-than-expected readmission rates. The readmission

penalty could substantially reduce the hospitals' operating revenues (Russell, 2016).

4. *Communities Risk the Widening of Health Disparities*

Furthermore, I observed that the study health systems' outreach programs and

activities were mostly intended to cater to the needs of the study hospitals immediate

communities. Hospital 5 and Hospital 7 in the previous discussions provided outreach

programs and activities to their proximal neighboring urban communities and not to their

entire catchment area, where needs may be greater. Thus, the large tax-exempt hospitals with

greater resources tend to provide outreach programs to communities which already enjoy (relatively) improved access to care while smaller hospitals that have limited resources are the ones that more likely to provide outreach services to rural communities with poor access to care or greater community health needs. For example, Hospital 14, a smaller healthcare system compared to Hospital 7, provided only $31 thousand worth of community outreach programs (about .03% of its operating expenses), while Hospital 7 spent $13 million (2% of its operating expenses). Hospital 14 is in a county with poor access to care and ranked 99 in health outcomes out of 100 counties, while Hospital 7 is in a community with relatively improved access to care and ranked 1 in health outcomes by County Health Rankings & Roadmaps (2017). Under this type of set-up, the IRS-mandated CHNA policy may unintentionally risk widening health disparities instead of reducing them, perpetuating inequity rather than promoting social justice (Health Affairs, 2016; Singh et al., 2015).

5. *North Carolina is a Microcosm of the United States' Access to Care Problem*

In a 2016 survey of 11 countries that included the United States, Australia, Canada, France, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, and the United Kingdom, the US ranked poorly on providing access to care to its citizenry. The survey also revealed that compared to the other 10 countries, adults in the US are sicker, poorer, and continue to face an uphill battle with access to care (Osborn et al., 2016). The four thematic findings of this study drawn from NC experience described previously also reflect the current state of the US access to care problem. For example, this study's observation that most health program interventions in NC focus on individuals rather than communities or policies is consistent with the US experience and well-entrenched in the public health literature (Eyler & Dreisinger, 2010; Golden & Earp, 2012; Towne, 2017). This study's finding that most NC interventions focus on tertiary or secondary prevention efforts is

consistent with the results of a nationwide study which found that US tax-exempt hospitals spent more than 85% of their provision of community benefit on delivering free or discounted care to already sick individuals and spent only about 5% on community health programs that help individuals avoid contracting a disease or improve access to care. Public health professionals have long called for a more systematic approach than "Band-Aid" solutions to address a wide array of community health needs, including access to care. Yet their call seems unheeded, as both the NC and US tax-exempt hospitals continue to concentrate more on providing short-term remedies rather than offering broad solutions that include addressing socio-economic determinants of health (Eyler & Dreisinger, 2010; Golden & Earp, 2012; Towne, 2017). The observation that the IRS-mandated CHNA policy may risk widen the NC communities' health disparities reflect the suggestions made by previous studies that covered nationwide US samples (Health Affairs, 2016; Singh et al., 2015).

Study Limitations and Call for Future Studies

This study is limited to analyzing the community benefit activities of tax-exempt hospitals located in North Carolina. Its findings may or may not be akin to other settings and locations. Future work is warranted before causal relationships between community health needs and provision of community benefit may be established. This study considered the information contained in the published reports as *prima facie* evidence of community benefit program implementation strategies. Further study is needed to evaluate the consistency, cost, and quality of the delivery of the outreach programs and their impact on community health outcomes. In the longer term, studies are needed to assess if the investment in community health programs increased over time after the conduct of IRS-mandated CHNA and whether the provision of community benefit is increasingly aligned to the prioritized health needs of communities. To add, program developers are encouraged to incorporate evaluation studies in

the program plans to assess the effectiveness of these community outreach programs strategies.

2.4 Conclusion

When analyzed from the Socio-Ecological Model perspective, the community benefit implementation strategies of NC tax-exempt hospitals to address the complex health needs of their communities appear to: (a) focus on individuals rather than communities or populations; (b) prioritize tertiary or secondary prevention efforts than primary; (c) offer "Band-Aid" remedies where broad, systemic solutions are needed; (d) risk widen health disparities instead of reducing it; and (e) reflect the US access to care problem. If the tax-exempt hospitals intend to meaningfully contribute to the nation's access to care problem, then they need to also prioritize the socio-economic-related health needs of their communities and expand their community benefit programs and services to include systemic, broad solutions that tackle health disparity such as the delivery of more community building activities. When viewed from SEM, the offering of community outreach programs that are more directed towards addressing individual factors and reliant on self-serving, "Band-Aid" solutions contribute little in addressing the access to care problem in the US and the health needs of communities. Considering the current US political milieu, impending changes to the ACA, planned budget cuts for public health programs, and revisions to the IRS tax code, it is vital that hospitals and policymakers recognize the healthcare needs and challenges faced by community members and design community benefit programs and policies that support their access to care.

REFERENCES

Alexander, J. A., Young, G. J., Weiner, B. J., & Hearld, L. R. (2009). How do system-affiliated hospitals fare in providing community benefit? Inquiry: A Journal of Medical Care Organization, Provision and Financing, 46(1), 72-91. doi:10.5034/inquiryjrnl_46.01.72

Bazzoli, G. J., Clement, J. P., & Hsieh, H.-M. (2010). Community Benefit Activities of Private, Nonprofit Hospitals. Journal of Health Politics, Policy and Law, 35(6), 999-1026. doi:10.1215/03616878-2010-036

Bindman, A. B., Grumbach, K., Osmond, D., Komaromy, M., Vranizan, K., Lurie, N., . . . Stewart, A. (1995). Preventable Hospitalizations and Access to Health Care. Jama, 274(4), 305-311. doi:10.1001/jama.1995.03530040033037

Boccuti, C., & Casillas, G. (2015, 2015/01/29/). Aiming for Fewer Hospital U-turns: The Medicare Hospital Readmission Reduction Program. Retrieved from http://kff.org/medicare/issue-brief/aiming-for-fewer-hospital-u-turns-the-medicare-hospital-readmission-reduction-program/

countyhealthrankings.org. (2017). How Healthy is your County? | County Health Rankings. County Health Rankings & Roadmaps.

Crossley, M. (2016). Health and Taxes: Hospitals, Community Health and the IRS. Yale Journal of Health Policy, Law, and Ethics, 16(1), 51-110.

Daley, E., Alio, A., Anstey, E., Chandler, R., Dyer, K., & Helmy, H. (2011). Examining Barriers to Cervical Cancer Screening and Treatment in Florida through a Socio-Ecological Lens. Journal of Community Health, 36(1), 121-131. doi:10.1007/s10900-010-9289-7

Dolton, P., & Pathania, V. (2016). Can increased primary care access reduce demand for emergency care? Evidence from England's 7-day GP opening. Journal of Health Economics, 49, 193-208. doi:10.1016/j.jhealeco.2016.05.002

Dupre, M. E., Xu, H., Granger, B. B., Lynch, S. M., Nelson, A., Churchill, E., . . . Peterson, E. D. (2018). Access to routine care and risks for 30-day readmission in patients with cardiovascular disease. American Heart Journal, 196, 9-17. doi:10.1016/j.ahj.2017.10.001

Eyler, A. A., & Dreisinger, M. (2010). Publishing on Policy: Trends in Public Health. Preventing Chronic Disease, 8(1).

Ferdinand, A. O., Epane, J. P., & Menachemi, N. (2014). Community benefits provided by religious, other nonprofit, and for-profit hospitals: a longitudinal analysis 2000-2009. Health care management review, 39(2), 145-153. doi:10.1097/HMR.0b013e3182993b52

Fielding, J. E., Teutsch, S., & Breslow, L. (2010). A framework for public health in the United States. Public Health Reviews, 32(1), 174.

Golden, S. D., & Earp, J. A. L. (2012). Social Ecological Approaches to Individuals and Their Contexts. Health Education & Behavior, 39(3), 364-372. doi:10.1177/1090198111418634

Health Affairs, P. B. (2016). "Nonprofit Hospitals' Community Benefit Requirements, " Health Affairs Health Policy Brief, February 25, 2016.

Leavell, H. R., & Clark, E. G. (1953). Textbook of Preventive Medicine. New York, NY USA: McGraw-Hill.

Leider, J. P., Tung, G. J., Lindrooth, R. C., Johnson, E. K., Hardy, R., & Castrucci, B. C. (2016). Establishing a Baseline: Community Benefit Spending by Not-for-Profit Hospitals Prior to Implementation of the Affordable Care Act. Journal of public health management and practice: JPHMP. doi:10.1097/PHH.0000000000000493

Mays, G. P., & Smith, S. A. (2011). Evidence Links Increases In Public Health Spending To Declines In Preventable Deaths. Health Affairs, 30(8), 1585-1593. doi:10.1377/hlthaff.2011.0196

McLeroy, K., Steckler, A., Bibeau, D., & Glanz, K. (1988). An ecological perspective on health promotion programs. Health Education Quarterly, 15(Winter 88), 351-377.

Mouradian, W. E. (2006). Band-Aid Solutions to the Dental Access Crisis: Conceptually Flawed—A Response to Dr. David H. Smith. Journal of Dental Education, 70(11), 1174-1179.

NCHA. (2014, 2017). NCHA Hospital Community Benefits Report. North Carolina Hospital Association. Retrieved from https://www.ncha.org/healthcare-topics/community-benefit

Nikpay, S. S., & Ayanian, J. Z. (2015). Hospital Charity Care--Effects of New Community-Benefit Requirements. The New England Journal of Medicine, 373(18), 1687-1690. doi:10.1056/NEJMp1508605

Osborn, R., Squires, D., Doty, M. M., Sarnak, D. O., & Schneider, E. C. (2016). In New Survey Of Eleven Countries, US Adults Still Struggle With Access To And Affordability Of Health Care. Health Affairs; Chevy Chase, 35(12), 2327-2336. doi:http://dx.doi.org.librarylink.uncc.edu/10.1377/hlthaff.2016.1088

Pennel, C. L., McLeroy, K. R., Burdine, J. N., & Matarrita-Cascante, D. (2015). Nonprofit hospitals' approach to community health needs assessment. American Journal of Public Health, 105(3), e103-113. doi:10.2105/AJPH.2014.302286

Principe, K., Adams, E. K., Maynard, J., & Becker, E. R. (2012). The Impact of the Individual Mandate and Internal Revenue Service Form 990 Schedule H on Community Benefits

From Nonprofit Hospitals. American Journal of Public Health, 102(2), 229. doi:10.2105/AJPH.2011.300339

Rubin, D. B., Singh, S. R., & Young, G. J. (2015). Tax-Exempt Hospitals and Community Benefit: New Directions in Policy and Practice. http://dx.doi.org.librarylink.uncc.edu/10.1146/annurev-publhealth-031914-122357.

