



*Strategies to Achieve Alignment, Collaboration, and Synergy across
Delivery and Financing Systems*

**Uncompensated Care Provision and the Implementation of
Population Health Improvement Strategies:
*An Empirical Examination of Hospital Contributions to the
Delivery of Public Health Activities – Preliminary Results***

*Research In Progress Webinar
Wednesday, May 9, 2018
12:00-1:00 pm ET/ 9:00 am-10:00 am PT*

Funded by the Robert Wood Johnson Foundation

Agenda

Welcome: **Shana L. Moore, PhD, MPA**
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Presenter: **CB Mamaril, PhD, MS**
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Commentary: **Simone Rauscher Singh, PhD**
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Q & A: Moderated by Dr. Shana Moore.



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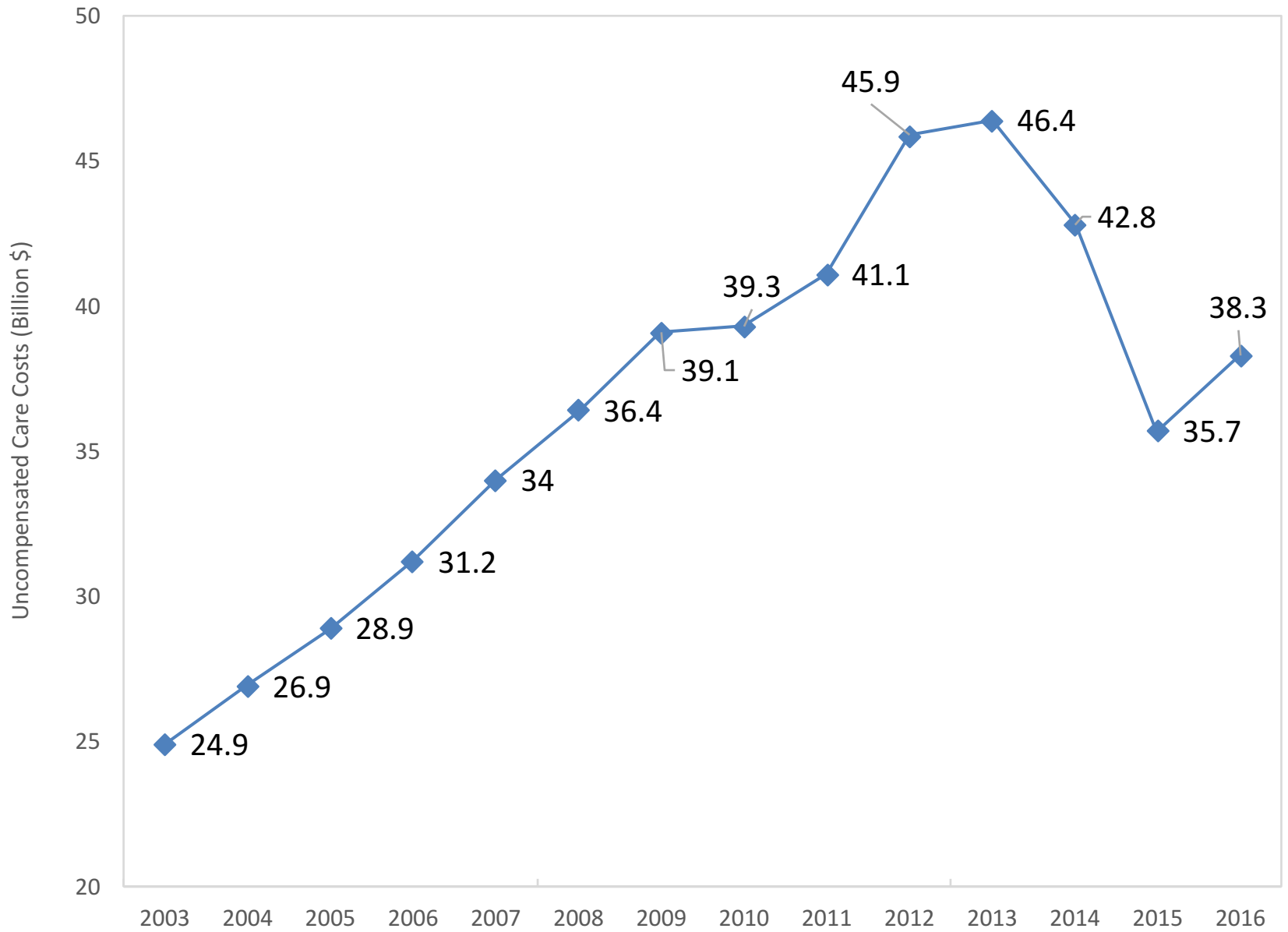
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- Robert Wood Johnson Foundation
- S4A Intramural Research Team
 - Glen P. Mays
 - Nurlan Kussainov, John Poe, Dominique Zephyr
 - Shana Moore
 - Other contributors to NLSPHS related research:
Rachel Hogg-Graham, Rick Ingram

- Hospital Uncompensated care (UCC) - overall measure of hospital care provided for which no payment was received from patient or insurer. Sum of hospital's bad debt and charity care.
 - A hospital incurs bad debt when it cannot obtain reimbursement for care provided - when patients are unable to pay their bills, but do not apply for charity care, or are unwilling to pay their bills. Excludes other unfunded costs of care, such as underpayment from Medicare and Medicaid.
 - Charity care is care or service that hospitals provided without expecting to be reimbursed because they had determined, with the assistance of the patient, the patient's inability to pay. In practice, hospitals often have difficulty of distinguishing bad debt from charity care (AHA, HFMA).
- Cumulatively since 2000, total UCC estimated at more than \$502 billion. From 1990-2013, average annual increase of 6% (AHA stats). ACA passed to reduce UCC burden due to the uninsured.
 - By expanding access to health insurance, ACA was expected to reduce demand for charity care, with hospitals having less charity care demand, it might lead hospitals to reallocate resources to other types of community benefit spending such as population health improvement initiatives.
- Since ACA / Medicaid expansion has resulted in lowering UCC burden – In Ct (Nikpay et al 2015) & nationally (Dranove et al 2016).

