

**University of Kentucky**

---

**From the Selected Works of Glen Mays**

---

Spring March 29, 2018

# Aligning Clinical and Public Health Systems for Population Health: Networks, Governance & Incentives

Glen P. Mays, *University of Kentucky*



Available at: [https://works.bepress.com/glen\\_mays/325/](https://works.bepress.com/glen_mays/325/)

# Aligning Clinical & Public Health Systems: Networks, Incentives & Information

Glen Mays, PhD, MPH  
University of Kentucky

[glen.mays@uky.edu](mailto:glen.mays@uky.edu)

[@GlenMays](#)

[www.systemsforaction.org](http://www.systemsforaction.org)



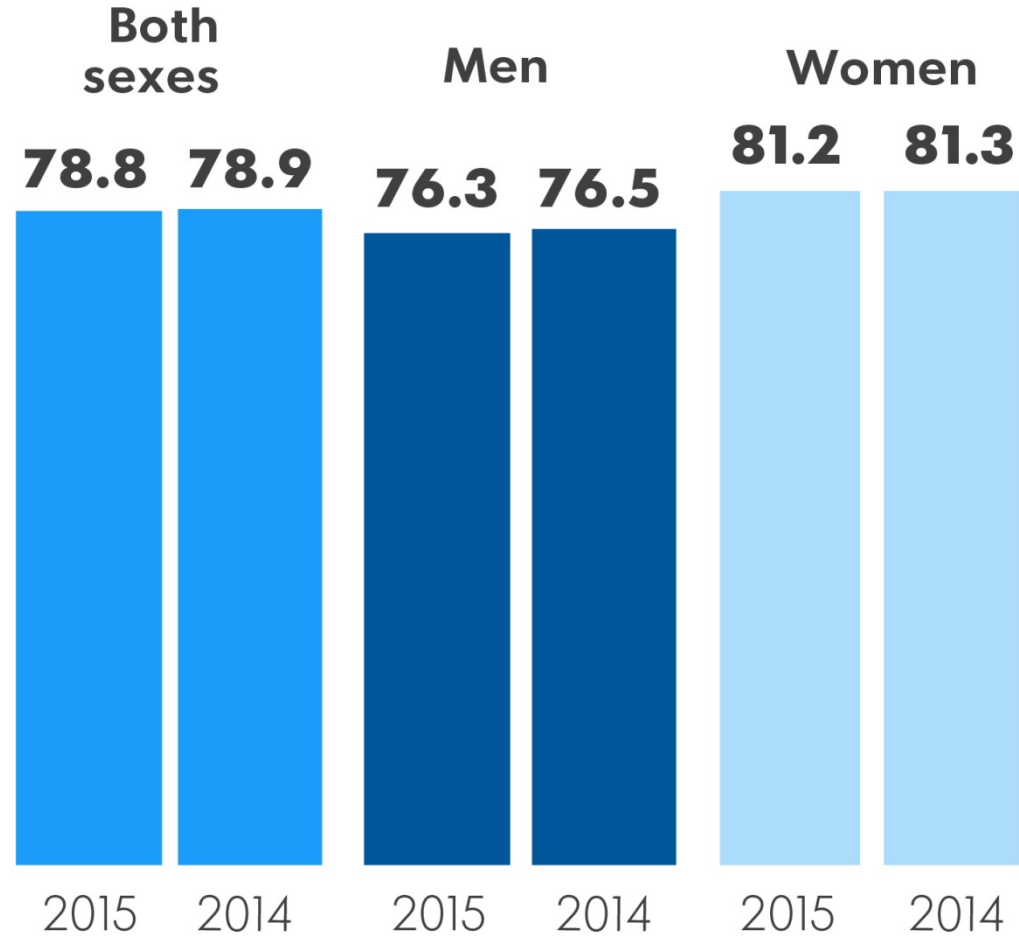
**Systems for Action**  
**National Coordinating Center**  
*Systems and Services Research to Build a Culture of Health*

# Questions of interest

- How strong are the networks that support population health improvement work?
- What are the roles played by medical and public health stakeholders?
- How do these networks vary across communities and change over time?
- How do these delivery systems impact health and economic outcomes?

