

Community Networks & