

Public Health 3.0: Building System Capital for Population Health Improvement

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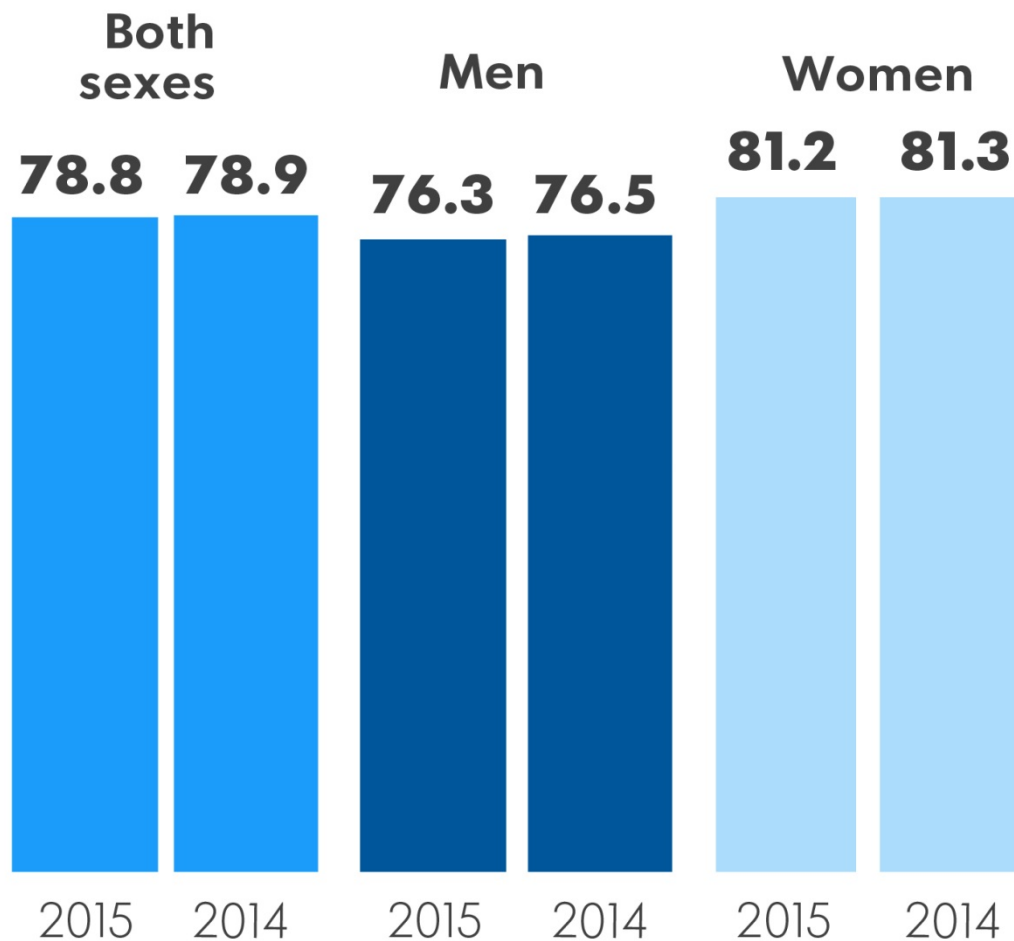
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www.systemsforaction.org

Losing ground in population health

U.S. LIFE EXPECTANCY FALLS

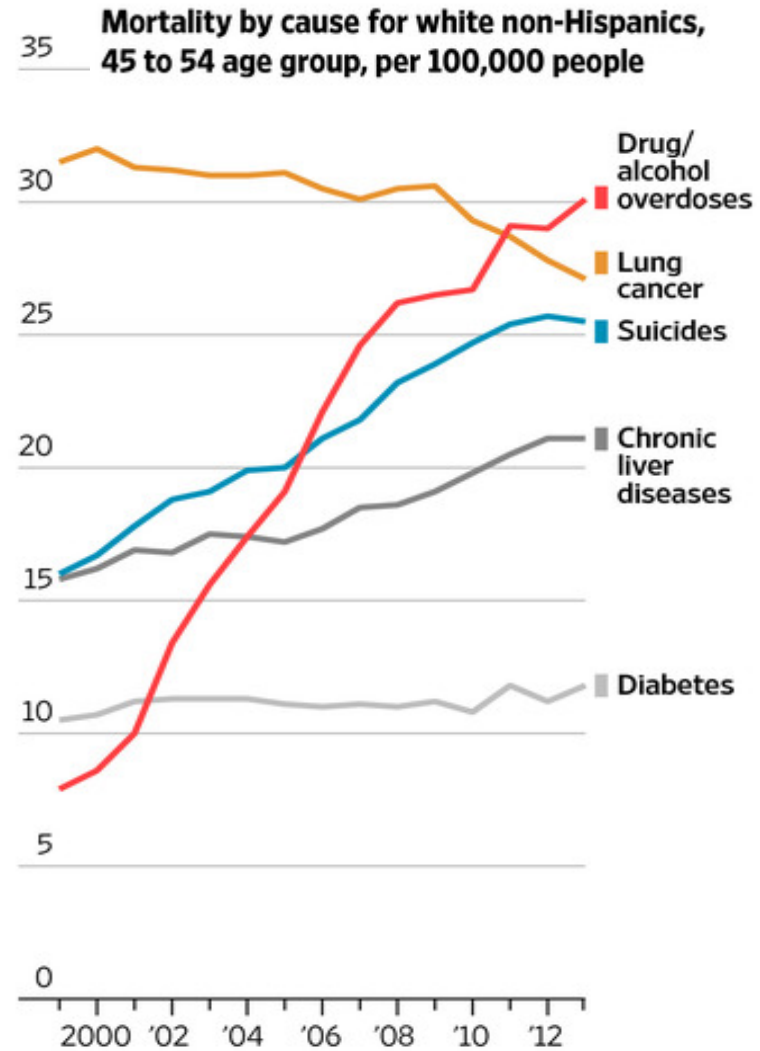
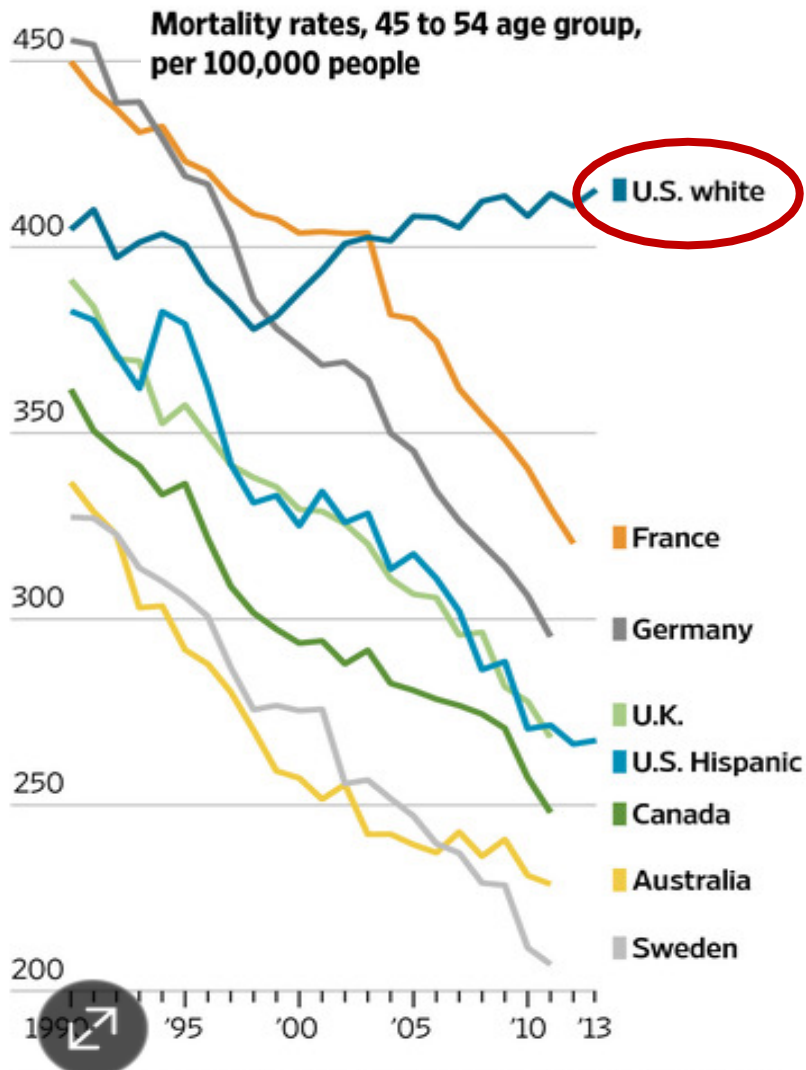