Ruderman, M. (2013). Ecological Model in Public Health. Johns Hopkins Bloomberg School of Public Health.

Russell, J. (2016). + Return trip: hospitals try to cut readmissions, avoid steep federal penalties.(Focus: HEALTH CARE & BENEFITS). Indianapolis Business Journal, 37(6), 13.

Singh, S. R., Bakken, E., Kindig, D. A., & Young, G. J. (2016). Hospital Community Benefit in the Context of the Larger Public Health System: A State-Level Analysis of Hospital and Governmental Public Health Spending Across the United States. Journal of Public Health Management and Practice, 22(2), 164-174. doi:10.1097/PHH.0000000000000253

Singh, S. R., Young, G. J., Daniel Lee, S.-Y., Song, P. H., & Alexander, J. A. (2015). Analysis of Hospital Community Benefit Expenditures' Alignment With Community Health Needs: Evidence From a National Investigation of Tax-Exempt Hospitals. American Journal of Public Health, 105(5), 914-921. doi:10.2105/AJPH.2014.302436

Sosa-Estani, S., Colantonio, L., & Segura, E. L. (2012). Therapy of Chagas Disease: Implications for Levels of Prevention. Journal of Tropical Medicine, 2012(2012). doi:10.1155/2012/292138

Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. American journal of health promotion : AJHP, 10(4), 282.

TFAH. (2017). A Funding Crisis for Public Health and Safety: State-by-State Public Health Funding and Key Health Facts, 2017 - Trust for America's Health. Trust for America's Health.

TFAH. (2018). A Funding Crisis for Public Health and Safety: ISSUE REPORT MARCH 2018 STATE-BY-STATE PUBLIC HEALTH FUNDING AND KEY HEALTH FACTS. Retrieved from Washington, DC: http://healthyamericans.org/assets/files/TFAH-2018-InvestInAmericaRpt-FINAL.pdf

Towne, S. D. (2017). Socioeconomic, geospatial, and geopolitical disparities in access to health care in the US 2011–2015. International Journal of Environmental Research and Public Health, 14(6), <xocs:firstpage xmlns:xocs=""/>. doi:10.3390/ijerph14060573

Trocchio, J. (2011). How Community-Building Aligns with Public Health. Health Progress(September - October 2011), 3.

Wade, K., & Matthews, G. (2014). Report on Review of North Carolina Hospitals' Community Health Needs Assessments and Implementation Strategies. The Network for Public Health Law.

Young, G. J., Chou, C.-H., Alexander, J., Lee, S.-Y. D., & Raver, E. (2013). Provision of Community Benefits by Tax-Exempt U.S. Hospitals. New England Journal of Medicine, 368(16), 1519-1527. doi:10.1056/NEJMsa1210239

APPENDIX B: NVIVO CODEBOOK

Prioritized Community Health Needs	Community health needs prioritized by county per CHNA
Access to care	Lack of access to mental health, dental care, increasing number of uninsured adults, shortage in healthcare providers
Aging population	Older adult population health issues
Dental health	Untreated tooth decay and need of preventive oral care services
HIV & sexually transmitted infections	HIV and sexually transmitted infections
Maternal & infant care	Infant mortality, maternal health, smoking during pregnancy
Mental health & substance abuse	Intimate partner violence, domestic violence, depression, anxiety, including substance abuse, Rx drug abuse
Obesity & chronic disease prevention	Obesity, nutrition, chronic disease, cardio-vascular disease, tobacco use, COPD, stroke, diabetes, cancer
Socio-economic determinants of health	Economic development, housing, income, education, crime, poverty, health equity, lack of community resources, physical environment, economy, violence prevention
Unintentional deaths & injuries	Motor vehicle crashes, poisoning, falls, risky behaviors
Community benefit programs	Community health programs and activities provided by North Carolina's tax-exempt hospitals to address the prioritized health needs of their communities per published community benefit reports.
Access to care	Assist low income, uninsured residents with managing their chronic disease by increasing access to healthcare services
Expand healthcare delivery systems	Increase types of health care services provided by the health system to the community; example (free clinics, cash and in-kind donations to community health centers)
Navigational platform	Navigating patients through the continuum of care to prevent hospitalization or readmissions; use of referrals and partnership with other groups; assisting patients to have access to healthcare services
Partner with local community groups	Outreach programs in collaboration with other community groups to increase access to care, includes providing grants or donations
Recruit healthcare providers	Hiring healthcare providers to work in the community to increase access to healthcare services; investing in health professions education to increase supply of healthcare providers to community
Transportation support services	Provide transportation support to wheelchair-bound patients; support community's public transport system

Aging population	Organizing support groups to provide education, advanced planning, and referrals to seniors; provide education sessions and screening opportunities
Health education sessions	Health educators, nurses and physicians deliver relevant education and screenings on topics including osteoporosis, senior wellness and nutrition, fall prevention and geriatric behavioral health.
Screening services	Visiting retirement homes, senior centers, assisted living facilities to provide screening services
Support groups	Support groups assist on issues and problems related to grief, caregiver support, depression, stress management, and emotional health
Maternal & infant care	Programs that include health and safety education and training for infant and maternal care; connecting moms to resources; supporting safe environment and offering clinical follow-ups. Examples: breastfeeding education, childbirth preparation, infant care, sibling and family preparation, and infant CPR.
Health education	Classes include breastfeeding education, childbirth preparation, infant care, sibling and family preparation, and infant CPR.
Home visits & clinical follow-up	Informs and refers mom about programs, services, and activities that provide additional resources to moms and infants
Partner with other organizations	Works with other community groups to support infant and maternal care
Mental health & substance abuse	Programs and activities that promote emotional well-being and manage mental health issues. Examples: support groups, grief counselling, caregiver support, management of depression and stress, offering crisis assistance and referral services
Crisis assistance and referrals	Crisis assistance and referral to community resources such as hospital services, free community clinics, and social service agencies
Mental health education	Educational sessions and information campaign about mental health and substance abuse
Partner with local agencies	Works with local mental health agencies and organizations in providing community outreach programs to improve mental health
Donating funds	Donation to other community groups that take care of people with mental health, disability, substance abuse problems
Obesity & chronic disease prevention	Programs and activities to prevent or manage chronic diseases (cancer included). Examples: conducting health education classes, distributing free testing supplies, implementing wellness programs, performing home visits and clinical follow-up, providing health screenings
Health education	Examples: conducting educational sessions for diabetes, heart health, peripheral arterial disease, cancer wellness, nutrition,

	classes & information campaign	fall prevention, behavioral health. Use of media to disseminate health information to the community
	Increase access to healthcare services	Addressing insurance and financial needs of patients with chronic diseases; providing programs that expand access to healthcare services
	Monitor & clinical follow-up	Examples: Installation of tracking system to monitor diabetic patients resource utilization and compliance of the treatment plan; providing clinical follow-up visits post discharge; providing on-going coordination of care
	Partner with other organizations	Partners with other local organizations to provide outreach services and host community events; provide support to employee-initiated community outreach projects; supplies grants and funds to partner organizations
	Screenings & wellness programs	Distributing testing supplies, conducting screenings, implementing wellness programs
	Health screenings	Offers health screening to individuals like diabetes screening, obesity screening, blood pressure screening, mobile mammography screening, clinical breast exam, osteoporosis; including distribution of free testing supplies
	Wellness programs	Activities to promote wellness and healthy living. Examples include nutrition, weight management, smoking cessation
Socio-economic factors		Activities to address safe and affordable housing, poverty, education, employment
	Education	Partner with local schools; provide health education classes
	Homeless programs	Respite home programs; partner with Habitat for Humanity
	Workforce development	Provide training for entry-level positions (nursing assistant and medical assistant)
	Support transportation services	Partner with local transport groups to provide transportation support services to patients

ARTICLE 3

ALIGNMENT OF PROVISION OF COMMUNITY BENEFIT AND
PRIORITIZED COMMUNITY HEALTH NEEDS: A MIXED-METHODS
STUDY AMONG NORTH CAROLINA'S TAX-EXEMPT HOSPITALS

Abstract

Objective

The Internal Revenue Service (IRS) requires tax-exempt hospitals to conduct community

health needs assessment (CHNA) every three years. The IRS CHNAs incentivize

hospitals to provide programs responsive to community health needs. Research is needed

to determine how well NC non-profit hospitals community benefit programs align with

the prioritized health needs of their communities.

Methods

Using a sequential explanatory design, I evaluated the provision of community benefit

and its association with prioritized community health needs in 39 tax-exempt hospitals

belonging to14 health systems located in 22 of North Carolina's 100 counties. I collected

community benefit spending data from published community benefit reports of the

selected hospitals and the CHNAs of the 22 counties served by the health systems. My

content analysis of community benefit reports and CHNAs revealed rich descriptions of

community benefit programs. I integrated quantitative and qualitative data in the

interpretation phase by mapping emergent themes and concepts to the Socio-Ecological

Model and integrating quantitative and qualitative results in the discussion.

Results

Compared to the Base-Year (year CHNA was completed), NC tax-exempt hospitals'

community health programs spending during the Then-Year (2 years later) declined by $17.3

million or by 5.9%, whereas patient care financial assistance increased by $159.3 million or

by 9.3%. Counties and hospitals differed on the importance of addressing socio-economic

determinants of health: counties prioritized it while the hospitals that serve in those counties

did not ($p=0.0124$). Hospitals spent more (87.2% of total community benefit spending) on

patient care financial assistance that are not prioritized by the counties while spending little

(12.8%) on community health programs that are aligned to the prioritized health needs of

communities. Four broad community benefit program objectives emerged: provide

preventive care services; improve population health; increase access to care; and address

socio-economic factors. The hospitals' community benefit programs are mostly individual-

level intervention efforts aimed at reducing the frequency of hospital readmissions for poor

and medically underserved patients. Community building activities or population-centered

initiatives are scarce in the current mix of community benefit programs and services.

Conclusion

Directing community benefit toward improving population health is a step in a right direction.

The findings of this mixed-methods study indicate that NC tax-exempt hospitals are beginning

to provide outreach programs that address population health within their respective

communities; however, their community benefit financial contributions are not shifting

toward population health initiatives. Their ingrained patient-level intervention perspective

and desire to recover high unreimbursed costs for providing care to Medicare, Medicaid, and

poor patients likely influence the hospitals' community benefit programming to favor

individual welfare over population health programs. Performing IRS-mandated CHNAs did

not substantially increase the alignment of community benefit programs with prioritized needs but did clearly highlight those needs.

