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Connecting the Systems that Drive Health in Your Community: Medical, Social & Public Health

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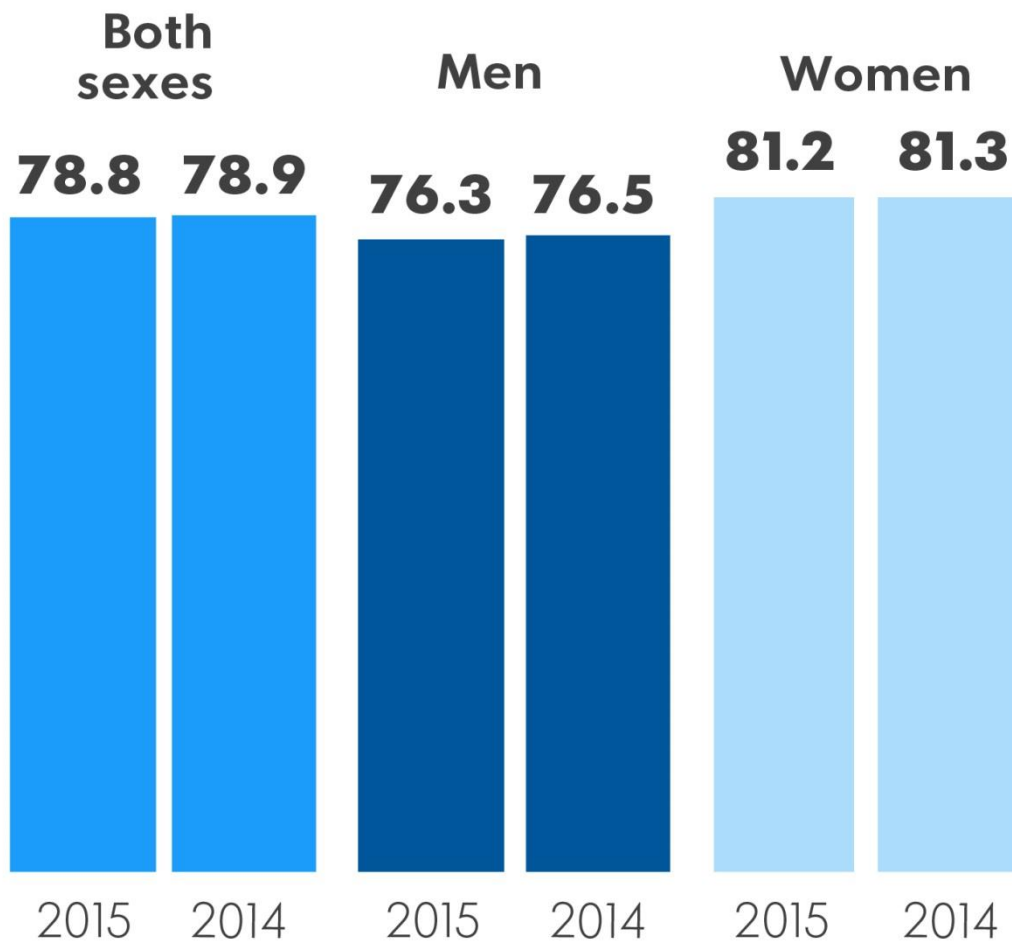University of Kentucky

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KENTUCKY®
Center for Public Health
Systems and Services Research

How to build delivery & financing systems that improve population health?

- Designed to achieve large-scale health improvement: neighborhoods, communities, regions

- Improve means AND reduce variances (health equity)

- Target fundamental and multiple determinants of health

- Mobilize the collective actions of multiple sectors and 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

Losing ground in population health

U.S. LIFE EXPECTANCY FALLS

	Both sexes		Men		Women	
	78.8	78.9	76.3	76.5	81.2	81.3
	2015	2014	2015	2014	2015	2014

SOURCE CDC
Jim Sergent, USA TODAY

USA TODAY

Published December 8, 2016

Geographic & socioeconomic inequities in population health

Men

Chetty et al. JAMA 2016
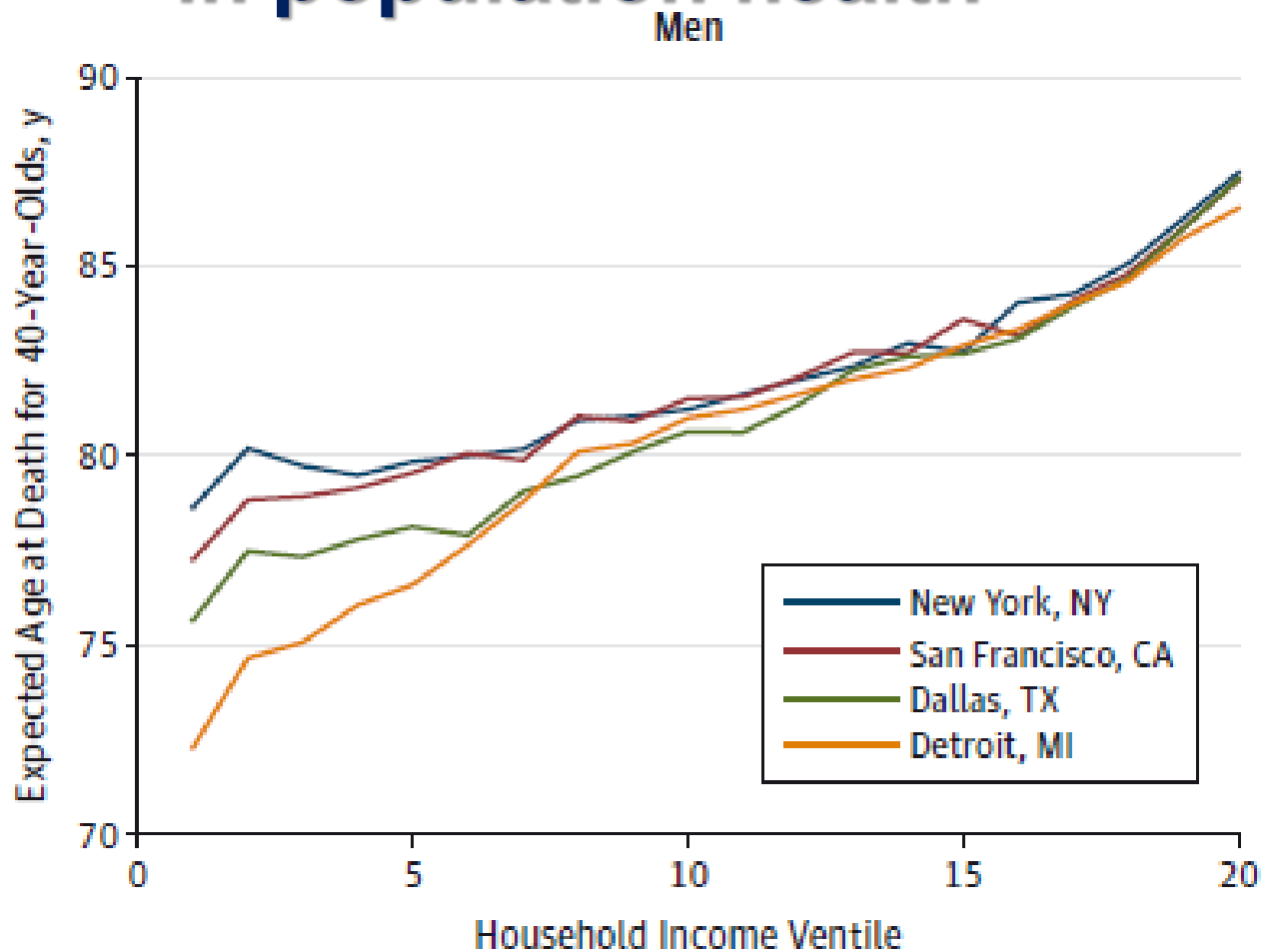
Multiple systems & sectors drive health…

