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# Integrating Delivery and Financing Systems Across Sectors to Build a Culture of Health

Glen P. Mays, *University of Kentucky*



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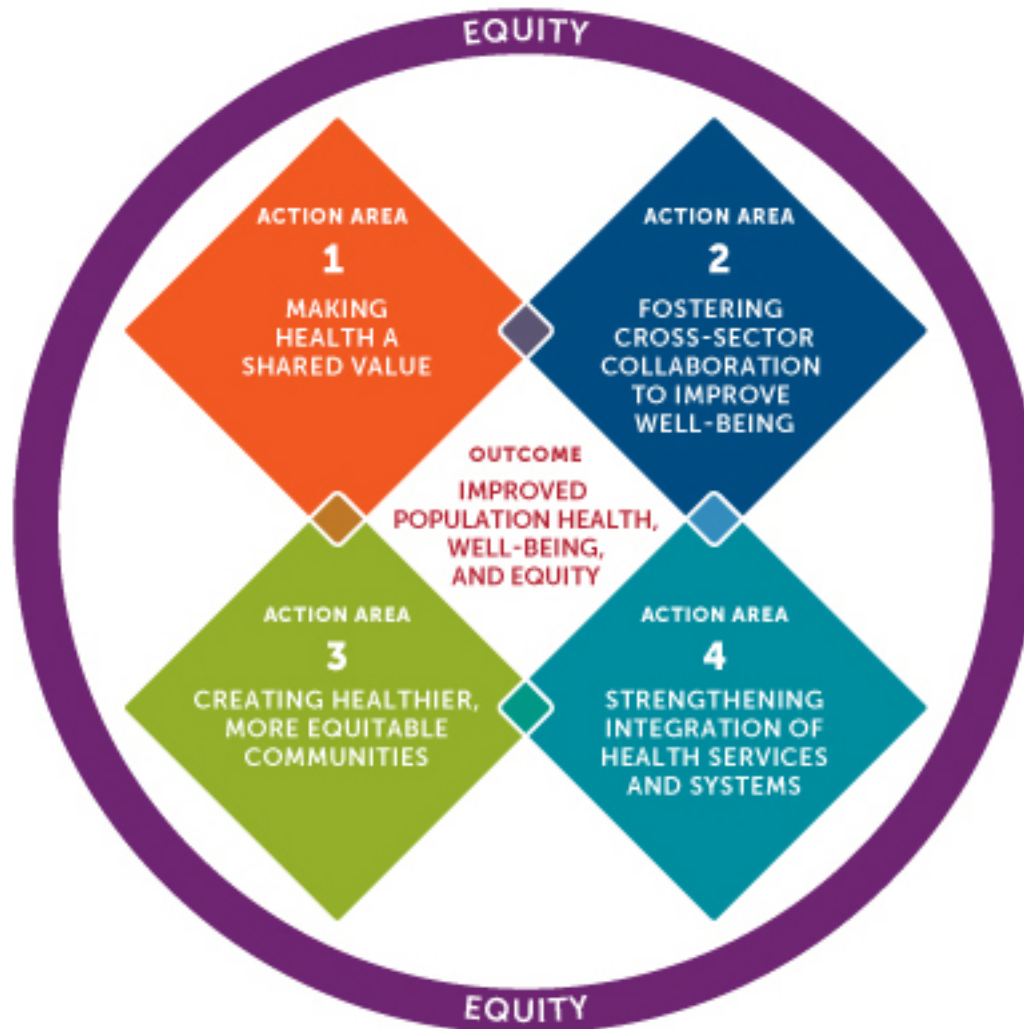
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AcademyHealth Annual Research Meeting • Boston, MA • 26 June 2015



**Systems for Action**  
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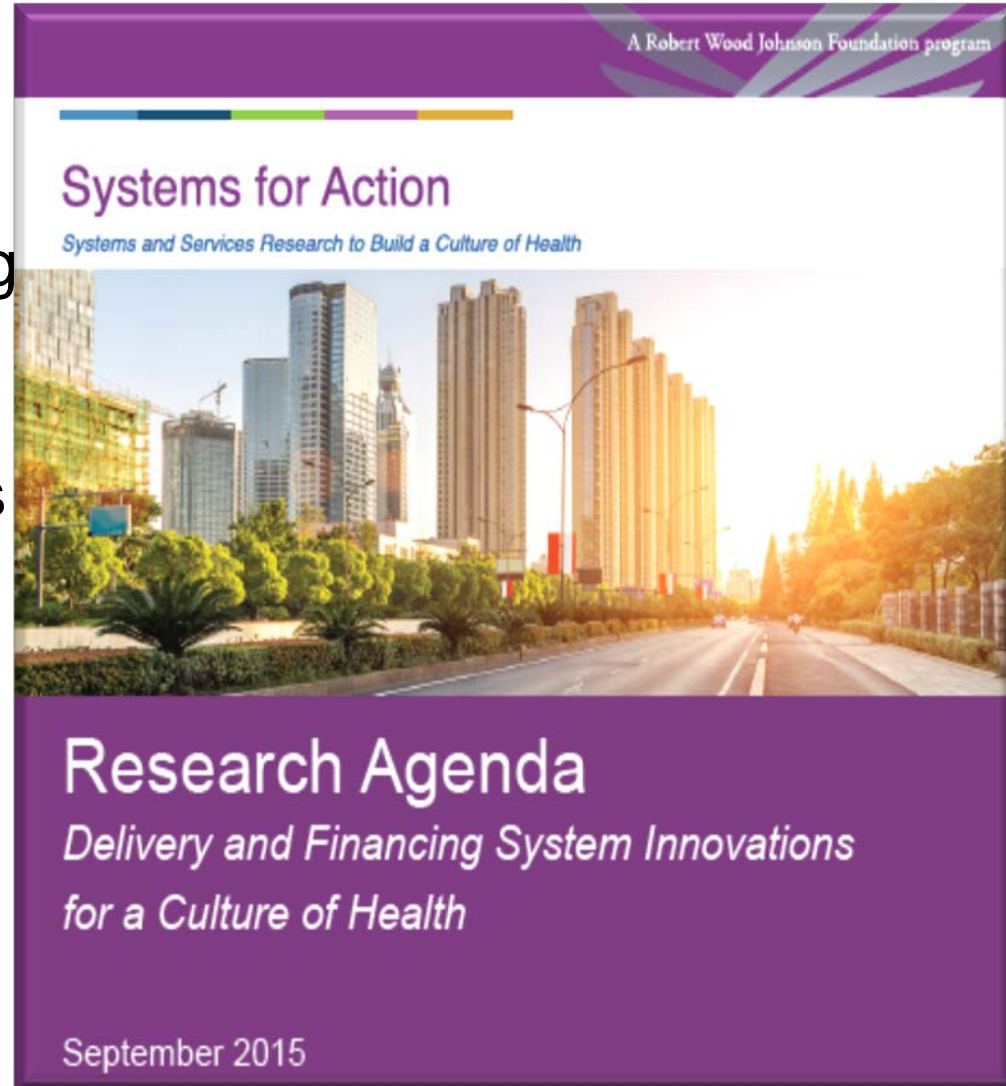
# A Framework for Building a Culture of Health



# Mission: Widen the lens beyond health care & public health systems

Rigorous research to identify novel mechanisms for aligning delivery and financing systems in **medical care**, **public health**, and **social & community services** in ways that improve **health** and **wellbeing**, achieve **efficiencies** in resource use, and reduce **inequities**.