SOURCE CDC

Jim Sargent, USA TODAY

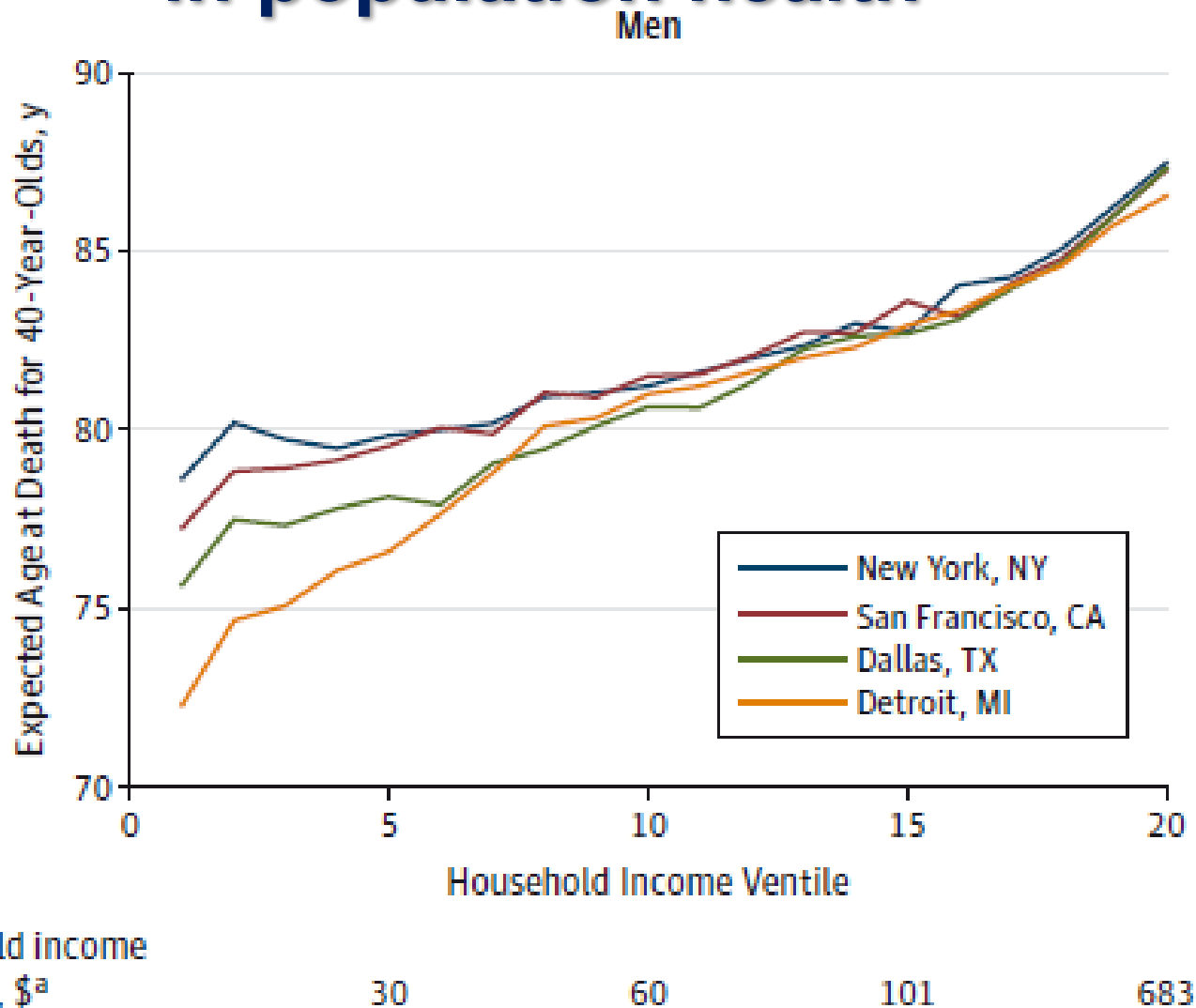


Losing ground in population health



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

Geographic & socioeconomic inequities in population health

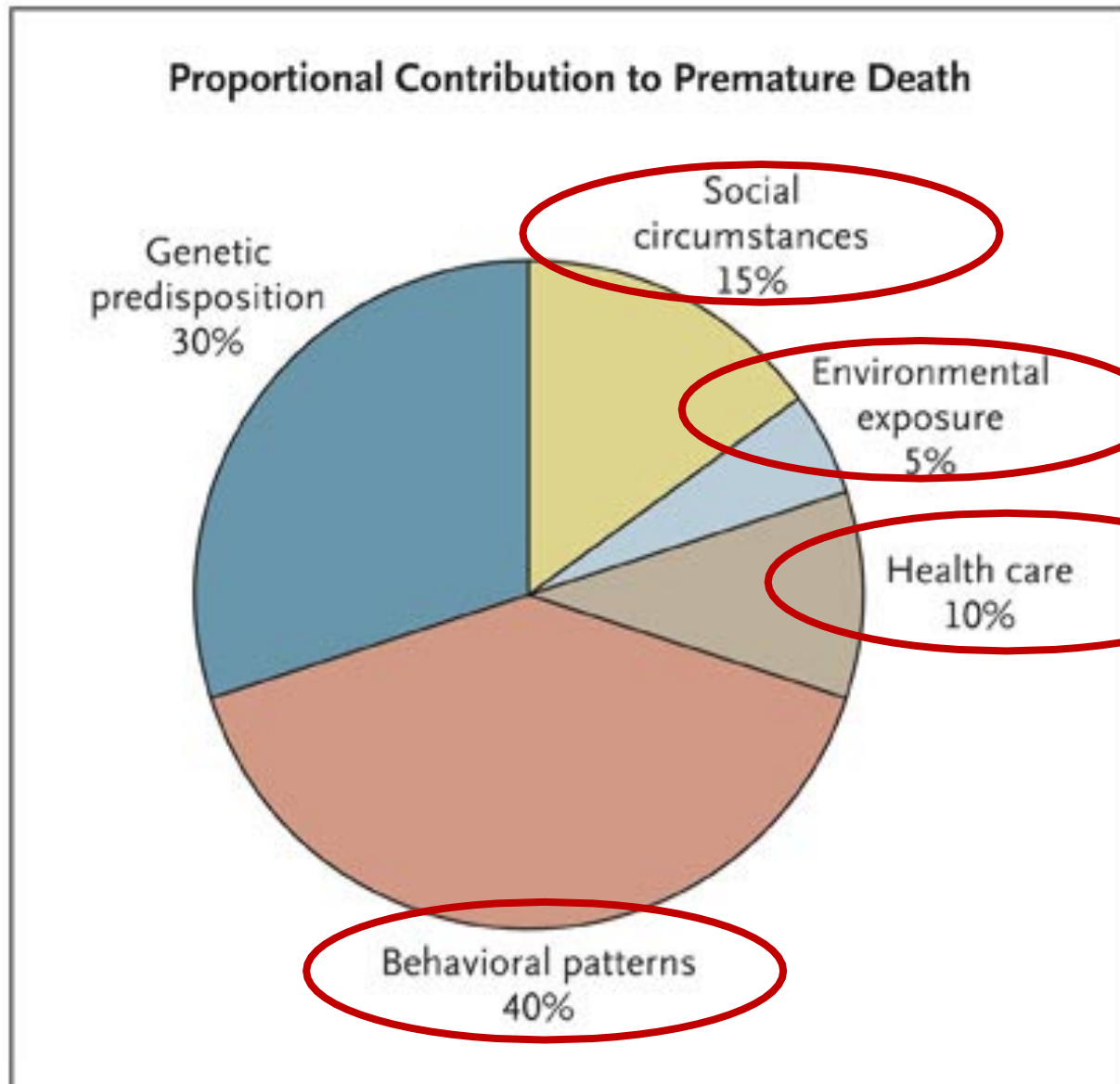


Chetty et al. JAMA 2016

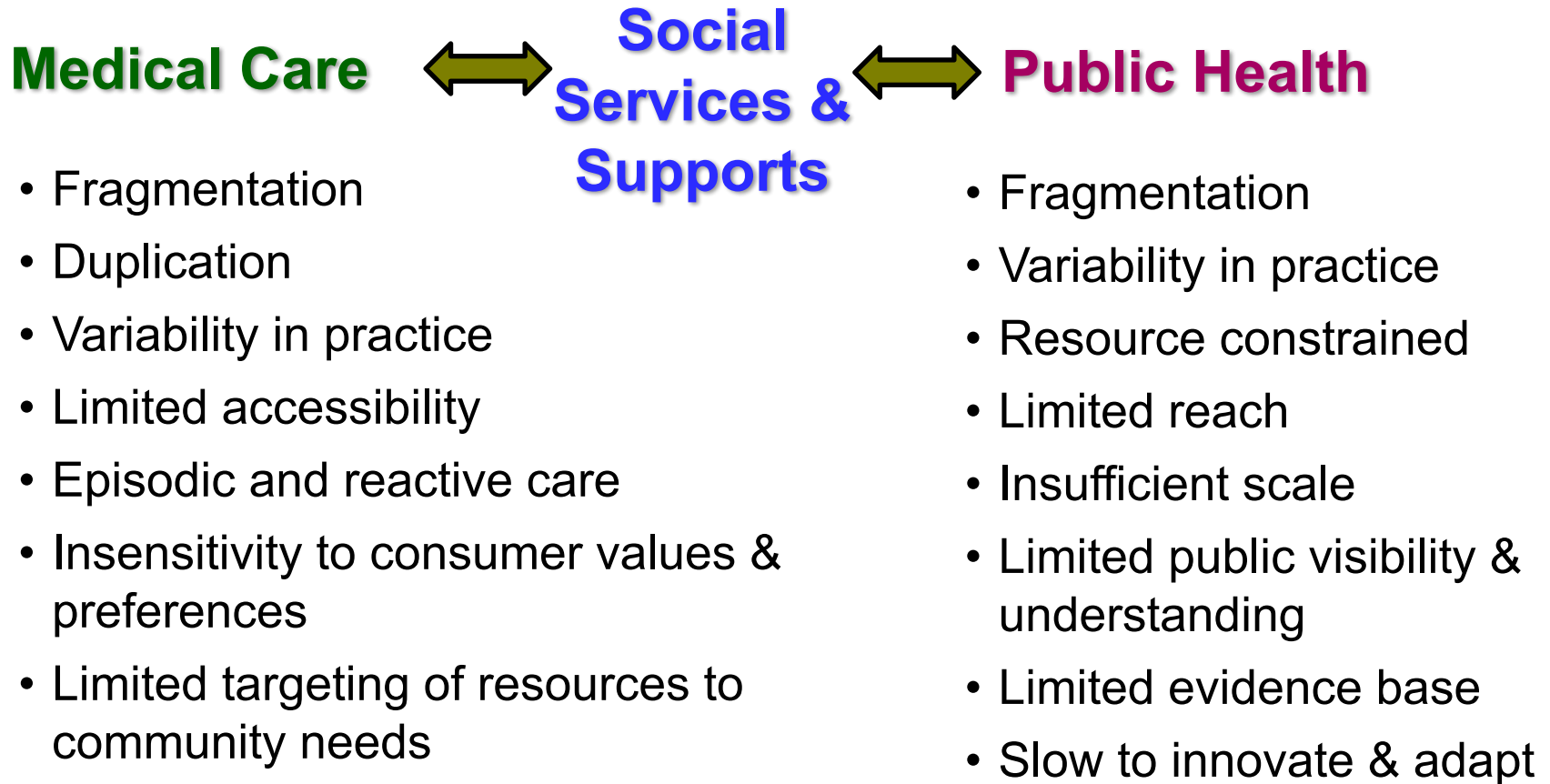
How do we support effective population health improvement strategies?

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

Multiple systems & sectors drive health...



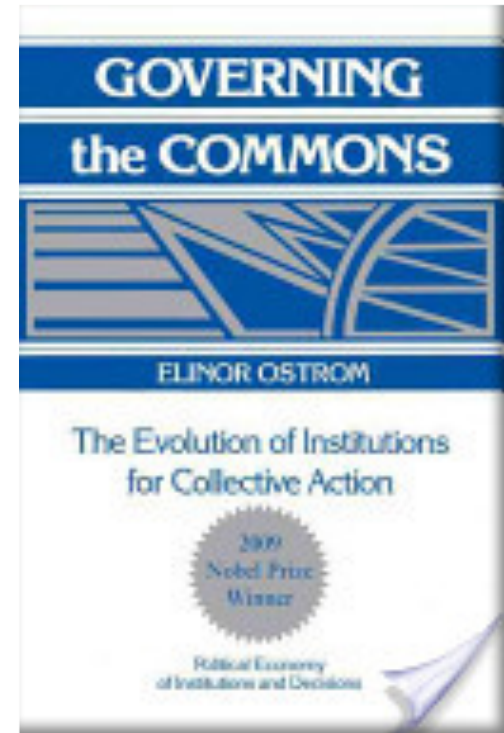
...But existing systems often fail to connect