3.0 Introduction

When it comes to healthcare spending, the United States (U.S.) ranks first compared to other nations. In 2016, the U.S. spent 17.2% of its GDP on healthcare, or about $9,892 per person, yet it performs worse than other developed nations in terms of health outcomes (OECD, 2018). Compared to Canada, France, Germany, the Netherlands, the United Kingdom, New Zealand, Norway, Sweden, and Switzerland, adults in the U.S. are sicker, poorer, and continue to face an arduous struggle with access to care (Osborn et al., 2016). Additionally, racial and ethnic minorities in the U.S. disproportionately encounter lack of access to healthcare services and experience poorer health outcomes from preventable chronic diseases despite the nation's state-of-the-art practice of medicine and advancements in public health (Jackson & Gracia, 2014).

Of the $3.36 trillion the U.S. spends yearly on healthcare, only 3% of it, or $255 per person, was allocated to public health (Himmelstein & Woolhandler, 2016; Keehan et al., 2017; TFAH, 2018). The U.S. federal government also cut funding for disease prevention and health improvement activities by $580 million, and state budgets for public health have remained level since 2010. Consequently, many U.S. communities lack financial resources to support population health programs while the nation's healthcare costs continue to increase (TFAH, 2017, 2018).

When the Affordable Care Act (ACA) was signed into law in 2010, the ACA effectively added Section 501(r) to the Internal Revenue Code, which imposed a new mandate on tax-exempt hospitals. The new IRS tax policy requires tax-exempt hospitals to conduct

Community Health Needs Assessments (CHNA) every three years, formulate implementation strategies, and communicate to the public the progress of their outreach programs and activities through yearly publication of community benefit reports effective March 23, 2012. Failure to comply with the law could result in a loss of tax-exempt status (Bazzoli et al., 2010; Crossley, 2016; Rubin et al., 2015). The ACA had the following two key priorities when it added Section 501(r) to the IRS Code: (1) increase preventive care services; and (2) improve population health (Leider et al., 2016; Singh et al., 2016; Singh et al., 2015; Young et al., 2013). Public health professionals welcomed the tax policy with optimism. Many thought that it would enable public health agencies and healthcare systems organizations to converge and deliver adequate preventive care services to address a wide array of population health needs, including diabetes, obesity, heart disease, and mental health (Crossley, 2016; Rubin et al., 2015).

Approximately two-thirds of hospitals in the U.S. are non-profit hospitals that are exempt from paying taxes under IRS Code Section 501(c)(3) (GAO, 2008; Rubin et al., 2013; Singh et al., 2016). In exchange for their tax-exempt status, non-profit hospitals provide community benefit in various forms of charitable activities, which a previous study estimated to be equivalent to 7.5% of the hospitals' operating expenses (Burke et al., 2014; Young et al., 2013). Non-profit hospitals collectively provided more than $60 billion of charitable programs and activities by the end of 2012 (Leider et al., 2016). However, a significant proportion of their community benefit spending was in the form of patient care financial assistance (free or discounted care to the poor and Medicaid/Medicare patients), with little allocated to community health programs. Public health professionals thought that community benefit spending that is heavily skewed towards patient care financial assistance rather than community health programs is incongruent with the health needs of communities: even if the

financial aid offers a crucial safety-net for the poor, it neither promotes population health nor augments the supply of preventive care services (Rubin et al., 2013; Rubin et al., 2015; Singh et al., 2015; Young et al., 2013). Policymakers also thought that tax-exempt hospitals would infuse much-needed funding for public health programs if they were to shift even a tiny portion of their community benefit spending away from patient care financial assistance and to community health programs (Crossley, 2016; Leider et al., 2016; Pennel et al., 2015; Rauscher & Vyzas, 2012; Rubin et al., 2015; Singh et al., 2016).

In the five years since the IRS CHNA requirement took effect, little is known about the community benefit spending pattern among NC tax-exempt hospitals. Specifically, little attention has been paid to whether the implementation of IRS-mandated CHNA incentivized NC tax-exempt hospitals to align their provision of community benefit to the health needs prioritized by their communities. The purpose of this study was to determine how well NC non-profit hospitals' community benefit programs align with the prioritized health needs of their communities based on CHNAs. The results of this study can be used to measure the initial success of IRS-mandated CHNA tax policy and suggest ways to further incentivize directing community benefit programs to invest in population health.

3.1 Methods

This study employed a mixed-methods research using a sequential explanatory design as illustrated in Figure 10. I gathered and analyzed quantitative data and then collected and analyzed qualitative data. Afterward, I integrated quantitative and qualitative data in the interpretation by mapping emergent themes and concepts to the Socio-Ecological Model and integrating quantitative and qualitative results in the discussion (Creswell & Plano Clark, 2011).
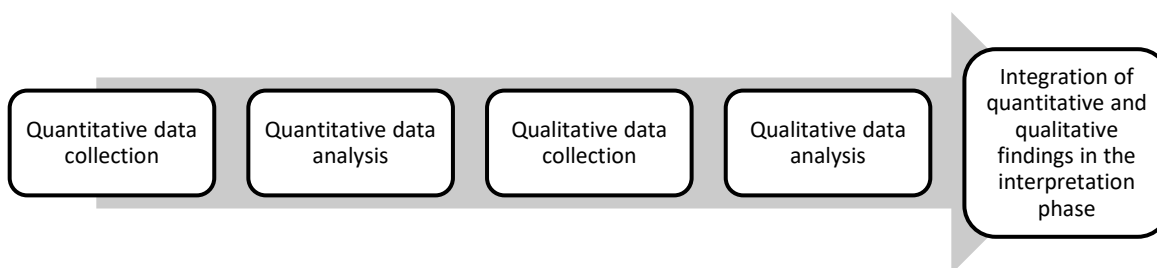
| Quantitative data collection | Quantitative data analysis | Qualitative data collection | Qualitative data analysis | Integration of quantitative and qualitative findings in the interpretation phase |

Figure 10. Sequential Explanatory Mixed-Methods Research (Creswell & Plano Clark, 2011).

Selection of Samples

I selected 14 NC health systems that encompass 39 non-profit hospitals – 20 rural hospitals and 19 urban hospitals, using purposive stratified sampling. I selected the study health systems based on hospital district location. Figure 11 shows the 6 NC hospital districts as classified by North Carolina Hospital Association (NCHA). The 39 non-profit hospitals represent 56% of all the identified private, non-profit hospitals listed in the NCHA directory. The selected 14 NC health systems and their respective hospitals collectively serve 22 NC counties of the 100 NC counties. The study health systems define communities as the counties they serve. Table 14 describes the characteristics of the 39 non-profit hospitals that belong to the 14 study health systems.
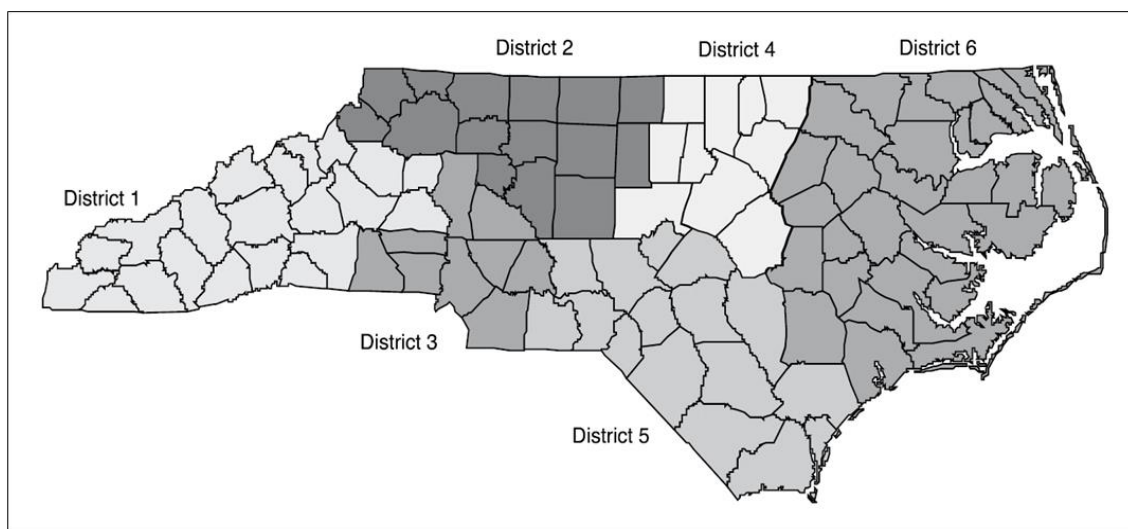

Figure 11. Hospital Districts Classification per NCHA
Source: North Carolina Hospital Association

Table 14. *Characteristics of Private, Non-Profit Hospitals in North Carolina*

Characteristic	All Private, Non-Profit NC Hospitals N = 70	NC Hospitals Covered by the Study N = 39
	Percent	
System affiliation		
Affiliated	75.7	82.1
Independent	24.3	17.9
Location		
Rural	54.3	51.3
Urban	45.7	48.7
Teaching status		
Non-teaching	70.0	59.0
Teaching	30.0	41.0
Bedsize		
≤ 100	48.6	35.9
101 - 299	30.0	35.9
≥ 300	21.4	28.2
Hospital district		
District 1	17.1	17.9
District 2	28.6	20.5
District 3	10.0	15.4
District 4	7.1	10.3
District 5	22.9	12.8
District 6	14.3	23.1

Quantitative Phase

For the quantitative strand of this mixed-methods study, I collected the community benefit expenditures reports of the 39 non-profit hospitals that belong to the 14 study health systems from the NCHA website. I tabulated the data in an electronic spreadsheet. Table 15 lists the two categories of community benefit and the items under each category according to NCHA community benefit guidelines.

Table 15. *Community Benefit Categories and Items According to NCHA*

Community Benefit	Description	Location on NCHA CB Report
Financial Assistance Category		
Cost of treating charity care patients	Free or discounted care to poor patients	Line A
Unreimbursed cost of treating Medicare patients	Reduced reimbursements for treating Medicare patients	Line B
Unreimbursed cost of treating Medicaid patients	Reduced reimbursements for providing care to Medicaid patients	Line E
Unreimbursed cost of treating patients from other means-tested government programs	Reduced reimbursements from means-tested government programs; example: CHIP	Line H
Subsidized health services	Services that are continued to be offered despite financial losses because the community needs them; examples: obstetrics, psychiatric services	Line M
Community Health Programs Category		
Community health improvement programs and services	Costs of activities that improve community health; examples: health education, screenings	Line K
Health professions education	Educational costs to increase supply of local healthcare clinicians	Line L
Research costs	Costs for supporting research activities	Line N
Cash and in-kind contributions	Cash and staff-time donated to help other community groups	Line O
Community building activities	Activities that protect or improve safety or health of community	Line P

Measures of Community Benefit

Each community benefit item shown in Table 15 above is measured as dollar expenditures during a fiscal year. Figure 12 is a sample community benefit report that is prepared using NCHA guidelines showing the dollar expenditures of community benefit items as well as the aggregate dollar spending of all community benefit programs during a fiscal year for one sample hospital.