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# Wide lens: implicated sectors

- Public health
- Medical care: ACOs, PCMCs, AHCs
- Income support
- Nutrition and food security
- Education and workforce development
- Housing
- Transportation
- Criminal justice
- Child and family services
- Community development and finance



# Study **novel mechanisms** for aligning systems and services across sectors

- Innovative alliances and partnerships
- Inter-governmental and public-private ventures
- New financing and payment arrangements
- Incentives for individuals, organizations & communities
- Governance and decision-making structures
- Information exchange and decision support
- New technology: m-health, tele-health
- Community engagement, public values and preferences
- Innovative workforce and staffing models
- Cross-sector planning and priority-setting

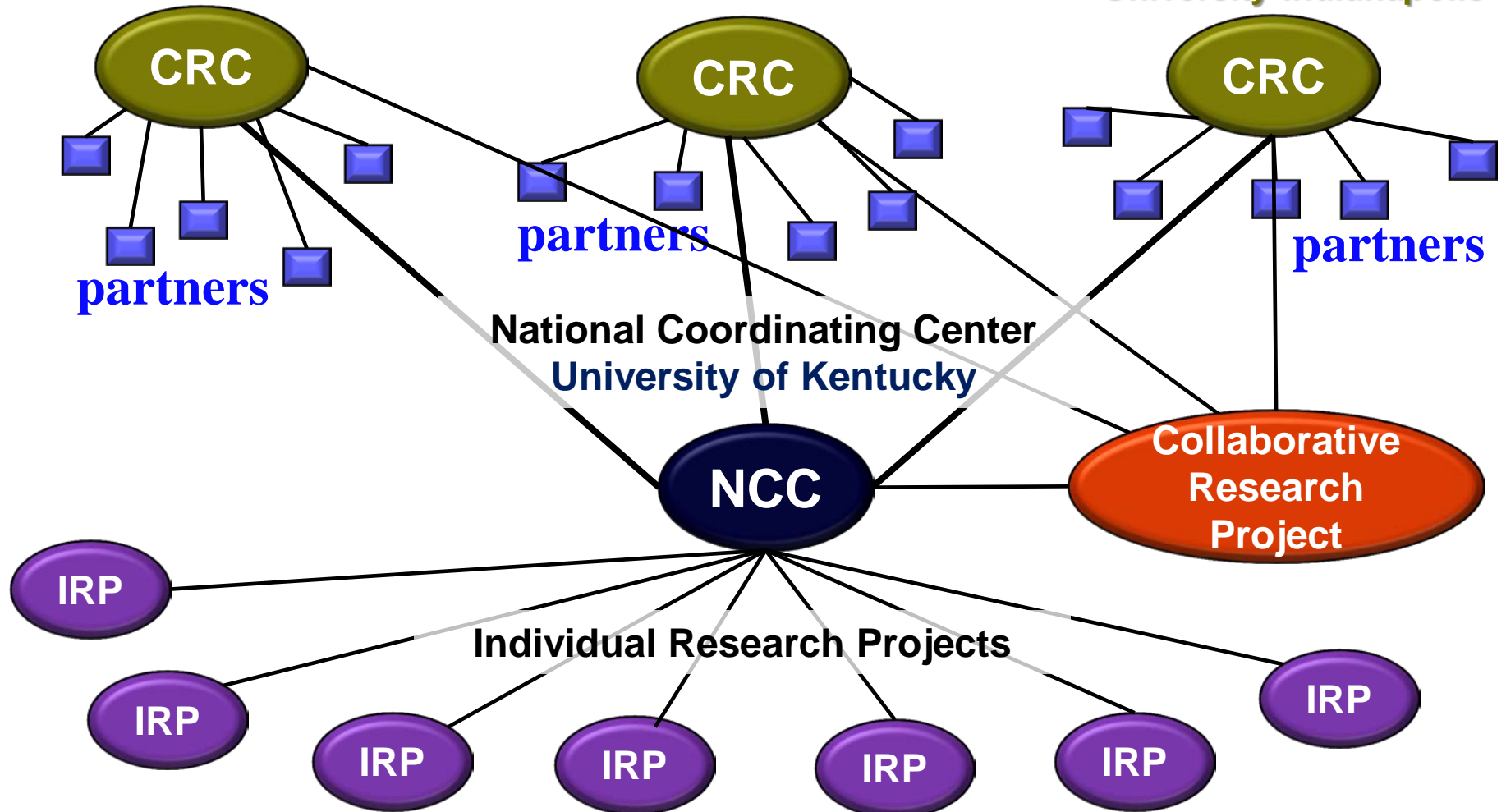
# S4A Program Structure

## Collaborating Research Centers

University of Chicago

Arizona State University

Indiana University – Purdue  
University Indianapolis



# Signature research projects

- ***University of Chicago:*** Randomized trial of a Comprehensive Care, Community and Culture program
- ***Arizona State University:*** Analysis of medical, mental health, and criminal justice system interactions for persons with behavioral health disorders
- ***IUPUI:*** Evaluating integration and decision support strategies for a community-based safety net health care and public health system
- ***University of Kentucky:*** Measuring multi-sector contributions to public health services and impact on population health.



