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Comprehensive Public Health Delivery Systems: Using Foundational Capabilities to Achieve Health Impact and Equity

Glen P. Mays
University of Kentucky, glen.mays@cuanschutz.edu

Comprehensive Public Health Delivery Systems:

Using Foundational Capabilities to Achieve Health Impact and Equity

Glen Mays, PhD, MPH
Professor of Health Services & Systems Research
University of Kentucky

glen.mays@uky.edu
@GlenMays
publichealtheconomics.org

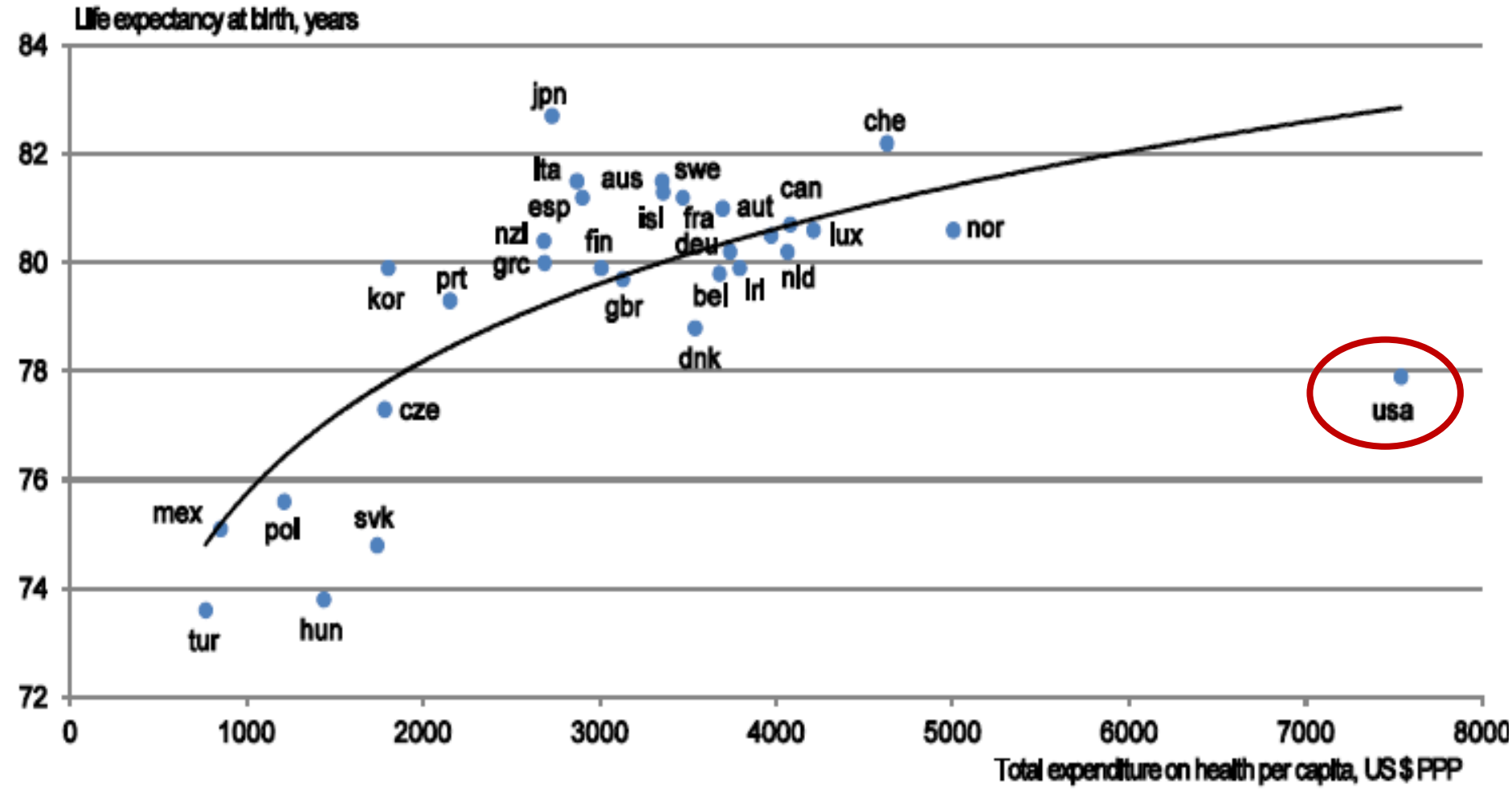
UNIVERSITY OF KENTUCKY
Center for Public Health Systems and Services Research

Systems for Action
National Coordinating Center
Systems and Services Research to Build a Culture of Health

Learning Objectives

- Compare innovative ways to structure local health departments that maximize resources to enhance service delivery to the community.
- Identify ways local health departments can build strategic alliances to implement successful collaborations in the community.

Losing ground in population health

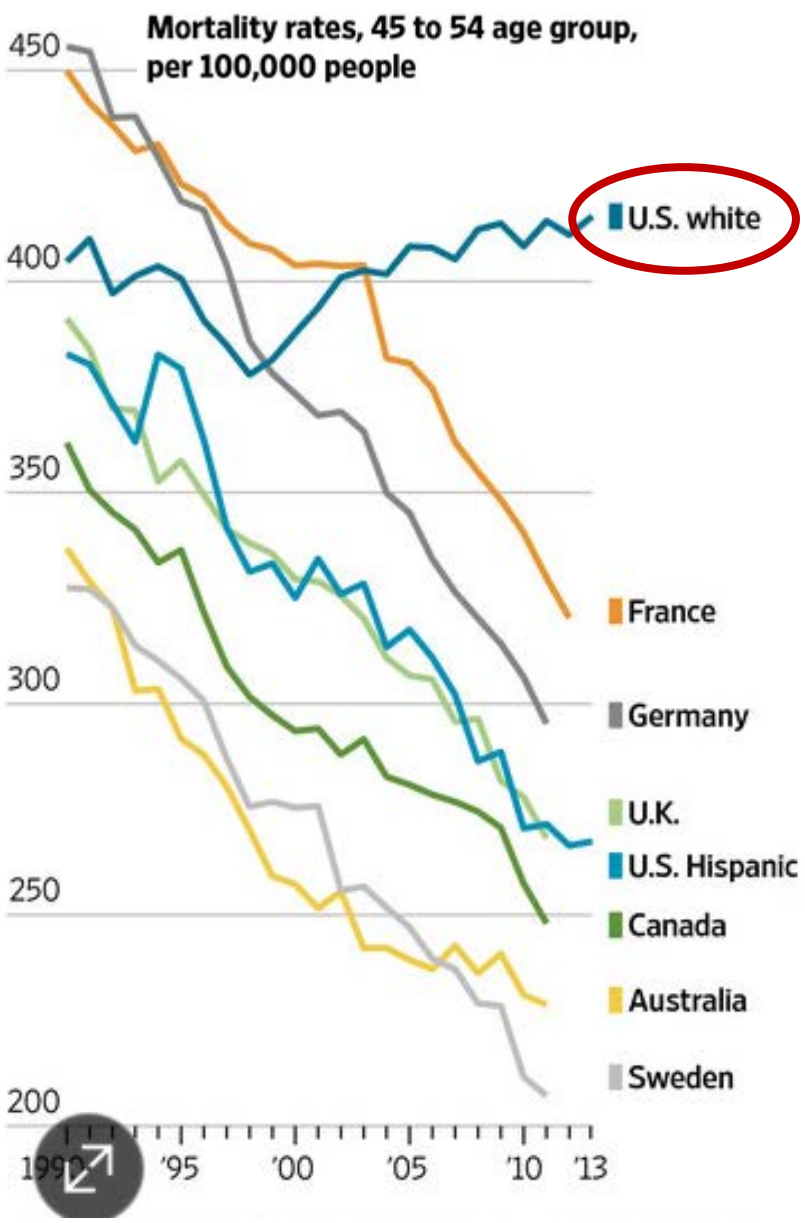


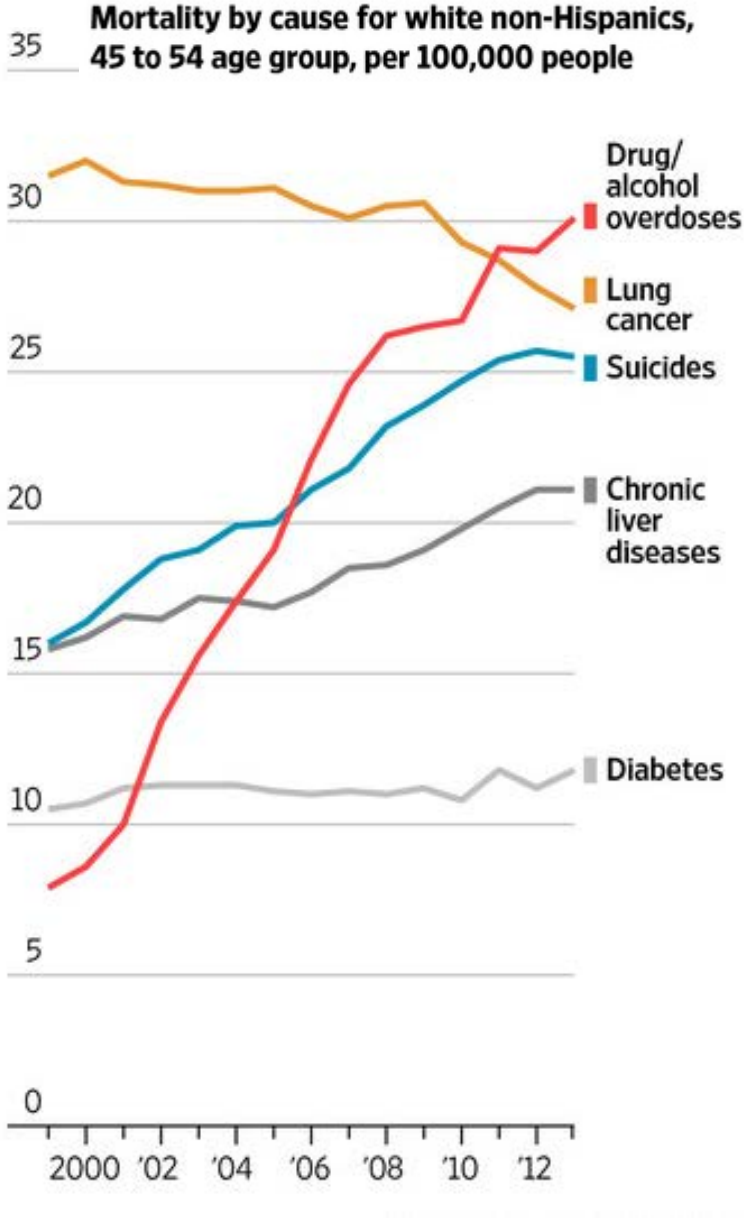
1. Or latest year available.