Waste & inefficiency
Inequitable outcomes
Limited population health impact

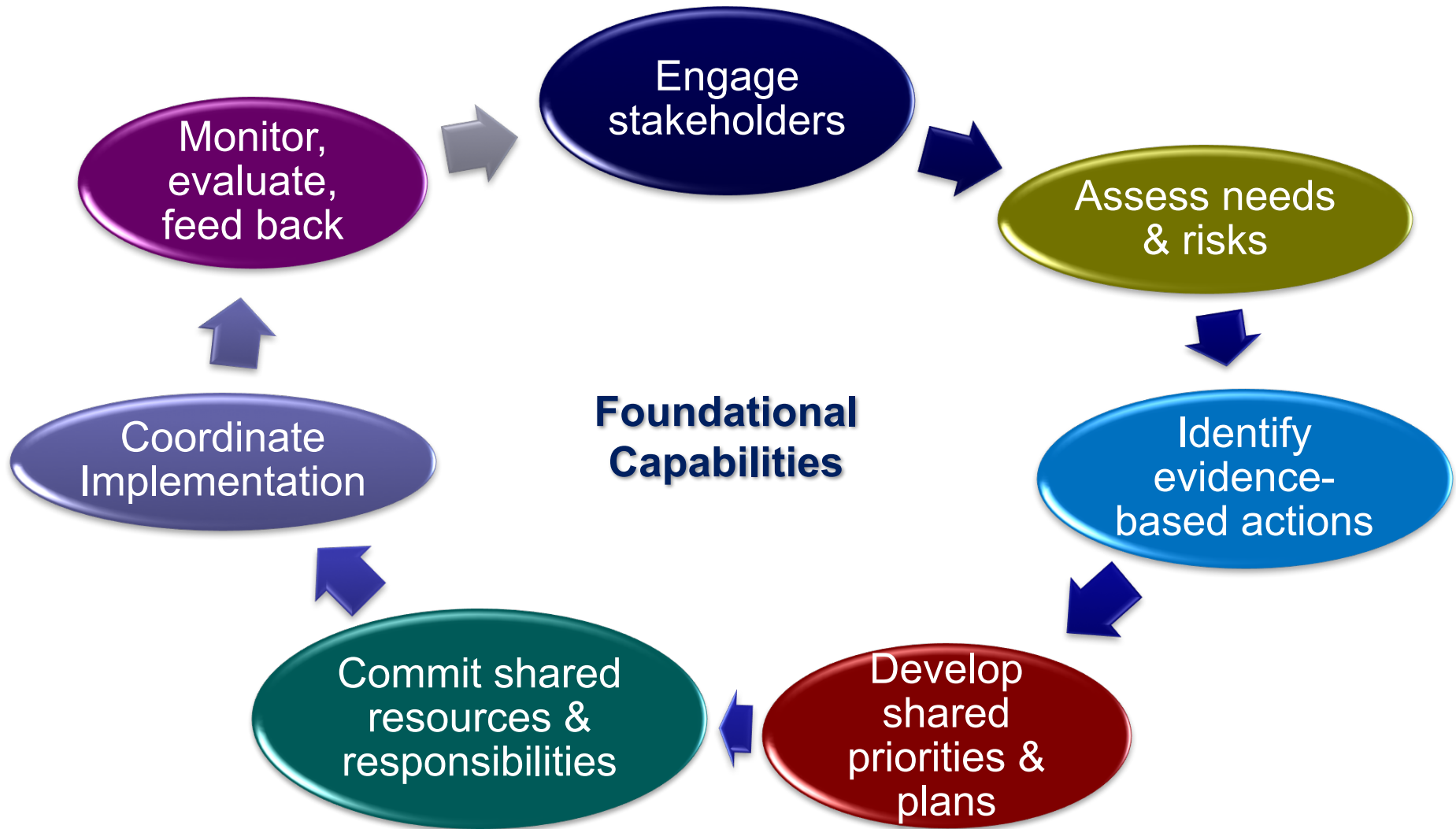
Challenge: overcoming collective action problems across systems & sectors

- 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

Widely recommended activities to support multi-sector initiatives in population health



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

Questions of interest

- How strong are the delivery systems that support foundational capabilities for population health?
- How do these delivery systems change over time?