# Understanding the Value of Multi-Sector Work to Improve Population Health

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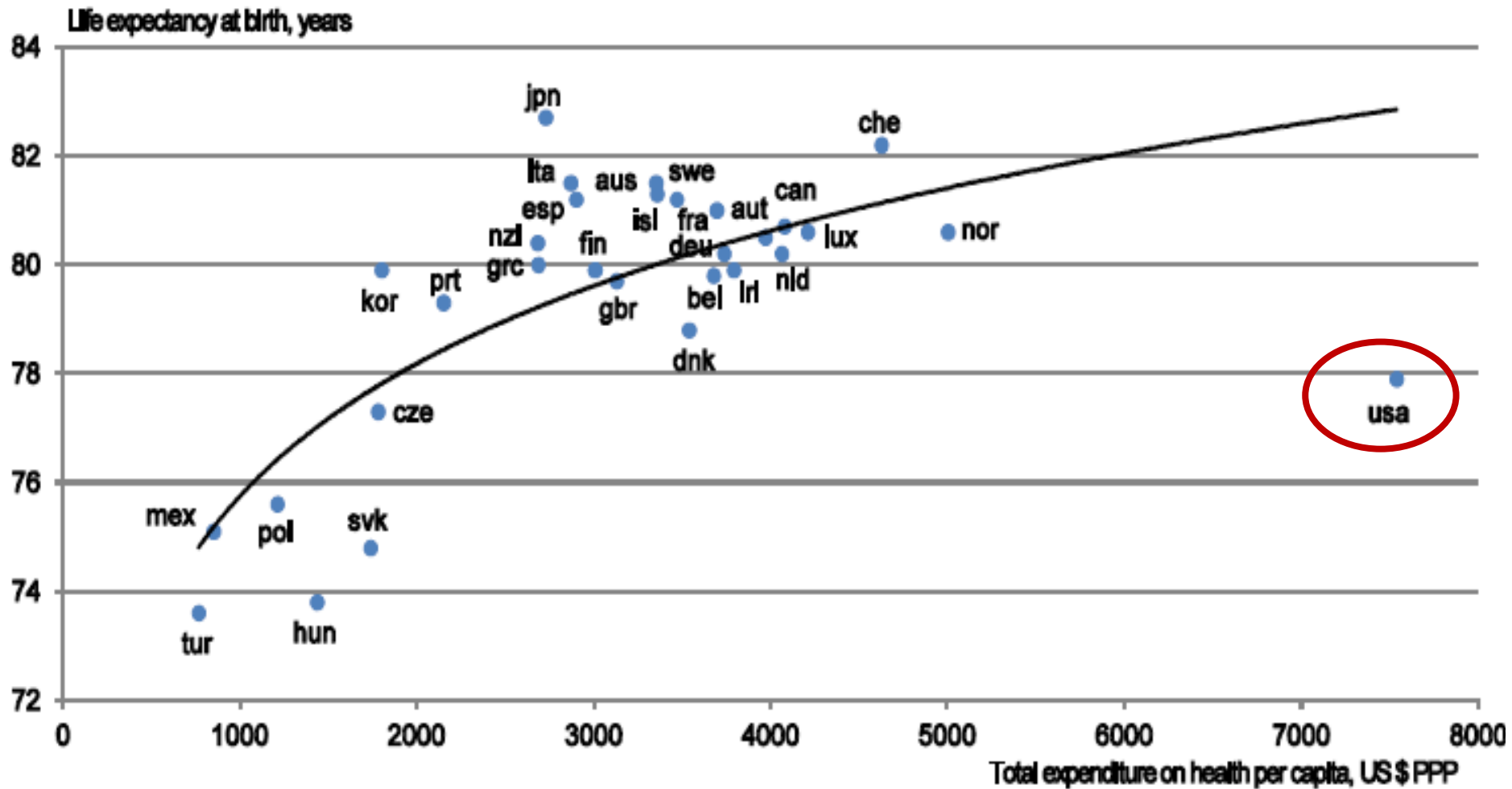
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# Losing ground in population health



1. Or latest year available.

Source: OECD Health Data 2010.

# How do we support effective population health improvement strategies?

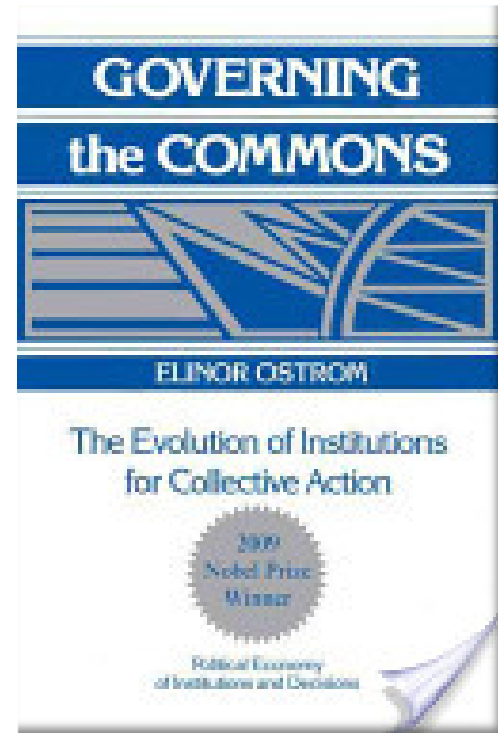
- Designed to achieve **large-scale** health improvement: neighborhood, city/county, region
- Target **fundamental** and often **multiple** determinants of health
- Mobilize the **collective actions** of multiple stakeholders in government & private sector
  - Infrastructure
  - Information
  - Incentives

Mays GP. Governmental public health and the economics of adaptation to population health strategies. *National Academy of Medicine Discussion Paper*. 2014.

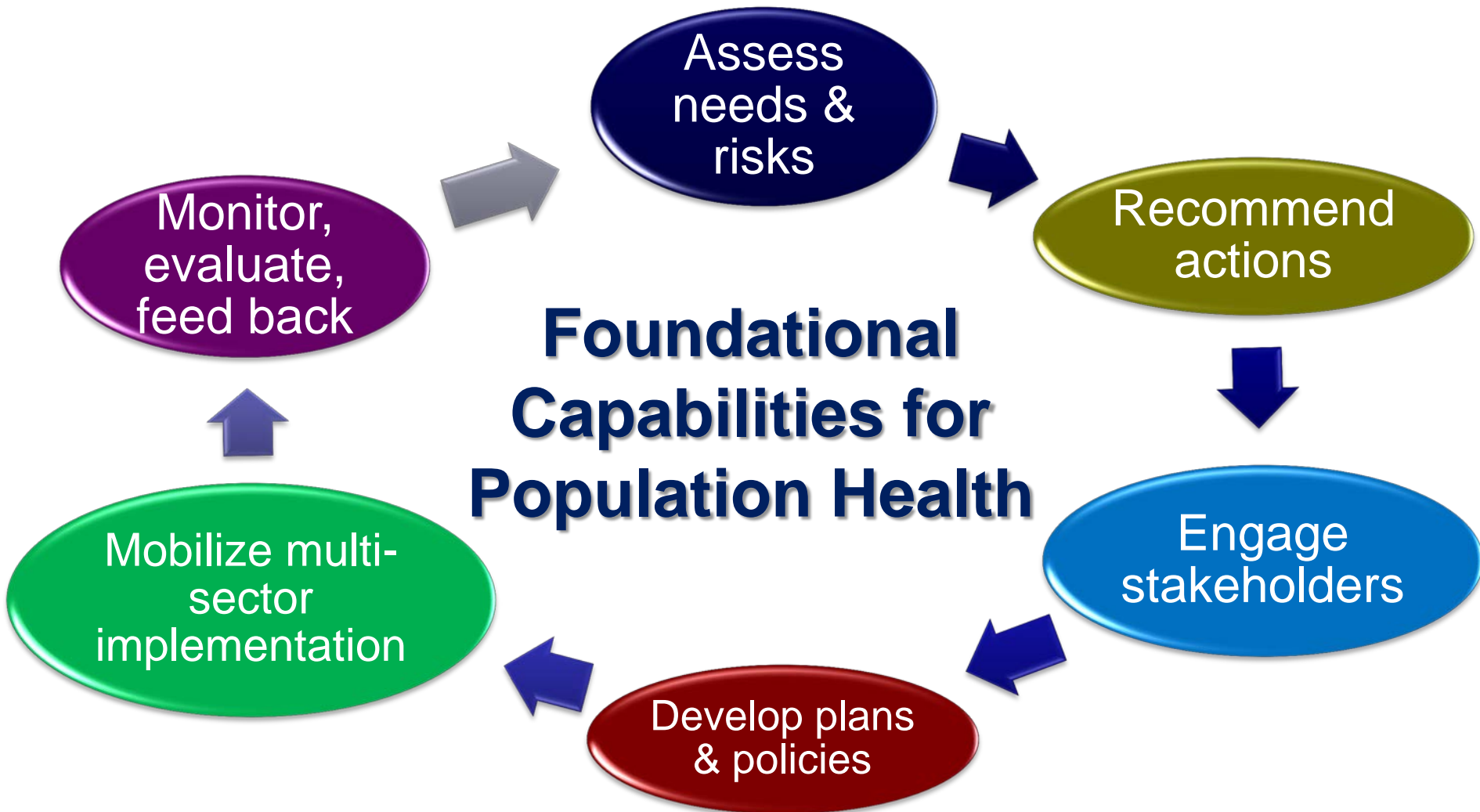
<http://nam.edu/wp-content/uploads/2015/06/EconomicsOfAdaptation.pdf>