# Losing ground in population health

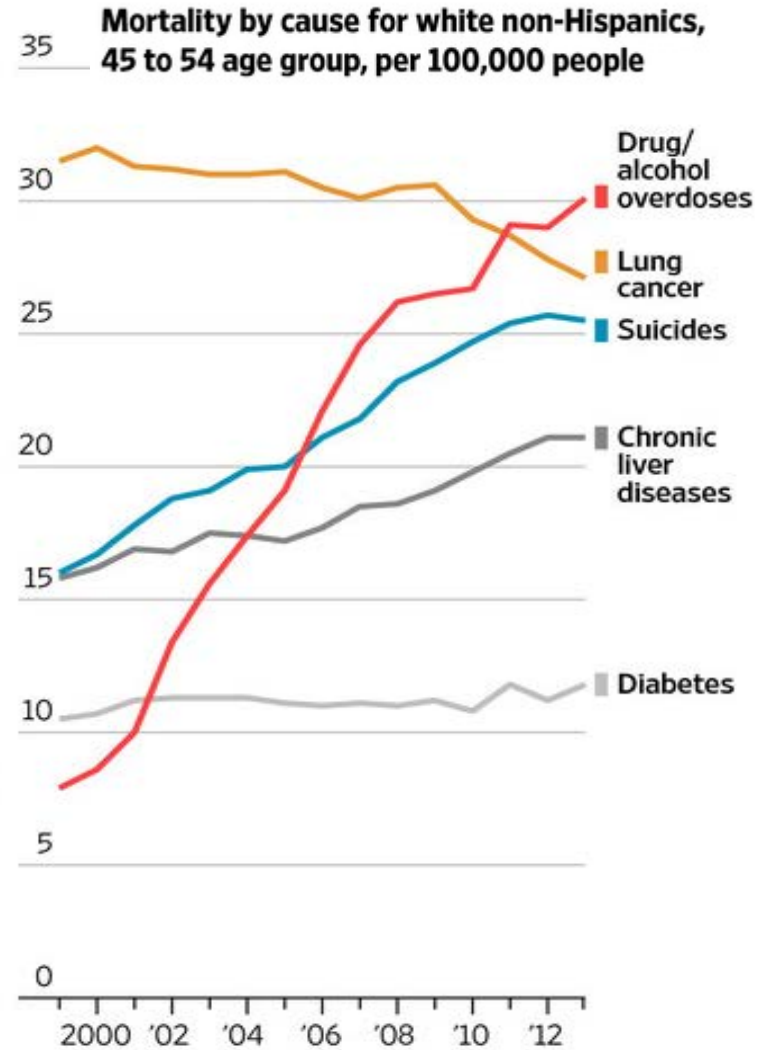
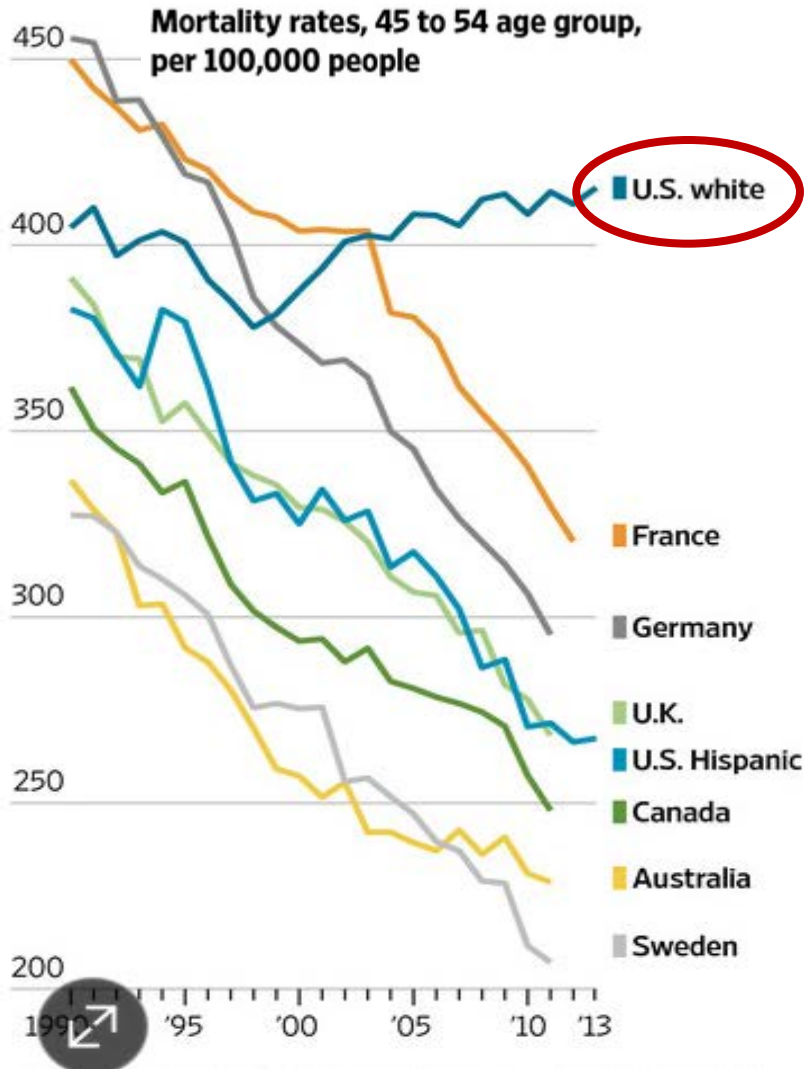
## U.S. LIFE EXPECTANCY FALLS



SOURCE CDC  
Jim Sergent, USA TODAY

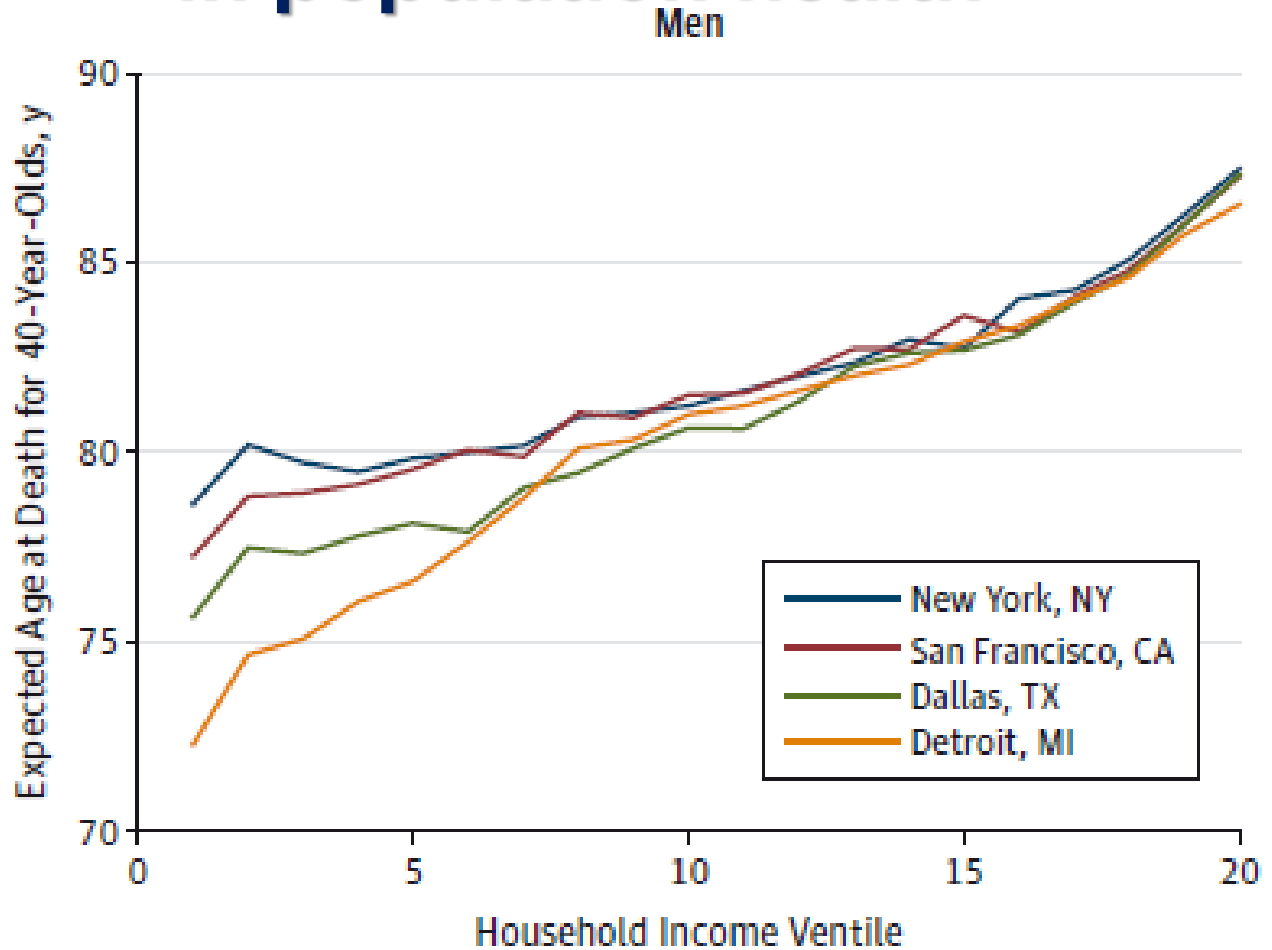


# Losing ground in population health



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

# Geographic & socioeconomic inequities in population health



Mean household income  
in thousands, \$<sup>a</sup>

30

60

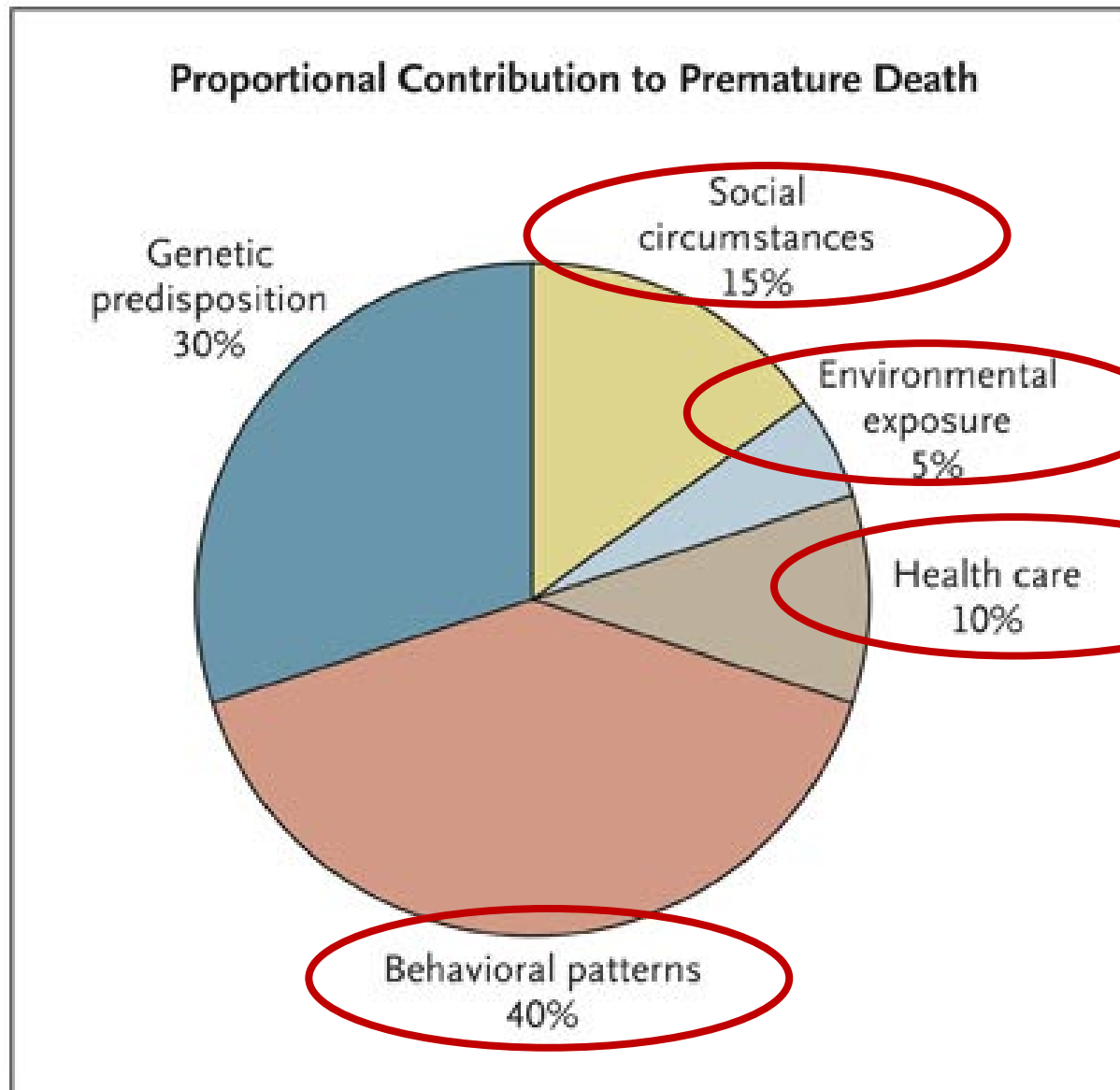
101

683

# How do we **implement** effective population health improvement strategies?

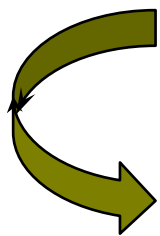
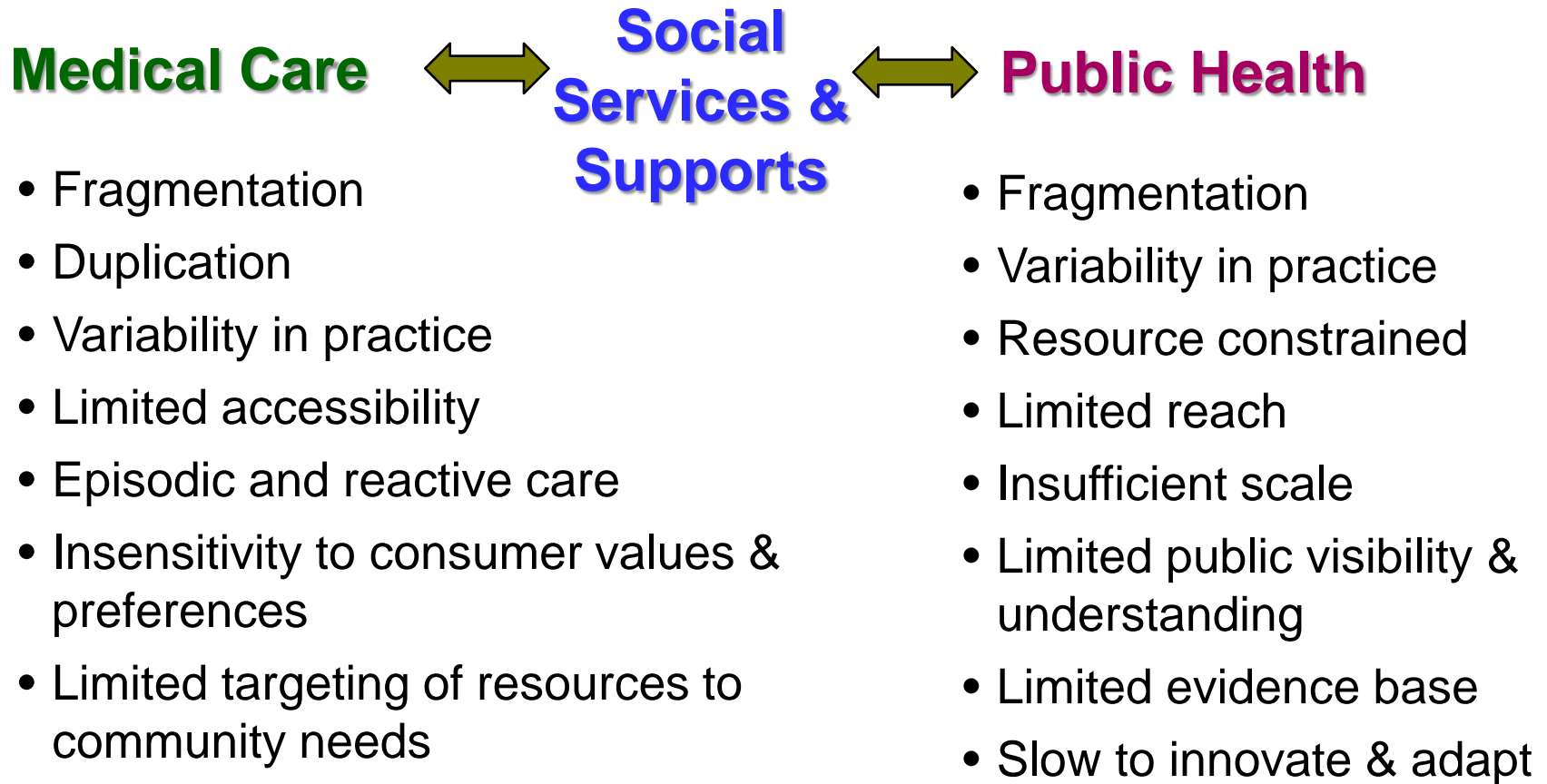
- Designed to achieve **large-scale** health improvement: neighborhood, city/county, region
- Improve the mean and reduce the variance (**equity**)
- Target **fundamental** and often **multiple** determinants of health
- Mobilize the **collective actions** of multiple stakeholders in government & private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