General Trends: Total Uncompensated Care Costs

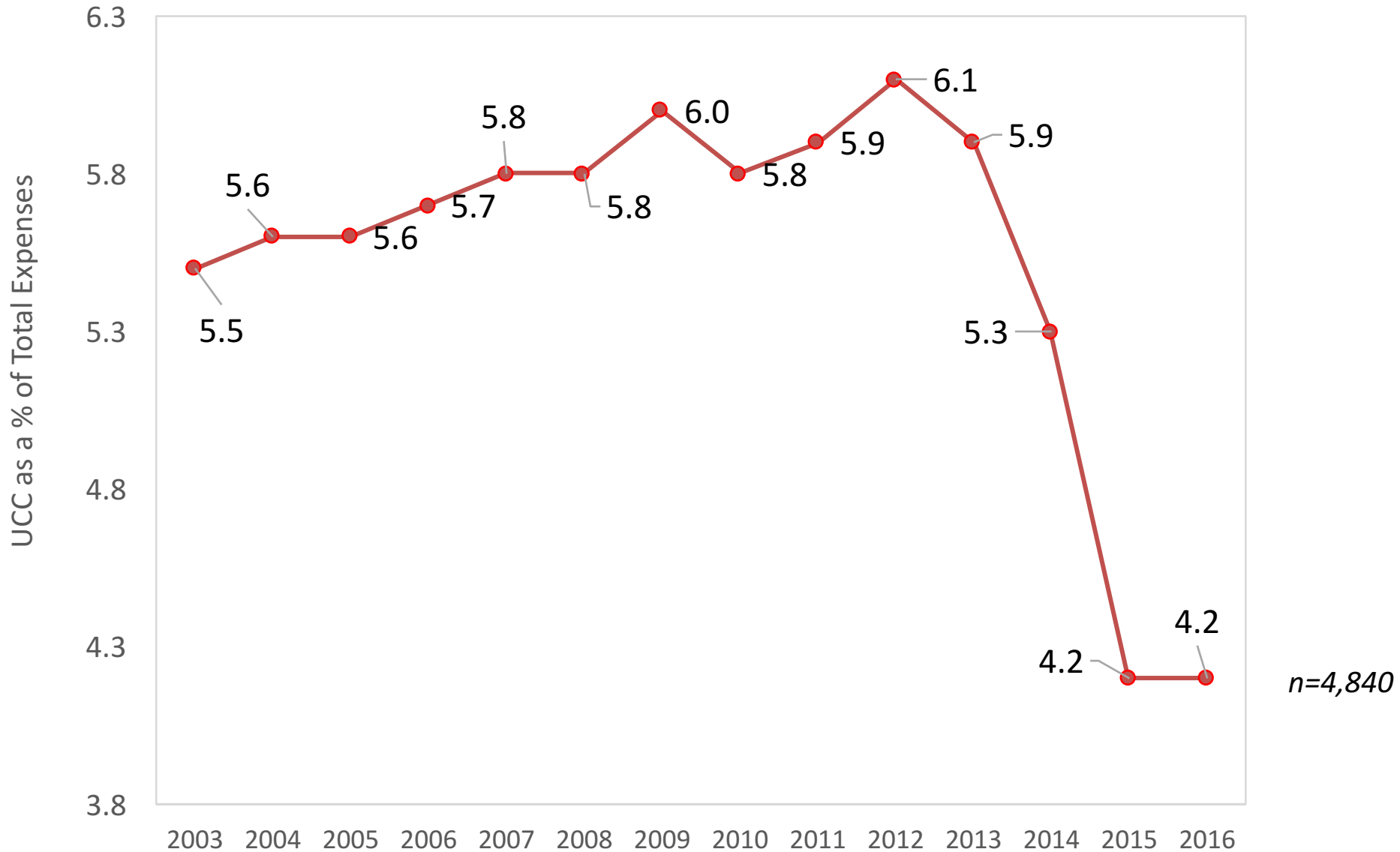
Source: American Hospital Association (AHA) Annual Survey



n=4,840

General Trends: Uncompensated Care Costs as a percentage of Hospital Operating Expenses

Source: American Hospital Association (AHA) Annual Survey



- Past studies on how hospital UCC are affected by policies related to patient and population insurance status and hospital specific factors (e.g. payment, reimbursement policies, management processes, etc.) and (e.g. Healthcare Financial Management Association; Dranove et al 2016; Nikpay et al 2015; DHHS 2015; Holahan & Garrett 2010).
- Issues with defining, measuring, & reporting uncompensated care especially dealing with bad debt and charity care.
 - e.g. Changes made after 2010 to CMS 2552-10 Worksheet S-10 to identify and distinguish between bad debt and charity care, and also distinguishes charity care provided to insured and uninsured patients.
 - e.g. CMS proposal to phase-in using S-10 data to determine DSH UCC pool (~ \$6 bil FY 17). Implications for the formula for DSH payments and reduction in this pool, which provide substantial financial assistance for hospitals who treat a large income of low-income patients, will be based on the reported UCC from S-10, line 30.
 - e.g. Better alignment of charity care costs that a NFP hospitals reports via its Form 990, Schedule H, with the those reported in Worksheet S-10.
- Non-for-profit charity care policies including community benefits as a source of investing in improving population health outcomes (e.g. Singh et al 2016; Valdovino et al 2015).



- Charity care and community benefits from non-for-profit (NFP) hospitals
 - Spend more on charity care than For-Profits (Valdovinos et al 2015).
 - **Singh et al 2016** : Spend ~ 7.5% of operating budget on community benefit expenditures: of which, >85% goes to patient recipients/clinical services, ~ 8% towards community benefits such *community-building (CBA)* & *health improvement (CHI)* activities, ~7% to support health research, education activities Represent an additional 9 percent in financial resources made available to the PH System.
 - **Young et al 2018** : Community benefit spending remained relatively flat, ~7 to 8% operating costs. Identified 7 types: (1) Charity-care; (2) Unreimbursed costs for means-tested gov't programs; (3) Subsidized health services; (4) Direct Spending on community health; (5) Contributions to community groups; (6) research; & (7) Health professions education. (1) & (2) make up ~ 70+ of total community benefit spending.
- Another measure of hospital contributions: Participation in the delivery of public health activities
 - Hogg et al (2015) Important role that hospitals play in implementing population health improvement strategies. Hospital participation in the local public health system is associated with and increase overall availability and scope of public health services in local public health systems.
 - Mays et al (2016) Availability & scope of population health services → Population health system capital → Improved Population health outcomes
- Does uncompensated care costs “crowd out” hospital contributions to the population health system (i.e. substitution effect)?
 - This study uses a measure of hospital contributions to the population health - NLSPHS measures of hospital participation from the perspective of PH System.