# 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



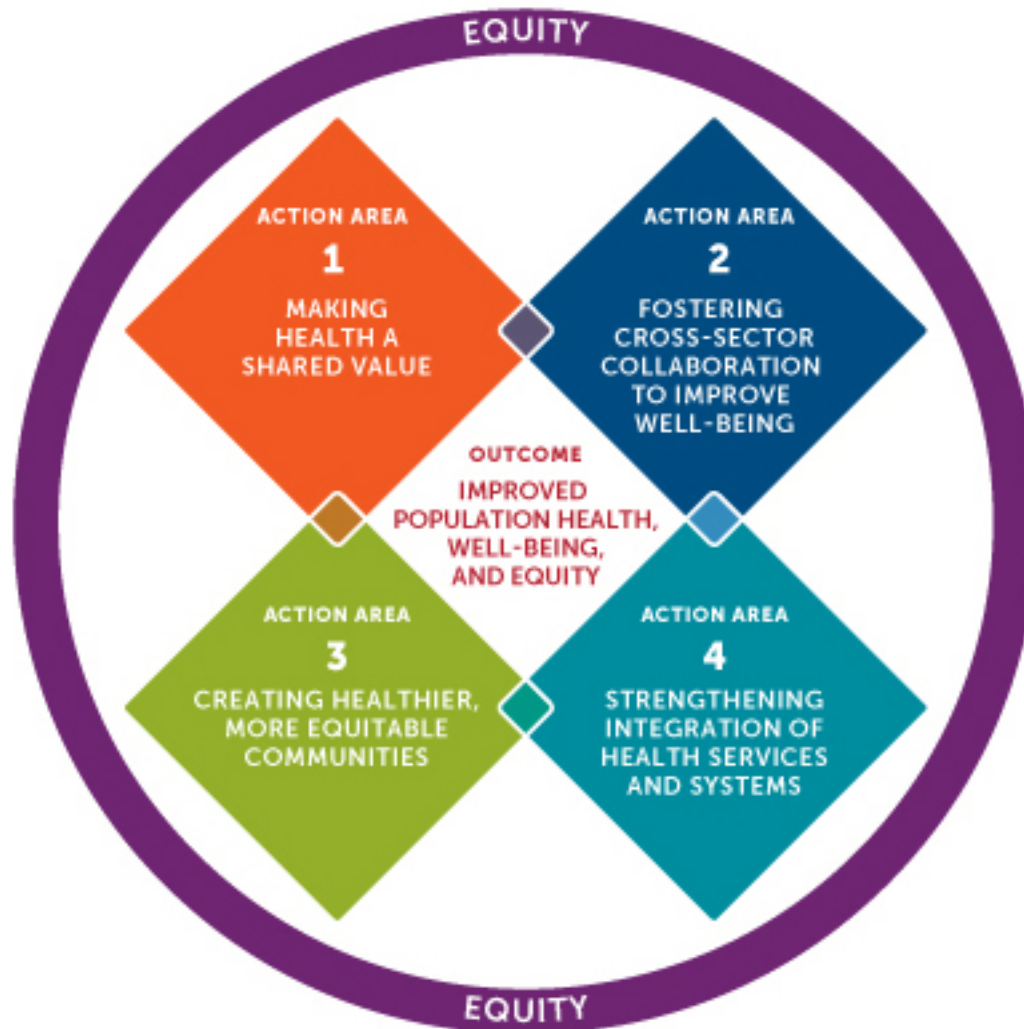
# Catalytic functions to support multi-sector actions in health



# Questions of interest

- Which organizations contribute to the implementation of population health activities in local communities?
- How do these contributions change over time?  
**Recession | Recovery | ACA implementation**
- What are the health and economic effects attributable to these multi-sector activities?