Hospital or Group Name	Test Hospitals
Survey Title	FY 2010
Last Updated	10/5/2010 9:46am

Community Benefits	
A. Estimated costs of treating **Charity Care** patients*	$7,000,000
B. Estimated unreimbursed costs of treating **Medicare** patients*	$5,000,000
C. This includes an adjustment in this period's Medicare revenues for extraordinary adjustments [1] of:	$100
D. Without this Medicare adjustment, Medicare losses would have been (B + C):	$5,000,100
E. Estimated unreimbursed costs of treating **Medicaid** patients*	$2,000,000
F. This includes an adjustment in this period's Medicaid revenues for extraordinary adjustments [1] of:	$200
G. Without this Medicaid adjustment, Medicaid losses would have been (F + G):	$2,000,200
H. Estimated unreimbursed costs of treating patients from **Other means-tested government programs***	$700,000
I. This includes an adjustment in this period's Other means-tested government programs revenues for extraordinary adjustments [1] of:	$300
J. Without this adjustment, Other means-tested government programs losses would have been (H + I):	$700,300
K. Community health improvement services & community benefit operations	$300
L. Health professions education	$300
M. Subsidized health services[2]	$300
N. Research costs	$300
O. Cash donations and in-kind contributions to community groups	$15,000
P. Community building activities[3]	$6,000
Q. Total Community Benefits[1] with Settlements and Extraordinary Adjustments (A + B + E + H + K + L + M + N + O + P)	$14,722,200
R. Total Community Benefits[1] without Settlements and Extraordinary Adjustments (A + D + G + J + K + L + M + N + O + P)	$14,722,800

Source: 2014 NCHA Guidelines for Reporting Hospital Community Benefits

Figure 12. Sample Community Benefit Report per NCHA Guidelines

I compared the community benefit spending of the 39 study hospitals during the period they first completed the CHNA (Base-Year) against their community benefit spending two years later (Then-Year) accounting for the effect of inflation. The main purpose of the longitudinal analysis was to describe the differences in community benefit spending data between the Base-Year and the Then-Year to determine if investments in community health programs increased after the conduct of IRS-mandated CHNAs. I analyzed the distribution and differences in community benefit spending data using descriptive statistics.

Afterward, I gathered the 22 NC County CHNAs that correspond to the locations of the 14 study health systems from the websites of the hospitals or local public health agencies.

Eight County CHNAs were concluded in 2016 and 16 County CHNAs were completed in

2015 – assessments that were prepared 3 or 4 years after the IRS Code Section 501(r) took

effect, respectively. The study health systems provided input or participated in the conduct of

County CHNAs. I read the County CHNAs to identify the community health needs that were

prioritized by the counties (communities) and then transcribed and tabulated the categorical

data in an electronic spreadsheet. Similarly, I also gathered the published 2015/2016

community benefit reports of the study health systems that are accessible online from their

websites. I read the study health systems' community benefit reports to determine the

community health needs the study health systems prioritized and then transcribed and

tabulated the categorical data in an electronic spreadsheet.

Relationship Between Prioritized Community Health Needs and Community Benefit

I measured the prioritized community health needs per counties as frequency count

based on County CHNA documents (e.g. Mental health = 16). Similarly, I measured the

prioritized community health needs per study hospitals as frequency count based on hospitals'

community benefit reports. I compared the frequencies of the community health needs

prioritized by county against that of the health system serving it using Fisher's exact test. The

null hypothesis was that the outcome variable (prioritized or not prioritized) is independent of

group variable (county versus health system); that is both the counties and health systems

shared priorities, or the community benefit programs provided by health systems are related

(aligned) to the prioritized health needs of their communities.

Qualitative Phase

For the qualitative aspect of this mixed-methods study, I uploaded the full text

versions of 2015/2016 community benefit reports of the 14 study health systems to NVivo

software package for analysis. I read the published community benefit documents to obtain a

broad range of hospital community benefit perspectives. I applied qualitative content analysis technique; i.e., assigning codes to the transcript of the documents, in search of emerging concepts or themes that reflect the tax-exempt hospitals' perception of what their communities prioritized as community health needs. (Creswell & Plano Clark, 2011; Saldaña, 2013).

Integrating Quantitative and Qualitative Findings: Theoretical Framework

For the integration, I combined the findings from the quantitative and qualitative stages in the interpretation phase (Fetters & Freshwater, 2015). The dimensions of community benefit can be grouped broadly into individual characteristics, interpersonal and organizational, community, and policy factors, consistent with McLeroy et al. (1988) Socio-Ecological Model (SEM). I therefore interpreted the data using the lens of the SEM, which theorizes that a person's health is determined by the individual's personal characteristics (e.g. health behavior, beliefs, education) as moderated by the successive echelons of individual's socio-ecological environment (e.g. family, work, community, society, policy) (Golden & Earp, 2012; McLeroy et al., 1988; Stokols, 1996). According to SEM, the socio-ecological factors have cumulative effect on an individual's health; therefore, disease prevention and health improvement programs are effective and impactful when they address more than one layer of the SEM instead of just focusing on one (Golden & Earp, 2012). Further, the SEM emphasizes incorporating solutions to socio-ecological factors that shape disease patterns to the overall plan to improve population health (Fielding et al., 2010). Figure 13 shows the SEM depicting a multi-level approach of addressing a population health problem.
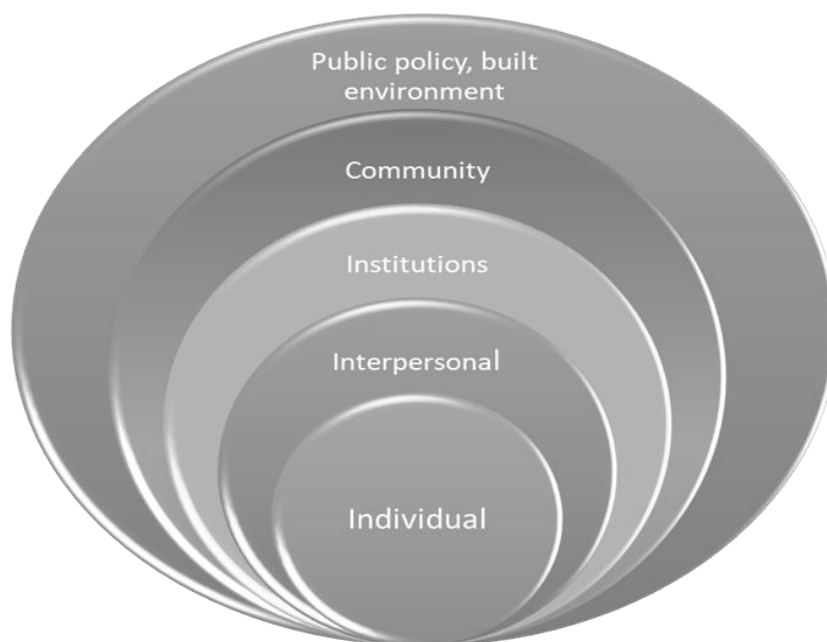
Adapted from McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Educ Q* 1988, 15:351–377.

Figure 13. The Socio-Ecological Model

Integrating the data by using a SEM perspective is appropriate because community health needs and community benefit programs operate across and within the various aspects of SEM (Daley et al., 2011). For instance, the community health need for obesity stems from *individual* factors like behavior, lifestyle practices, genetics while *interpersonal and organizational* factors (family, school, work) affect the individual's health behavior practices. Additionally, *community* factors (access to healthcare services, affordability of healthy food, availability of recreational facilities) also influence health behavior and lifestyle practices. Broad health *policy* related to sale of food (packaging, chemicals, nutritional contents) impacts the individual's health as well (Ruderman, 2013). This mixed-methods research used SEM in discussing the integrated data to examine the effectiveness of NC tax-exempt hospitals' provision of community benefit to address the prioritized health needs of their communities.

In tandem with the SEM perspective, this mixed-methods study also examined the disease prevention levels where the study hospitals' focused interventions to address the health needs of their communities. Disease prevention interventions are classified into three levels: primary, secondary, tertiary preventions (Leavell & Clark, 1953; Sosa-Estani et al., 2012). Primary prevention strategies avoid the development of disease or being infected by a pathogen. Primary prevention strategies are mainly preventive or promotion measures such as wellness programs, health information campaigns, improvements in the physical environment, vaccinations, and health policy. *Secondary* prevention strategies aim to diagnose and treat a disease during its early stages, before it progresses into a debilitating condition. Secondary prevention measures include health screenings, health education on managing a disease, disease monitoring, and clinical follow-ups. *Tertiary* prevention strategies are treatments to lessen the harmful effects of a prevailing disease. Tertiary prevention measures, typically referred to as clinical medicine, are intended to restore function and reduce disease-related complications (Leavell & Clark, 1953; Sosa-Estani et al., 2012).

3.2 Results

I integrated quantitative and qualitative data in the interpretation phase by mapping emergent themes and concepts to the Socio-Ecological Model. The findings show misalignment between the prioritized community health needs and community benefit spending priority. NC tax-exempt hospitals continue to focus on providing individual-level patient care financial assistance while their communities prioritized interventions that address broad population health needs. Their patient-level intervention outlook and desire to recover lost revenues likely influence the hospitals' community benefit programming.

Quantitative Results

Table 16 shows the distribution of the study health systems' community benefit programs by category and type during the Base-Year and the Then-Year. The study hospitals' aggregate community benefit was $2 billion during the Base-Year and $2.15 billion during the Then-Year. Aggregate community benefit spending increased by $142 million or by 7.1%, mainly due to increases in patient care financial assistance, which rose by $159.3 million, or an increase of 9.3%. While patient care financial assistance increased, community health programs spending decreased by $17.3 million or by 5.9%, mainly due to the cost of education subsidies to attract healthcare clinicians to work in the community, which declined by $22.2 million or by 15.2%. Community health improvement services expenditures (i.e., community outreach programs that promote health or prevent diseases), declined by $6.3 million or by 7.5%. Similarly, spending on community building activities, which are programs and activities that improve the health of community or provide a safe environment, decreased by $1.6 million or by 9.8%. Patient care financial assistance accounted for 85.4% ($1.71 billion) of the aggregate community benefit spending during the Base-Year and 87.2% ($1.87 billion) during the Then-Year.