Recession | Recovery | ACA implementation

- How do these delivery systems influence health and economic outcomes?

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

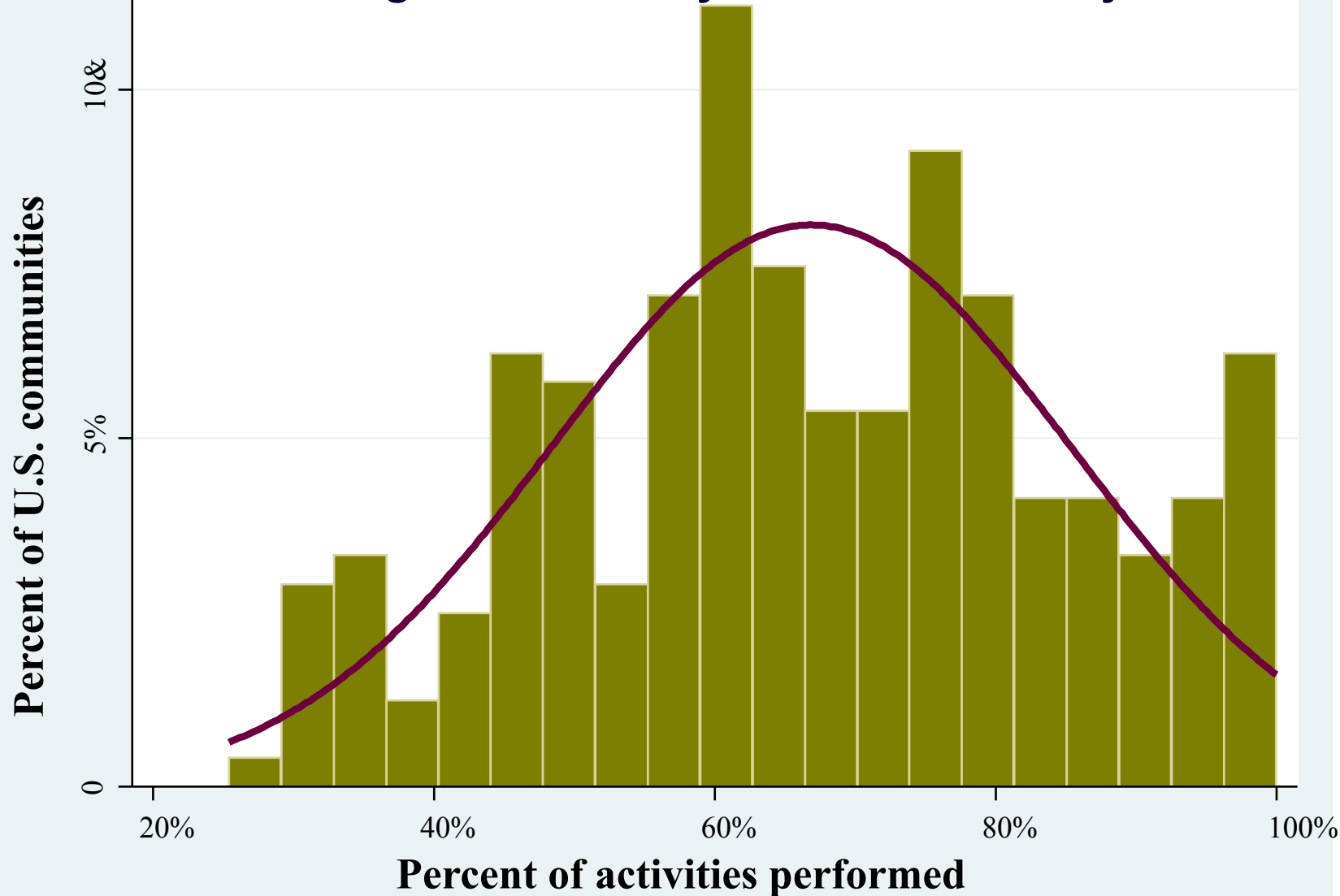
** Expanded sample of 500 communities < 100,000 added in 2014 wave

Data linkages expand analytic possibilities

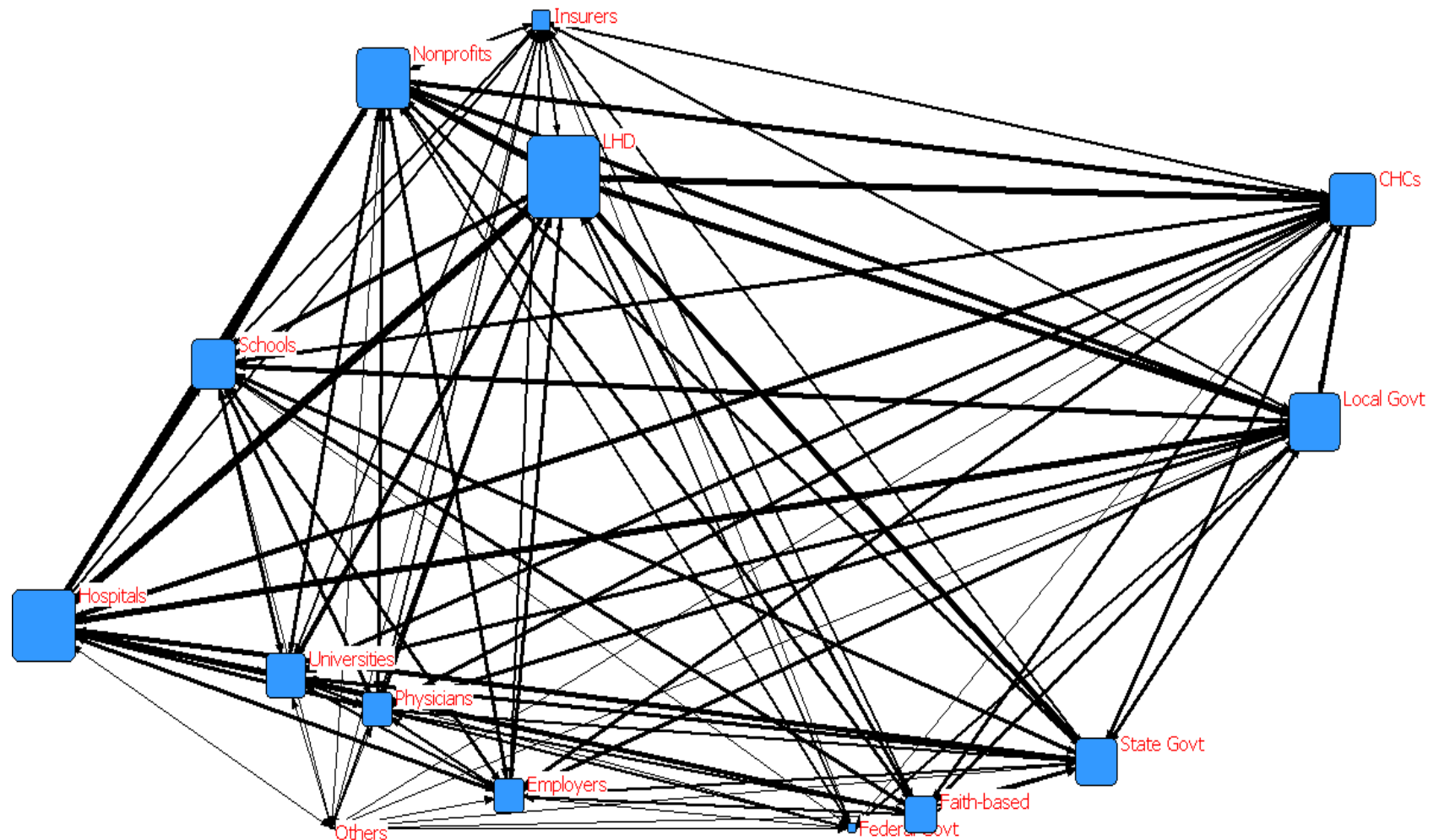
- **Area Health Resource File**: health resources, demographics, socioeconomic status, insurance coverage
- **NACCHO Profile data**: public health agency institutional and financial characteristics
- **CMS Impact File & Cost Report**: hospital ownership, market share, uncompensated care
- **Dartmouth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