Source: OECD Health Data 2010.

WHO 2010

Losing ground in population health

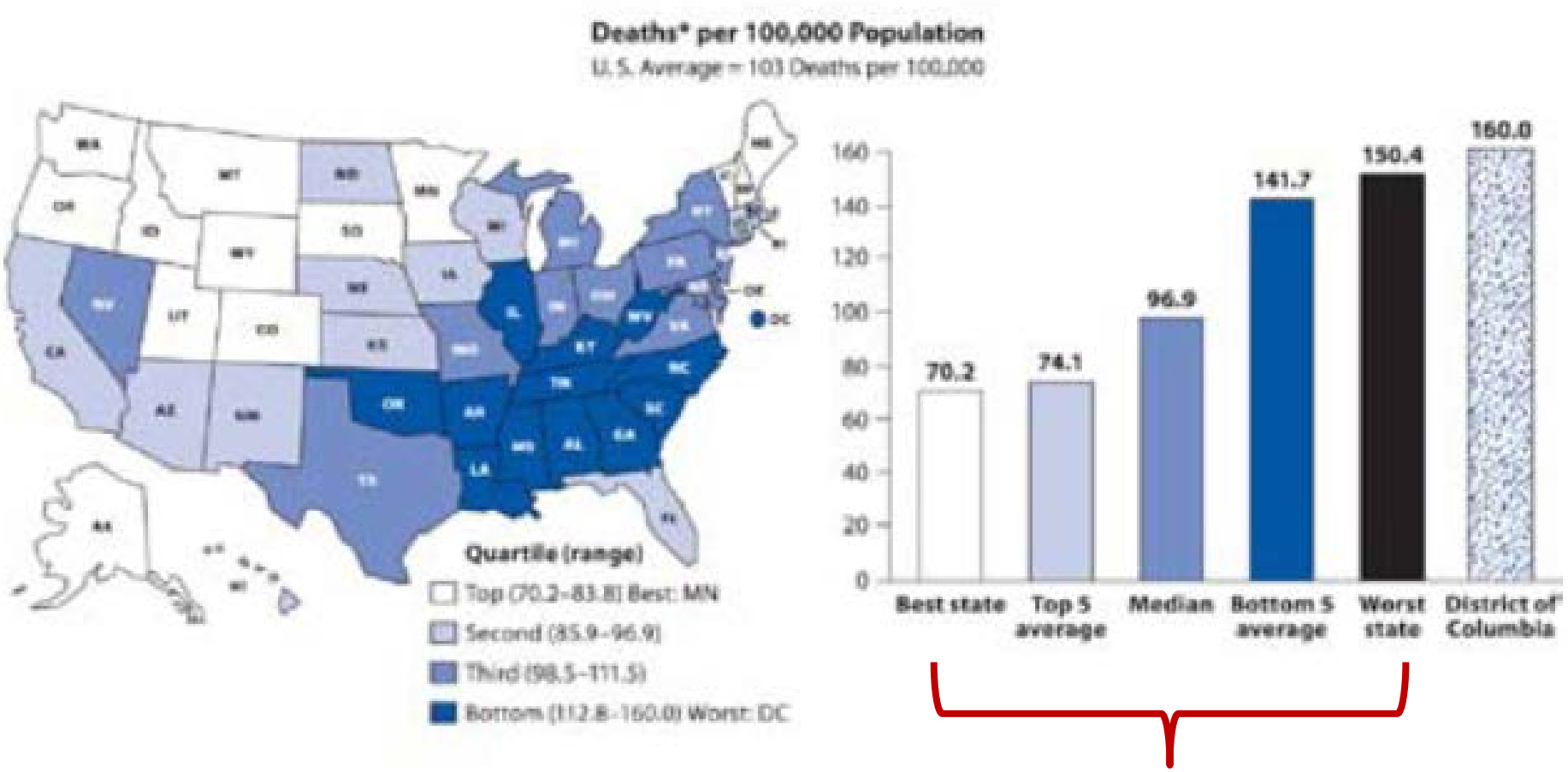




Case A, Deaton A. Proceedings of the National Academy of Sciences 2015

Losing ground in population health

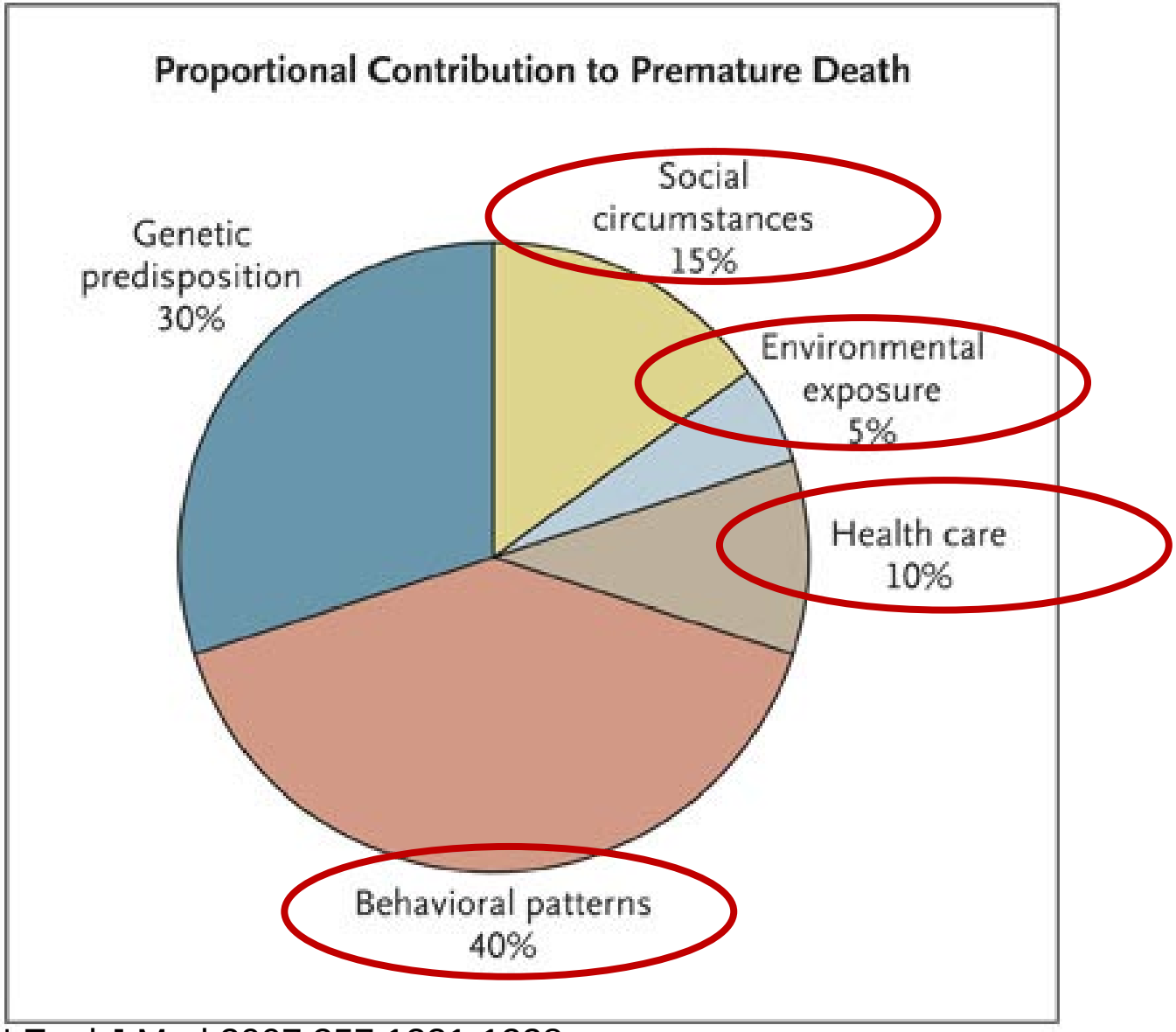
Premature Deaths per 100,000 Residents



>100% Difference

Commonwealth Fund 2012

Multiple systems & sectors drive health…



Schroeder SA. N Engl J Med 2007;357:1221-1228

…But existing systems often fail to connect

Medical Care ⟷ Social Services & Supports ⟷ Public Health

- Fragmentation
- Duplication
- Variability in practice
- Limited accessibility
- Episodic and reactive care
- Insensitivity to consumer values & preferences
- Limited targeting of resources to community needs

- Fragmentation
- Variability in practice
- Resource constrained
- Limited reach
- Insufficient scale
- Limited public visibility & understanding
- Limited evidence base
- Slow to innovate & adapt

Waste & inefficiency

Inequitable outcomes

Limited population health impact

Fundamental Question: How do we support effective population health improvement strategies?

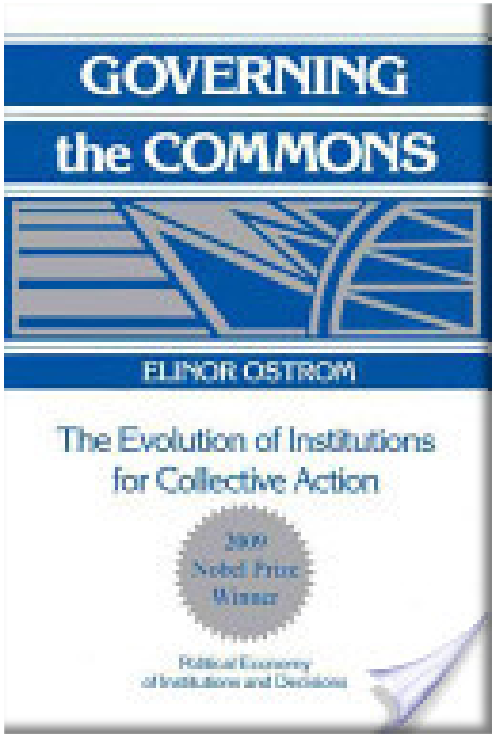
- Designed to achieve large-scale health improvement: neighborhood, city/county, region
- Target fundamental and often multiple determinants
- Mobilize the collective actions of multiple stakeholders in government & private sector

  - Infrastructure
  - Information
  - Incentives

Mays GP. Governmental public health and the economics of adaptation to population health strategies. ***National Academy of Medicine Discussion Paper.*** 2014. http://nam.edu/wp-content/uploads/2015/06/EconomicsOfAdaptation.pdf