Proportional Contribution to Premature Death

- Social circumstances 15%
- Genetic predisposition 30%
- Environmental exposure 5%
- Health care 10%
- Behavioral patterns 40%

Schroeder SA. N Engl J Med 2007;357:1221-1228
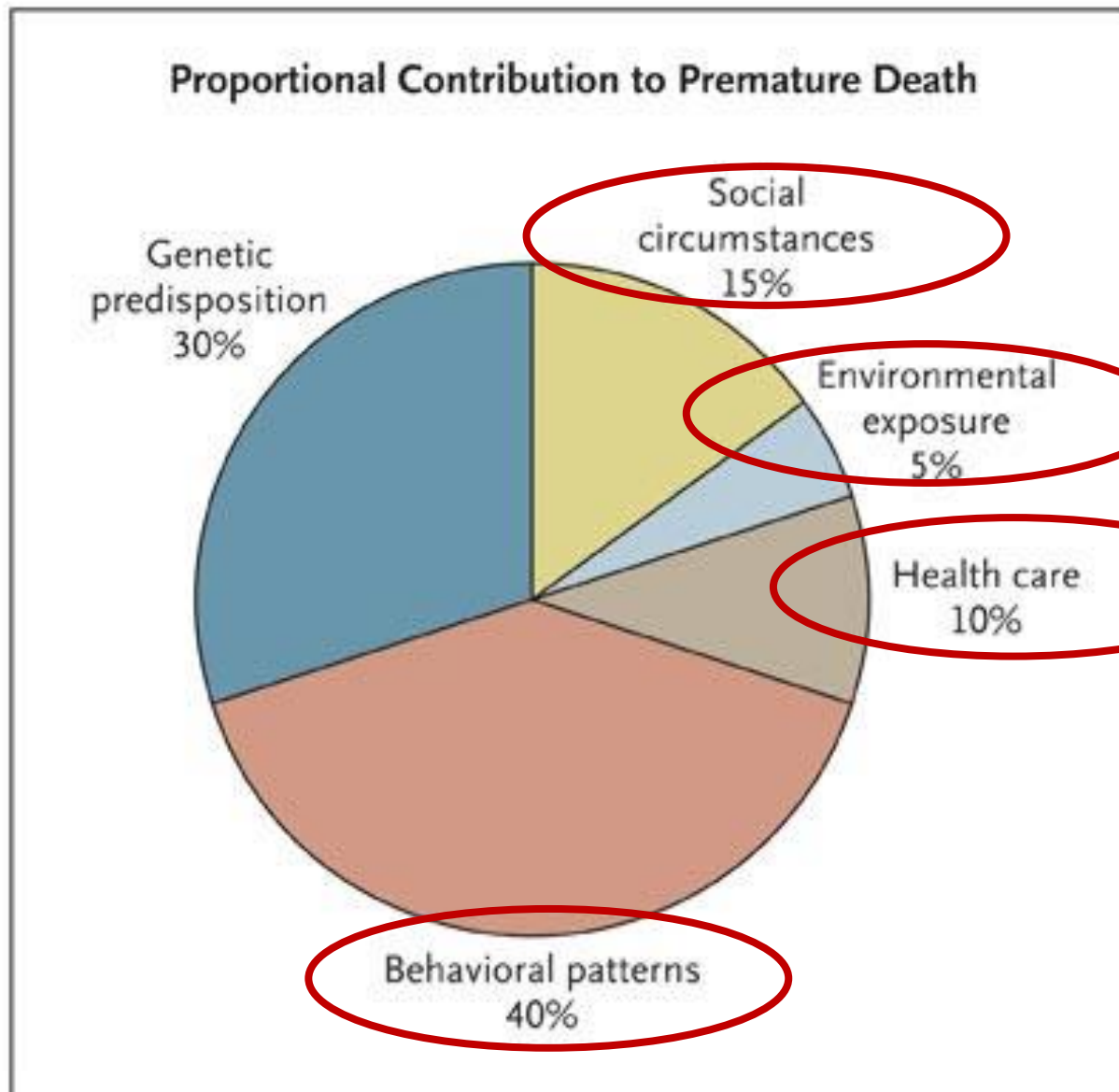
…But existing systems often fail to connect

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
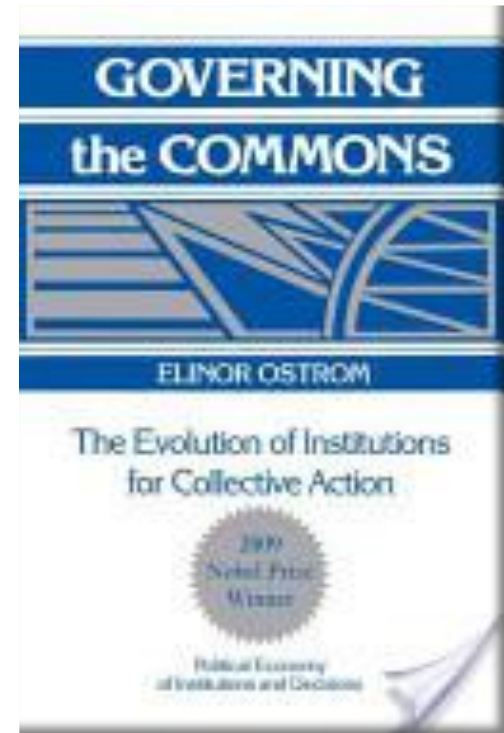- Slow to innovate & adapt

Waste & inefficiency

Inequitable outcomes
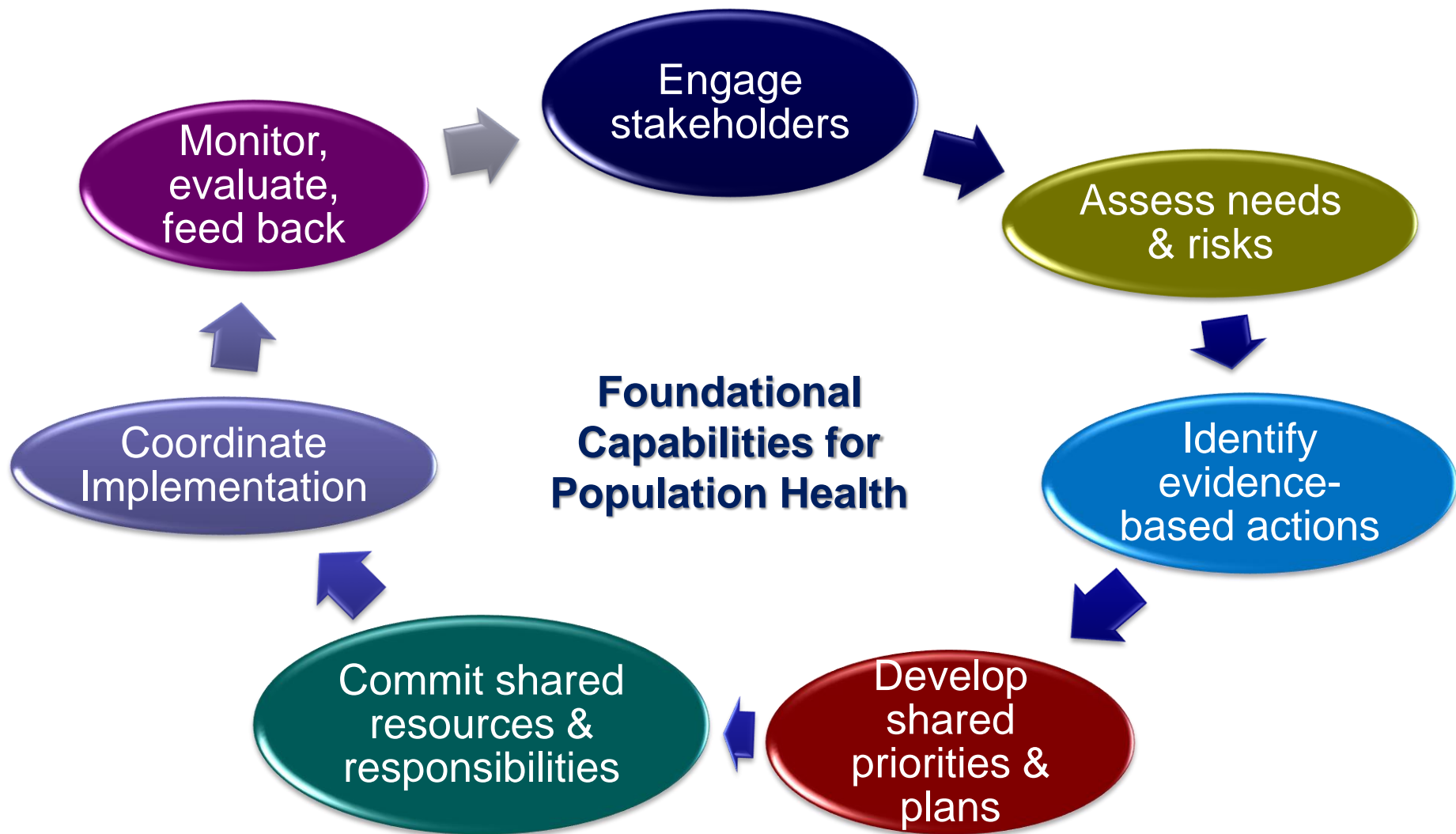
Limited population health impact
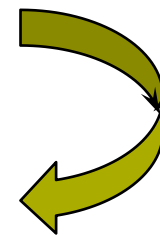
Challenge: overcoming collective action problems across systems & sectors

- 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

GOVERNING the COMMONS

ELINOR OSTROM

The Evolution of Institutions for Collective Action

2009 Nobel Prize Winner

Political Economy of Institutions and Decisions

Ostrom E. 1994

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

Foundational Capabilities for Population Health

- Engage stakeholders
- Assess needs & risks
- Identify evidence-based actions
- Develop shared priorities & plans
- Commit shared resources & responsibilities
- Coordinate Implementation
- Monitor, evaluate, feed back

Questions of interest

- How strong are the multi-sector delivery systems that support population health improvement?

- How do these delivery systems change over time?

- 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

- Nationally representative cohort of 600 U.S. communities

- Followed over time: 1998-2018

- Local public health officials report:
  - *Scope*: availability of 20 recommended population health activities
  - *Network density*: organizations contributing to each activity
  - *Network centrality*: strongest central actor
  - *Quality*: perceived effectiveness of each activity