Variation in implementing foundational population health activities

National Longitudinal Survey of Public Health Systems 2016



Mapping who contributes to population health

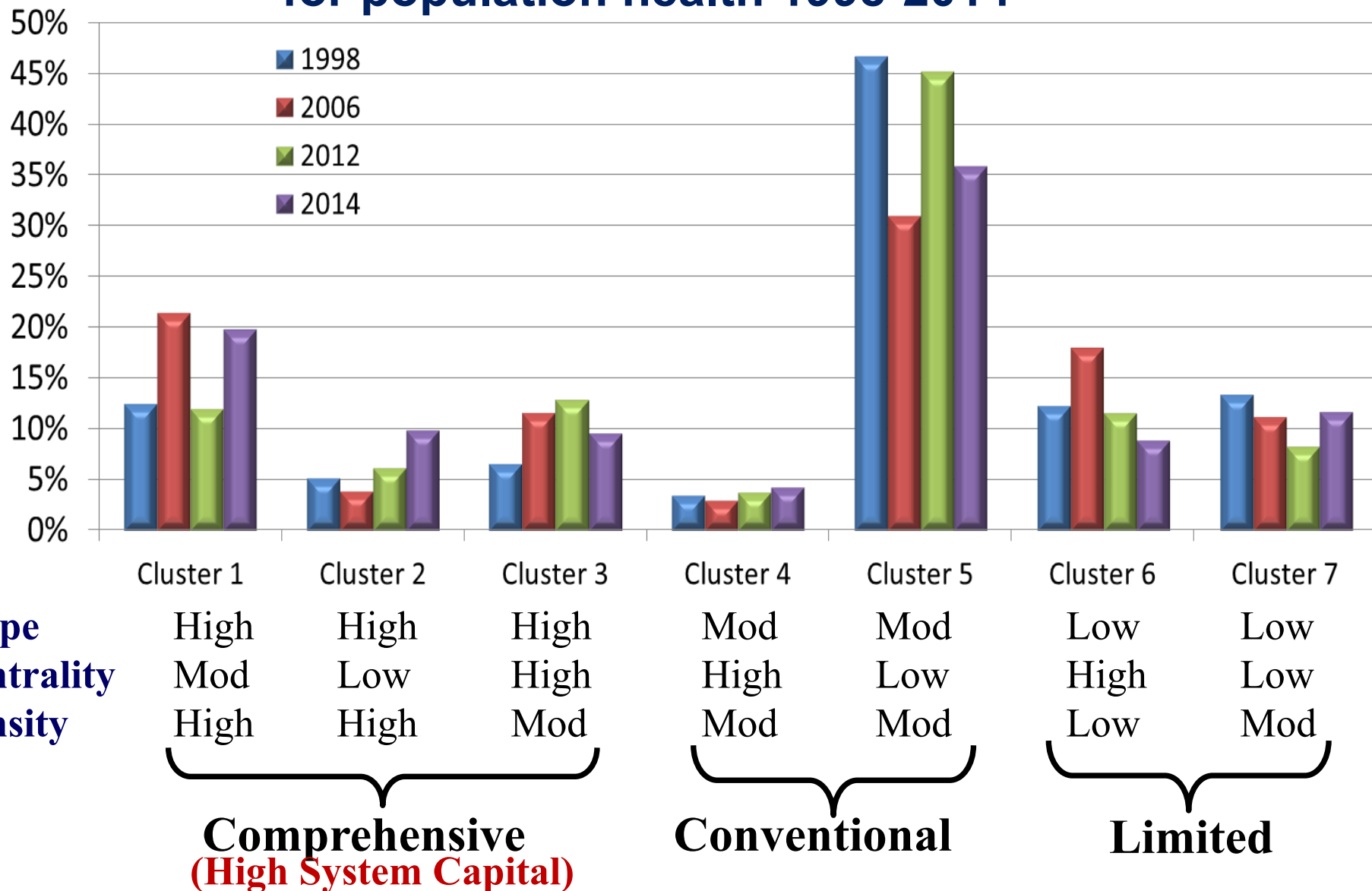


Node size = degree centrality

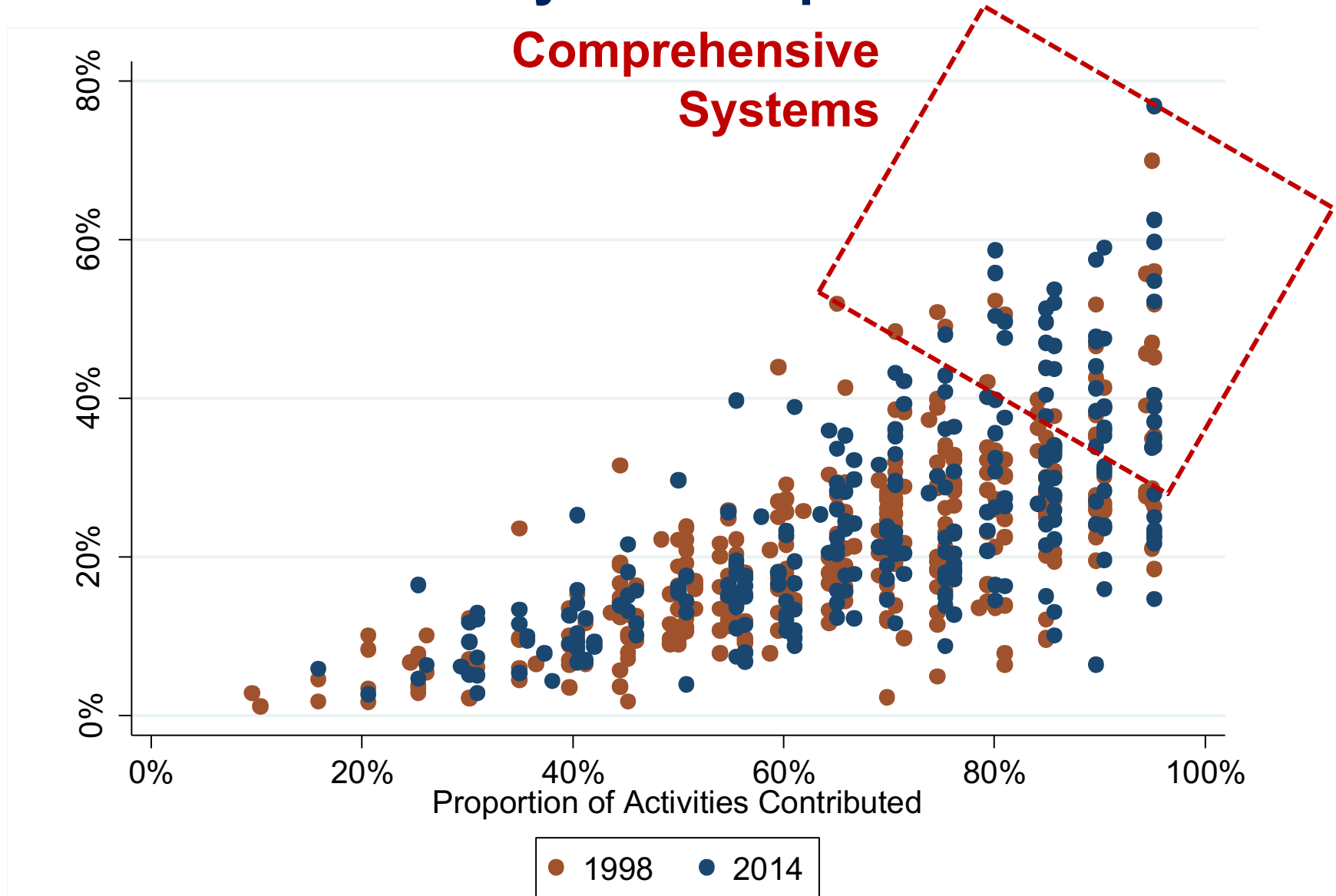
Line size = % activities jointly contributed (tie strength)

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



Network density and scope of activities



Comprehensive 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

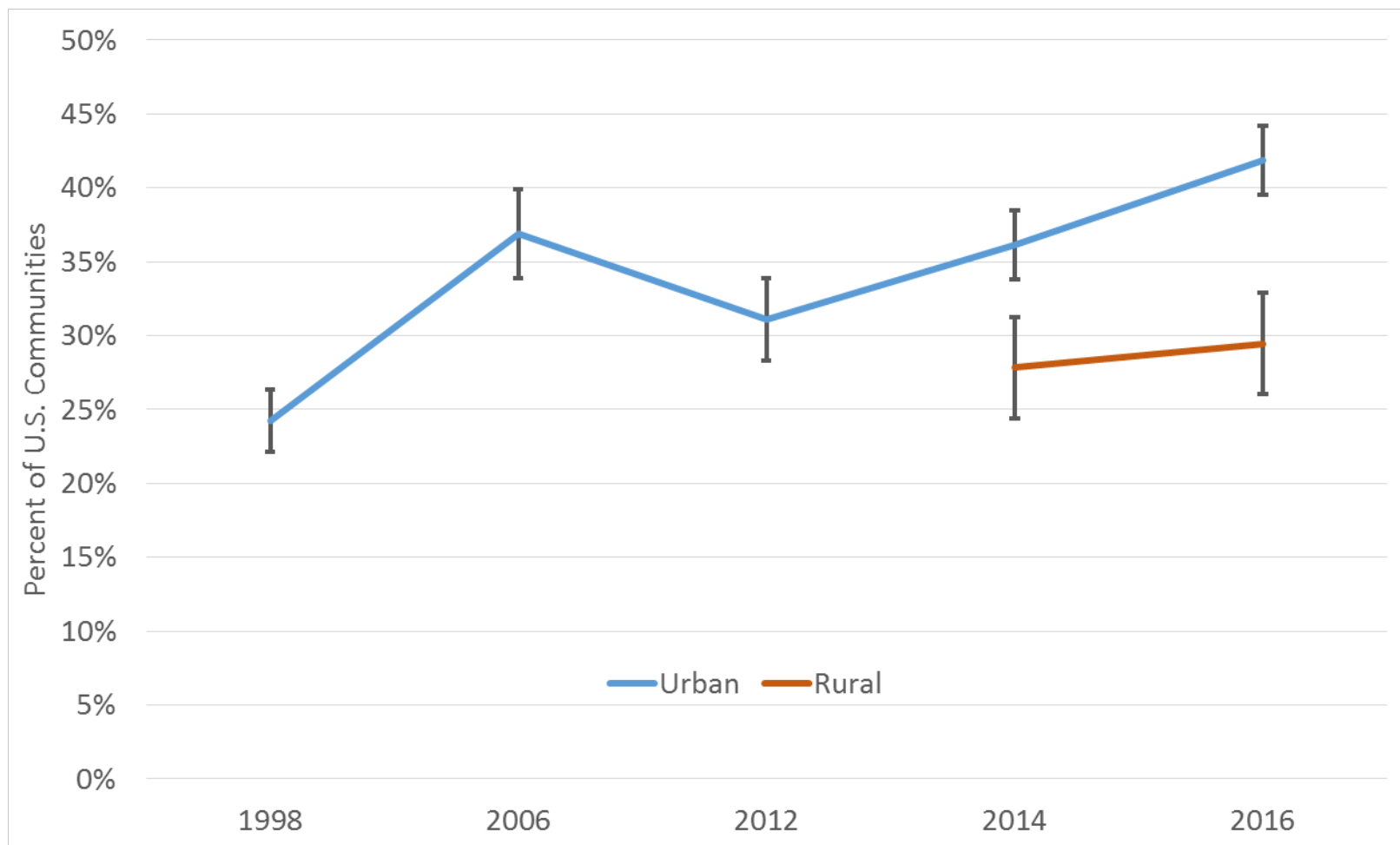
Access to public health

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

Variation and change in comprehensive delivery systems



Implementation of foundational activities, 1998-2016

| | Activity | 1998 | 2016 | % Change | |
|--|---|-------------|-------------|-----------------|---|
| Assessment | 1. Conduct periodic assessment of community health status and needs | 71.5% | 87.1% | 21.8% |  |
| | 2. Survey community for behavioral risk factors | 45.8% | 71.1% | 55.2% | |
| | 3. Investigate adverse health events, outbreaks and hazards | 98.6% | 100.0% | 1.4% | |
| | 4. Conduct laboratory testing to identify health hazards and risks | 96.3% | 96.1% | -0.2% | |
| | 5. Analyze data on community health status and health determinants | 61.3% | 72.7% | 18.6% | |
| | 6. Analyze data on preventive services use | 28.4% | 39.0% | 37.3% | |
| Policy/Planning | 7. Routinely provide community health information to elected officials | 80.9% | 84.0% | 3.8% |  |
| | 8. Routinely provide community health information to the public | 75.4% | 82.3% | 9.1% | |
| | 9. Routinely provide community health information to the media | 75.2% | 89.0% | 18.3% | |
| | 10. Prioritize community health needs | 66.1% | 83.6% | 26.5% | |
| | 11. Engage community stakeholders in health improvement planning | 41.5% | 68.8% | 65.7% | |
| | 12. Develop a community-wide health improvement plan | 81.9% | 87.9% | 7.3% | |
| Assurance | 13. Identify and allocate resources based on community health plan | 26.2% | 41.9% | 59.9% |  |
| | 14. Develop policies to address priorities in community health plan | 48.6% | 56.8% | 16.9% | |
| | 15. Maintain a communication network among health-related organizations | 78.8% | 85.3% | 8.2% | |
| | 16. Link people to needed health and social services | 75.6% | 50.0% | -33.8% | |
| | 17. Implement legally mandated public health activities | 91.4% | 92.4% | 1.1% | |
| | 18. Evaluate health programs and services in the community | 34.7% | 37.9% | 9.4% | |
| | 19. Evaluate local public health agency capacity and performance | 56.3% | 56.1% | -0.3% |  |
| | 20. Monitor and improve implementation of health programs and policies | 47.3% | 46.4% | -1.9% | |
| | Mean performance of assessment activities (#1-6) | 67.0% | 77.7% | 15.9% | |
| | Mean performance of policy and planning activities (#7-15) | 63.9% | 75.5% | 18.3% | |
| Mean performance of implementation and assurance activities (#16-20) | | 61.1% | 56.6% | -7.3% | |
| Mean performance of all activities | | 63.8% | 67.6% | 6.0% | |

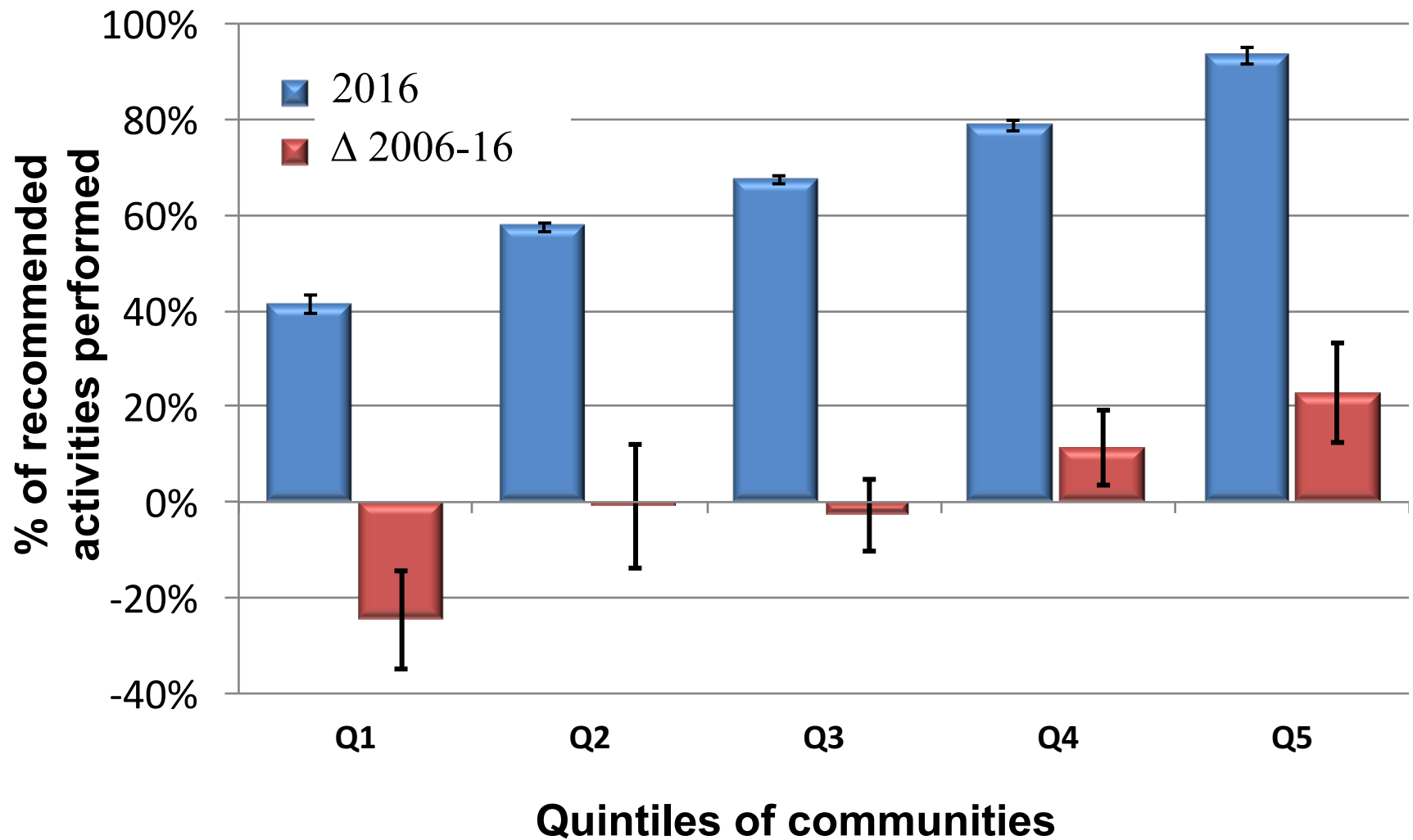
Organizational contributions to foundational activities, 1998-2016