Challenge: overcoming collective action problems across systems & sectors

- Incentive compatibility → public goods
- Concentrated costs & diffuse benefits
- Time lags: costs vs. improvements
- Uncertainties about what works
- Asymmetry in information
- Difficulties measuring progress
- Weak and variable institutions & infrastructure
- Imbalance: resources vs. needs
- Stability & sustainability of funding

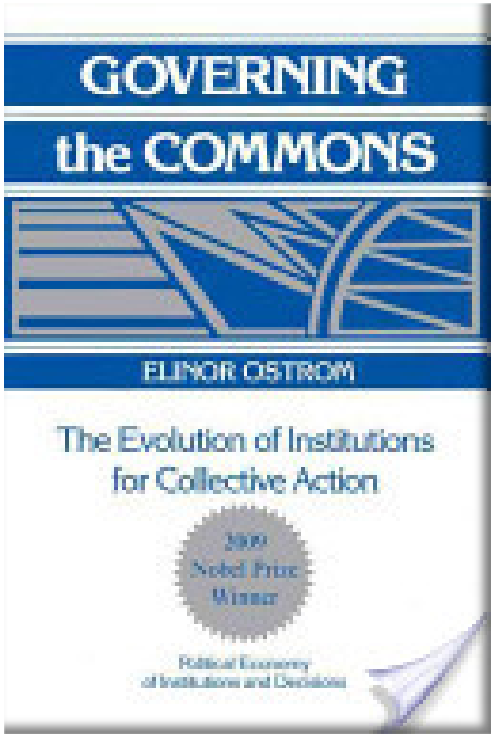


Ostrom E. 1994

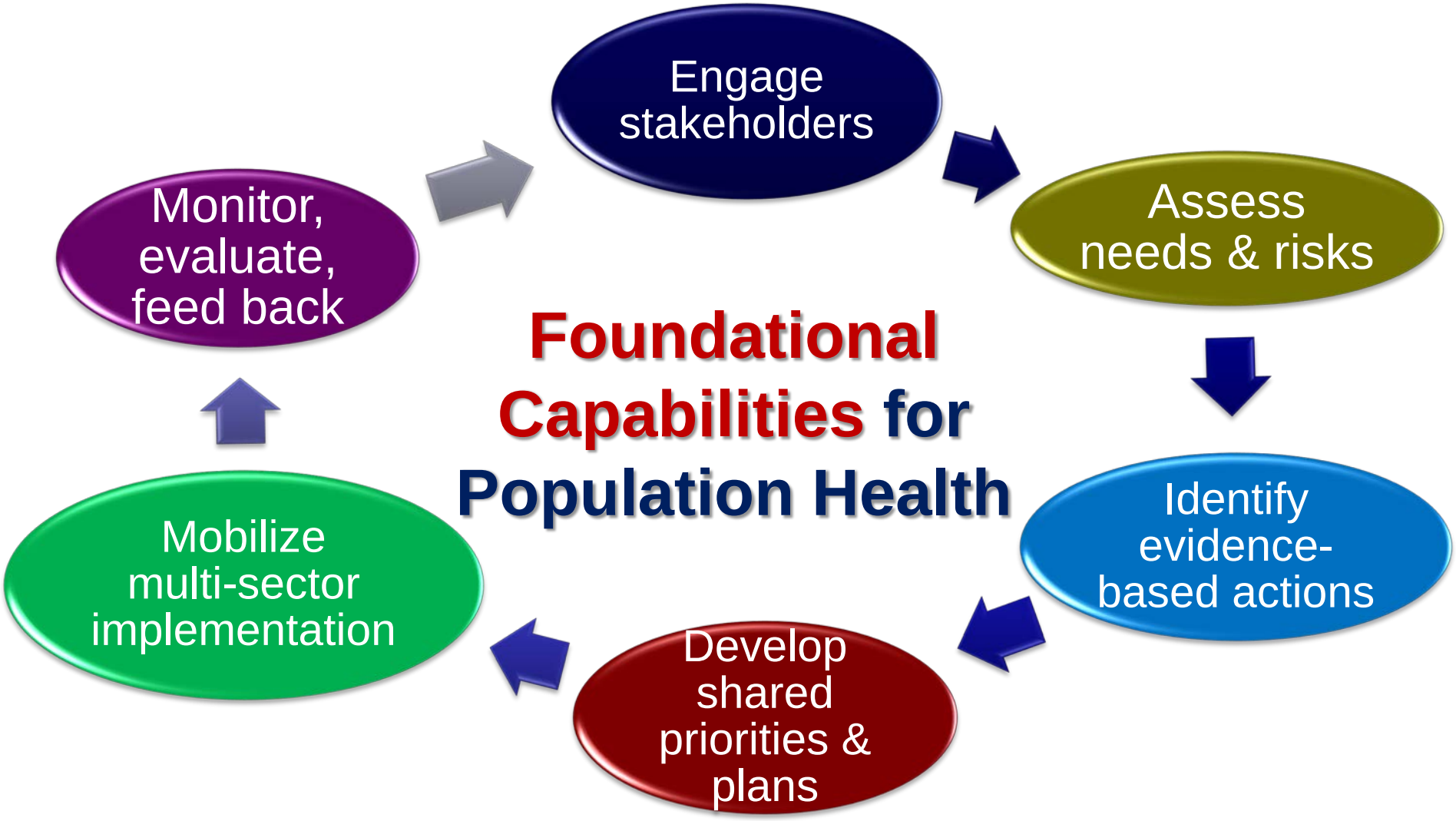
What services and supports are needed to support collective actions in health?

Need a chief health strategist for communities & populations:

- Articulate population health needs & priorities
- Engage community stakeholders
- Plan with clear roles & responsibilities
- Recruit & leverage resources
- Develop and enforce policies
- Ensure coordination across sectors
- Promote equity and target disparities
- Support evidence-based practices
- Monitor and feed back results
- Ensure transparency & accountability: resources, results, ROI



Catalytic functions to support multi-sector actions in health



National Academy of Sciences Institute of Medicine: ***For the Public's Health: Investing in a Healthier Future.*** Washington, DC: National Academies Press; 2012.

The Culture of Health Action Framework

Robert Wood Johnson Foundation

http://www.rwjf.org/en/culture-of-health/2015/11/measuring_what_matte.html

What do we call systems that deliver a broad scope of foundational capabilities through dense networks of multi-sector relationships?

COMPREHENSIVE

Comprehensive Public Health Systems

One of RWJF's Culture of Health National Metrics

- Implement a ***broad scope*** of population health activities
- Through ***dense networks*** of multi-sector relationships
- Including ***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

http://www.cultureofhealth.org/en/integrated-systems/access.html

What do we know about multi-sector work in population health?

- Which organizations contribute to the implementation of population health activities in local communities?
- How do these contributions develop and change over time?

  Recession | Recovery | ACA implementation

- What are the health and economic effects attributable to these multi-sector activities?

What do we know about multi-sector work in public health?

National Longitudinal Survey of Public Health Systems

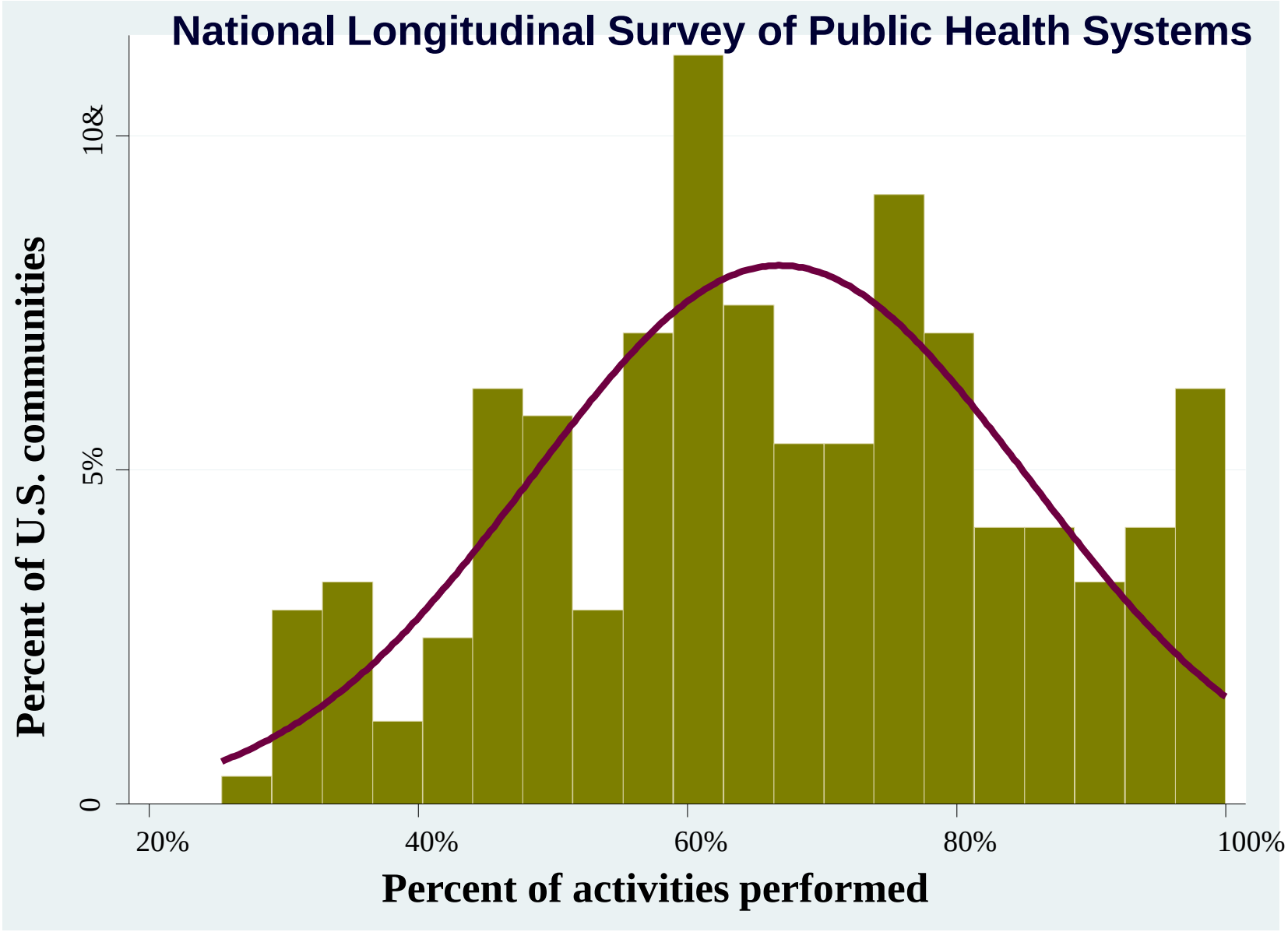
- Cohort of 360 communities with at least 100,000 residents
- Followed over time: 1998, 2006, 2012, 2014**, 2016
- Local public health officials report:
  - ***Scope***: availability of 20 recommended population health activities
  - ***Network***: organizations contributing to each activity
  - ***Centrality of effort***: contributed by governmental public health agency
  - ***Quality***: perceived effectiveness of each activity

** Expanded sample of 500 communities<100,000 added in 2014 wave

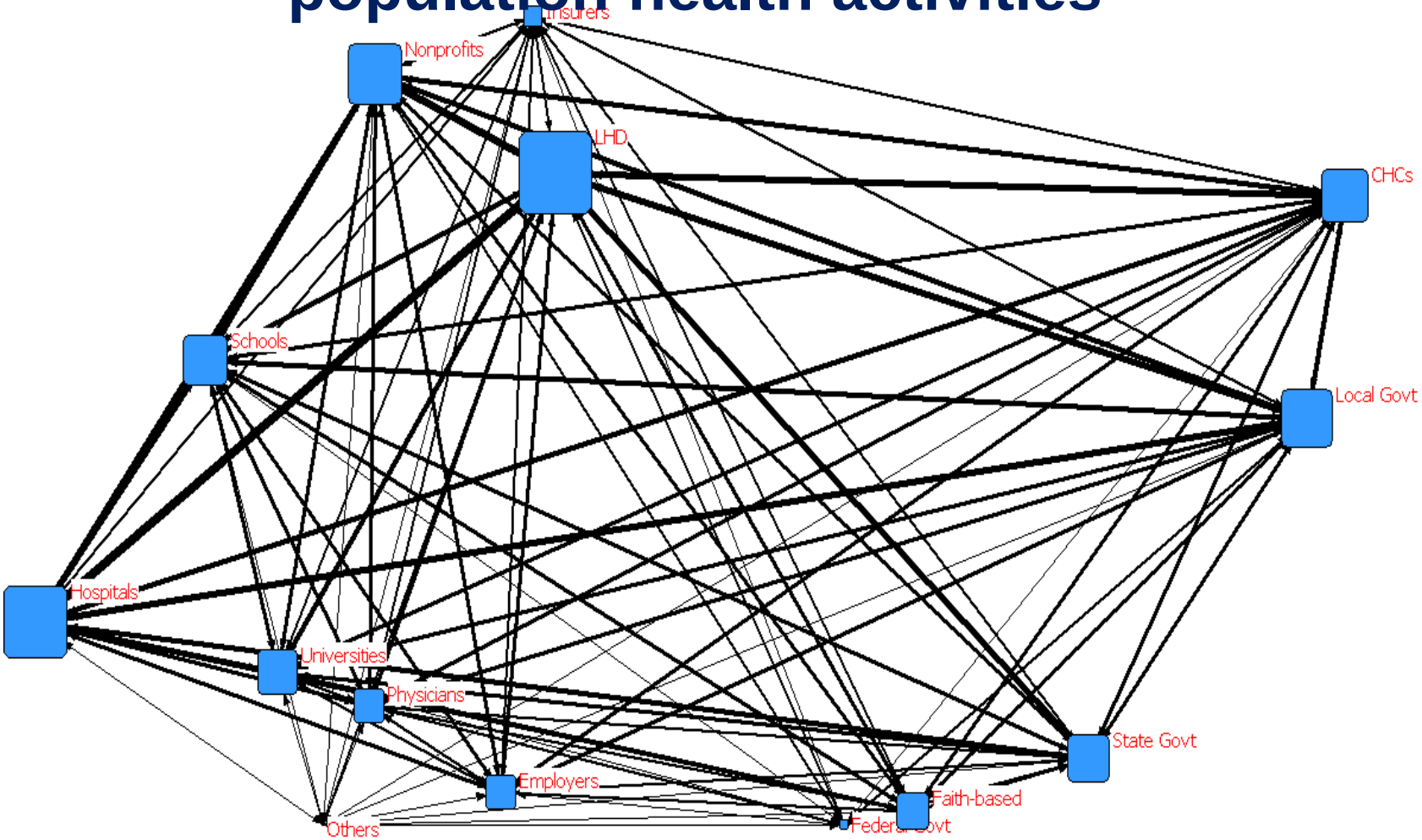
Prevalence of population health activities in U.S. metropolitan communities, 1998-2014

Activity	1998	2006	2012	2014	% Chg
1 Conduct periodic assessment of community health status and needs	71.5%	77.5%	72.6%	87.1%	21.8%
2 Survey community for behavioral risk factors	45.8%	70.2%	73.9%	71.1%	55.2%
3 Investigate adverse health events, outbreaks and hazards	98.6%	97.9%	99.6%	100.0%	1.4%
4 Conduct laboratory testing to identify health hazards and risks	96.3%	97.0%	99.2%	96.1%	-0.2%
5 Analyze data on community health status and health determinants	61.3%	73.2%	63.5%	72.7%	18.6%
6 Analyze data on preventive services use	28.4%	26.1%	33.2%	39.0%	37.3%
7 Routinely provide community health information to elected officials	80.9%	90.1%	87.1%	84.0%	3.8%
8 Routinely provide community health information to the public	75.4%	88.8%	80.9%	82.3%	9.1%
9 Routinely provide community health information to the media	75.2%	88.4%	87.1%	89.0%	18.3%
10 Prioritize community health needs	66.1%	71.7%	66.8%	83.6%	26.5%
11 Engage community stakeholders in health improvement planning	41.5%	50.6%	49.8%	68.8%	65.7%
12 Develop a community-wide health improvement plan	81.9%	86.7%	69.7%	87.9%	7.3%
13 Identify and allocate resources based on community health plan	26.2%	37.3%	27.8%	41.9%	59.9%
14 Develop policies to address priorities in community health plan	48.6%	51.9%	49.0%	56.8%	16.9%
15 Maintain a communication network among health-related organizations	78.8%	87.2%	89.6%	85.3%	8.2%
16 Link people to needed health services	75.6%	68.7%	60.6%	50.0%	-33.8%
17 Implement legally mandated public health activities	91.4%	92.3%	89.2%	92.4%	1.1%
18 Evaluate health programs and services in the community	34.7%	37.5%	33.2%	37.9%	9.4%
19 Evaluate local public health agency capacity and performance	56.3%	56.2%	55.2%	56.1%	-0.3%
20 Monitor and improve implementation of health programs and policies	47.3%	50.4%	42.7%	46.4%	-1.9%
Mean performance of assessment activities (#1-6)	67.0%	73.7%	73.7%	77.7%	15.9%
Mean performance of policy and planning activities (#7-15)	63.9%	72.5%	67.5%	75.5%	18.3%
Mean performance of implementation and assurance activities (#16-20)	61.1%	61.0%	56.2%	56.6%	-7.3%
Mean performance of all activities	63.8%	70.2%	66.9%	67.6%	6.0%

Variation in implementing foundational population health activities



Mapping who contributes to population health activities

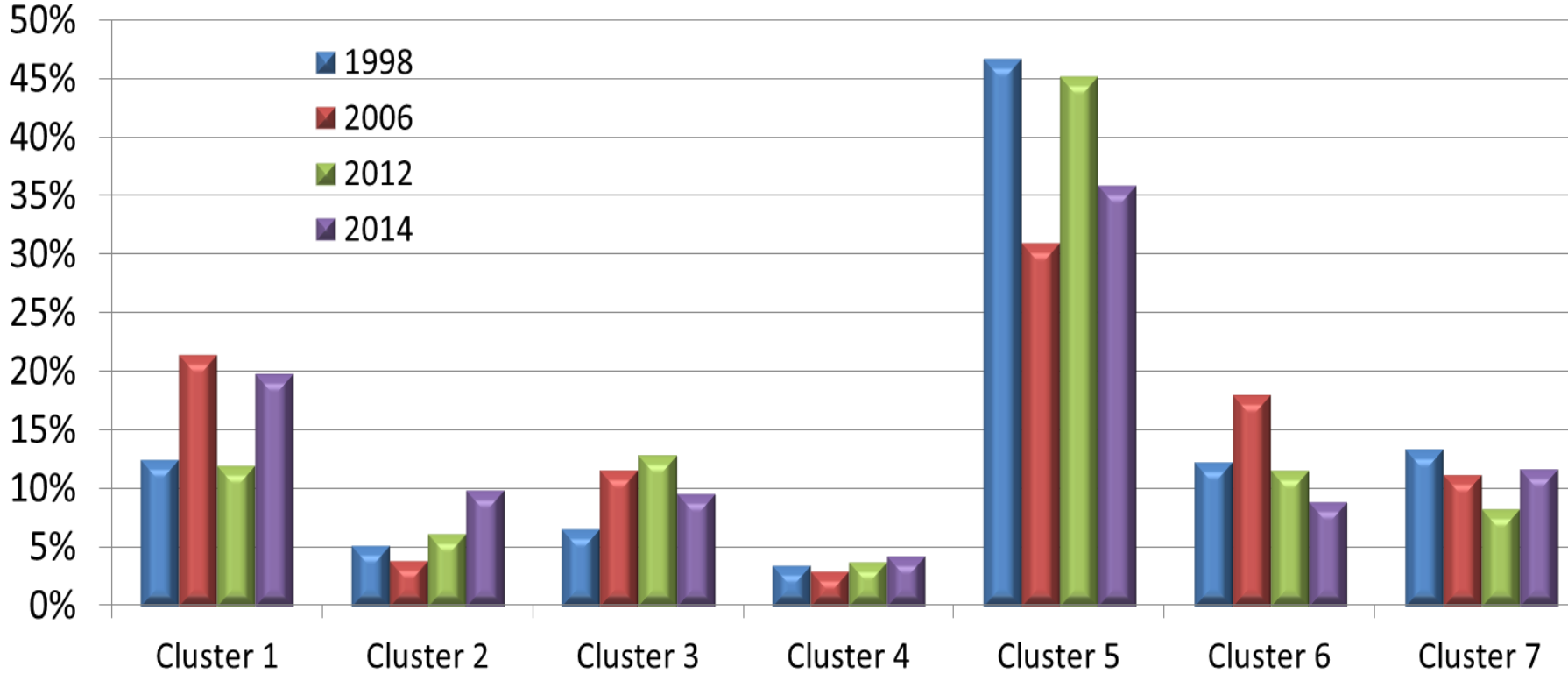


Node size = degree centrality

Line size = % activities jointly contributed (tie strength)

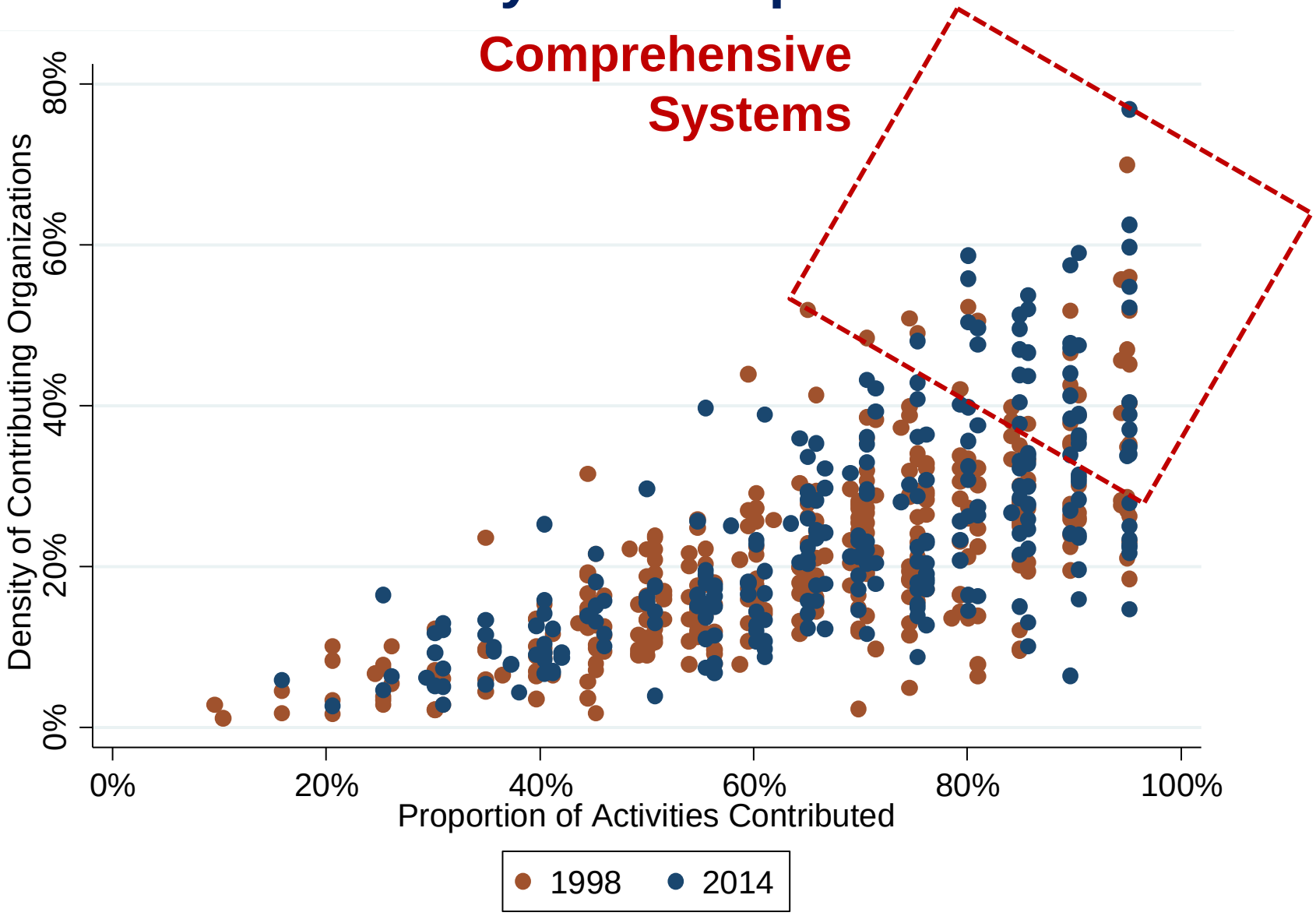
Mays GP et al. Understanding the organization of public health delivery systems: an empirical typology. *Milbank Q.* 2010;88(1):81–111.

Classifying multi-sector delivery systems for population health 1998-2014



	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
Scope	High	High	High	Mod	Mod	Low	Low
Centrality	Mod	Low	High	High	Low	High	Low
Density	High	High	Mod	Mod	Mod	Low	Mod
	Comprehensive (High System Capital)			**Conventional**		**Limited**	

Network density and scope of activities

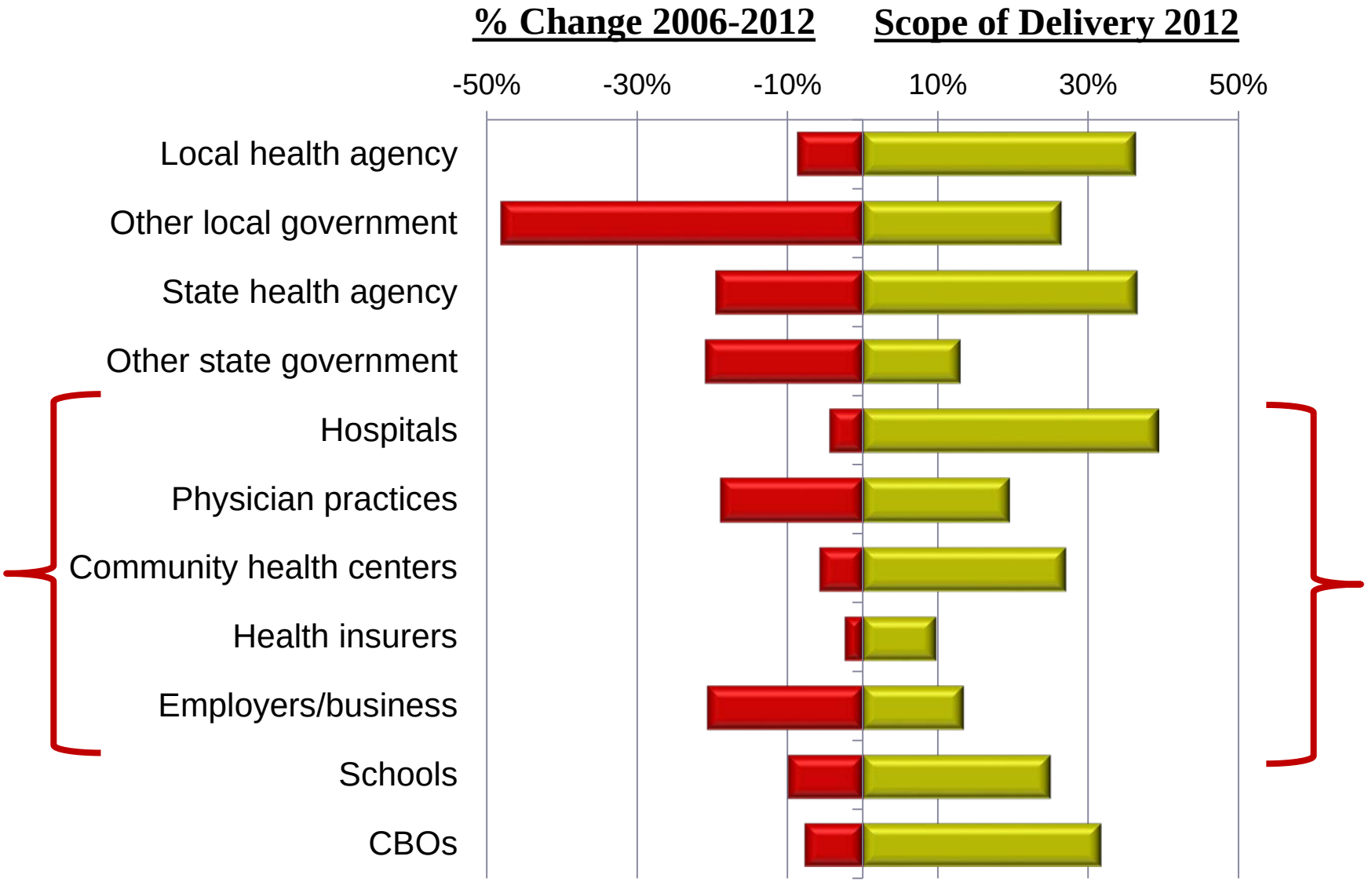


Changes in system prevalence and coverage

System Capital Measures	1998	2006	2012	2014	2014 (<100k)
Comprehensive systems					
% of communities	**24.2%**	**36.9%**	**31.1%**	**32.7%**	**25.7%**
% of population	**25.0%**	**50.8%**	**47.7%**	**47.2%**	**36.6%**
Conventional systems					
% of communities	50.1%	33.9%	49.0%	40.1%	57.6%
% of population	46.9%	25.8%	36.3%	32.5%	47.3%
Limited systems					
% of communities	25.6%	29.2%	19.9%	20.6%	16.7%
% of population	28.1%	23.4%	16.0%	19.6%	16.1%

Mays GP, Hogg RA. Economic shocks and public health protections in US metropolitan areas. Am J Public Health. 2015;105 Suppl 2:S280-7.