Among the items under financial assistance category, the unreimbursed cost for treating Medicare patients was the highest ($991.2 million) during the Then-Year, followed by the costs of treating charity care patients ($460.3 million) and the unreimbursed cost for providing care to Medicaid patients ($351.6 million). For the items under community health programs, the expenditures for health professions education was the highest ($123.9 million), followed by community health improvement services spending ($78.2 million) and cash and in-kind contributions expenditures ($55.4 million).

Table 16. *Distribution of Community Benefit Spending by Category and Type Base-Year Vs. Then-Year*

Provision of community benefit	N[c]	Base-Year Spending[a]	%	Then-Year Spending[b]	%	Difference Dollar	%
Cost for treating charity care patients	14	480.7	24.0	460.3	21.4	(20.4)	(4.2)
Unreimbursed cost - Medicare patients	14	843.8	42.1	991.2	46.2	147.4	17.5
Unreimbursed cost - Medicaid patients	14	319.0	15.9	351.6	16.4	32.6	10.2
Unreimbursed cost - other programs	4	11.4	0.6	0.4	0.0	(11.0)	(96.2)
Subsidized health services	5	57.5	2.9	68.1	3.2	10.7	18.6
Financial assistance	14	1,712.4	85.4	1,871.7	87.2	159.3	9.3
Community health improvement services	11	84.5	4.2	78.2	3.6	(6.3)	(7.5)
Health professions education	10	146.1	7.3	123.9	5.8	(22.2)	(15.2)
Research costs	4	4.1	0.2	3.7	0.2	(0.3)	(8.4)
Cash and in-kind contributions	13	42.3	2.1	55.4	2.6	13.1	31.0
Community building activities	9	16.2	0.8	14.6	0.7	(1.6)	(9.8)
Community health programs	13	293.1	14.6	275.8	12.8	(17.3)	(5.9)
All	14	2,005.5	100.0	2,147.5	100.0	142.0	7.1

[a] *in US milllion dollars*

[b] *in US million dollars, inflation-adjusted*

[c] *number of health systems*

Table 17 compares the community health needs prioritized by the 22 NC counties (communities) per CHNAs and the community health needs prioritized by study health systems that serve them per published community benefit reports. Table 4 shows that the NC counties and the study health systems both prioritized the following community health needs: obesity and chronic disease prevention ($p=1.0$), mental health and substance abuse ($p=0.4839$), maternal and infant care ($p=0.5594$), unintentional deaths and injuries ($p=1.0$), HIV and sexually transmitted infections ($p=0.4$), dental health ($p=1.0$), aging population ($p=1.0$), and access to care ($p=1.0$). However, they differed significantly on the importance of addressing socio-economic determinants of health ($p=0.0124$). While 11 NC counties

prioritized socio-economic determinants of health, only 5 study health systems did.

Table 17. *Prioritized Community Health Needs by Counties and Study Health Systems*

Community Health Needs	Prioritized in County's CHNA?		Prioritized by Health Systems that Serve in the County?		Fisher's exact test
	Yes	No	Yes	No	p-value
Obesity and chronic disease prevention	20	0	20	0	1.0000
Mental health and substance abuse	16	0	14	2	0.1746
Maternal and infant care	4	3	6	1	0.5594
Unintentional deaths and injuries	2	0	0	0	1.0000
HIV and sexually transmitted infections	3	0	1	2	0.4000
Dental health	1	0	1	0	1.0000
Aging population	1	0	1	0	1.0000
Access to care	12	0	10	2	0.4783
Socio-economic determinants of health[a]	11	0	5	6	0.0124

[a] *refers to economic development, housing, income, education, crime, violence, poverty, health equity, lack of community resources, physical environment*

The quantitative analysis yielded the following three findings:

First, community health programs spending during the Then-Year declined by $17.3 million or by 5.9% compared to the Base-Year despite the conduct of IRS-mandated CHNAs; in contrast, patient care financial assistance increased by $159.3 million or by 9.3%.

Second, counties (communities) prioritized socio-economic determinants of health while most of the study health systems that serve in those counties did not prioritize it (*p=0.0124*).

Third, study hospitals spent more (87.2% of the total community benefit spending) on patient care financial assistance (free or discounted care to poor and Medicaid/Medicare patients) that are not prioritized by the counties while spending little (12.8% of the aggregate community benefit spending) on community health programs that are aligned to the prioritized health needs of communities (e.g. obesity and chronic disease prevention, mental

health and substance abuse, maternal and infant care).

Qualitative Results

Four broad themes of community benefit program objectives emerged in the application of qualitative content analysis to the transcript of community benefit reports. These were: provide preventive care services; improve population health; increase access to care; and address socio-economic factors. Below, I further describe each theme.

Provide preventive care services

Preventing chronic disease was the predominant community health need, prioritized by 13 out of 14 study health systems. The study health systems' chronic disease community outreach programs and services focused on: delivering education and information campaigns, conducting screenings and wellness programs, monitoring of at-risk patients, and increasing access to healthcare services. Providing health education classes and health information campaigns emerged as the principal strategies in addressing chronic disease. Moreover, most interventions reported by the study hospital systems focused on managing diabetes and obesity.

Improve Population Health

The study health systems identified and prioritized three population health needs: mental health; maternal and infant care; and care for an aging population. The study health systems' mental health community benefit programs and services included: conducting an education and information campaign; providing crisis assistance; and increasing access to mental healthcare services. The study health systems supported new moms and their infants by providing or assisting them with education and information campaigns, home visits and clinical follow-up, and access to healthcare services. The study health systems addressed the need to care for an aging population by providing: support groups, health education sessions,

and screenings services at senior living facilities. The study health systems also provided grants to and collaborated with other groups (e.g. schools, community health centers, non-governmental organizations) to address a variety of population health needs.

Increase Access to Care

The study health systems' access to care community benefit programs and services included: expanding healthcare delivery systems, increasing navigational platforms, recruiting healthcare providers, and providing transportation support services. A health system reported expanding healthcare systems by developing three rural health centers and Free Clinic operations in collaboration with other local community groups. Navigational platform refers to the system of helping and directing low-income and uninsured patients to acquire health insurance coverage or have access to healthcare services "*to effectively navigate patients through the continuum of care to prevent hospitalization and/or readmissions.*" The study health systems increased the supply of healthcare providers in their communities by recruiting or providing health profession educational grants. For instance, a study health system hired a licensed mental health professional to "*increase the number of underserved community members receiving mental health treatment and decrease barriers of access to mental health services.*" Another health system "*contributed over $3 million toward the training and teaching of tomorrow's healthcare professionals*" to increase the supply of healthcare providers in the community. The lack of transportation is a concern that is highly related to access to care problem (Elnitsky et al., 2013). A study health system addressed the transportation concern of some of its wheelchair bound patients by partnering with local transport companies to provide the patients with transport services.

Address Socio-Economic Factors

The study health systems socio-economic factor programs addressed safe and

affordable housing, employment, education, and poverty. For instance, a county prioritized

the need for safe and affordable housing and the health system serving that county provided

commensurate outreach programs and services:

> *Continue partnership with Habitat for Humanity of X County. The organization builds affordable housing communities in X County and provides homeowner education programs. Study Health System provides volunteers and serves on the organization's advisory board.*

Similarly, one county prioritized the need for economic development and its health system

provided the following community health program:

> *Study Health System will partner to support entry level workforce development in the health care field participation in High Country Council on Work Force Development in development of a healthcare career pathway program by 10/2017. Entry level will be at CNA or CMA and High School diploma.*

I also sought qualitative information from the community benefit reports to understand

why some health systems did not prioritize socio-economic community health needs even

though their communities did. One health system perceives that socio-economic factors are

"outside the hospital's scope of services." Another health system believes that focusing on

population health needs are "more feasible" for hospitals to impact. And another one

considers addressing obesity and chronic diseases to be more in line with the healthcare

"organization's vision, commitments, and key strengths."

The qualitative data analysis produced the following four findings:

First, four broad community benefit program objectives emerged: provide preventive

care services; improve population health; increase access to care; and address socio-economic

factors. These themes reflect the tax-exempt hospitals perceptions of how best to address the

prioritized community health needs. The qualitative results suggest that the hospitals started to

address population health, access to care, and to a lesser extent, socio-economic concerns like

safe and affordable housing and poverty.

Second, access to care transcends all other prioritized community health needs. That is, the lack of access to care, which is related to the individual's socio-economic condition, can exacerbate the individual's health outcome (Kind et al., 2014; Phelan, Link, & Tehranifar, 2010; Towne, 2017; WHO, 2010). Therefore, the four broad themes that emerged from the study reflect the SEM where disease prevention and population health needs operate across and within the various levels of SEM (Golden & Earp, 2012; McLeroy et al., 1988).

Third, applying the SEM, I see that most community benefit programs (e.g. wellness promotion, health screenings, health education, transportation services, free clinics) are patient-level intervention efforts aimed at reducing the frequency of hospital readmissions for the poor and medically underserved patients with obesity, diabetes, and other chronic diseases.

Fourth, community building activities or population-centered initiatives that relate to socio-economic determinants of health (e.g. improvements in the physical environment, economic development, poverty, education, creating safe and healthy environment) are scarce in the current mix of community benefit programs and services.

Integrating Quantitative and Qualitative Results

Guided by the SEM and levels of prevention theoretical frameworks, this study integrates the following quantitative and qualitative data findings.

Despite conducting IRS-mandated CHNAs, NC tax-exempt hospitals' community health programs spending during the Then-Year declined by $17.3 million or by 5.9% compared to the Base-Year, whereas patient care financial assistance increased by $159.3 million or by 9.3%. Counties and hospitals differed on the importance of addressing socio-economic determinants of health: counties prioritized it while most hospitals that serve in those counties did not (*p=0.0124*). Hospitals spent more on patient care financial assistance

(87.2% of aggregate community benefit spending) that are not prioritized by the counties while spending little (12.8%) on community health programs that are aligned to the prioritized health needs of communities.

The four broad themes of community benefit programs reflect what the tax-exempt hospitals perceive as prioritized community health needs: providing preventive care services; improving population health; increasing access to care; and addressing socio-economic determinants of health. Qualitative results suggest that NC tax-exempt hospitals started to address population health. Most population health initiatives the hospitals provided are patient-level preventions (e.g. screening, monitoring, wellness programs, health education, free clinics) focused on reducing the frequency of hospital readmissions for the poor and medically underserved patients. Community building activities or population-centered initiatives that address socio-economic determinants of health are scarce in the current mix of community benefit programs and services.

The integrated analysis leads to two conclusions:

First, conducting IRS-mandated CHNAs did not incentivize NC tax-exempt hospitals to commit more financial resources to population health improvement initiatives. The hospitals continue to provide more individual-level financial assistance (free or discounted care to hospitalized patients) than in community health improvement programs or community building activities. Although the hospitals are beginning to address population health and access to care needs, their dollar expenditures in these areas paled in comparison to patient care financial assistance.