# Multiple systems & sectors drive health...

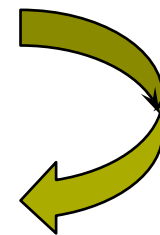




# ...But existing systems often fail to connect

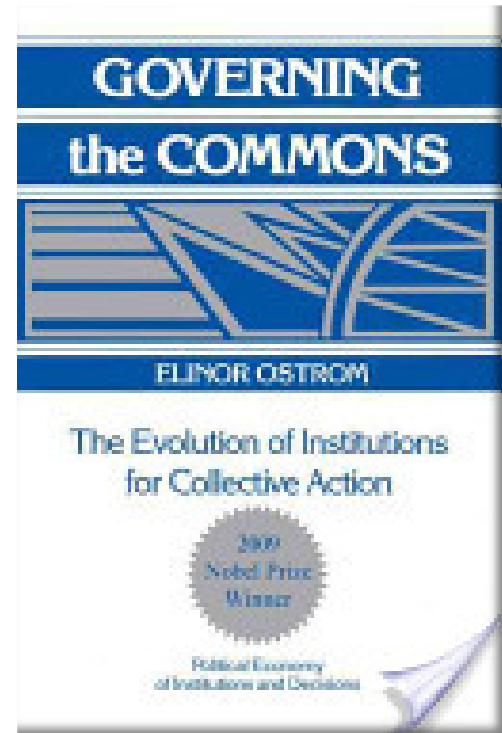


**Waste & inefficiency**  
**Inequitable outcomes**  
**Limited population health impact**



# Challenge: overcoming collective action problems in implementation

- 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 capabilities that support **implementation** of multi-sector health initiatives



# 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**: implementation of 20 recommended public health capabilities
  - **Network**: organizations contributing to each capability
  - **Centrality of effort**: contributed by governmental public health agency
  - **Quality**: perceived effectiveness of each capability

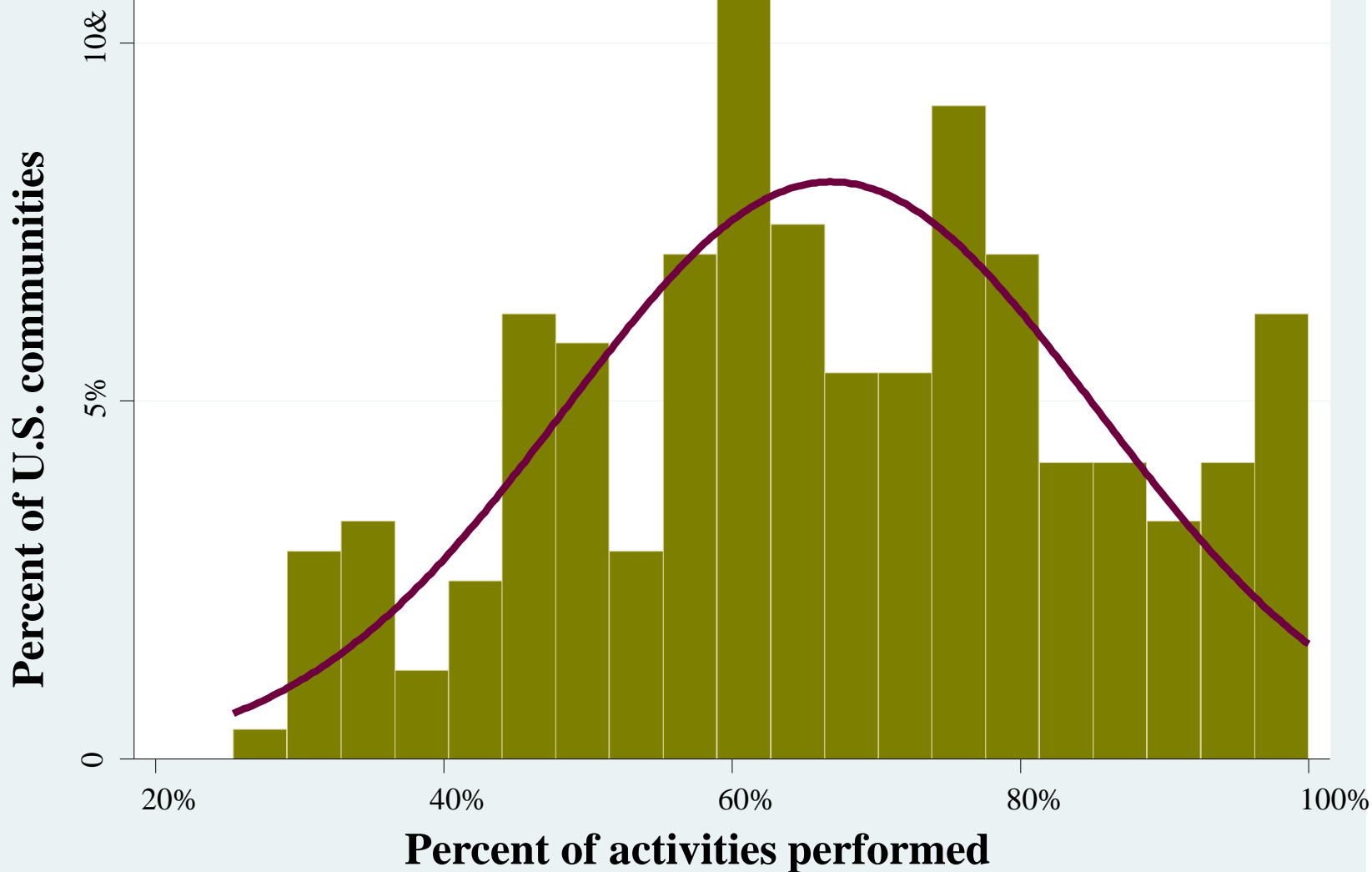
\*\* Expanded sample of 500 communities < 100,000 added in 2014 wave