Data linkages expand analytic possibilities

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

- **Association data**: local 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
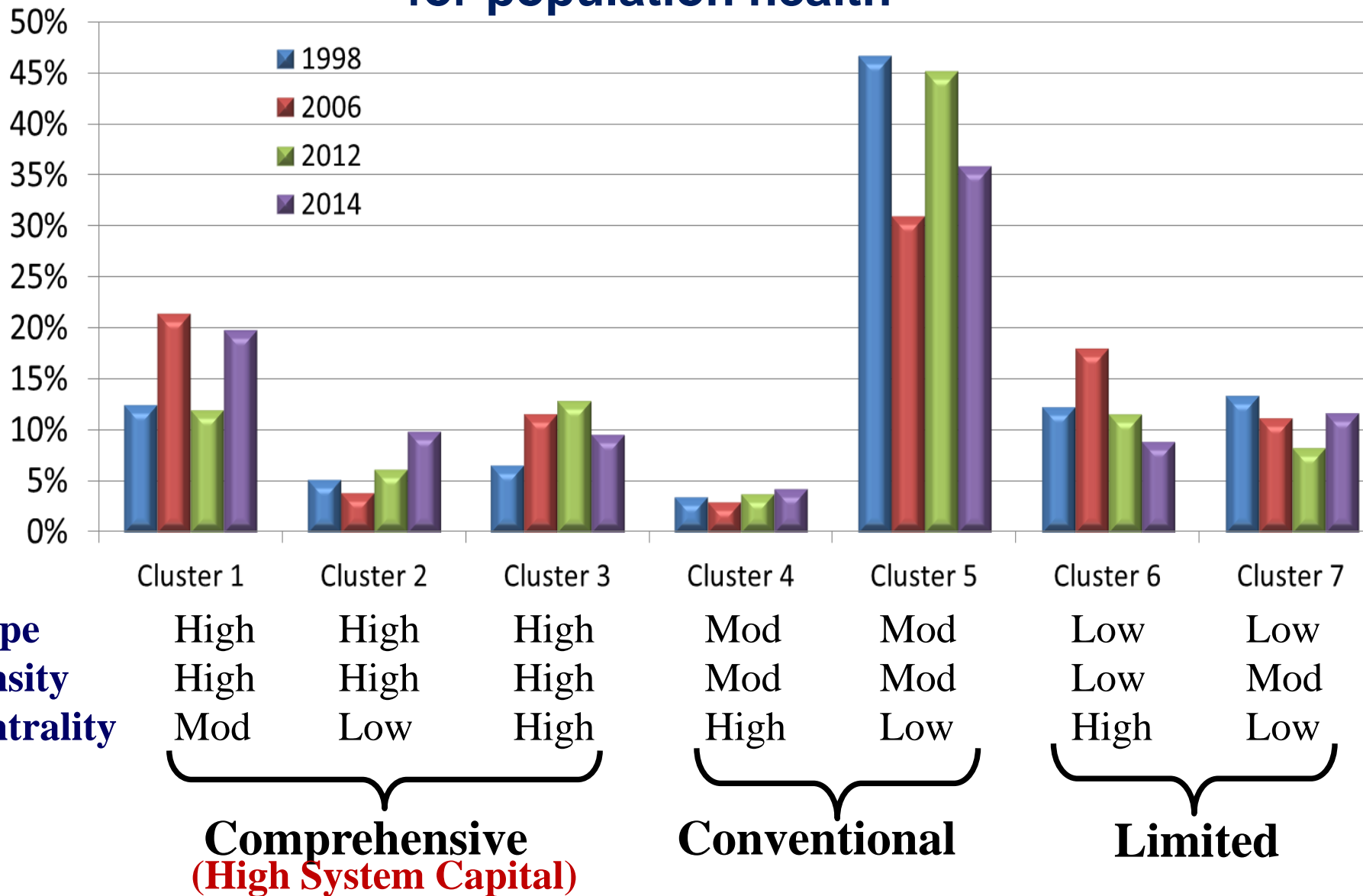
Mapping delivery systems for population health
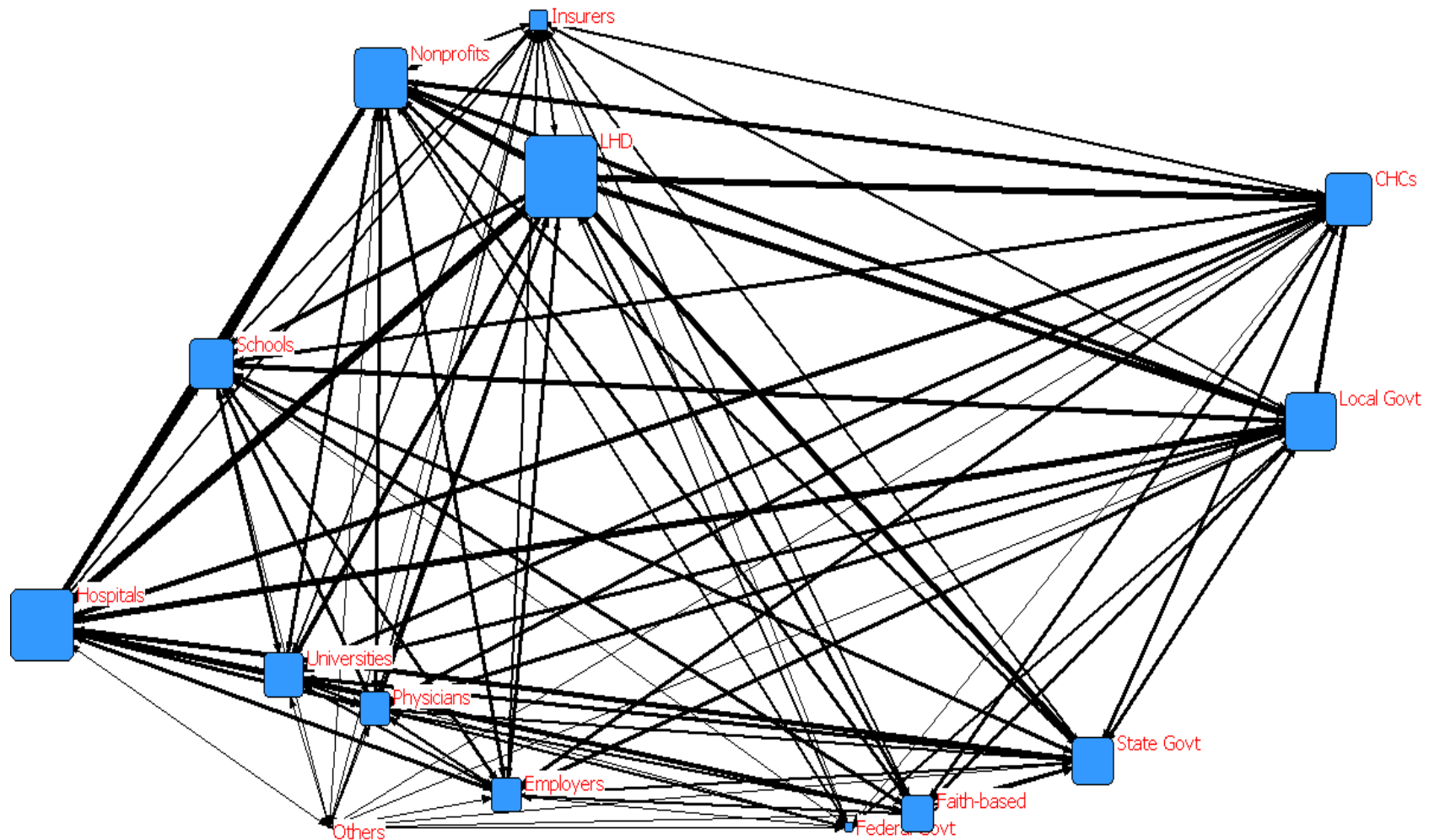
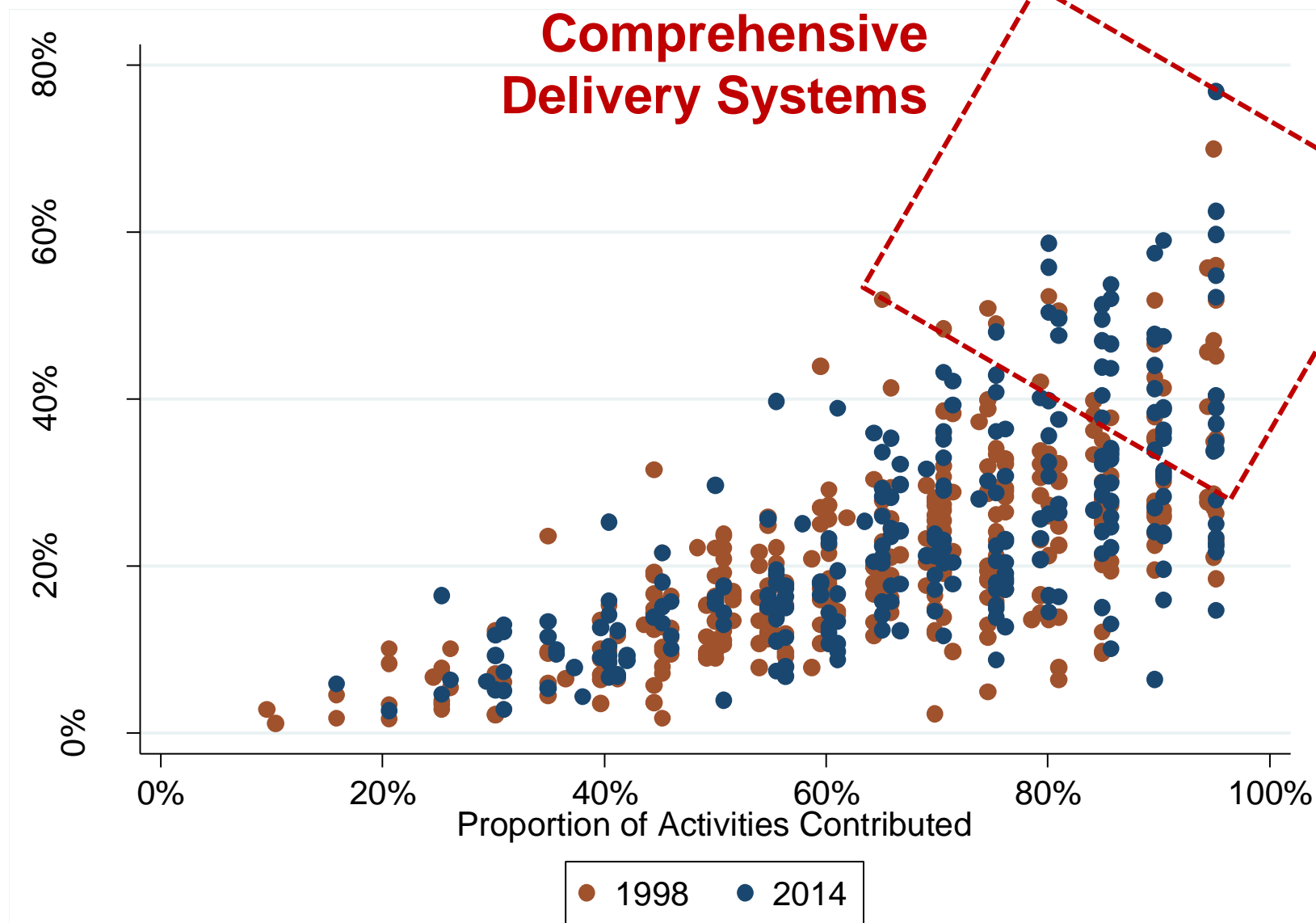
Node size = degree centrality
Line size = % activities jointly contributed (tie strength)