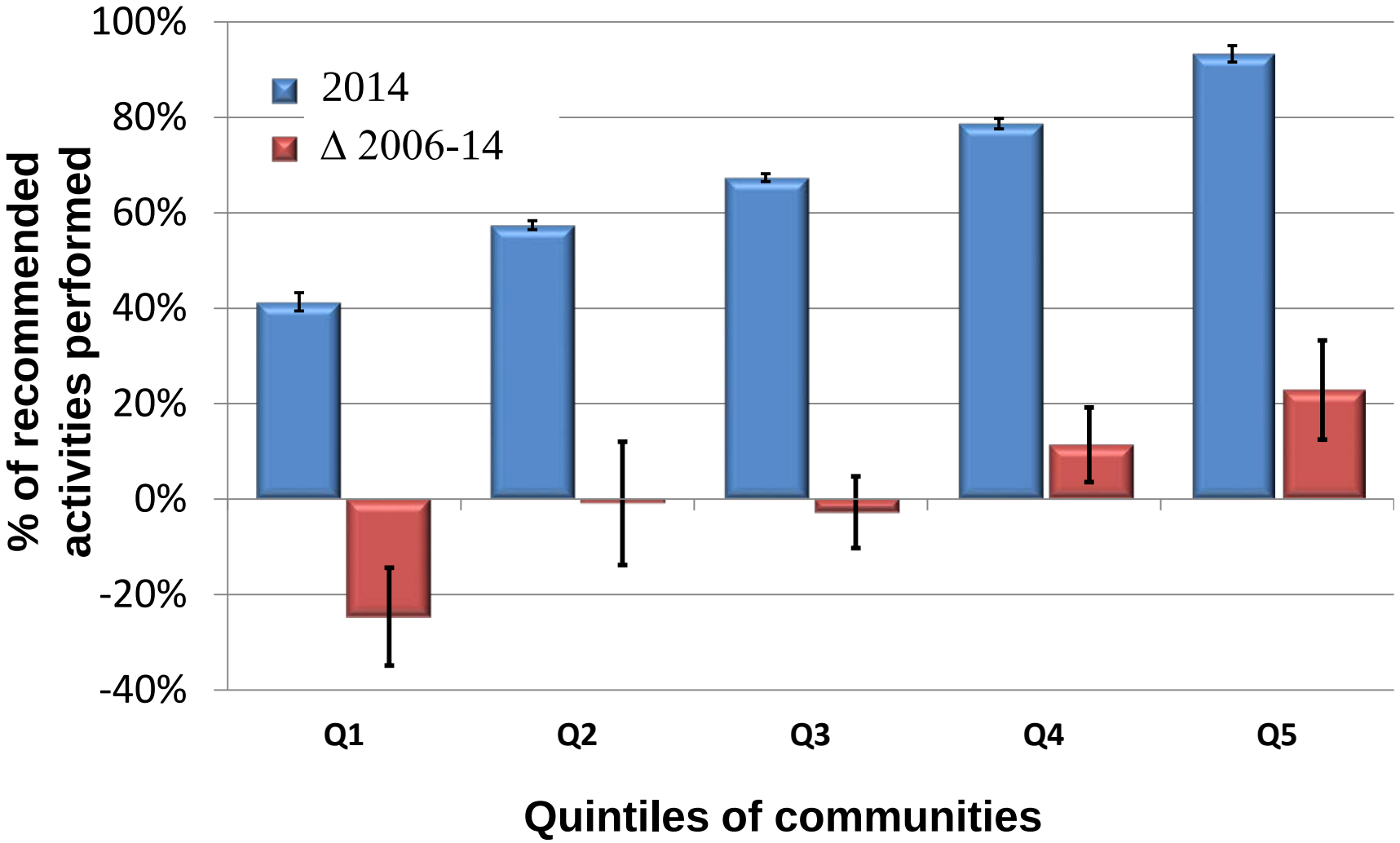
Changes in system capital during the Great Recession



Mays GP, Hogg RA. Economic shocks and public health protections in US metropolitan areas. Am J Public Health. 2015;105 Suppl 2:S280-7.

Equity in population health delivery systems

Delivery of recommended population health activities

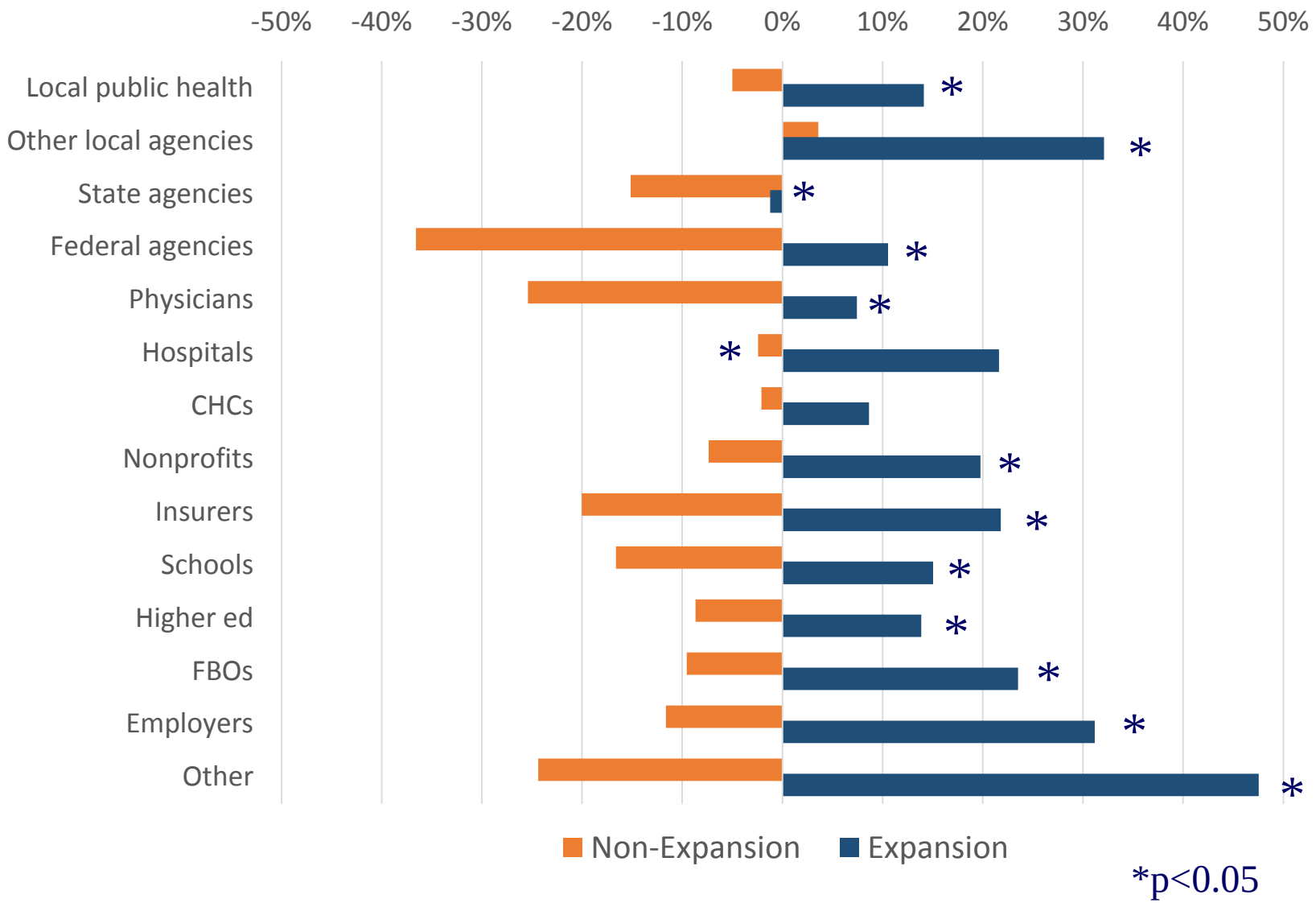


Mays GP, Hogg RA. Economic shocks and public health protections in US metropolitan areas. Am J Public Health. 2015;105 Suppl 2:S280-7.

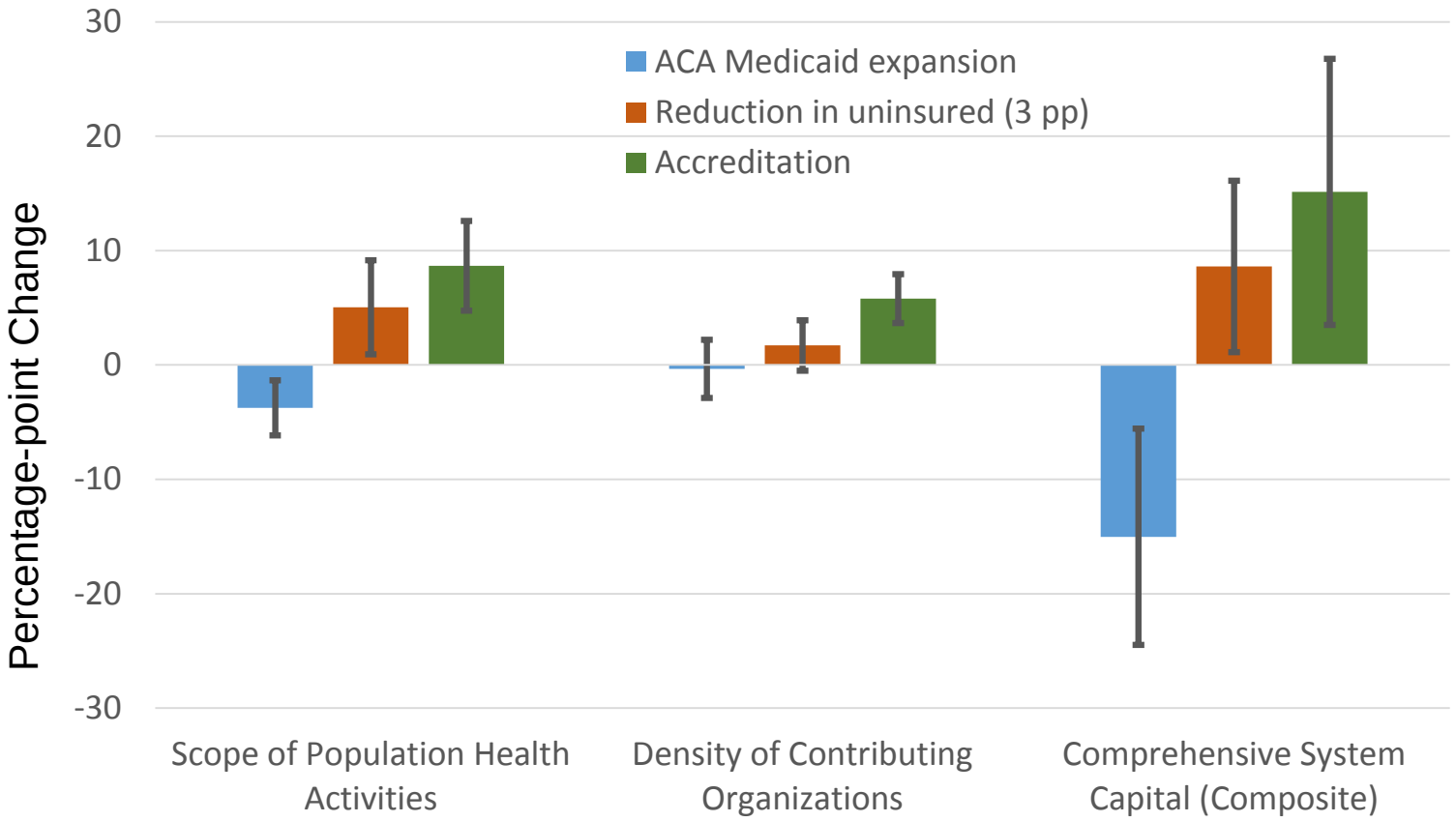
Organizational contributions to population health activities, 1998-2014

Type of Organization	% of Recommended Activities Implemented 1998	2014	Percent Change
Local public health agencies	60.7%	67.5%	11.1%
Other local government agencies	31.8%	33.2%	4.4%
State public health agencies	46.0%	34.3%	-25.4%
Other state government agencies	17.2%	12.3%	-28.8%
Federal government agencies	7.0%	7.2%	3.7%
Hospitals	37.3%	46.6%	24.7%
Physician practices	20.2%	18.0%	-10.6%
Community health centers	12.4%	29.0%	134.6%
Health insurers	8.6%	10.6%	23.0%
Employers/businesses	16.9%	15.3%	-9.6%
Schools	30.7%	25.2%	-17.9%
Universities/colleges	15.6%	22.6%	44.7%
Faith-based organizations	19.2%	17.5%	-9.1%
Other nonprofit organizations	31.9%	32.5%	2.0%
Other	8.5%	5.2%	-38.4%