- ❑ Measure of hospital contributions derived from the **National Longitudinal Survey of Public Health Systems (NLSPHS)**
 - ❑ The NLSPHS has followed a cohort of some 500 communities with at least 100,000 residents
 - ❑ Followed over time: 1998, 2006, 2012, 2014*, 2016*, 2018**
- Note: * Expanded sample of ~500 communities < 100,000 added in 2014 wave & continued in succeeding waves ** *launching soon*
- ❑ Local public health officials report:
 - ❖ **Scope:** availability of recommended population health activities based on Institute of Medicine's core functions of assessment, policy development, and assurance.
 - ❖ **Network:** organizations contributing to each activity
 - ❖ **Centrality of effort:** contributed by governmental public health agency
 - ❖ **Quality:** perceived effectiveness of each activity

Implementation of population health activities, 1998-2016

	Activity	1998	2016	% Change
Assessment	1. Conduct periodic assessment of community health status and needs	71.5%	89.2%	24.8%
	2. Survey community for behavioral risk factors	45.8%	70.2%	53.3%
	3. Investigate adverse health events, outbreaks and hazards	98.6%	99.7%	1.1%
	4. Conduct laboratory testing to identify health hazards and risks	96.3%	96.4%	0.1%
	5. Analyze data on community health status and health determinants	61.3%	75.8%	23.7%
	6. Analyze data on preventive services use	28.4%	36.7%	29.2%
Policy/Planning	7. Routinely provide community health information to elected officials	80.9%	86.6%	7.0%
	8. Routinely provide community health information to the public	75.4%	83.7%	11.0%
	9. Routinely provide community health information to the media	75.2%	86.5%	15.0%
	10. Prioritize community health needs	66.1%	83.4%	26.2%
	11. Engage community stakeholders in health improvement planning	41.5%	65.8%	58.6%
	12. Develop a community-wide health improvement plan	81.9%	84.9%	3.7%
	13. Identify and allocate resources based on community health plan	26.2%	47.1%	79.8%
	14. Develop policies to address priorities in community health plan	48.6%	65.6%	35.0%
	15. Maintain a communication network among health-related organizations	78.8%	84.0%	6.6%
Assurance	16. Link people to needed health and social services	75.6%	50.0%	-33.9%
	17. Implement legally mandated public health activities	91.4%	92.7%	1.4%
	18. Evaluate health programs and services in the community	34.7%	41.7%	20.2%
	19. Evaluate local public health agency capacity and performance	56.3%	53.0%	-5.9%
	20. Monitor and improve implementation of health programs and policies	47.3%	52.9%	11.8%
	Mean performance of assessment activities (#1-6)	67.0%	78.0%	16.4%
	Mean performance of policy and planning activities (#7-15)	63.8%	76.4%	19.7%
	Mean performance of implementation and assurance activities (#16-20)	61.1%	58.1%	-4.9%
	Mean performance of all activities	64.1%	72.3%	12.8%

Area Health Resource File: health resources, demographics, socioeconomic status, insurance coverage

NACCHO Profile data: public health agency institutional and financial characteristics

Dartmouth Atlas: Area-level medical spending (Medicare)

CDC Compressed Mortality File: Cause-specific death rates by county

Equality of Opportunity Project (Chetty): local estimates of life expectancy by income

National Health Interview Survey: individual-level health

HCUP: area-level hospital and ED use, readmissions

CMS Cost Report & Impact File: hospital ownership, market share, uncompensated care

<http://systemsforaction.org/projects/national-longitudinal-survey-public-health-systems>

Comprehensive Public Health Systems

One of RWJF's Culture of Health National Metrics

- ❖ **Broad scope** of population health activities
- ❖ **Dense network** of multi-sector relationships of contributing organizations
- ❖ **Central actors** to coordinate actions

Access to public health

Overall, 47.2 percent of the population is covered by a comprehensive public health system. Individuals are more likely to have access if they are non-White (51.5 percent vs. 45.5 percent White) or live in a metropolitan area (48.7 percent vs. 34.1 percent in nonmetropolitan areas).

47.2%

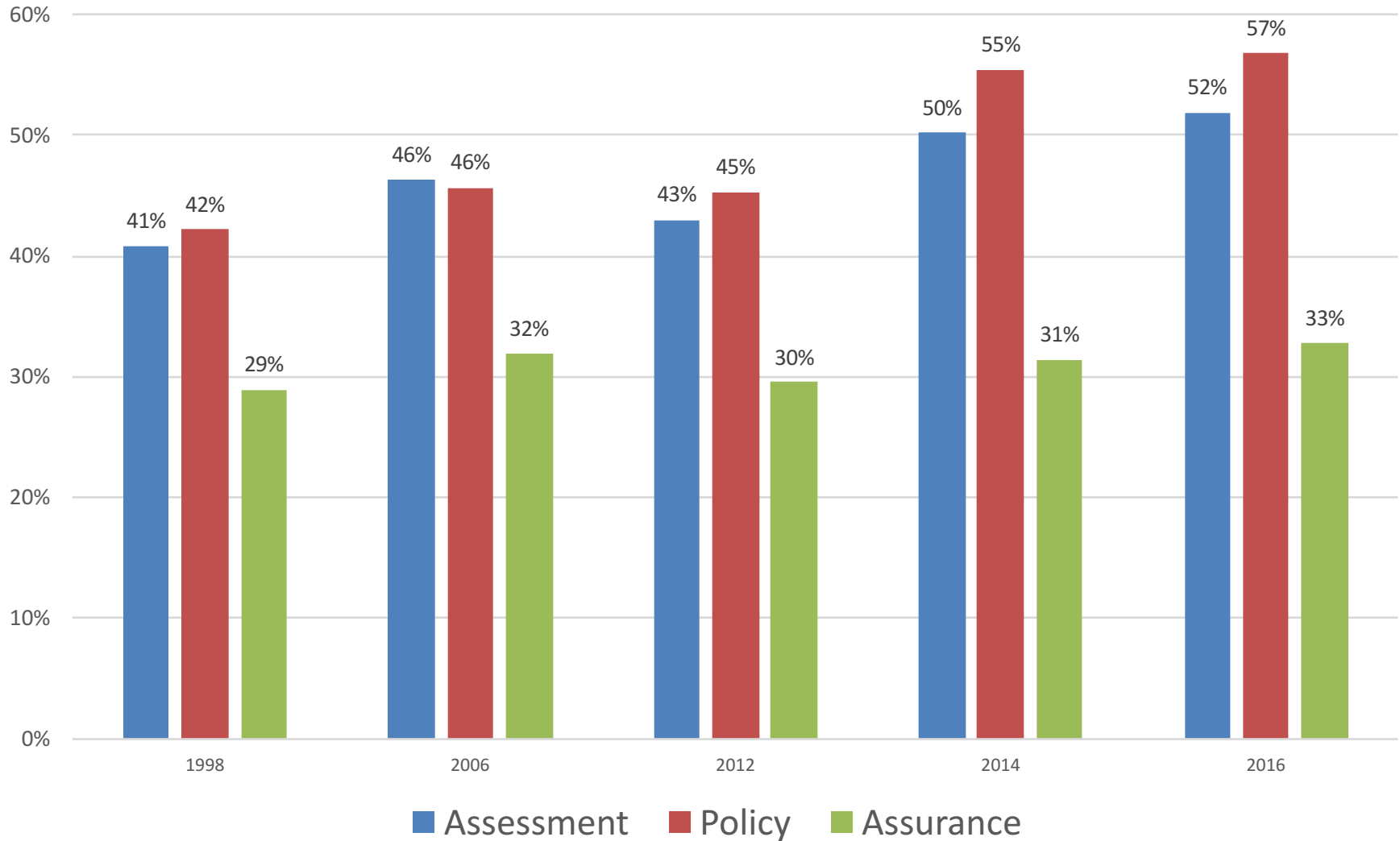
of population served by a
comprehensive public
health system