Second, conducting IRS-mandated CHNAs did not increase the alignment of community benefit programs with prioritized needs. Tax-exempt hospitals continue to spend and engage more in providing patient care financial assistance than community health

programs, a strategy misaligned with prioritized community health needs (Singh et al., 2015). The provision of community benefit is aligned to community health needs if it: prevents the incidence of disease, promotes health by building community-wide coalition to address population health issues, addresses socio-economic determinants of health, or improves access to care, meaning to help individuals acquire health insurance coverage, expand healthcare delivery systems, or increase the supply of healthcare providers in the community (Trocchio, 2015). However, qualitative analysis provides insights into the hospitals' perceptions of their community's health needs. It appears that the hospitals, even though driven more likely by organization-centric motives than to meet the health needs of their communities, are slowly and to a limited extent providing community outreach programs that address access to care and population health concerns.

3.3 Discussion

The IRS mandated CHNAs to ensure tax-exempt hospitals are explicitly aware of the health needs of their communities and to incentivize their benefit programs to address those needs by investing and engaging more in population health improvement programs (Crossley, 2016; Leider et al., 2016; Rubin et al., 2015; Singh et al., 2016; Singh et al., 2015). Qualitative results show that NC tax-exempt hospitals are beginning to provide such programs. However, this study finds no evidence that the performance of CHNAs achieved the purpose of incentivizing hospitals into investing and engaging more in population health improvement initiatives. The alignment of hospitals' community benefit with priority health needs has not improved substantially.

- NC tax-exempt hospitals' community benefit spending continues to be heavily skewed toward patient care financial assistance – free or discounted care to

hospitalized individuals. According to the community benefit financial reports, these tax-exempt hospitals supplied more tertiary-level, individual-focused prevention services while the communities they serve prioritized secondary or primary disease prevention efforts that address a broad range of population health issues. Community benefit is only aligned with community health needs if it improves population health, builds community-coalitions to manage population health issues, increases access to care, or addresses socio-economic determinants of health. (Trocchio, 2011).

- The qualitative strand of the study suggests these organizations are beginning to address population health issues. However, the limited resources that the hospitals allocated to community health programs were primarily spent on preventing chronic disease by providing wellness programs, health screenings, health information campaigns and increasing access to services. Very little portion of the total community benefit spending (only 0.7%) addressed socio-economic determinants of health or community building activities (e.g., affordable housing, economic development, poverty, improvement in the physical environment). NC communities prioritized socio-economic-related health needs, yet most of the tax-exempt hospitals that serve them did not (*p=0.0124*).

The disparity between patient care financial assistance and community health programs spending in favor of the former and the detriment of the latter suggests five things. First, the NC tax-exempt hospitals continue to function as safety-nets rather than active partners of public health agencies in the conduct of population health initiatives (Singh et al., 2016). However, even if the offering of patient care financial assistance provides a crucial safety net for the poor, hospital charity care does not necessarily improve population health

(Berg, 2009; Leider et al., 2016; Singh et al., 2016; Singh et al., 2015; Young et al., 2013).

Second, NC tax-exempt hospitals prioritize patient care financial assistance likely because it is more relevant to their core competency of providing clinical care (Singh et al., 2015). Although it may be immediately accretive to the hospitals' bottom line to prioritize charity care, ignoring socio-economic determinants of health is akin to ignoring the "fundamental causes" of disease development and health inequalities (Phelan et al., 2010). Third, NC tax-exempt hospitals may feel that their track record of incurring high unreimbursed costs (lost revenues) for providing care to patients with Medicaid/Medicare coverage already provides them sufficient justification for their tax-exempt status, which makes mandating CHNAs to incentivize increased investments in community health programs moot. Fourth, if the IRS' purpose in mandating CHNAs was to spur a shift in community benefit priorities toward population health needs and away from the traditional patient care financial assistance, then, the evidence from 4 years after the requirement's implementation, indicates it is currently failing in North Carolina.

Policy Implications

The IRS has given tax-exempt hospitals wide latitude in deciding the categories, types, or items of community benefit that they can provide to meet the requirements of the Act (Bazzoli et al., 2010; GAO, 2008; Rubin et al., 2015; Young et al., 2013). In NC, tax-exempt hospitals can even control the amount of community benefit spending since no state law establishes how much and what kind of community benefit is required in exchange for tax-exempt status (Nelson et al., 2015). Therefore, tax-exempt hospitals can "cherry-pick" the type of community benefit and the amount spent so long as they comply with the IRS CHNA and accompanying reporting requirements. NC tax-exempt hospitals continue to choose to provide more tertiary-level prevention services than disease prevention and population health

efforts, even if doing so does little to either improve the overall health of the communities they serve or lessen the occurrence of costly avoidable hospitalizations (Berg, 2009; Singh et al., 2016; Singh et al., 2015; Young et al., 2013). Unless the IRS and the NC state lawmakers do something to regulate or set a limit on community health programs spending (dollar values and spending mix), I do not foresee substantial changes in NC tax-exempt hospitals' community benefit spending pattern in the years to come. Patient care financial assistance would probably remain at about 85% of the aggregate community benefit spending while community health spending would remain at around 15%.

Policy Recommendations

Introducing state laws or IRS regulation that would set minimums on community benefit spending (dollar values and mix) for tax-exempt hospitals may be controversial and may face strong opposition from hospital associations. Instead, I recommend that the current Centers for Medicaid and Medicare Services (CMS) prospective payment algorithm for paying inpatient hospitalizations be modified by the addition of a premium factor for Costs of Providing Population Health Programs. It will function like the Indirect Costs of Graduate Medical Education (IME) payment where teaching hospitals are reimbursed more than non-teaching hospitals. The addition of Costs of Providing Population Health Programs to the algorithm will afford additional payment to hospitals that invest more in population health programs. The addition of this payment premium factor should motivate hospitals to spend and engage more in community or population-health-focused intervention efforts. This subtler and less controversial approach could elicit the desired shift in community benefit spending priorities. In addition, the IRS should articulate an explicit stance regarding what items should be legally and rightfully counted toward the provision of community benefit. The IRS should issue clear pronouncements on uniformly measuring and reporting the benefit

to the public, much in the same manner that the IRS holds for-profit hospitals accountable for measuring, reporting, and paying the correct amount of taxes. The public deserves valid and reliable community benefit reports. The accountancy profession should develop a set of generally accepted accounting principles regarding the measurement, reporting, and auditing of the provision of community benefit.

Study Limitations and Call for Future Studies

This study is confined within the context of tax-exempt hospitals that operate in North Carolina. Future studies with expanded scope and coverage may offer more insights to the study of community benefit after the implementation of IRS Code Section 501(r). This study made use of monetary values to measure the provision of community benefit. Tax-exempt hospitals may argue that their contribution to the community cannot be measured by dollar values alone. Therefore, this study employed a mixed methods approach including document analysis approaches to understand non-profit hospital perspectives on how their contributions support the population health initiative. Further study is needed to evaluate the delivery of outreach programs and their impact on the health outcomes of the communities around the immediate service areas of tax-exempt hospitals. This study considered the information contained in the published community benefit reports as *prima facie* evidence of implementation strategies or community outreach programs. Further work is warranted before causal relationships between community health needs and community benefit may be established.

3.4 Conclusion

Directing community benefit toward improving population health is a step in the right direction. The findings of this mixed-methods study indicate that NC tax-exempt hospitals are

beginning to provide outreach programs that address population health within their respective communities; however, their community benefit financial contributions are not shifting toward population health initiatives. Their ingrained biomedical, patient-level intervention perspective and desire to recover high unreimbursed costs for providing care to Medicare, Medicaid, and poor patients likely influence the hospitals' community benefit programming to favor individual welfare over population health programs. Performing IRS-mandated CHNAs did not substantially increase the alignment of community benefit programs with prioritized needs but did clearly highlight those needs.

REFERENCES

Bazzoli, G. J., Clement, J. P., & Hsieh, H.-M. (2010). Community Benefit Activities of Private, Nonprofit Hospitals. *Journal of Health Politics, Policy and Law, 35*(6), 999-1026. doi:10.1215/03616878-2010-036

Berg, J. W. (2009). *Population Health and Tax-Exempt Hospitals: Putting the Community Back into the 'Community Benefit' Standard* (ID 1243963). Retrieved from Rochester, NY: https://papers.ssrn.com/abstract=1243963

Burke, J. G., Truong, S., Albert, S., Steenrod, J., Gibert, C., Folb, B., . . . James, E. (2014). What Can Be Learned from the Types of Community Benefit Programs that Hospitals Already Have in Place? *Journal of Health Care for the Poor and Underserved, 25*(1), 165-193. doi:10.1353/hpu.2014.0058

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Los Angeles: SAGE Publications.

Crossley, M. (2016). Health and Taxes: Hospitals, Community Health and the IRS. *Yale Journal of Health Policy, Law, and Ethics, 16*(1), 51-110.

Daley, E., Alio, A., Anstey, E., Chandler, R., Dyer, K., & Helmy, H. (2011). Examining Barriers to Cervical Cancer Screening and Treatment in Florida through a Socio-Ecological Lens. *Journal of Community Health, 36*(1), 121-131. doi:10.1007/s10900-010-9289-7

Fielding, J. E., Teutsch, S., & Breslow, L. (2010). A framework for public health in the United States. *Public Health Reviews, 32*(1), 174.

GAO. (2008). *Nonprofit Hospitals; Variation in Standards and Guidance Limits: Comparison of How Hospitals Meet Community Benefit Requirements* (GAO-08-880 ed.): DIANE Publishing.

Golden, S. D., & Earp, J. A. L. (2012). Social Ecological Approaches to Individuals and Their Contexts. *Health Education & Behavior, 39*(3), 364-372. doi:10.1177/1090198111418634

Himmelstein, D. U., & Woolhandler, S. (2016). Public Health's Falling Share of US Health Spending. *American Journal of Public Health, 106*(1), 56. doi:10.2105/AJPH.2015.302908

Jackson, C. S., & Gracia, J. N. (2014). Addressing Health and Health-Care Disparities: The Role of a Diverse Workforce and the Social Determinants of Health. *Public Health Reports, 129*(1_suppl2), 57-61. doi:10.1177/00333549141291S211

Keehan, S. P., Stone, D. A., Poisal, J. A., Cuckler, G. A., Sisko, A. M., Smith, S. D., . . . Lizonitz, J. M. (2017). National Health Expenditure Projections, 2016-25: Price Increases, Aging Push Sector To 20 Percent Of Economy. *Health Aff (Millwood), 36*(3), 553. doi:10.1377/hlthaff.2016.1627

Leavell, H. R., & Clark, E. G. (1953). *Textbook of Preventive Medicine*. New York, NY USA: McGraw-Hill.