# Data linkages expand analytic possibilities

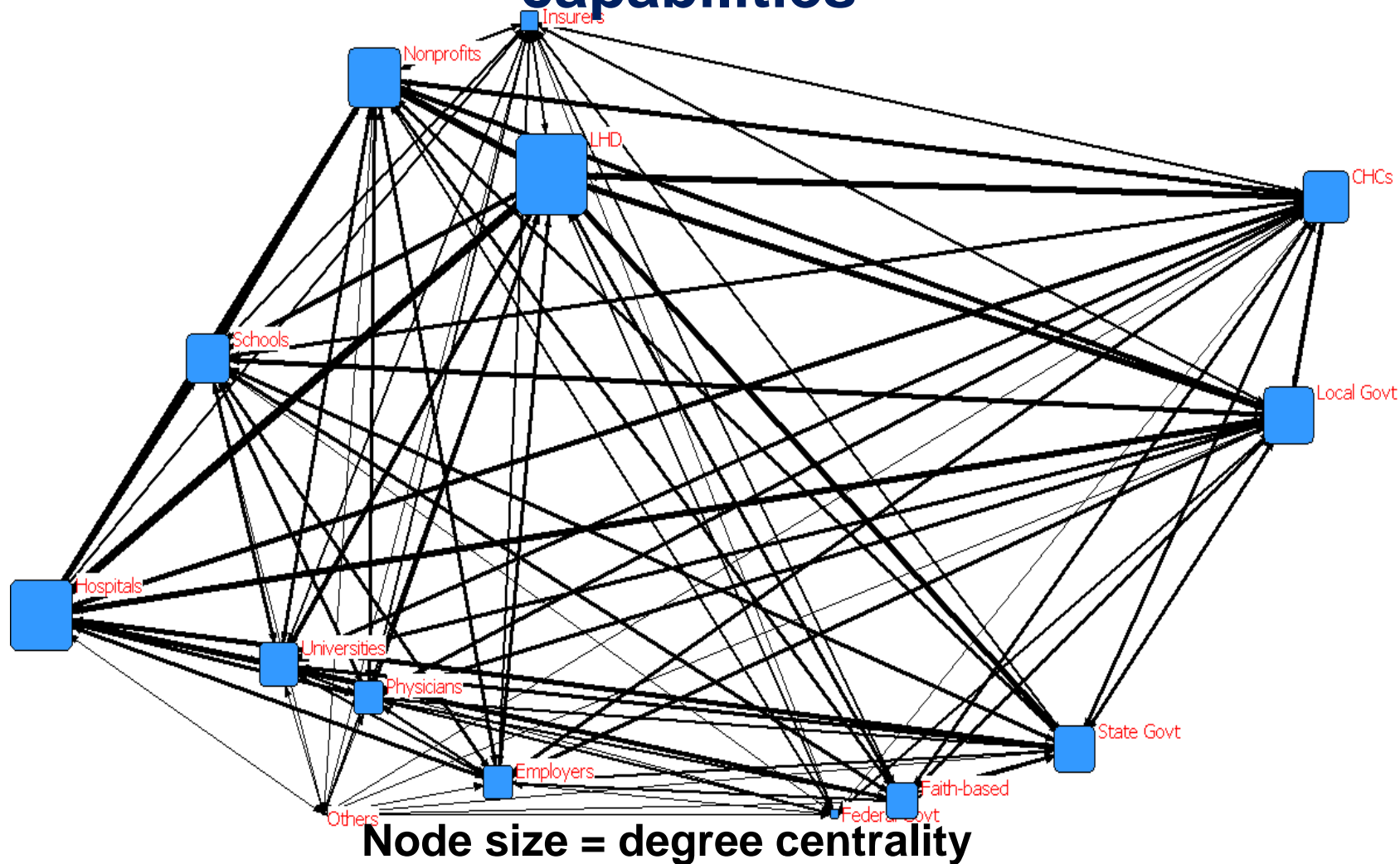
- **Area Health Resource File:** health resources, demographics, socioeconomic status, insurance coverage
- **NACCHO Profile data:** public health agency institutional and financial characteristics
- **CMS Impact File & Cost Report:** hospital ownership, market share, uncompensated care
- **Dartmouth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

National Longitudinal Survey of Public Health Systems 2016



# Mapping who contributes to public health capabilities



**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.

# 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

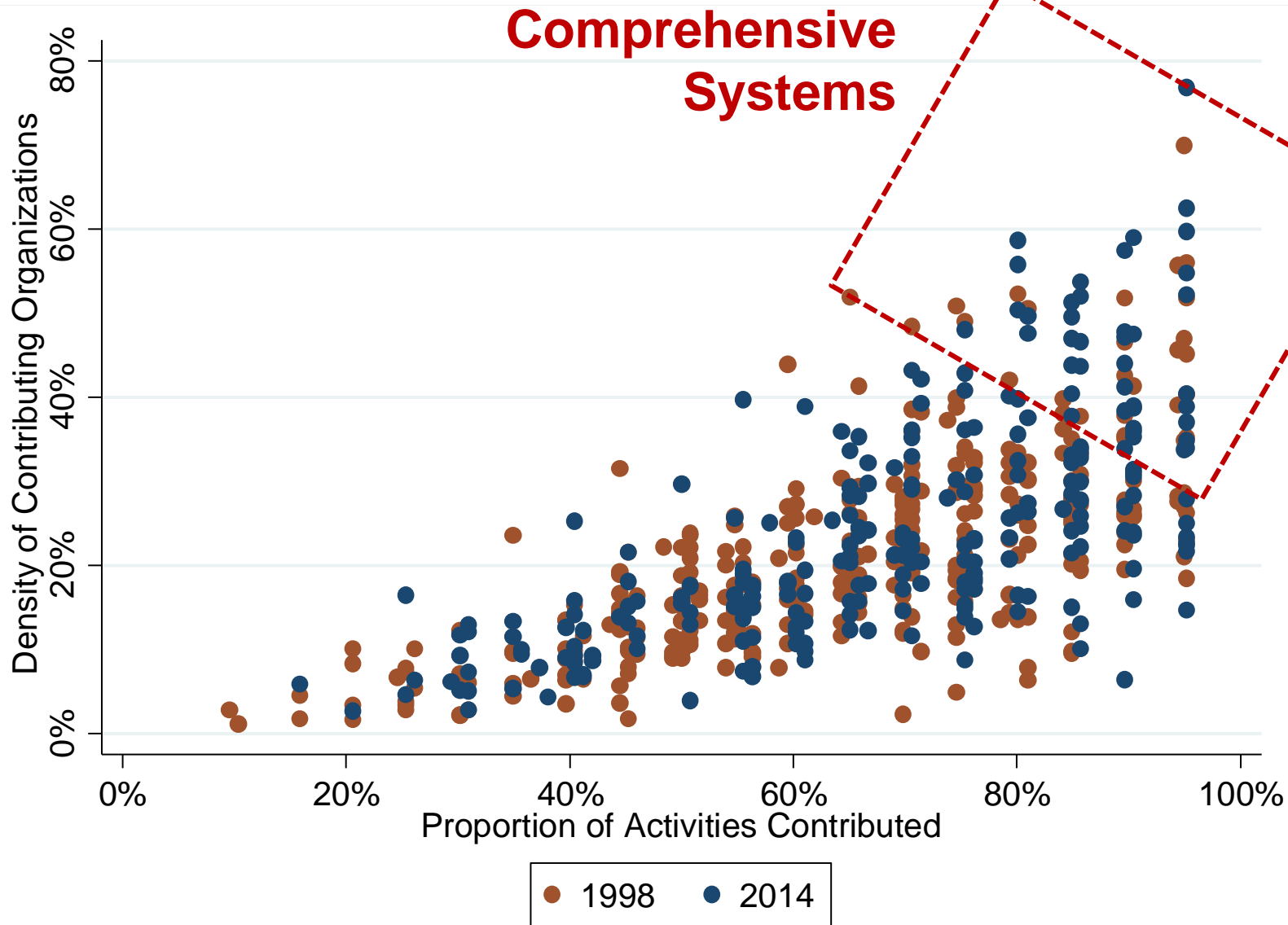
Overall, 47.2 percent of the population is covered by a comprehensive public health system. Individuals are more likely to have access if they are non-White (51.5 percent vs. 45.5 percent White) or live in a metropolitan area (48.7 percent vs. 34.1 percent in nonmetropolitan areas).

47.2%

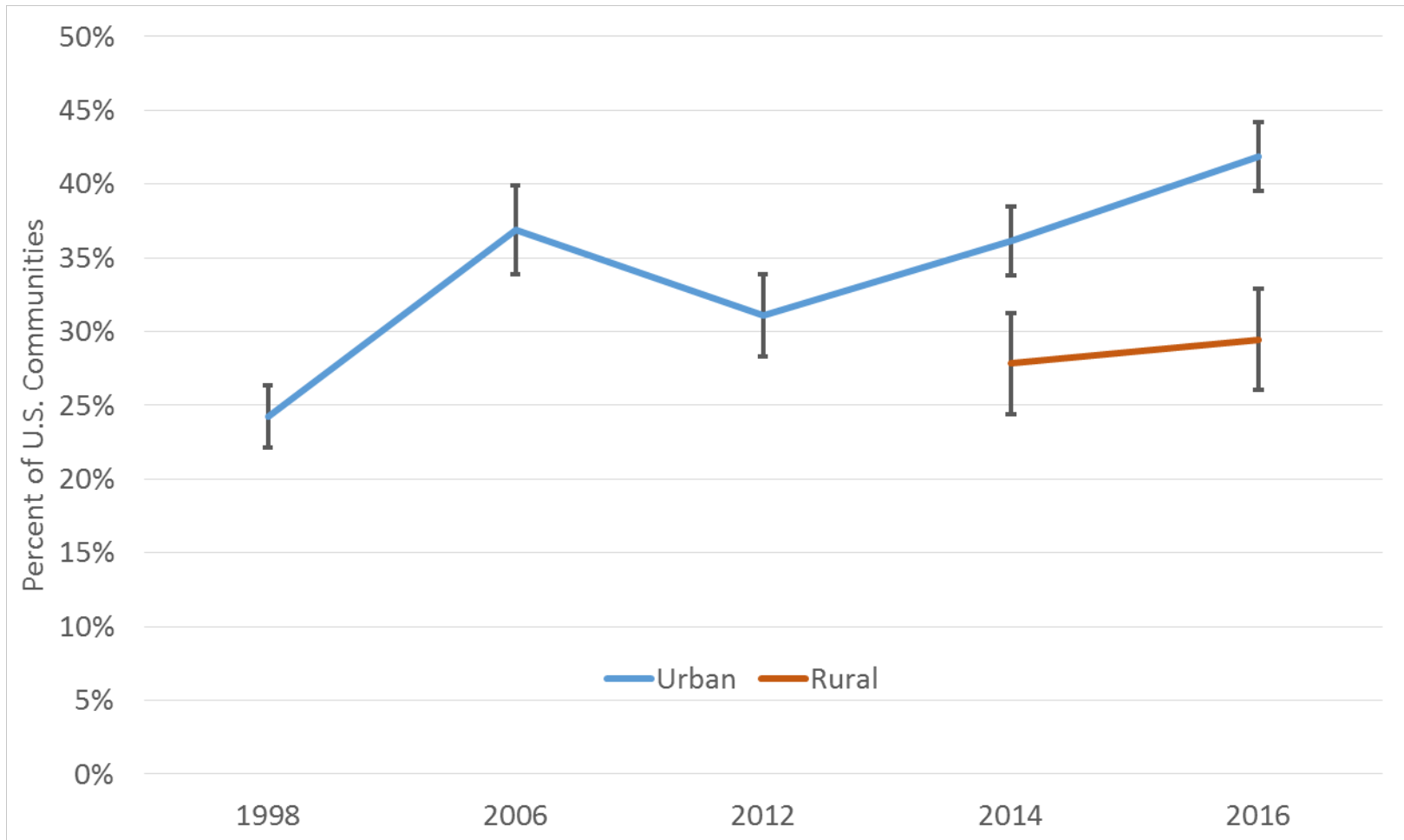
of population served by a  
comprehensive public  
health system