# Guided by Culture of Health Action Framework



# A useful lens for studying multi-sector work

## 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

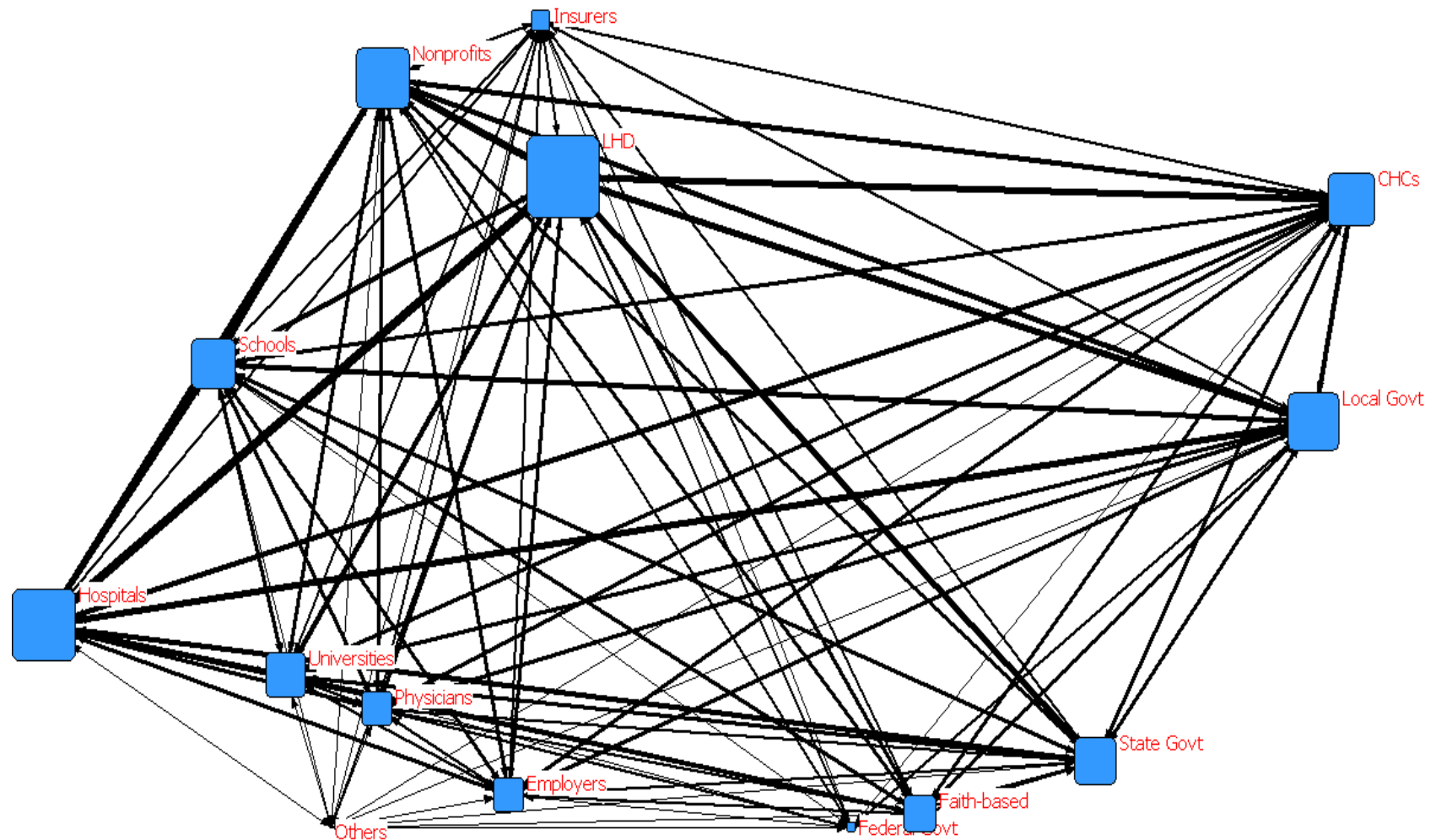
\*\* Expanded sample of 500 communities < 100,000 added in 2014 wave



# Data linkages expand analytic possibilities

- **Area Health Resource File:** health resources, demographics, socioeconomic status, insurance coverage
- **NACCHO Profile data:** public health agency institutional and financial characteristics
- **CMS Impact File & Cost Report:** hospital ownership, market share, uncompensated care
- **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