Leider, J. P., Tung, G. J., Lindrooth, R. C., Johnson, E. K., Hardy, R., & Castrucci, B. C. (2016). Establishing a Baseline: Community Benefit Spending by Not-for-Profit Hospitals Prior to Implementation of the Affordable Care Act. *Journal of public health management and practice: JPHMP*. doi:10.1097/PHH.0000000000000493

McLeroy, K., Steckler, A., Bibeau, D., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly, 15*(Winter 88), 351-377.

Nelson, G. D., Tan, B., & Mueller, C. H. (2015). The Hilltop Institute: Hospital Community Benefit Program: Community Benefit Laws. *The Hilltop Institute*.

OECD. (2018). Health resources - Health spending - OECD Data. *OECD Data Health Spending*.

Osborn, R., Squires, D., Doty, M. M., Sarnak, D. O., & Schneider, E. C. (2016). In New Survey Of Eleven Countries, US Adults Still Struggle With Access To And Affordability Of Health Care. *Health Affairs; Chevy Chase, 35*(12), 2327-2336. doi:http://dx.doi.org.librarylink.uncc.edu/10.1377/hlthaff.2016.1088

Pennel, C. L., McLeroy, K. R., Burdine, J. N., & Matarrita-Cascante, D. (2015). Nonprofit hospitals' approach to community health needs assessment. *American Journal of Public Health, 105*(3), e103-113. doi:10.2105/AJPH.2014.302286

Rauscher, S., & Vyzas, M. (2012). Assessing the validity of self-reported community benefit expenditures: evidence from not-for-profit hospitals in California. *Journal of public health management and practice: JPHMP, 18*(4), 346-354. doi:10.1097/PHH.0b013e3182470578

Rubin, D. B., Singh, S. R., & Jacobson, P. D. (2013). Evaluating Hospitals' Provision of Community Benefit: An Argument for an Outcome-Based Approach to Nonprofit Hospital Tax Exemption. *American Journal of Public Health, 103*(4), 612-616. doi:10.2105/AJPH.2012.301048

Rubin, D. B., Singh, S. R., & Young, G. J. (2015). Tax-Exempt Hospitals and Community Benefit: New Directions in Policy and Practice. *http://dx.doi.org.librarylink.uncc.edu/10.1146/annurev-publhealth-031914-122357*.

Ruderman, M. (2013). Ecological Model in Public Health. *Johns Hopkins Bloomberg School of Public Health*.

Saldaña, J. (2013). *The coding manual for qualitative researchers*. Los Angeles: SAGE Publications.

Singh, S. R., Bakken, E., Kindig, D. A., & Young, G. J. (2016). Hospital Community Benefit in the Context of the Larger Public Health System: A State-Level Analysis of Hospital and Governmental Public Health Spending Across the United States. *Journal of Public*

Health Management and Practice, 22(2), 164-174. doi:10.1097/PHH.0000000000000253

Singh, S. R., Young, G. J., Daniel Lee, S.-Y., Song, P. H., & Alexander, J. A. (2015). Analysis of Hospital Community Benefit Expenditures' Alignment With Community Health Needs: Evidence From a National Investigation of Tax-Exempt Hospitals. *American Journal of Public Health, 105*(5), 914-921. doi:10.2105/AJPH.2014.302436

Sosa-Estani, S., Colantonio, L., & Segura, E. L. (2012). Therapy of Chagas Disease: Implications for Levels of Prevention. *Journal of Tropical Medicine, 2012*(2012). doi:10.1155/2012/292138

Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American journal of health promotion : AJHP, 10*(4), 282.

TFAH. (2017). A Funding Crisis for Public Health and Safety: State-by-State Public Health Funding and Key Health Facts, 2017 - Trust for America's Health. *Trust for America's Health*.

TFAH. (2018). *A Funding Crisis for Public Health and Safety: ISSUE REPORT MARCH 2018 STATE-BY-STATE PUBLIC HEALTH FUNDING AND KEY HEALTH FACTS*. Retrieved from Washington, DC: http://healthyamericans.org/assets/files/TFAH-2018-InvestInAmericaRpt-FINAL.pdf

Trocchio, J. (2011). How Community-Building Aligns with Public Health. *Health Progress*(September - October 2011), 3.

Trocchio, J. (2015). Community Benefit and Population Health Management. *Health Progress*(January - February 2015), 3.

Young, G. J., Chou, C.-H., Alexander, J., Lee, S.-Y. D., & Raver, E. (2013). Provision of Community Benefits by Tax-Exempt U.S. Hospitals. *New England Journal of Medicine, 368*(16), 1519-1527. doi:10.1056/NEJMsa1210239

APPENDIX C: SAS CODES


```
*prioritized by counties vs prioritized by health systems;

data obesity;
      input group $ outcome $ count;
      datalines;
      counties 1yes 20
      counties no 0
      hs 1yes 20
      hs no 0
            ;
proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;

data mental;
      input group $ outcome $ count;
      datalines;
      counties 1yes 16
      counties no 0
      hs 1yes 14
      hs no 2
            ;
proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;

data maternal;
      input group $ outcome $ count;
      datalines;
      counties 1yes 4
      counties no 3
      hs 1yes 6
      hs no 1
            ;
proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;

data u_deaths;
      input group $ outcome $ count;
      datalines;
      counties 1yes 2
      counties no 0
      hs 1yes 0
      hs no 0
            ;
proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;
```

```
data hiv;
      input group $ outcome $ count;
      datalines;
      counties 1yes 3
      counties no 0
      hs 1yes 1
      hs no 2
      ;

proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;

data dental;
      input group $ outcome $ count;
      datalines;
      counties 1yes 1
      counties no 0
      hs 1yes 1
      hs no 0
      ;

proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;

data access;
      input group $ outcome $ count;
      datalines;
      counties 1yes 12
      counties no 0
      hs 1yes 10
      hs no 2
      ;

proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;

data socio;
      input group $ outcome $ count;
      datalines;
      counties 1yes 11
      counties no 0
      hs 1yes 5
      hs no 6
      ;

proc freq;
      weight count;
      tables group*outcome /chisq fisher;
      run;
```

CONCLUSION

The three articles in this study examined the community benefit programs and services provided by NC tax-exempt hospitals in the context of a nationwide IRS reporting requirement. The articles collectively provide comprehensive understanding of the hospitals' investments in community benefit and how well their mix of community benefit programs support population health. The findings indicate that despite performing IRS-mandated CHNAs, the tax-exempt hospitals' financial contributions are not currently shifting toward population health initiatives. The hospitals continue to invest more in individual-level patient care financial assistance than in population-health focused programs or community building activities. As elucidated in the articles, their ingrained biomedical, patient-level intervention perspective and desire to recover high unreimbursed costs or lost revenues for providing care to Medicare, Medicaid, and poor patients likely influence the hospitals' community benefit programming to favor individual welfare over population health. Nevertheless, policymakers should continue to direct community benefit programs toward population health because it is a step in the right direction. Organizational change takes time and the desired results of policy interventions are usually incremental. Thus, conducting CHNA must remain a legal obligation by non-profit hospitals for maintaining their privileged tax status to facilitate organizational paradigm shift in community benefit programming toward population health programs or community building activities and away from individual welfare.

REFERENCES

Abbott, A. L. (2011). Community Benefits and Health Reform: Creating New Links for Public Health and Not-for-Profit Hospitals. *Journal of Public Health Management and Practice, 17*(6), 524-529. doi:10.1097/PHH.0b013e31822da124

Alexander, J. A., Young, G. J., Weiner, B. J., & Hearld, L. R. (2009). How do system-affiliated hospitals fare in providing community benefit? *Inquiry: A Journal of Medical Care Organization, Provision and Financing, 46*(1), 72-91. doi:10.5034/inquiryjrnl_46.01.72

Andersen, R. M. (1995). Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? *Journal of Health and Social Behavior, 36*(1), 1-10. doi:10.2307/2137284

Bazzoli, G. J., Clement, J. P., & Hsieh, H.-M. (2010). Community Benefit Activities of Private, Nonprofit Hospitals. *Journal of Health Politics, Policy and Law, 35*(6), 999-1026. doi:10.1215/03616878-2010-036

Berg, J. W. (2009). *Population Health and Tax-Exempt Hospitals: Putting the Community Back into the 'Community Benefit' Standard* (ID 1243963). Retrieved from Rochester, NY: https://papers.ssrn.com/abstract=1243963

Bindman, A. B., Grumbach, K., Osmond, D., Komaromy, M., Vranizan, K., Lurie, N., . . . Stewart, A. (1995). Preventable Hospitalizations and Access to Health Care. *Jama, 274*(4), 305-311. doi:10.1001/jama.1995.03530040033037

Boccuti, C., & Casillas, G. (2015, 2015/01/29/). Aiming for Fewer Hospital U-turns: The Medicare Hospital Readmission Reduction Program. Retrieved from http://kff.org/medicare/issue-brief/aiming-for-fewer-hospital-u-turns-the-medicare-hospital-readmission-reduction-program/

Burke, J. G., Truong, S., Albert, S., Steenrod, J., Gibert, C., Folb, B., . . . James, E. (2014). What Can Be Learned from the Types of Community Benefit Programs that Hospitals Already Have in Place? *Journal of Health Care for the Poor and Underserved, 25*(1), 165-193. doi:10.1353/hpu.2014.0058

countyhealthrankings.org. (2017). How Healthy is your County? | County Health Rankings. *County Health Rankings & Roadmaps*.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Los Angeles: SAGE Publications.

Crossley, M. (2016). Health and Taxes: Hospitals, Community Health and the IRS. *Yale Journal of Health Policy, Law, and Ethics, 16*(1), 51-110.

Daley, E., Alio, A., Anstey, E., Chandler, R., Dyer, K., & Helmy, H. (2011). Examining Barriers to Cervical Cancer Screening and Treatment in Florida through a Socio-Ecological Lens. *Journal of Community Health, 36*(1), 121-131. doi:10.1007/s10900-010-9289-7

Dolton, P., & Pathania, V. (2016). Can increased primary care access reduce demand for emergency care? Evidence from England's 7-day GP opening. *Journal of Health Economics, 49*, 193-208. doi:10.1016/j.jhealeco.2016.05.002

Dupre, M. E., Xu, H., Granger, B. B., Lynch, S. M., Nelson, A., Churchill, E., . . . Peterson, E. D. (2018). Access to routine care and risks for 30-day readmission in patients with cardiovascular disease. *American Heart Journal, 196*, 9-17. doi:10.1016/j.ahj.2017.10.001

Elnitsky, C., Andresen, E., Clark, M., McGarity, S., Hall, C., & Kerns, R. (2013). Access to the US Department of Veterans Affairs health system: self-reported barriers to care among returnees of Operations Enduring Freedom and Iraqi Freedom. *BMC Health Services Research, 13*(1), 498. doi:10.1186/1472-6963-13-498

Eyler, A. A., & Dreisinger, M. (2010). Publishing on Policy: Trends in Public Health. *Preventing Chronic Disease, 8*(1).