# Network density and scope of activities



# Variation and change in comprehensive delivery systems



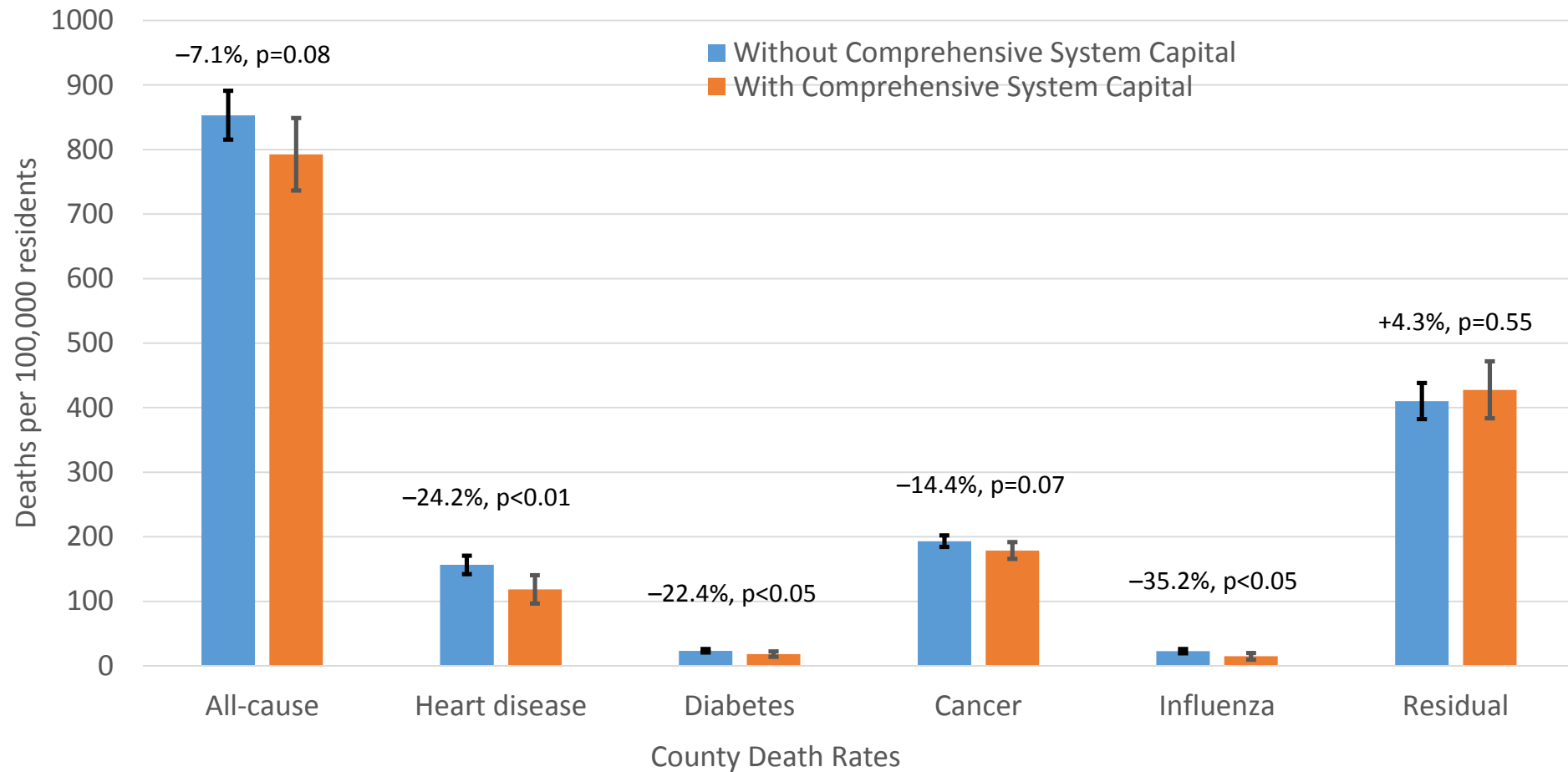
# Organizational contributions to public health capabilities, 1998-2016