# Mapping who contributes to population health

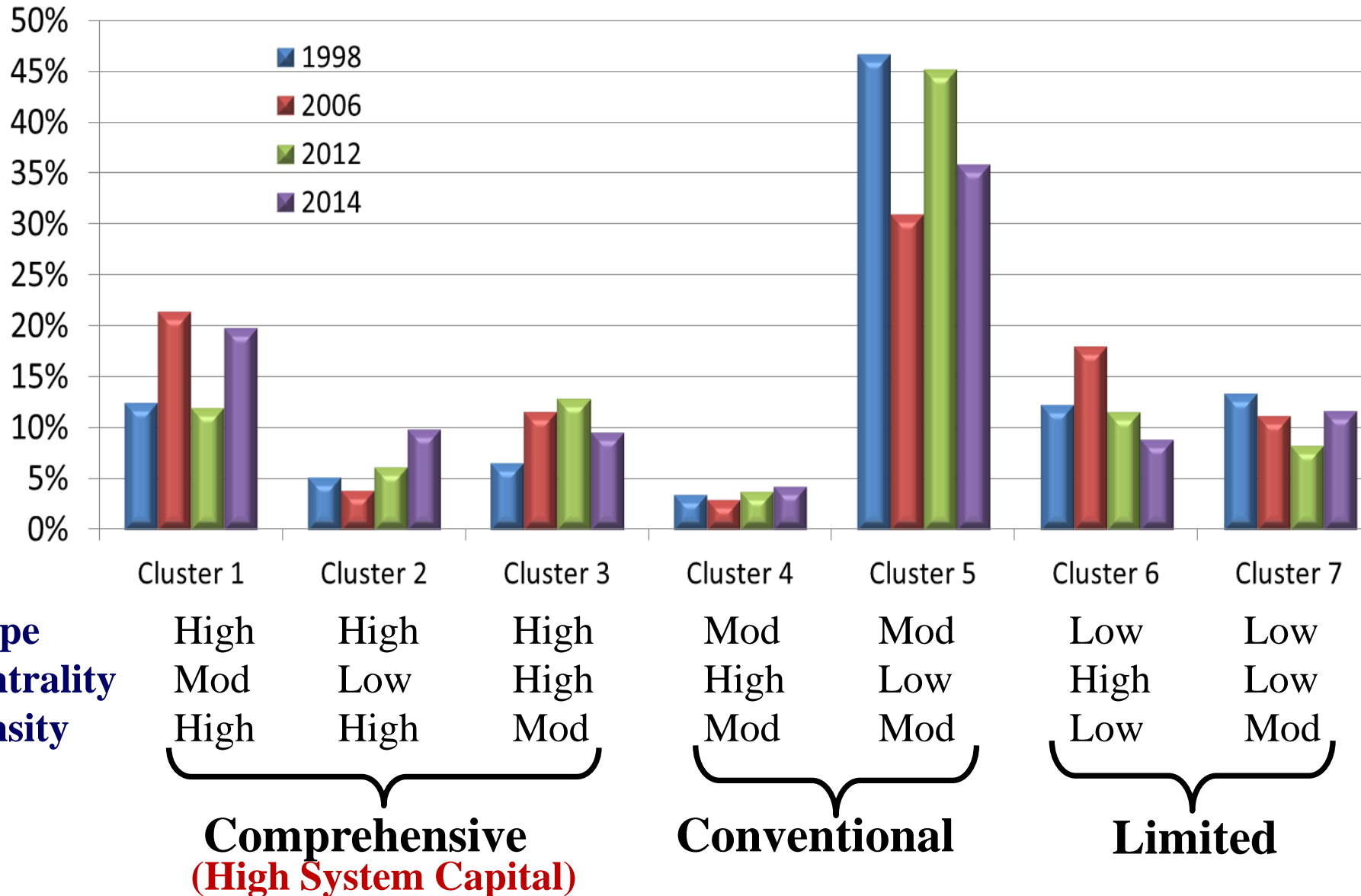


**Node size = degree centrality**

**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



# 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
- **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

# Changes in system prevalence and coverage

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

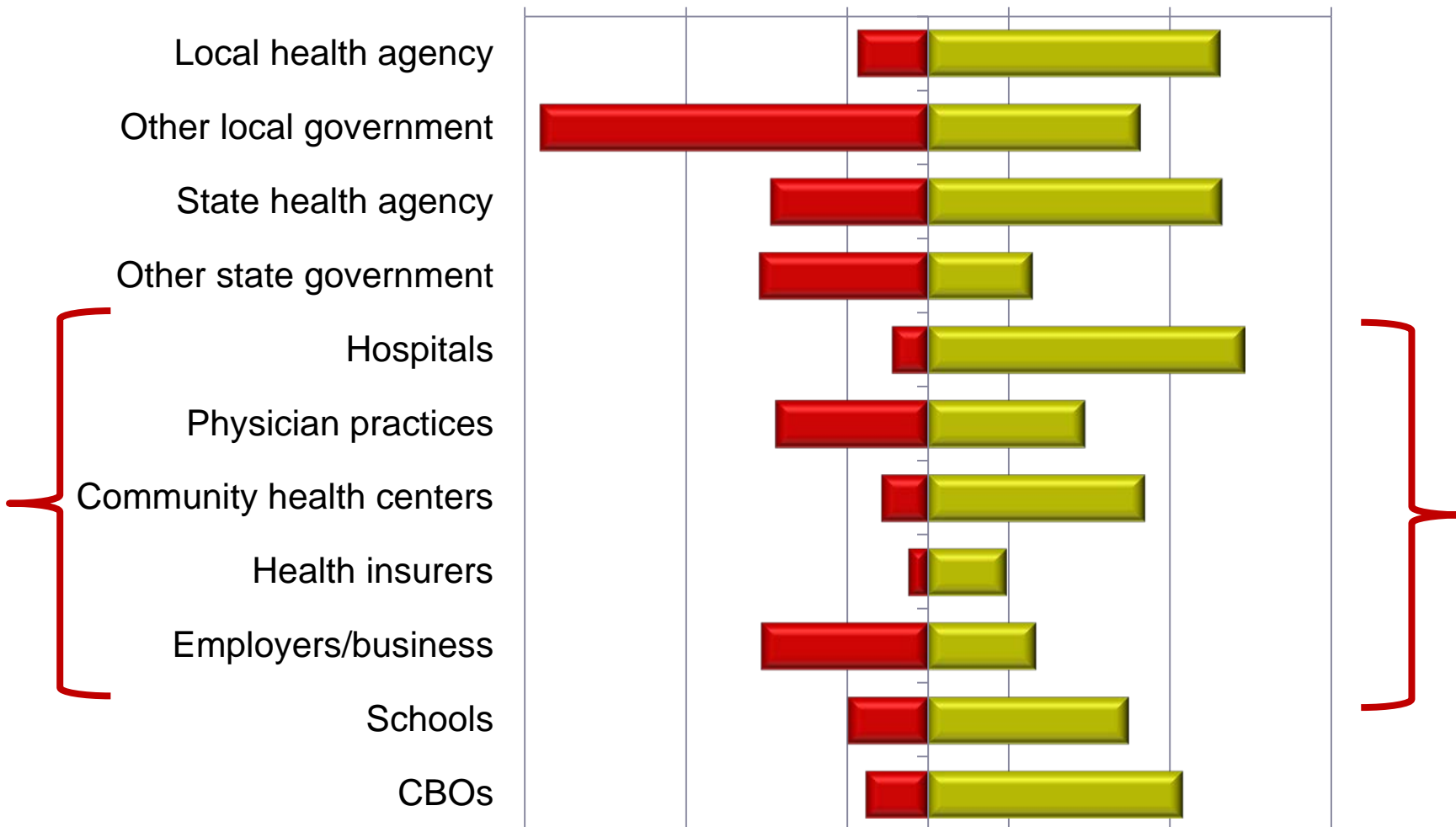
Mays GP, Hogg RA. Economic shocks and public health protections in US metropolitan areas. *Am J Public Health*. 2015;105 Suppl 2:S280-7.

# Changes in intensive and extensive margins of system capital during the Great Recession

% Change 2006-2012

Scope of Delivery 2012

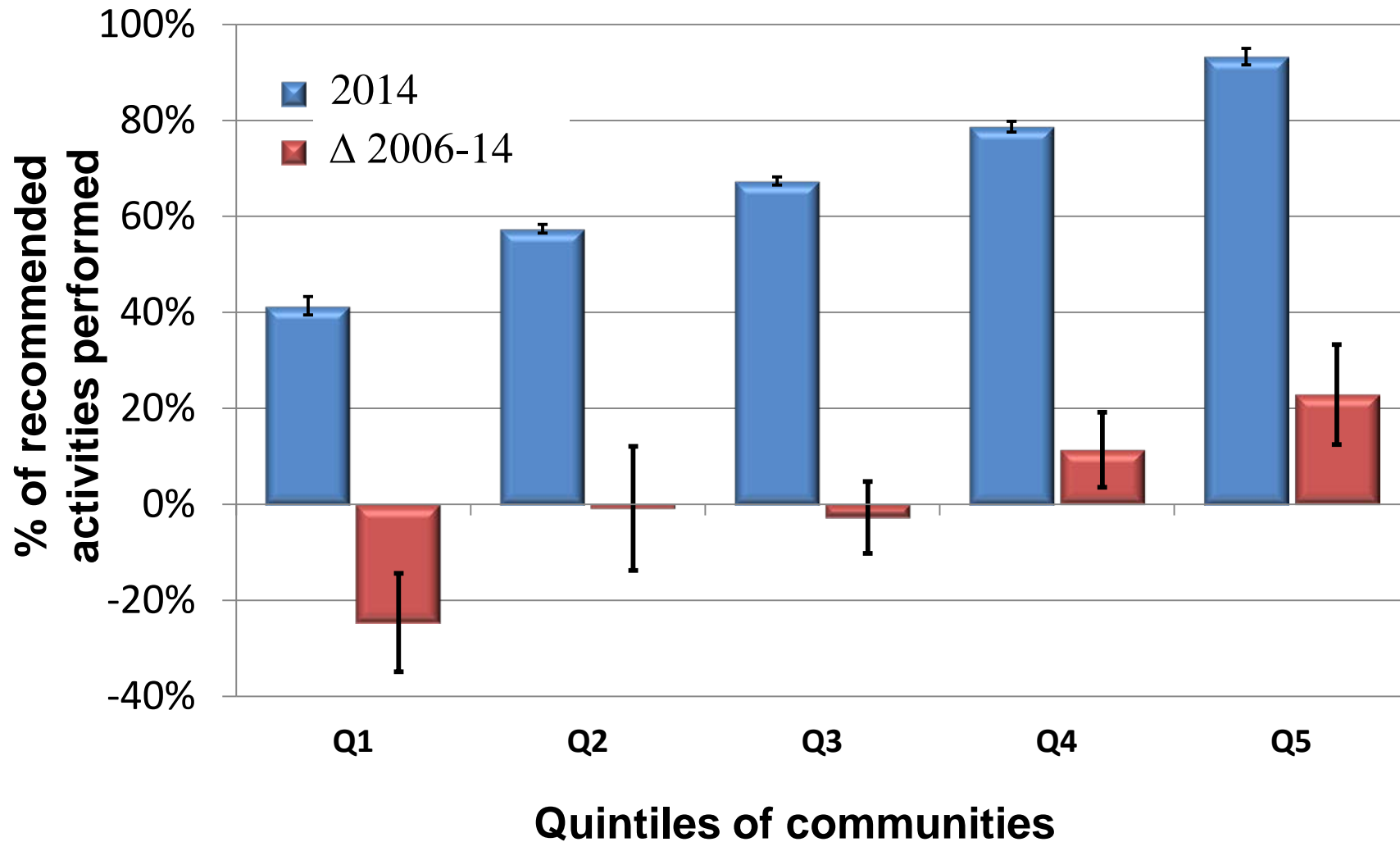
-50%      -30%      -10%      10%      30%      50%