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

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
Scope	High	High	High	Mod	Mod	Low	Low
Density	High	High	High	Mod	Mod	Low	Mod
Centrality	Mod	Low	High	High	Low	High	Low

Comprehensive
(High System Capital)

Conventional

Limited

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

Network density and scope of activities

Comprehensive Delivery Systems

Y-axis: 80%, 60%, 40%, 20%, 0%

X-axis: Proportion of Activities Contributed — 0%, 20%, 40%, 60%, 80%, 100%

Legend: ● 1998 ● 2014

Mays GP et al. *Health Affairs* 2016

Comprehensive Delivery 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).
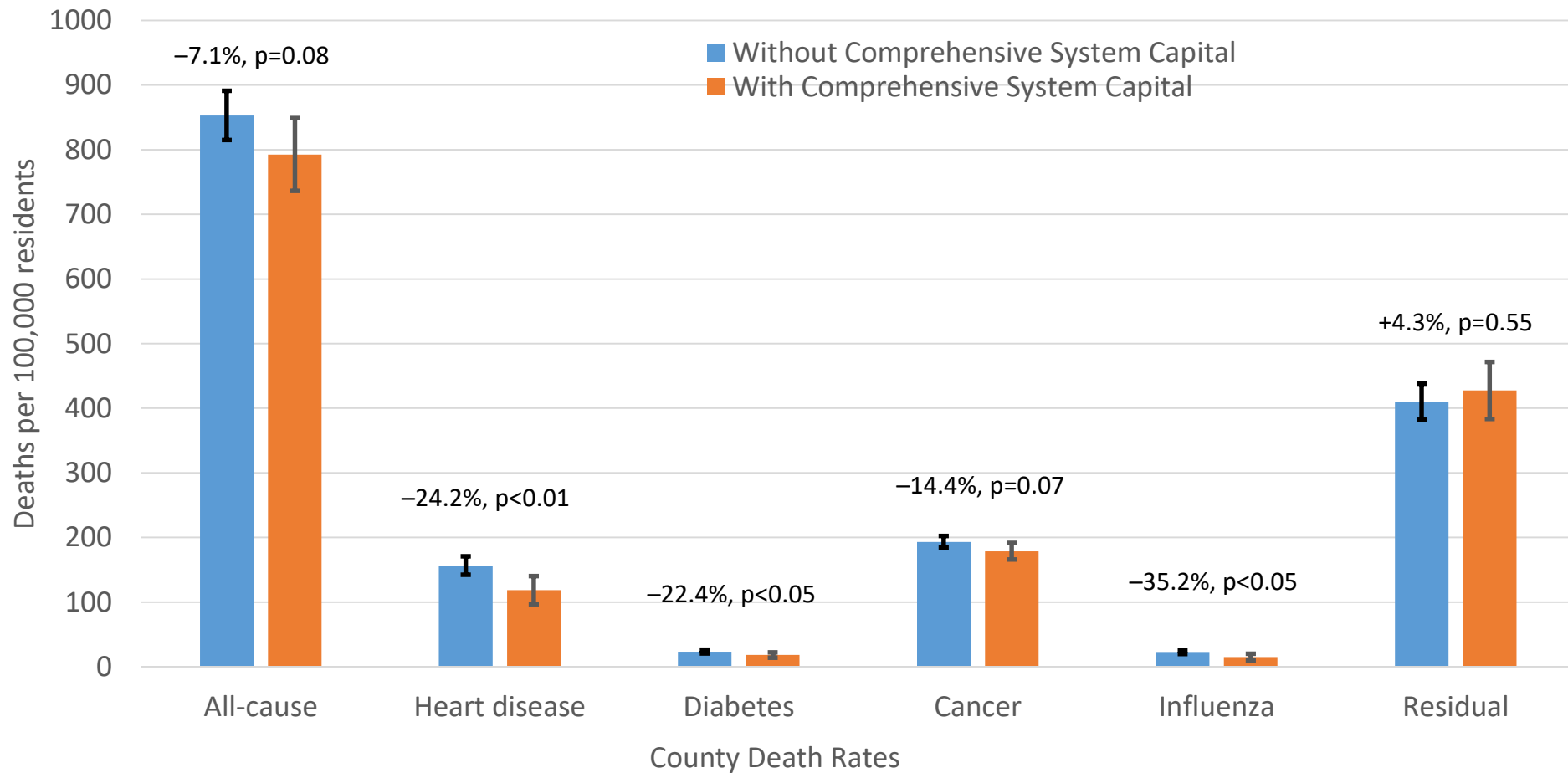
47.2%
of population served by a comprehensive public health system