% of Recommended Activities Contributed

| <u>Type of Organization</u> | <u>1998</u> | <u>2016</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% |

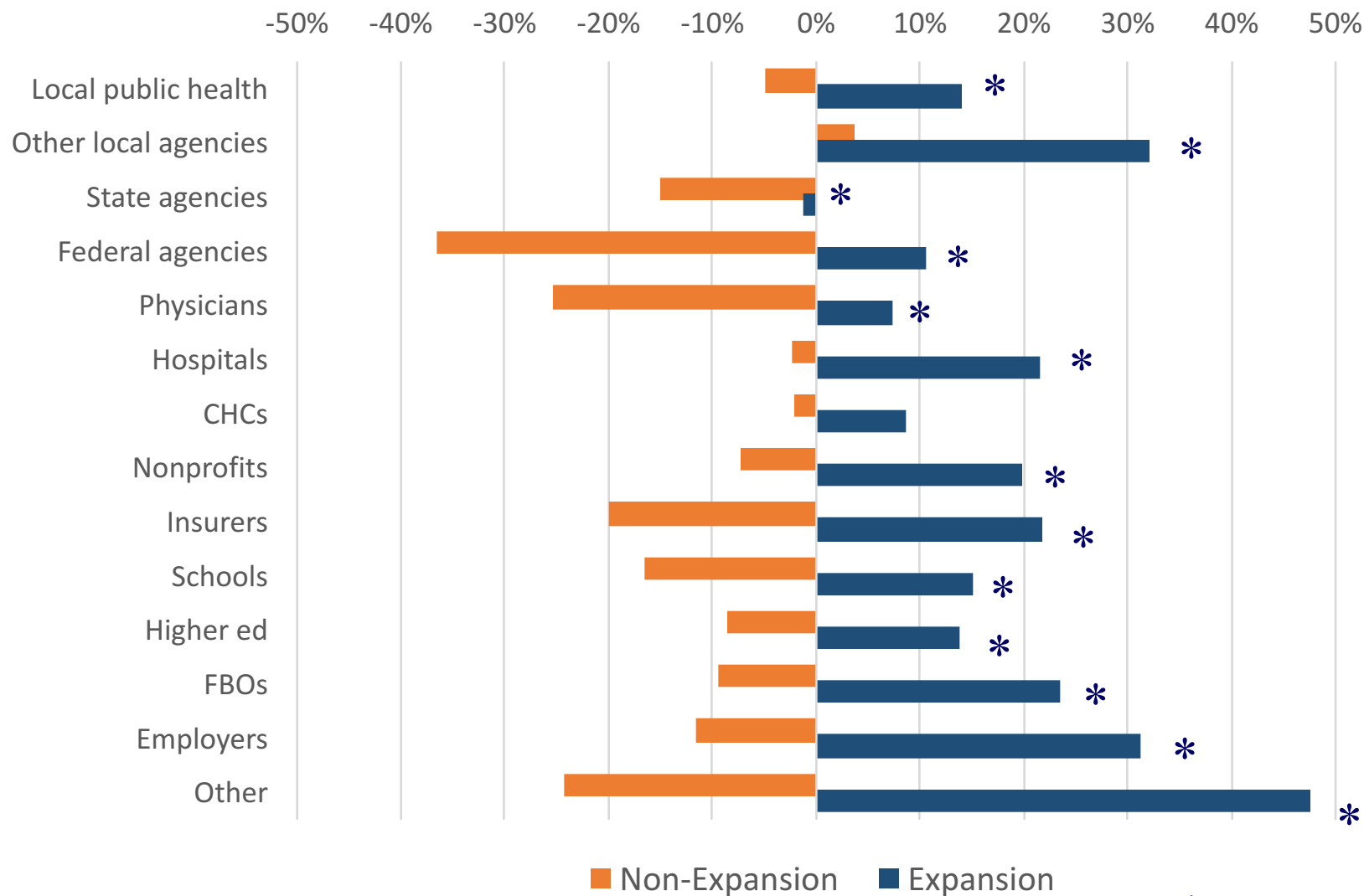
Equity in public health delivery systems

Implementation of foundational 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.

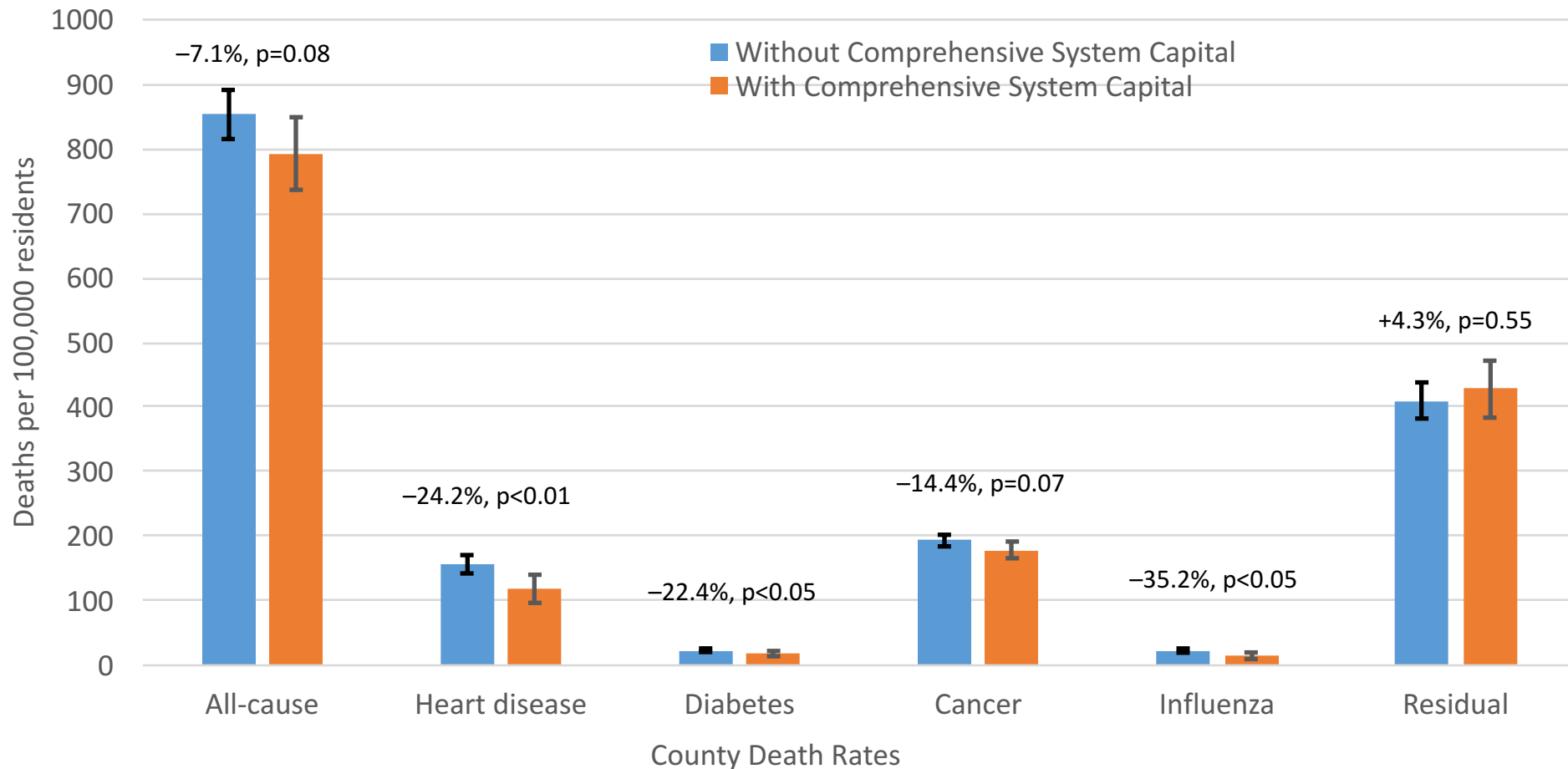
Changes in organizational contributions by ACA Medicaid expansion status, 2012-2016