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

## Implementation 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

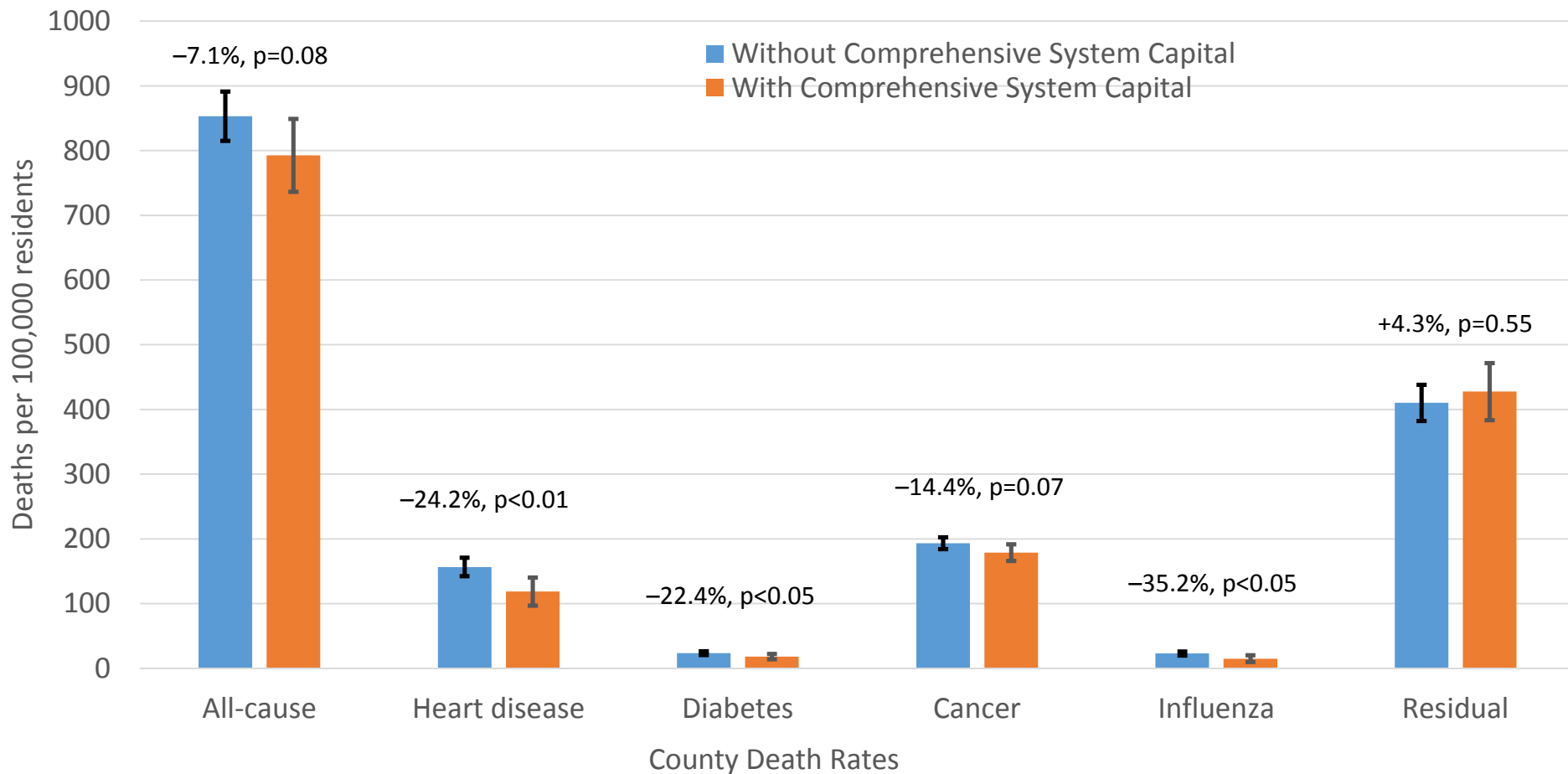
## % of Recommended Activities Implemented

<u>Type of Organization</u>	<u>1998</u>	<u>2014</u>	<u>Percent Change</u>
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%