Organizational Contribution to Population Health Activities

% of Recommended Activities Implemented

TYPE OF ORGANIZATION	1998	2016	Percent Change
Local health department	60.7%	68.3%	9.6%
Other local government agencies	31.8%	34.0%	6.9%
State public health agencies	46.0%	32.6%	-29.1%
Other state government agencies	17.2%	11.3%	-34.3%
Federal government agencies	7.0%	6.9%	-0.9%
HOSPITALS	37.3%	47.1%	26.2%
Physician practices	20.2%	18.1%	-10.2%
Community health centers	12.4%	31.1%	151.9%
Health insurers	8.6%	12.0%	39.9%
Employers/business groups	25.5%	15.2%	-40.7%
Schools (K-12)	30.7%	24.7%	-19.5%
Colleges / universities	15.6%	23.0%	47.3%
Faith-based organizations	24.0%	16.2%	-32.5%
Other nonprofits	36.4%	34.3%	-5.7%
Other	8.5%	6.1%	-28.8%

Hospital Participation in Population Health Activities Over Time (All NLSPHS Survey Waves)



Hospital Participation in 19 Core Population Health Activities

S4A

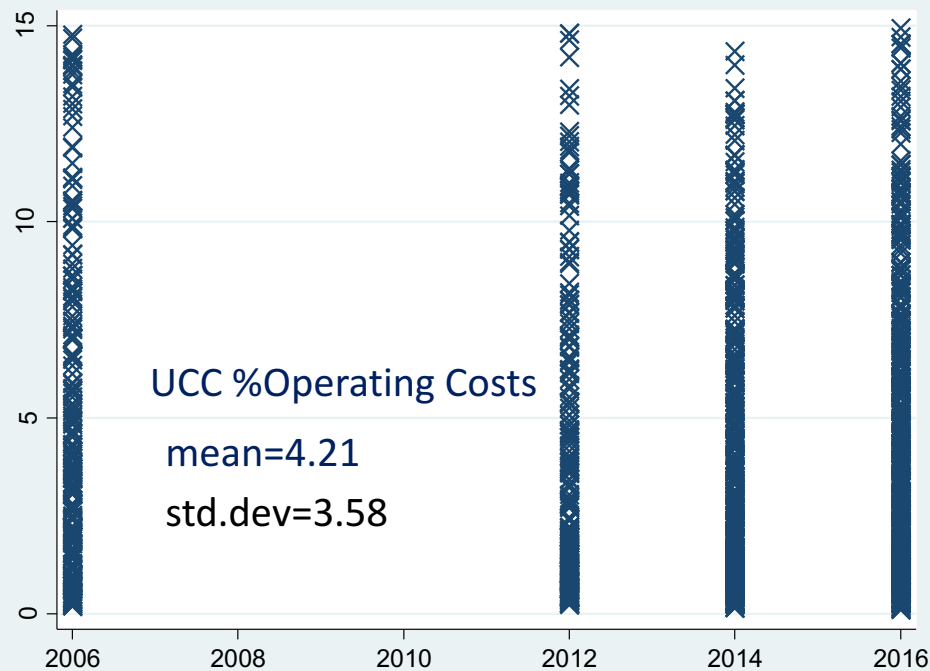
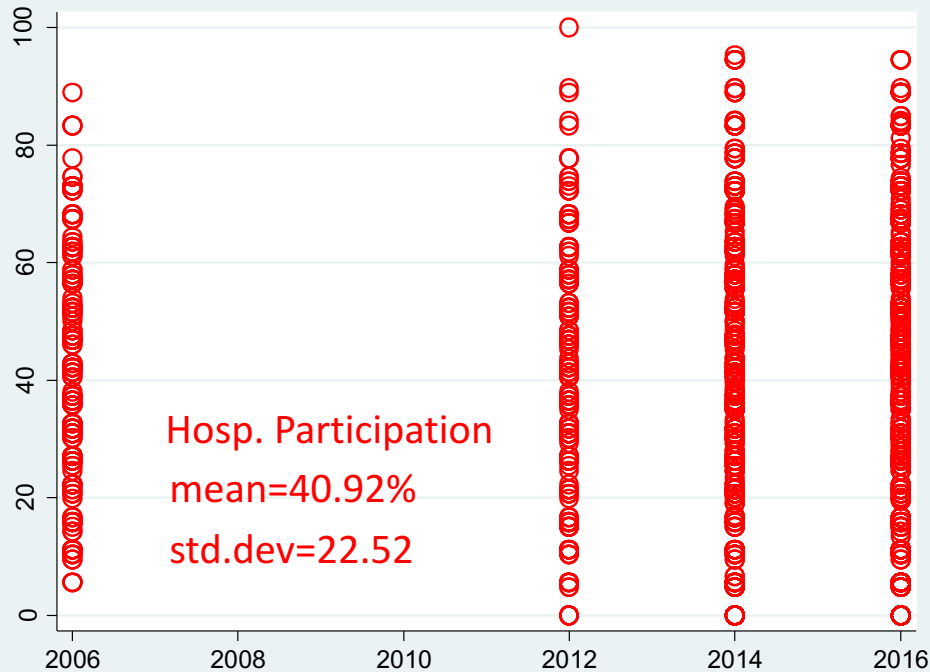
BY ACTIVITY		1998	2016	Percent Change
Assessment activities				
1	Conduct periodic assessment of community health status and needs	58.2%	84.0%	44.2%
2	Survey community for behavioral risk factors	22.1%	28.4%	28.3%
3	Investigate adverse health events, outbreaks and hazards	56.3%	63.6%	13.0%
4	Conduct laboratory testing to identify health hazards and risks	49.0%	49.5%	1.1%
5	Analyze data on community health status and health determinants	46.7%	62.1%	33.0%
6	Analyze data on preventive services use	13.5%	23.9%	77.2%
Policy and planning activities				
7	Routinely provide community health information to elected officials	26.8%	39.8%	48.4%
8	Routinely provide community health information to the public	48.9%	58.9%	20.6%
9	Routinely provide community health information to the media	33.0%	57.2%	73.2%
10	Prioritize community health needs	49.6%	75.2%	51.8%
11	Engage community stakeholders in health improvement planning	60.7%	71.9%	18.4%
12	Develop a community-wide health improvement plan	34.7%	59.0%	70.3%
13	Identify and allocate resources based on community health plan	16.2%	32.4%	99.7%
14	Develop policies to address priorities in community health plan	35.3%	47.6%	34.6%
15	Maintain a communication network among health-related organizations	66.5%	70.9%	6.7%
Implementation and Assurance activities				
16	Link people to needed health and social services	57.8%	35.5%	-38.6%
17	Implement legally mandated public health activities	13.8%	17.3%	25.6%
18	Evaluate health programs and services in the community	3.4%	13.0%	276.7%
19	Evaluate local public health agency capacity and performance	11.5%	14.1%	22.4%
Mean participation in Assessment activities (#1-6)		40.8%	51.9%	27.1%
Mean participation in Policy and planning activities (#7-15)		42.1%	56.8%	34.7%
Mean participation in Implementation and Assurance activities (#16-20)		28.9%	32.7%	13.1%
HOSPITAL Mean participation in all activities		37.3%	47.1%	26.2%