*p<0.05

Health effects attributable to multi-sector work

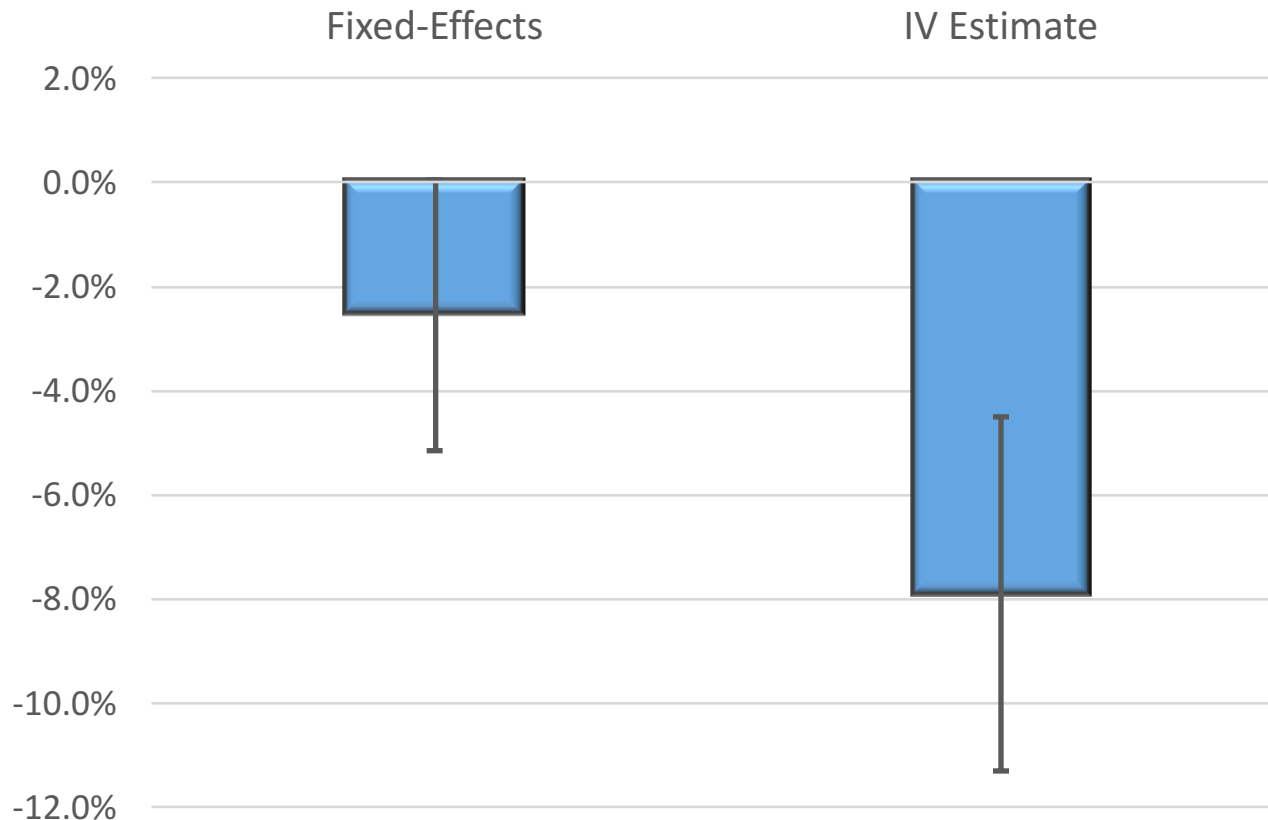
Impact of Comprehensive Systems on **Mortality**, 1998-2014



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

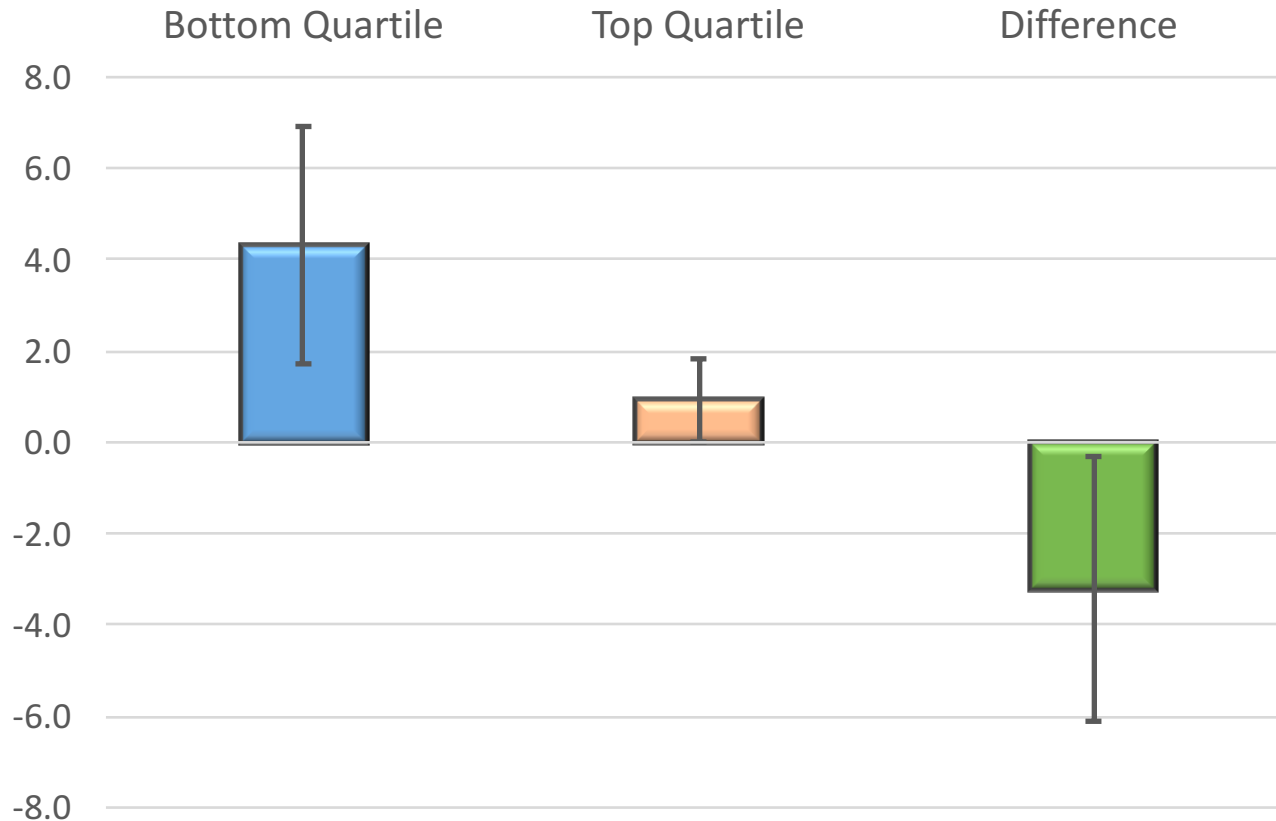
Impact of Comprehensive Systems on **Medical Spending** (Medicare) 1998-2014



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

Mays GP et al. *forthcoming* 2017

Conclusions and implications

- Large health gains accrue to comprehensive systems
- Health gains are larger for low-income populations and low-income communities
- Dense collaborative networks do more than just plan: prioritize, invest, evaluate, repeat (crowd-sourcing)
- Equity and opportunity: two-thirds of communities currently lack comprehensive systems
- ACA incentives and resources may help:
 - Hospital community benefit
 - Value-based health care payments
 - Insurer and employer incentives
 - Public health agency accreditation
- 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

Our research program focuses on delivery and financing system alignment

A Robert Wood Johnson Foundation program

Systems for Action

Systems and Services Research to Build a Culture of Health



Research Agenda

*Delivery and Financing System Innovations
for a Culture of Health*

September 2015

<http://www.systemsforaction.org>

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

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