Ferdinand, A. O., Epane, J. P., & Menachemi, N. (2014). Community benefits provided by religious, other nonprofit, and for-profit hospitals: a longitudinal analysis 2000-2009. *Health care management review, 39*(2), 145-153. doi:10.1097/HMR.0b013e3182993b52

Fetters, M. D., & Freshwater, D. (2015). The 1 + 1 = 3 Integration Challenge. In (Vol. 9, pp. 115-117): SAGE Publications.

Fielding, J. E., Teutsch, S., & Breslow, L. (2010). A framework for public health in the United States. *Public Health Reviews, 32*(1), 174.

GAO. (2008). *Nonprofit Hospitals; Variation in Standards and Guidance Limits: Comparison of How Hospitals Meet Community Benefit Requirements* (GAO-08-880 ed.): DIANE Publishing.

Golden, S. D., & Earp, J. A. L. (2012). Social Ecological Approaches to Individuals and Their Contexts. *Health Education & Behavior, 39*(3), 364-372. doi:10.1177/1090198111418634

Health Affairs, P. B. (2016). "Nonprofit Hospitals' Community Benefit Requirements, " Health Affairs Health Policy Brief, February 25, 2016.

Hellinger, F. J. (2009). Tax-exempt hospitals and community benefits: a review of state reporting requirements. *J Health Polit Policy Law, 34*(1), 37-61. doi:10.1215/03616878-2008-991

Himmelstein, D. U., & Woolhandler, S. (2016). Public Health's Falling Share of US Health Spending. *American Journal of Public Health, 106*(1), 56. doi:10.2105/AJPH.2015.302908

IRS. (2016). New Requirements for 501(c)(3) Hospitals Under the Affordable Care Act. *IRS*.

Jackson, C. S., & Gracia, J. N. (2014). Addressing Health and Health-Care Disparities: The Role of a Diverse Workforce and the Social Determinants of Health. *Public Health Reports, 129*(1_suppl2), 57-61. doi:10.1177/00333549141291S211

Keehan, S. P., Stone, D. A., Poisal, J. A., Cuckler, G. A., Sisko, A. M., Smith, S. D., . . . Lizonitz, J. M. (2017). National Health Expenditure Projections, 2016-25: Price Increases, Aging Push Sector To 20 Percent Of Economy. *Health Aff (Millwood), 36*(3), 553. doi:10.1377/hlthaff.2016.1627

Kind, A. J. H., Jencks, S., Brock, J., Yu, M., Bartels, C., Ehlenbach, W., . . . Smith, M. (2014). Neighborhood socioeconomic disadvantage and 30-day rehospitalization: a retrospective cohort study. *Ann Intern Med, 161*(11), 765-774 710p. doi:10.7326/M13-2946

Leavell, H. R., & Clark, E. G. (1953). *Textbook of Preventive Medicine*. New York, NY USA: McGraw-Hill.

Leider, J. P., Tung, G. J., Lindrooth, R. C., Johnson, E. K., Hardy, R., & Castrucci, B. C. (2016). Establishing a Baseline: Community Benefit Spending by Not-for-Profit Hospitals Prior to Implementation of the Affordable Care Act. *Journal of public health management and practice: JPHMP*. doi:10.1097/PHH.0000000000000493

Mays, G. P., & Smith, S. A. (2011). Evidence Links Increases In Public Health Spending To Declines In Preventable Deaths. *Health Affairs, 30*(8), 1585-1593. doi:10.1377/hlthaff.2011.0196

McLeroy, K., Steckler, A., Bibeau, D., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly, 15*(Winter 88), 351-377.

Mouradian, W. E. (2006). Band-Aid Solutions to the Dental Access Crisis: Conceptually Flawed—A Response to Dr. David H. Smith. *Journal of Dental Education, 70*(11), 1174-1179.

NCHA. (2014, 2017). NCHA Hospital Community Benefits Report. *North Carolina Hospital Association.* Retrieved from https://www.ncha.org/healthcare-topics/community-benefit

Nelson, G. D., Tan, B., & Mueller, C. H. (2015). The Hilltop Institute: Hospital Community Benefit Program: Community Benefit Laws. *The Hilltop Institute*.

Nikpay, S. S., & Ayanian, J. Z. (2015). Hospital Charity Care--Effects of New Community-Benefit Requirements. *The New England Journal of Medicine, 373*(18), 1687-1690. doi:10.1056/NEJMp1508605

OECD. (2018). Health resources - Health spending - OECD Data. *OECD Data Health Spending*.

Osborn, R., Squires, D., Doty, M. M., Sarnak, D. O., & Schneider, E. C. (2016). In New Survey Of Eleven Countries, US Adults Still Struggle With Access To And Affordability Of Health Care. *Health Affairs; Chevy Chase, 35*(12), 2327-2336. doi:http://dx.doi.org.librarylink.uncc.edu/10.1377/hlthaff.2016.1088

Patient Protection and Affordable Care Act, Pub. L. No. 111–148: H.R.3590 - 111th Congress (2009-2010). (2010).

Pennel, C. L., McLeroy, K. R., Burdine, J. N., & Matarrita-Cascante, D. (2015). Nonprofit hospitals' approach to community health needs assessment. *American Journal of Public Health, 105*(3), e103-113. doi:10.2105/AJPH.2014.302286

Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social Conditions as Fundamental Causes of Health Inequalities: Theory, Evidence, and Policy Implications. *Journal of Health and Social Behavior, 51*(1_suppl), S28-S40. doi:10.1177/0022146510383498

Principe, K., Adams, E. K., Maynard, J., & Becker, E. R. (2012). The Impact of the Individual Mandate and Internal Revenue Service Form 990 Schedule H on Community Benefits From Nonprofit Hospitals. *American Journal of Public Health, 102*(2), 229. doi:10.2105/AJPH.2011.300339

Rauscher, S., & Vyzas, M. (2012). Assessing the validity of self-reported community benefit expenditures: evidence from not-for-profit hospitals in California. *Journal of public health management and practice: JPHMP, 18*(4), 346-354. doi:10.1097/PHH.0b013e3182470578

Rosenbaum, S., Kindig, D. A., Bao, J., Byrnes, M. K., & O'Laughlin, C. (2015). The Value Of The Nonprofit Hospital Tax Exemption Was $24.6 Billion In 2011. *Health Aff (Millwood), 34*(7), 1225-1233. doi:10.1377/hlthaff.2014.1424

Rubin, D. B., Singh, S. R., & Jacobson, P. D. (2013). Evaluating Hospitals' Provision of Community Benefit: An Argument for an Outcome-Based Approach to Nonprofit Hospital Tax Exemption. *American Journal of Public Health, 103*(4), 612-616. doi:10.2105/AJPH.2012.301048

Rubin, D. B., Singh, S. R., & Young, G. J. (2015). Tax-Exempt Hospitals and Community Benefit: New Directions in Policy and Practice. *http://dx.doi.org.librarylink.uncc.edu/10.1146/annurev-publhealth-031914-122357*.

Ruderman, M. (2013). Ecological Model in Public Health. *Johns Hopkins Bloomberg School of Public Health*.

Russell, J. (2016). + Return trip: hospitals try to cut readmissions, avoid steep federal penalties.(Focus: HEALTH CARE & BENEFITS). *Indianapolis Business Journal, 37*(6), 13.

Saldaña, J. (2013). *The coding manual for qualitative researchers*. Los Angeles: SAGE Publications.

Singh, S. R., Bakken, E., Kindig, D. A., & Young, G. J. (2016). Hospital Community Benefit in the Context of the Larger Public Health System: A State-Level Analysis of Hospital and Governmental Public Health Spending Across the United States. *Journal of Public Health Management and Practice, 22*(2), 164-174. doi:10.1097/PHH.0000000000000253

Singh, S. R., Young, G. J., Daniel Lee, S.-Y., Song, P. H., & Alexander, J. A. (2015). Analysis of Hospital Community Benefit Expenditures' Alignment With Community Health Needs: Evidence From a National Investigation of Tax-Exempt Hospitals. *American Journal of Public Health, 105*(5), 914-921. doi:10.2105/AJPH.2014.302436

Sosa-Estani, S., Colantonio, L., & Segura, E. L. (2012). Therapy of Chagas Disease: Implications for Levels of Prevention. *Journal of Tropical Medicine, 2012*(2012). doi:10.1155/2012/292138

Steinwachs, D. M., & Hughes, R. G. (2008). Health Services Research: Scope and Significance. In R. G. Hughes (Ed.), *Patient Safety and Quality: An Evidence-Based Handbook for Nurses* (pp. 1-163). Rockville (MD): Agency for Healthcare Research and Quality (US).

Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American journal of health promotion : AJHP, 10*(4), 282.

TFAH. (2017). A Funding Crisis for Public Health and Safety: State-by-State Public Health Funding and Key Health Facts, 2017 - Trust for America's Health. *Trust for America's Health*.

TFAH. (2018). *A Funding Crisis for Public Health and Safety: ISSUE REPORT MARCH 2018 STATE-BY-STATE PUBLIC HEALTH FUNDING AND KEY HEALTH FACTS*. Retrieved from Washington, DC: http://healthyamericans.org/assets/files/TFAH-2018-InvestInAmericaRpt-FINAL.pdf

Towne, S. D. (2017). Socioeconomic, geospatial, and geopolitical disparities in access to health care in the US 2011–2015. *International Journal of Environmental Research and Public Health, 14*(6), <xocs:firstpage xmlns:xocs=""/>. doi:10.3390/ijerph14060573

Trocchio, J. (2011). How Community-Building Aligns with Public Health. *Health Progress*(September - October 2011), 3.

Trocchio, J. (2015). Community Benefit and Population Health Management. *Health Progress*(January - February 2015), 3.

Wade, K., & Matthews, G. (2014). Report on Review of North Carolina Hospitals' Community Health Needs Assessments and Implementation Strategies. *The Network for Public Health Law*.

WHO. (2010). *A conceptual framework for action on the social determinants of health: debates, policy & practice, case studies*.

Young, G. J., Chou, C.-H., Alexander, J., Lee, S.-Y. D., & Raver, E. (2013). Provision of Community Benefits by Tax-Exempt U.S. Hospitals. *New England Journal of Medicine, 368*(16), 1519-1527. doi:10.1056/NEJMsa1210239