- We linked 2006, 2012, 2014, & 2016 waves of the NLSPHS with data from CMS Cost Reports & Impact files aggregated up to the hospital service area (HSA).
 - Healthcare Cost Report Information System (HCRIS) Hospital Cost Report (CMS-2552-96 and CMS-2552-10), IPPS Final Rule Data Files (CMS Impact File) for General Acute Care and Critical Access Hospitals
 - Dependent variable: Hospital participation in recommended public health activities (i.e. hospital contributions to the community's population health system). Explanatory variable of interest: Area-level uncompensated care costs (Worksheet S-10) expressed as a percentage of total operating costs (Worksheet G3)
- Panel regression estimation with instrumental variables methods that account for endogenous explanatory variable, repeated measures, and clustering of public health jurisdictions within states
 - Instruments for uncompensated care : Community Uninsured Rate (AHRF), Lagged (1 year) DSH patient percentage (impact file), State Medicaid Income Eligibility Threshold for Children
 - Unit of Analysis is at the Local Public Health Jurisdiction level (can include multiple-counties) merged with information on hospital uncompensated care provision aggregated at the Hospital Service Area (HSA) level
 - Weighting approach to account for overlapping county and hospital service area boundaries



Empirical Model



❑ Longitudinal dataset: NLSPHS from 2006, 2012, 2014, & 2016 waves merged with relevant Hospital Service Area (HSA) data. Analytic file contains 824 local health jurisdictions matched with 1,051 HSAs.

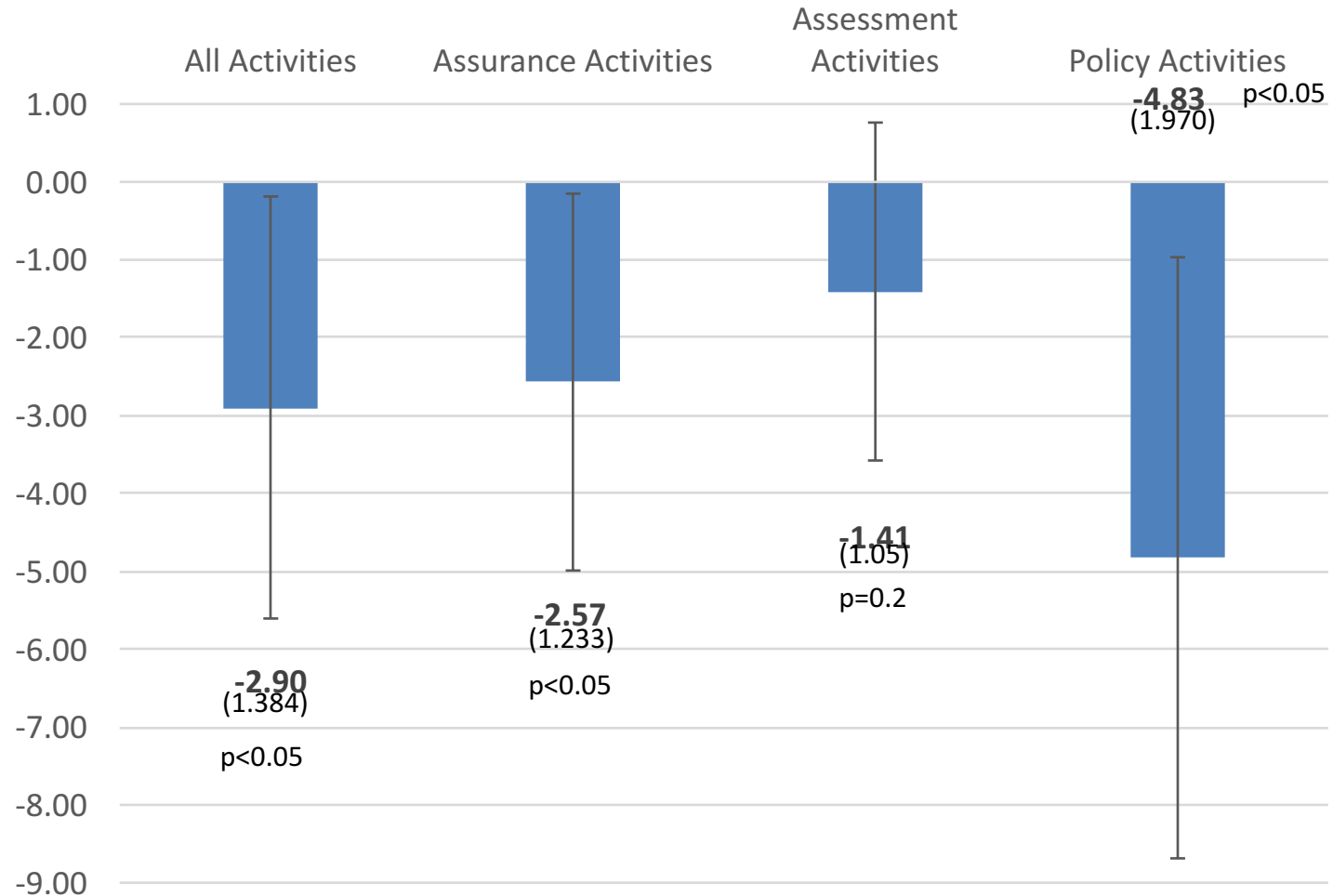
❑ Community-level covariates include:

- No. of Primary Care Physicians
- Poverty Rate
- Unemployment Rate
- Per Capita Income
- No. of FQHCs
- % Population non-white
- Jurisdiction Population
- Local board of health presence
- Centralized governance
- Population density
- Metro area designation

❑ HSA-level hospital-related controls include:

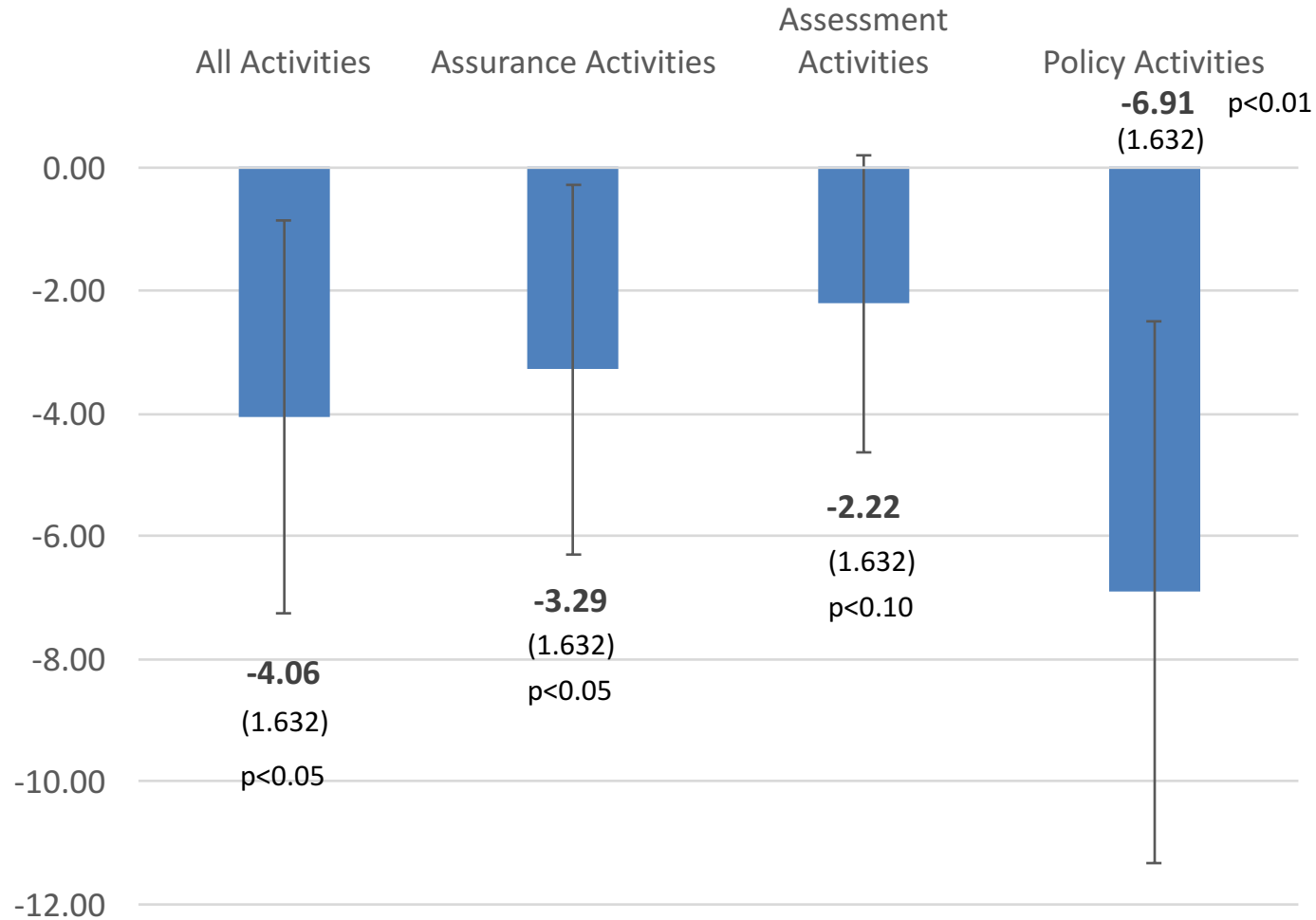
- Case-Mix Index
- Market Concentration
- Hospital Net Income
- Teaching hospital in the HSA

Changes in hospital participation (% of recommended public health activities) attributable to changes in uncompensated care provision (HSA-level UCC %operating costs), 2006-2016



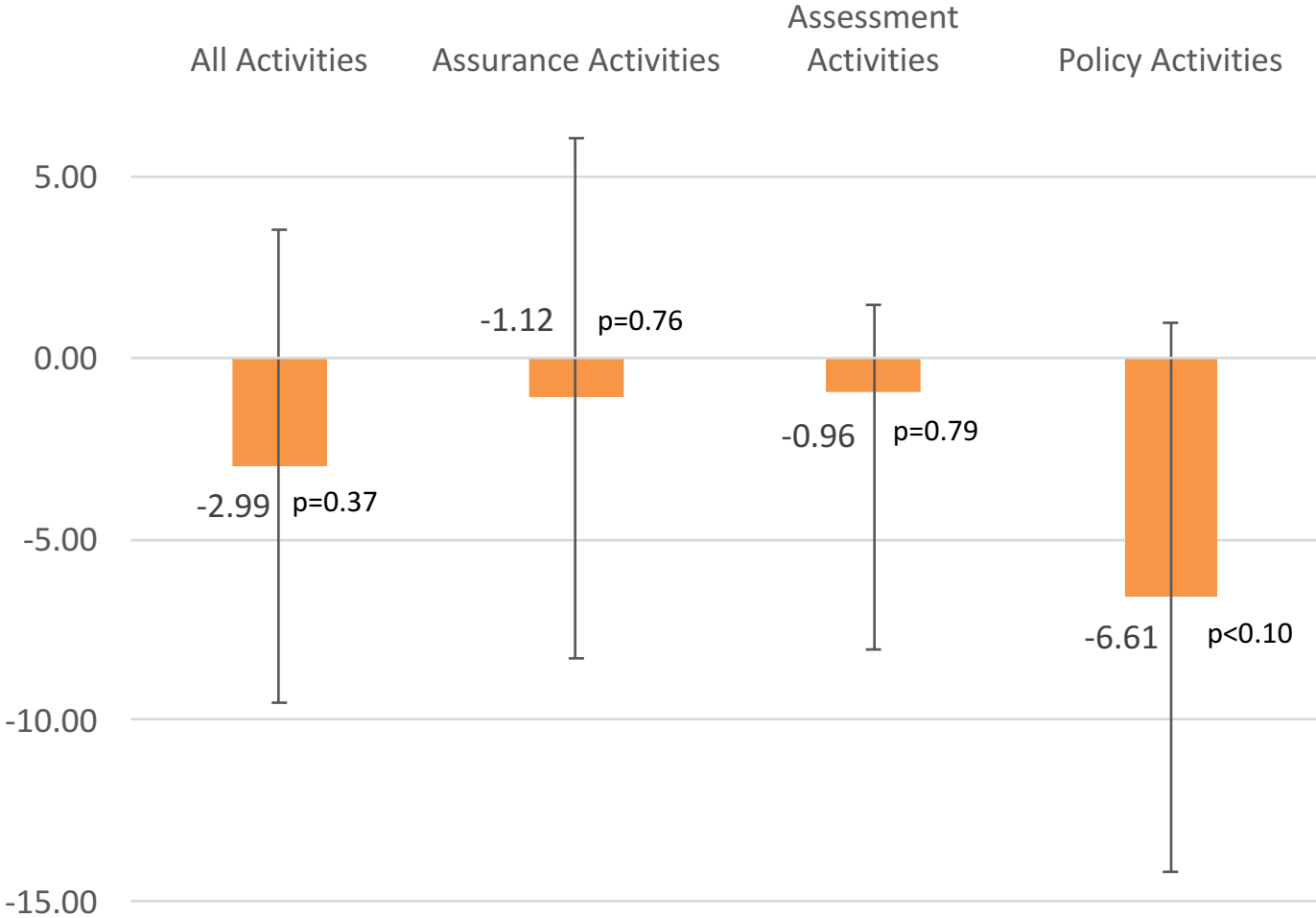
IV regression estimates controlling for community-level characteristics and hospital service area (HSA)-level characteristics. Standard errors (in parenthesis) are adjusted for clustering within states. N=1088 community-years