## % of Recommended Capabilities 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%

# Health effects attributable to multi-sector work

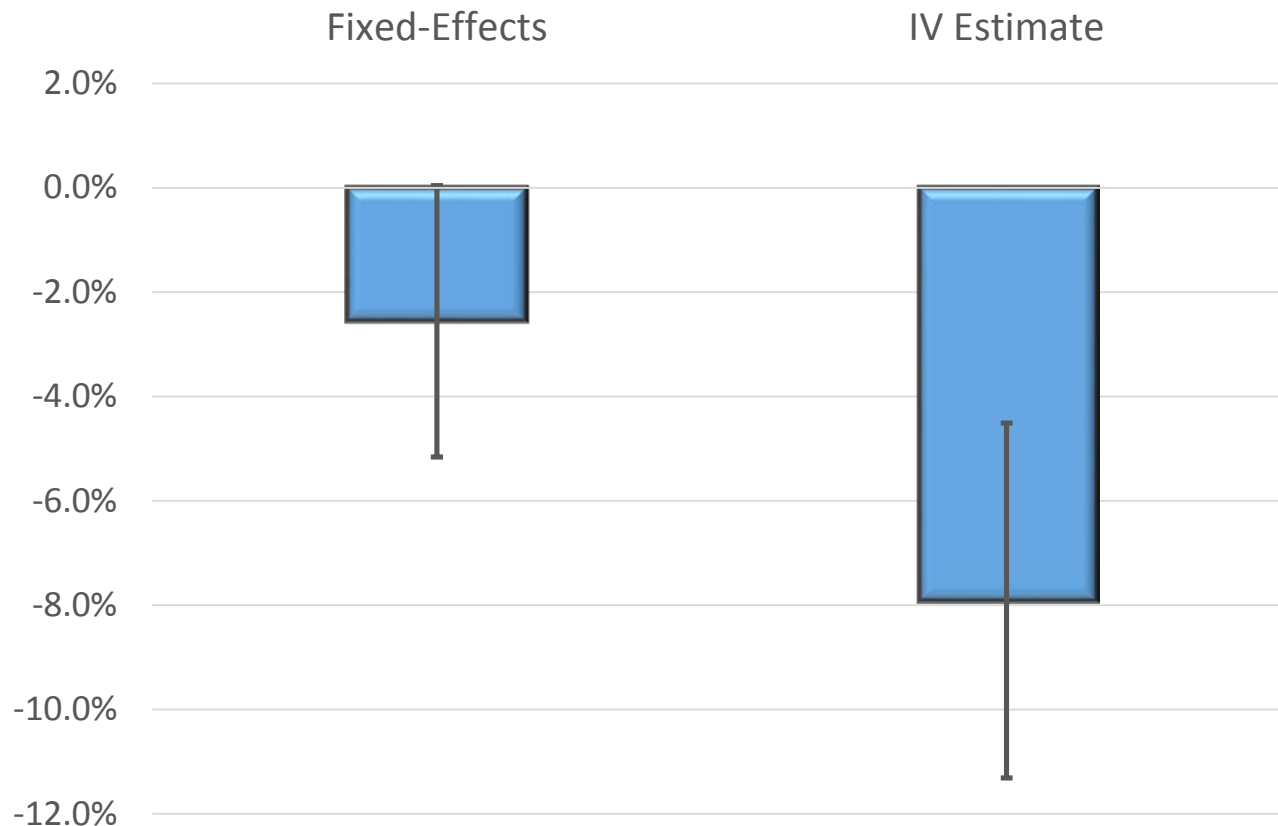
## Impact of Comprehensive Systems on **Mortality**, 1998-2014



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

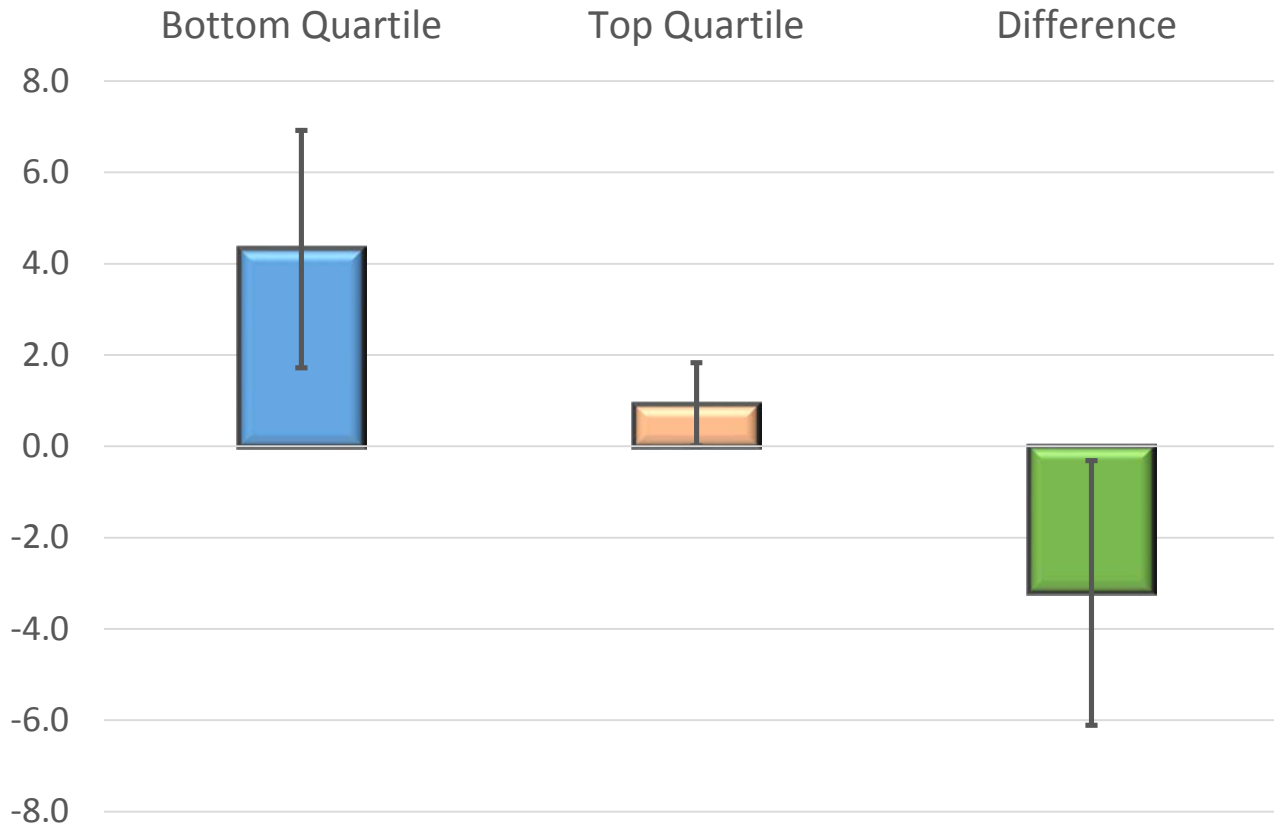
## Impact of Comprehensive Systems on **Medical Spending** (Medicare) 1998-2014



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

# 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**

Glen P. Mays, Ph.D., M.P.H.

[glen.mays@uky.edu](mailto:glen.mays@uky.edu)

[@GlenMays](#)

**Email:** [systemsforaction@uky.edu](mailto:systemsforaction@uky.edu)

**Web:** [www.systemsforaction.org](http://www.systemsforaction.org)  
[www.publichealtheconomics.org](http://www.publichealtheconomics.org)

**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)