Changes in organizational centrality by ACA Medicaid expansion status, 2012-2014



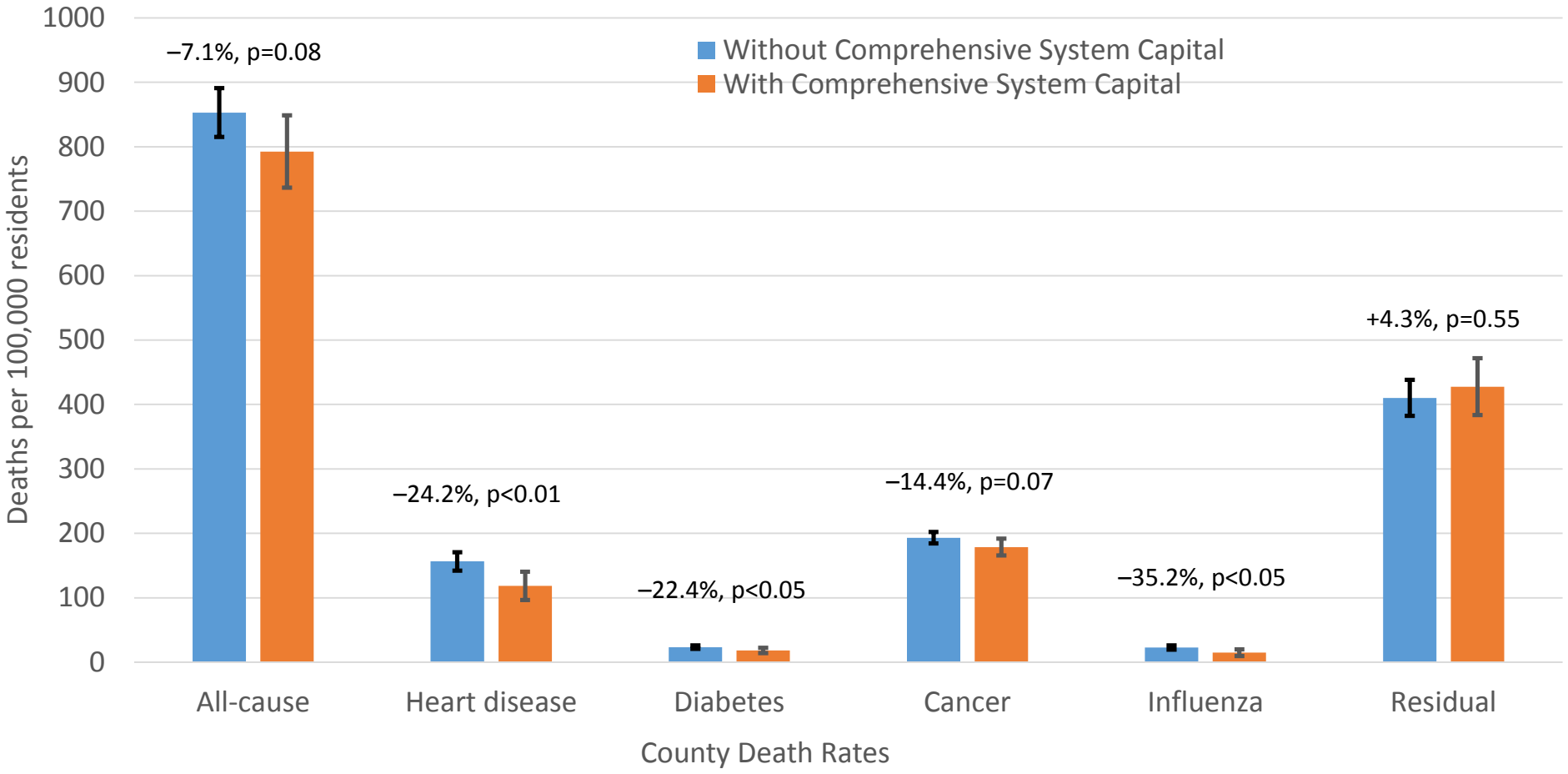
Effects of ACA and accreditation on population health activities



Controlling for type of jurisdiction, population size and density, metropolitan area designation, income per capita, unemployment, poverty rate, racial composition, age distribution, physician and hospital availability, state and year fixed effects. Vertical lines are 95% confidence intervals. **N=1019 community-years**

Health effects attributable to multi-sector work

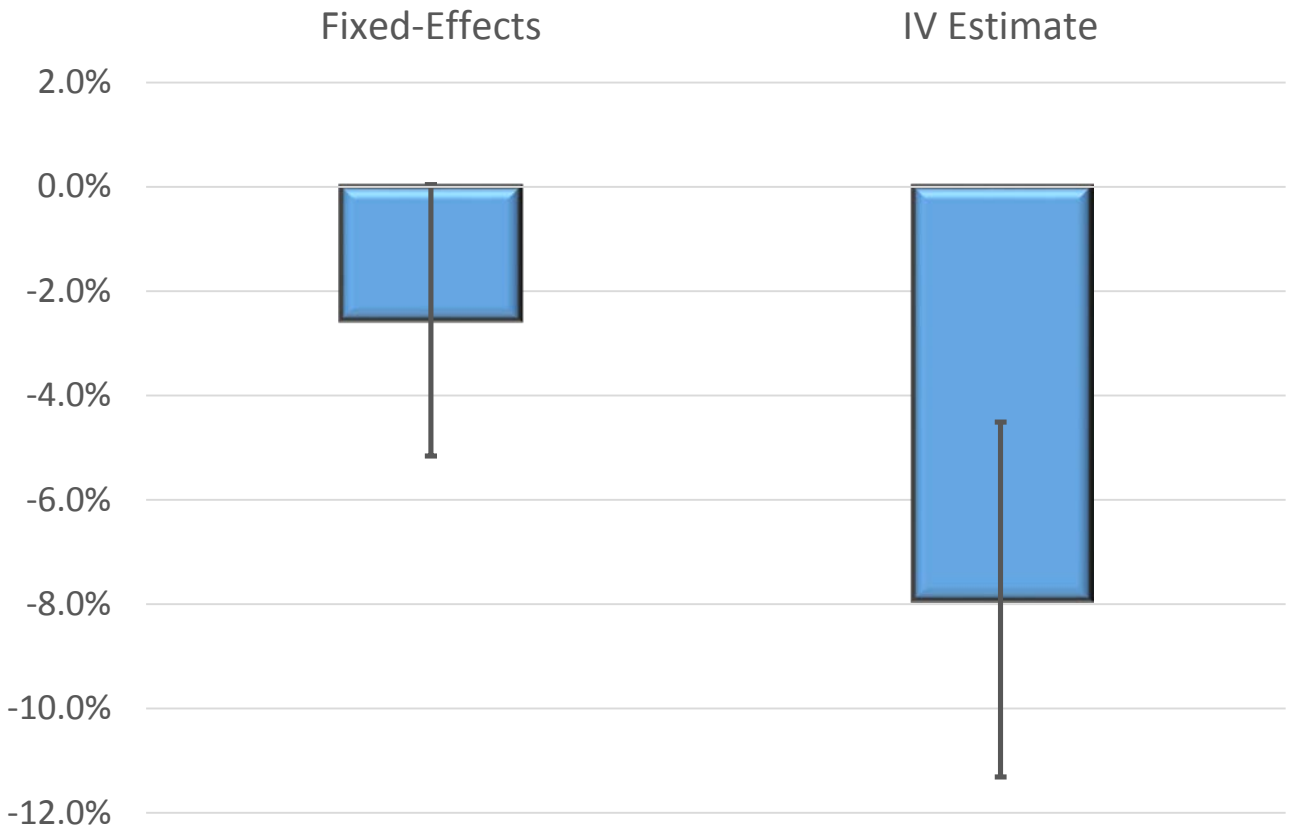
Impact of Comprehensive Systems on Mortality, 1998-2014



Fixed-effects instrumental variables estimates controlling for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years

Economic effects attributable to multi-sector work

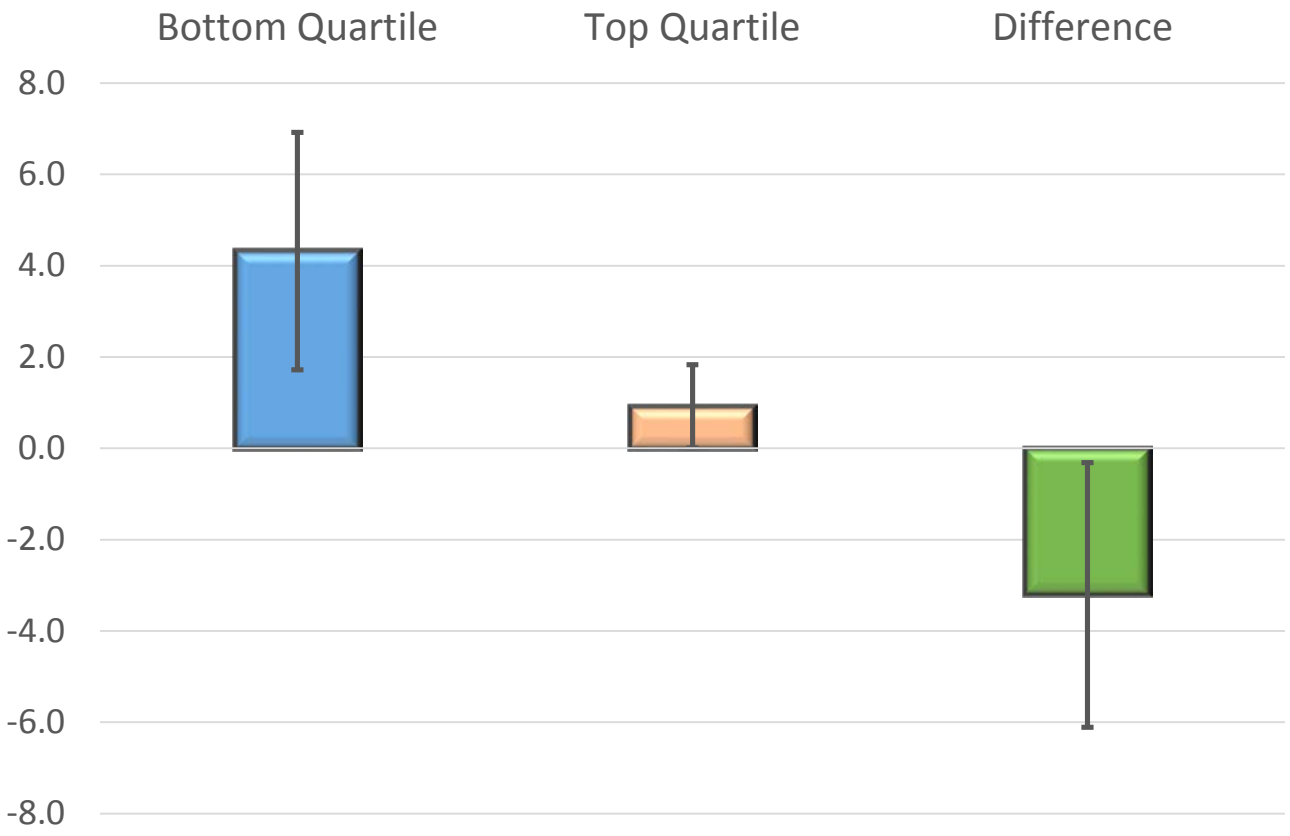
Impact of Comprehensive Systems on Medical Spending (Medicare) 1998-2014



Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals

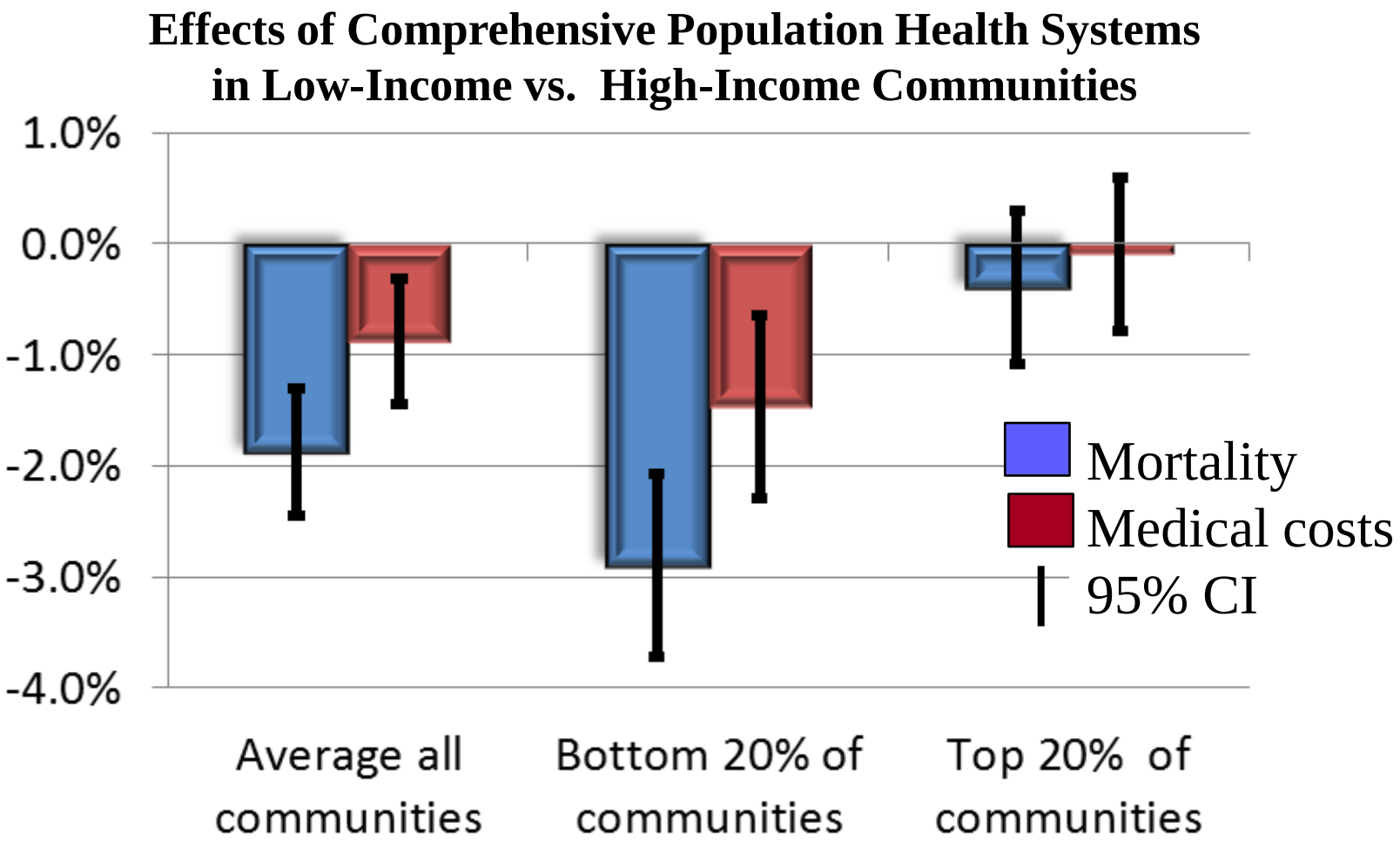
Economic effects attributable to multi-sector work

Impact of Comprehensive Systems on Life Expectancy by Income (Chetty), 2001-2014



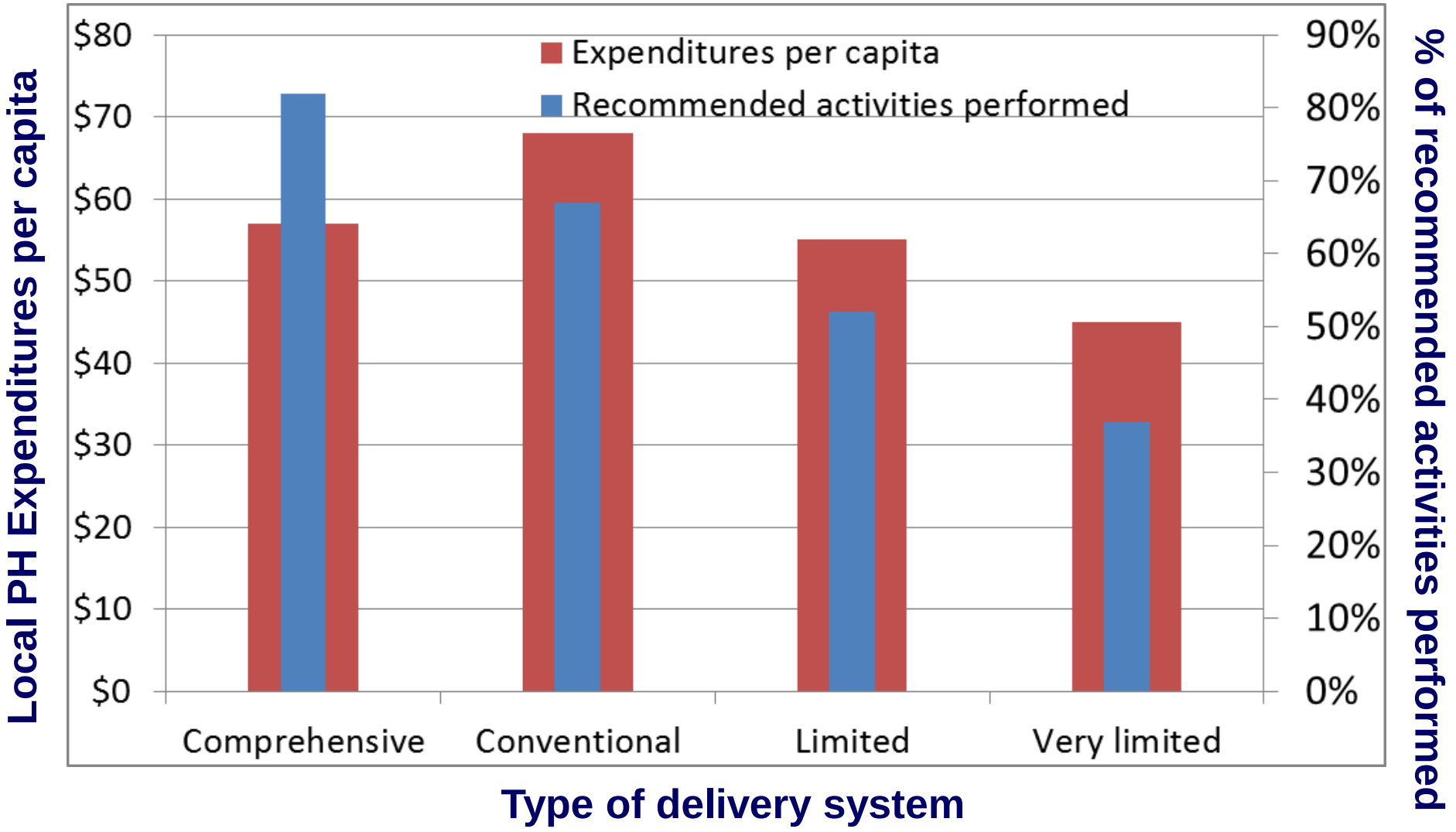
Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals

Making the case for equity: larger gains in low-resource communities



Log IV regression estimates controlling for community-level and state-level characteristics

Comprehensive systems do more with less



New incentives & infrastructure are in play

Conclusions: What we know and still need to learn

- Large potential benefits of system integration
- Inequities in integration are real & problematic
- Integration requires support
  - Infrastructure
  - Institutions
  - Incentives
- Sustainability and resiliency are not automatic

Finding the connections

- Act on aligned incentives
- Exploit the disruptive policy environment
- Innovate, prototype, study – then scale
- Pay careful attention to shared governance, decision-making, and financing structures
- Demonstrate value and accountability to the public

For More Information

Systems for Action

National Coordinating Center

Systems and Services Research to Build a Culture of Health

Supported by The Robert Wood Johnson Foundation

Glen P. Mays, Ph.D., M.P.H.
glen.mays@uky.edu
@GlenMays

Email: systemsforaction@uky.edu
Web: www.systemsforaction.org
www.publichealthsystems.org
Journal: www.FrontiersinPHSSR.org
Archive: works.bepress.com/glen_mays
Blog: publichealtheconomics.org

UNIVERSITY OF KENTUCKY
Center for Public Health Systems and Services Research

For more information

- Defining Comprehensive Public Health Delivery Systems https://works.bepress.com/glen_mays/198/
- CPHS methodology: Milbank Quarterly 2010 http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2888010/
- Health/economic benefits of comprehensive systems: AJPH 2015 http://www.ncbi.nlm.nih.gov/pubmed/25689201
- Longitudinal Survey of Public Health Systems http://works.bepress.com/glen_mays/38/
- Customized system feedback report http://works.bepress.com/glen_mays/67/

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