Changes in hospital participation (% of recommended public health activities) attributable to changes in uncompensated care provision (HSA-level UCC %operating costs), 2012-2016



IV regression estimates controlling for community-level characteristics and hospital service area (HSA)-level characteristics. Standard errors (in parenthesis) are adjusted for clustering within states. N=914 community-years

Changes in hospital participation (% of recommended public health activities) attributable to changes in charity care provision (LOG of total HSA-level charity care costs), 2012-2016



IV regression estimates controlling for community-level characteristics and hospital service area (HSA)-level characteristics. N=913 community-years



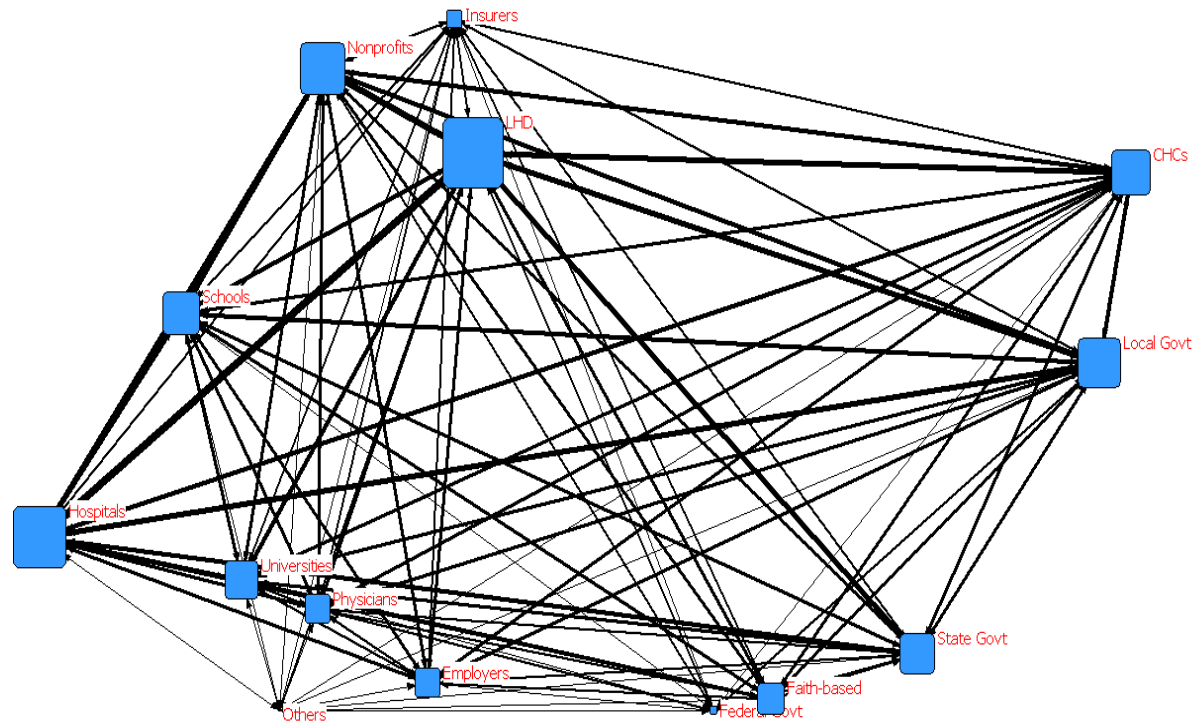
- ❑ Results indicate a 1 percentage point increase in uncompensated care costs (% operating expenses) is associated with 3-4 percentage point decrease in hospital participation in the scope of recommended public health activities.
 - We find the same association holds when we use other measures of uncompensated care provision including total HSA-level uncompensated care costs and HSA per capita uncompensated care costs
- ❑ Results suggest that hospital participation in policy-type public health activities followed by assurance-type activities are particularly affected by changes in uncompensated care provision.
- ❑ Implications for population health given importance of hospital contributions to population health system capital:
 - Evidence of system capital impact on population health outcomes.
 - *For example, high system capital (i.e. comprehensive public health systems) associated with a decline in community mortality rates over time (Mays et al 2016).*



Ongoing Analysis / Next Steps

- Examine the effect of UCC on the level of hospital engagement in the public health system as measured by: (1) degree centrality which measures connectedness of the hospital to the public health network; and (2) betweenness centrality which captures the extent to which the hospital lies between other organizations in the public health network.

❖ *Preliminary results suggest evidence of reduced community engagement by hospitals attributable to higher uncompensated costs ($p < 0.1$ for degree centrality)*



- Further analyses that delineate effects on hospital participation attributable to hospital bad debt and charity care costs
- Analysis using recently updated CMS Cost Reports released late April 2018



HOSPITALS

By Gary J. Young, Stephen Flaherty, E. David Zepeda, Simone Rauscher Singh, and Geri Rosen Cramer

DATAWATCH

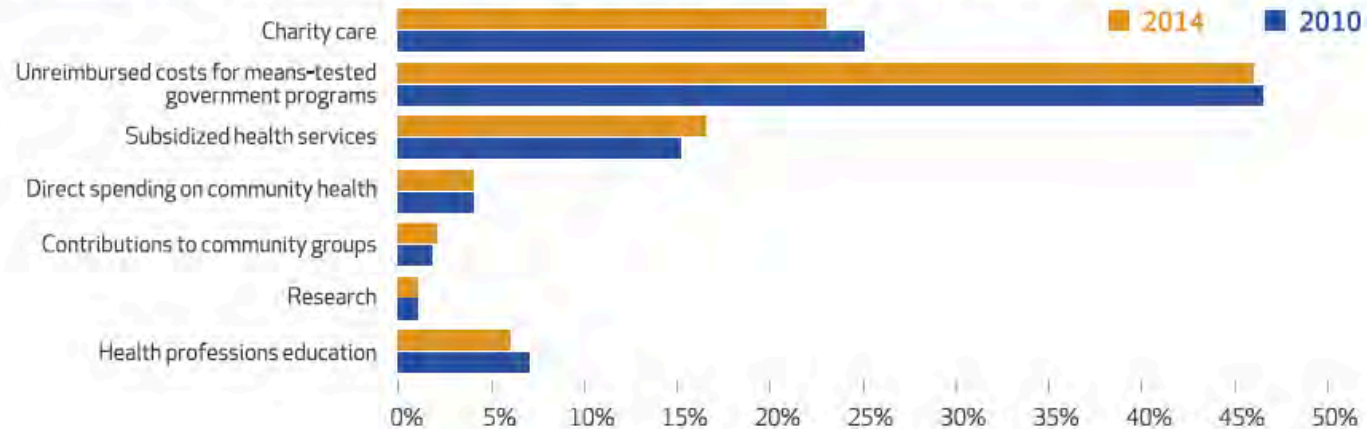
Community Benefit Spending By Tax-Exempt Hospitals Changed Little After ACA