# Health effects attributable to multi-sector work

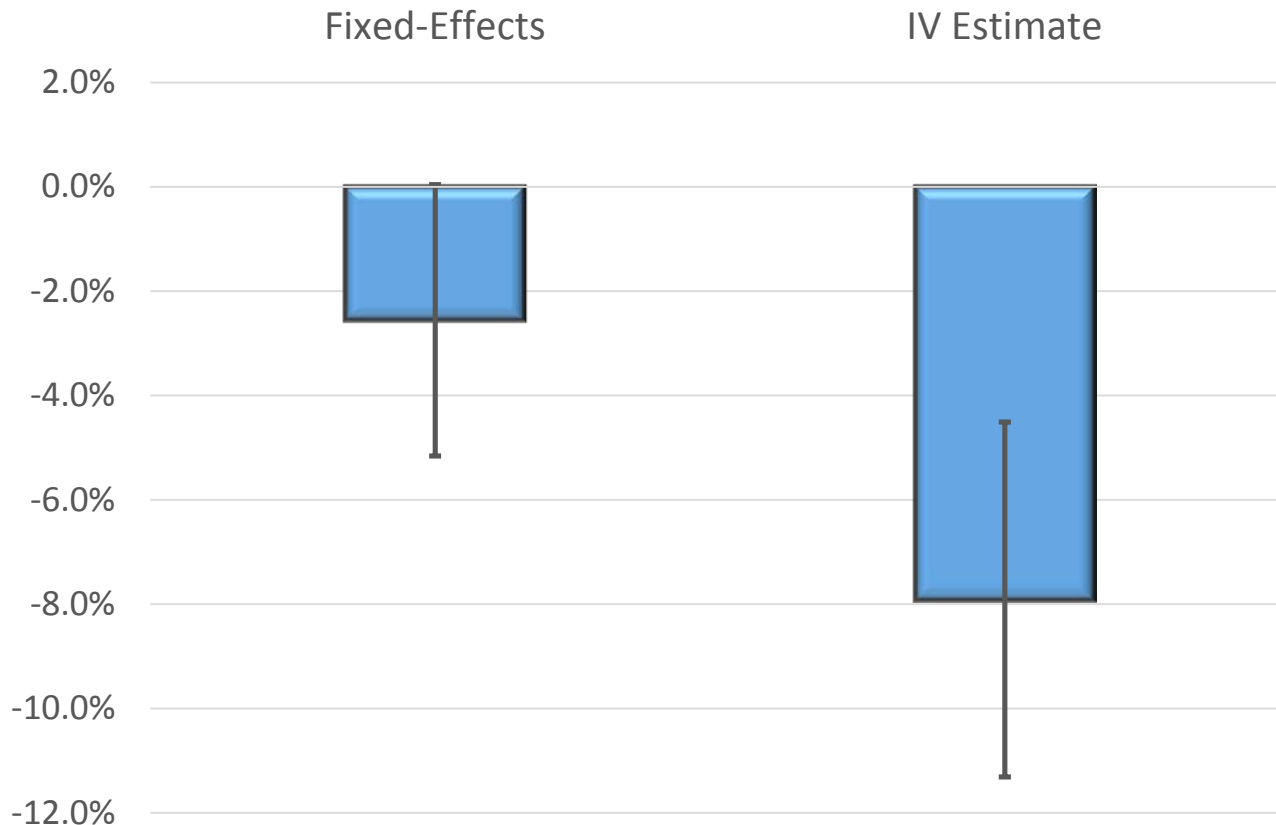
## Fixed effects IV Estimates on Mortality, 1998-2014



Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years

# Economic effects attributable to multi-sector work

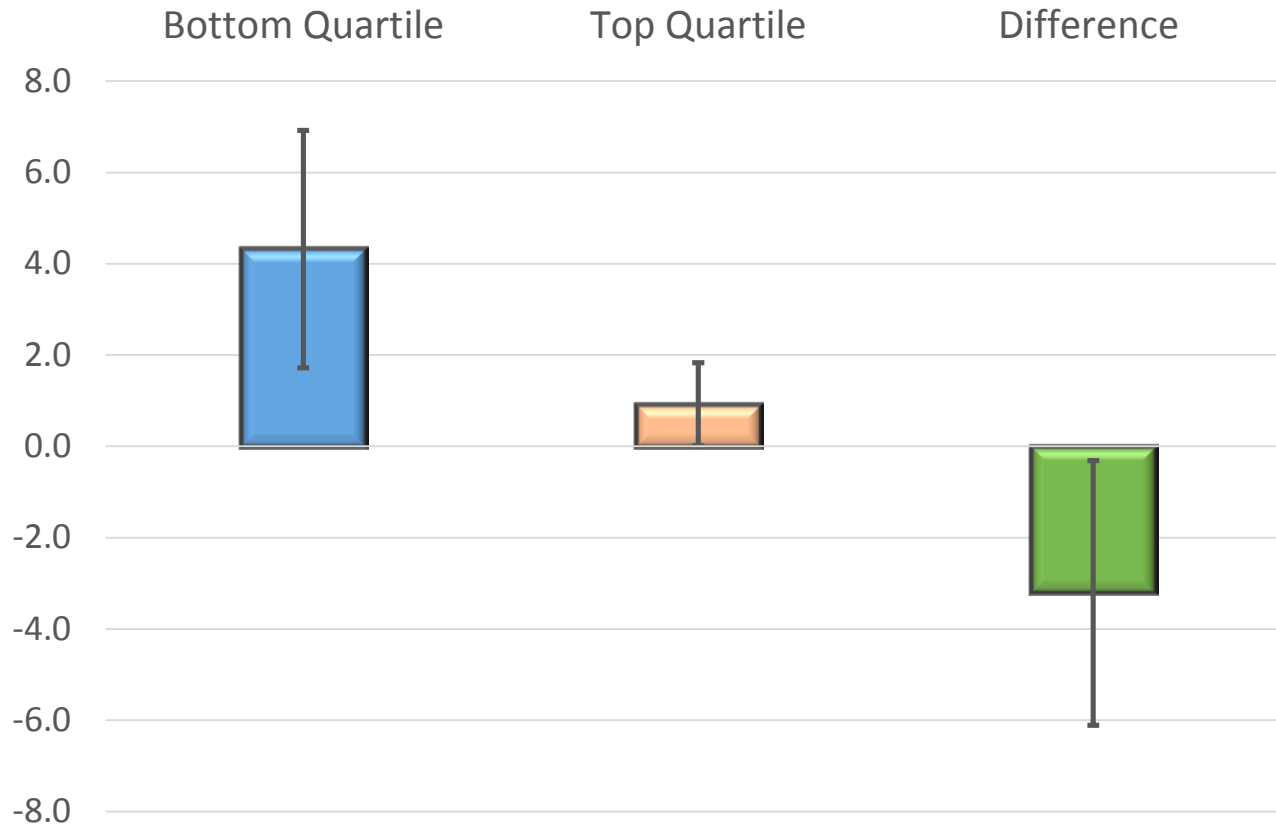
## Fixed effects and IV Estimates of Comprehensive System Capital Effects on Medical Spending (Medicare), 1998-2014



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

## Fixed effects Estimates of Comprehensive System Capital Effects 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

# Conclusions: What we know and still need to learn

- Large potential benefits of integrated multi-sector work on population health
- Inequities in population health activities are large
- Integration requires support
  - Infrastructure
  - Institutions
  - Incentives
- Sustainability and resiliency are not automatic

# For More Information

## Systems for Action

National Coordinating Center

*Systems and Services Research to Build a Culture of Health*

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**Journal:** [www.FrontiersinPHSSR.org](http://www.FrontiersinPHSSR.org)

**Archive:** [works.bepress.com/glen\\_mays](http://works.bepress.com/glen_mays)

**Blog:** [publichealtheconomics.org](http://publichealtheconomics.org)



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