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

Variation and change
in comprehensive systems
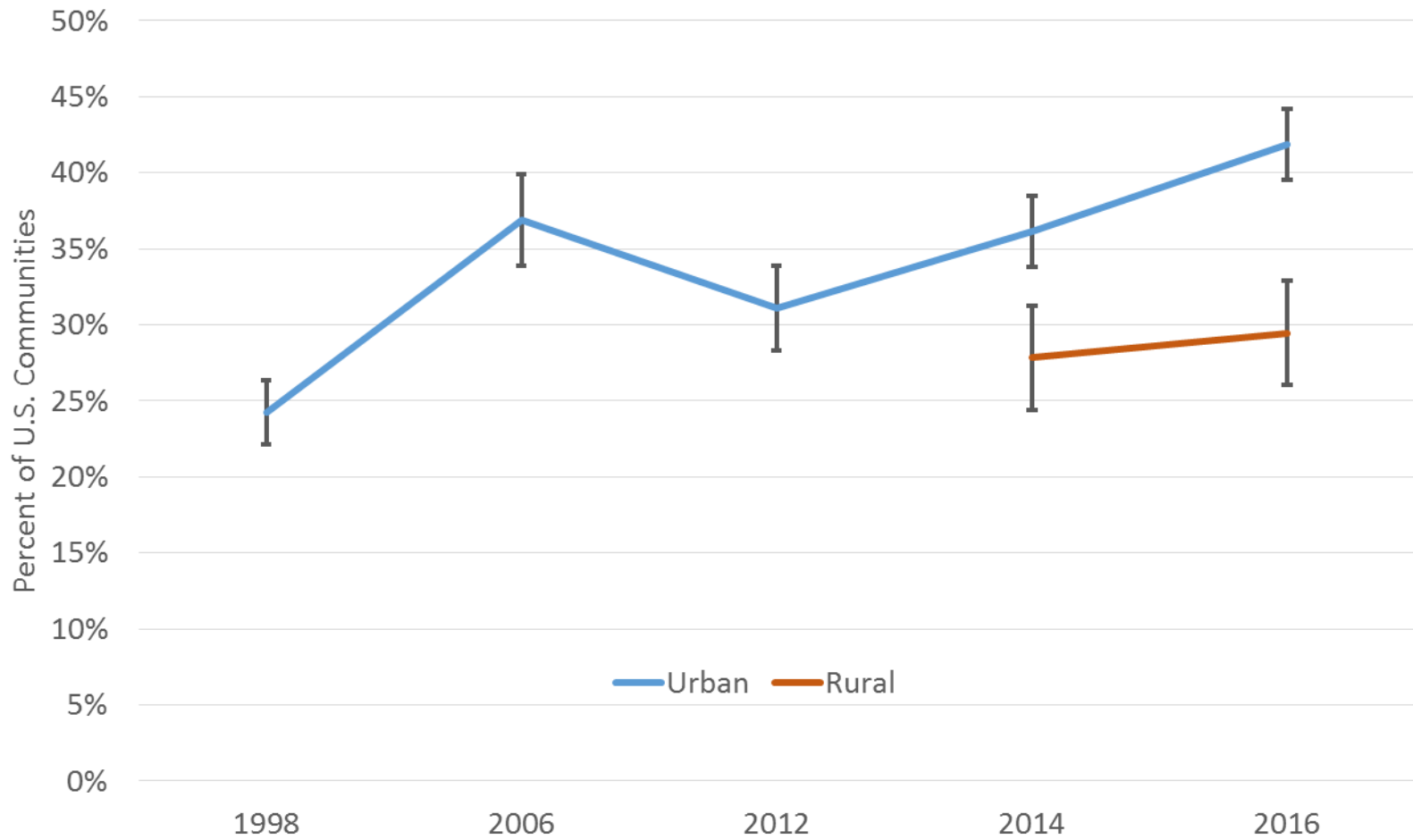
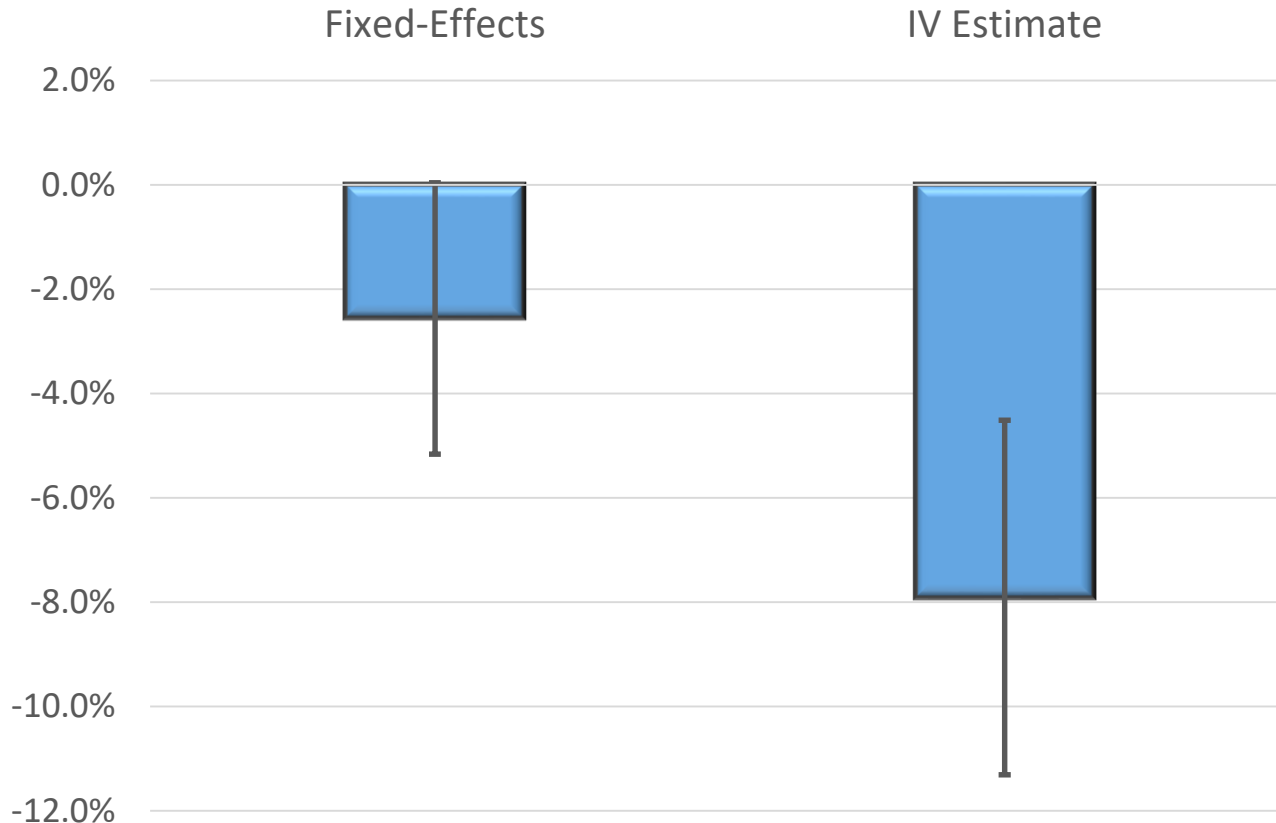# Health effects attributable to system capital

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.

Mays GP et al. *Health Affairs* 2016

Economic effects attributable to system capital

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. Vertical lines are 95% confidence intervals

Mays GP et al. *Health Services Research* 2017

# Economic effects attributable to system capital

Impact of Comprehensive Systems
on Life Expectancy by Income (Chetty), 2001-2014
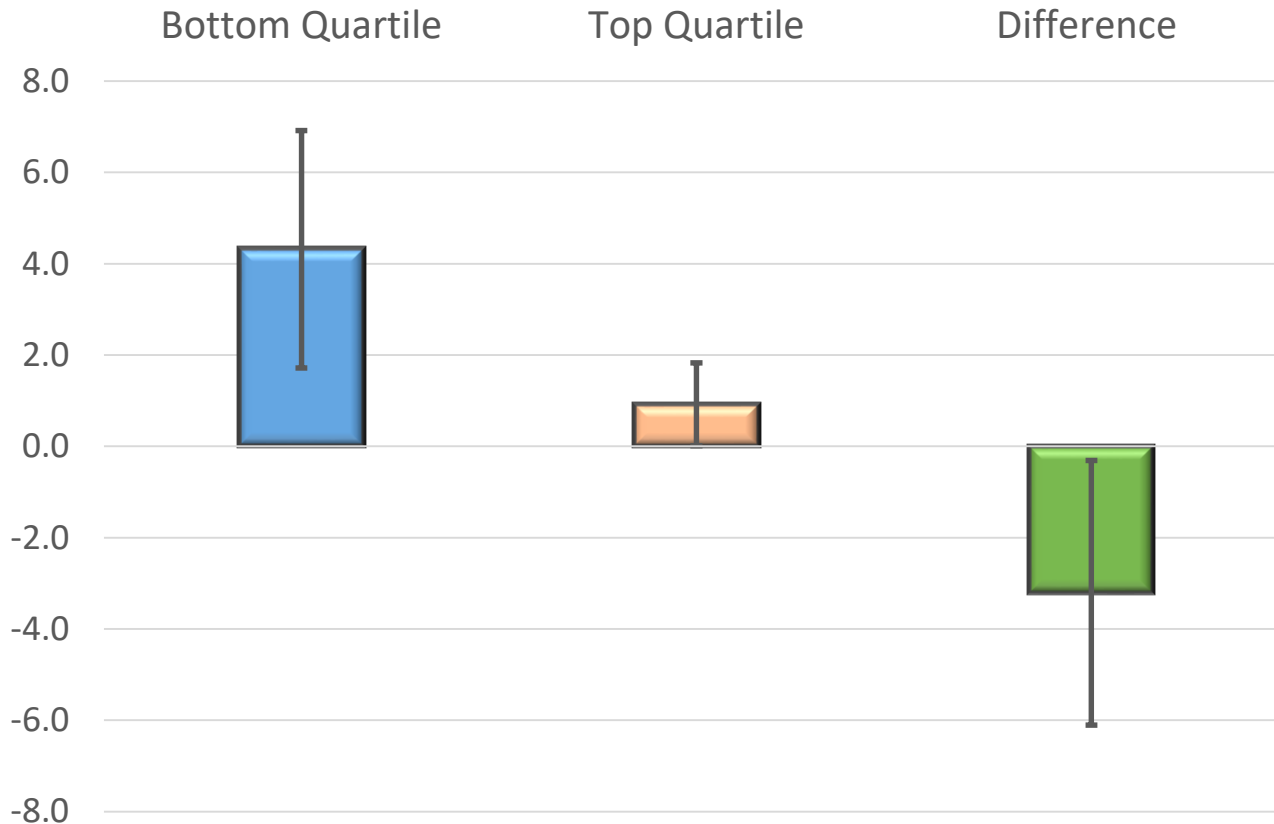
Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. Vertical lines are 95% confidence intervals