Provisions of the Affordable Care Act (ACA) encouraged tax-exempt hospitals to invest broadly in community health benefits. Four years after the ACA's enactment, hospitals had increased their average spending for all community benefits by 0.5 percentage point, from 7.6 percent of their operating expenses in 2010 to 8.1 percent in 2014.

Hospital community benefits under the ACA

EXHIBIT 2

Percentages of tax-exempt hospital spending on community benefits, by type of benefit, 2010 and 2014

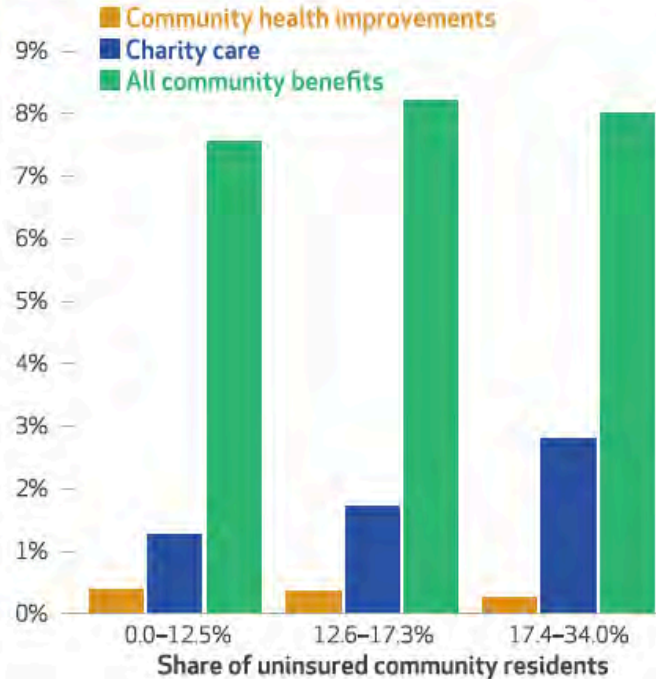


Source: Young et al. 2018. Community Benefit Spending By Tax-Exempt Hospitals Changed Little After the ACA. *Health Affairs*. 37(1): 121-124.

Hospital community benefits under the ACA

EXHIBIT 3

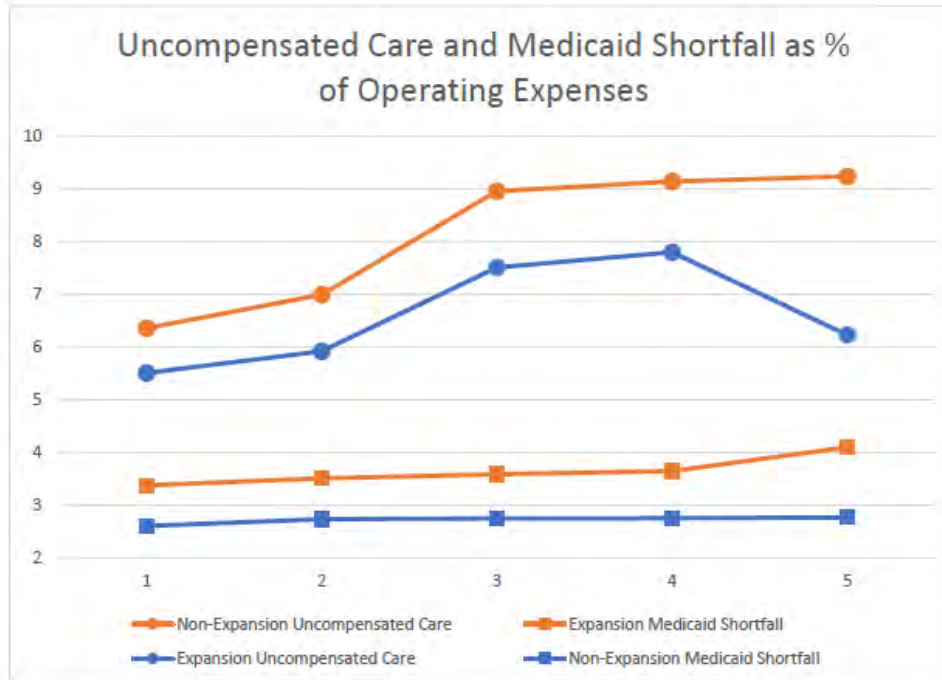
Mean percentages of tax-exempt hospital spending on community benefits, by share of uninsured community residents, 2014



Source: Young et al. 2018.
Community Benefit Spending By
Tax-Exempt Hospitals Changed
Little After the ACA. *Health Affairs*.
37(1): 121-124.

Hospital community benefits in Medicaid expansion vs. non-expansion states

Figure 1: Uncompensated Care and Medicaid Shortfall as % of Hospital Operating Expenses



Source: Source: Authors' analysis of IRS data (Schedule H of Form 990), 2010 to 2014.

Source: Young et al. Impact of ACA Medicaid Expansion on Hospitals' Financial Status. Under Review.

Questions?



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Archives

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Upcoming

May 23, 2018, 12 p.m., ET

Systems for Action Individual Research Project

[Integrating Cross-Sectoral Health and Social Services for the Homeless](#)

Jesus Valero, PhD, University of Utah, and Hee Soun Jang, PhD, University of North Texas

June 6, 2018, 12 p.m., ET

Systems for Action Individual Research Project

[Linking Education and Health Data to Improve Adolescent Health in Los Angeles](#)

Sheryl Kataoka, MD, MS, and Rebecca Dudovitz, MD, MS, University of California, Los Angeles

June 20, 2018, 12 p.m., ET

Systems for Action Individual Research Project

[Financing Integrated Health and Social Services for Populations with Mental Illness](#)

Yuhua Bao, PhD, Weill Cornell Graduate School of Medical Sciences, and Lisa Dixon, MD, MPH, NY State Psychiatric Institute/Columbia University Medical Center

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