Mays GP et al. *forthcoming* 2017

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

Effects of Comprehensive Population Health Systems
in Low-Income vs. High-Income Communities
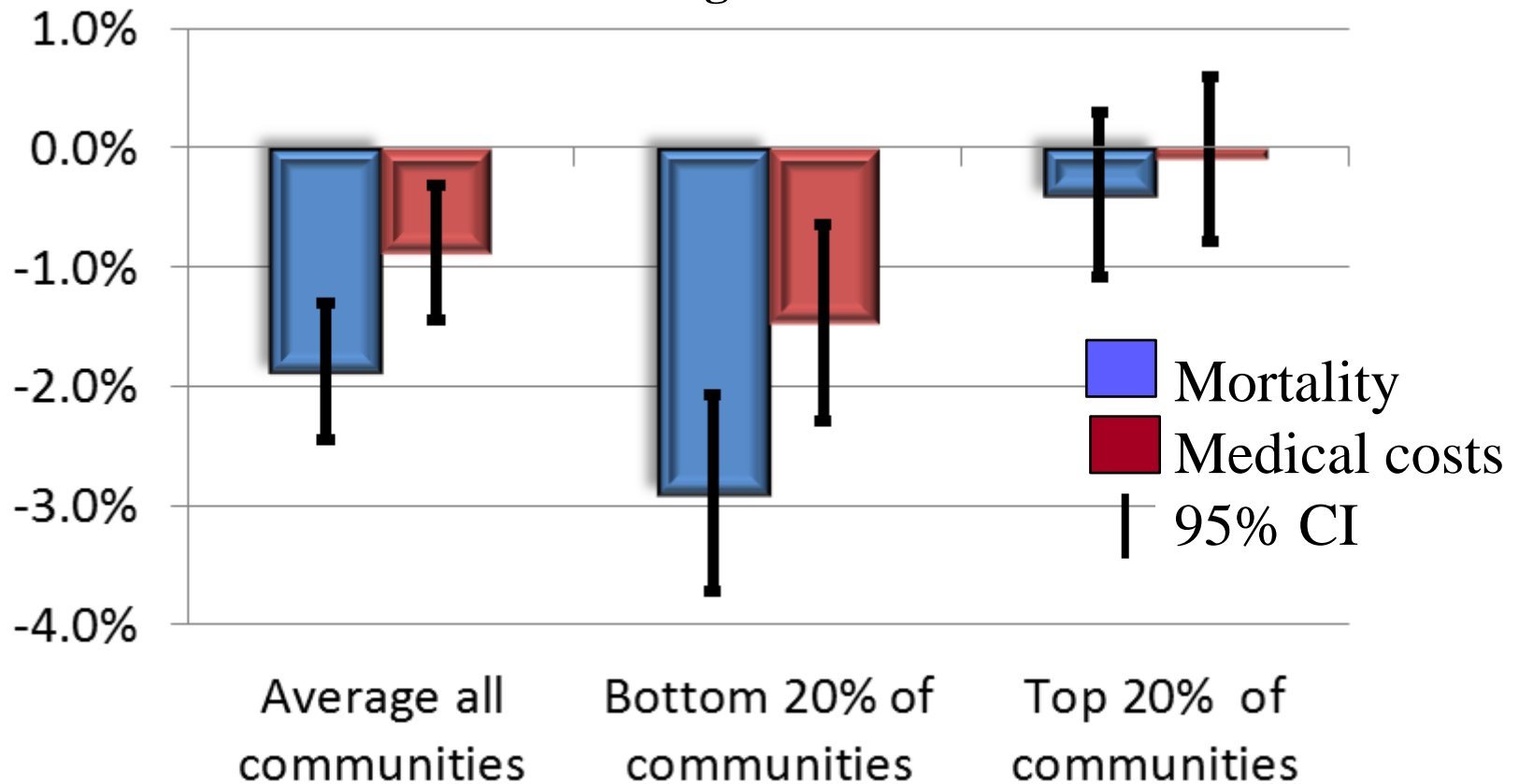
Log IV regression estimates controlling for community-level and state-level characteristics

Getting to sustainable financing

Structural element	Function
1. Strong multi-sector governance model	Do I have a seat at the table?
2. Clear goals, activities, division of responsibility	What are we buying?
3. Clarity on implementation costs	What is the investment?
4. Credible estimates of health & economic outcomes	What are the returns?
5. Robust evaluation and monitoring systems	How will we know success?

Public & Private Willingness to Pay

Conclusions and implications

- Large health gains in places with strong system capital

- Larger gains for low-income populations & communities

- Comprehensive systems do more than just plan: prioritize, invest, evaluate, repeat (crowd-sourcing)

- Equity and opportunity: two-thirds of communities currently lack comprehensive system capital

- Policy incentives and resources may help:
  - Hospital community benefit
  - Value-based health care payments
  - Insurer and employer incentives
  - Accountable Health Community models

- Sustainability and resiliency are not automatic

Key take-aways: power of the network

- Strength of the network >> individual initiatives

- Peripheral players & strength of weak ties

- Anchor institutions & coordination

- Governance & decision-making structures

- Catalytic functions: engagement, assessment, priority-setting, evaluation

- Shared resource investments

- Time & staying power

Finding the connections

Connection not found

Connection Settings   Retry   Close

- 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

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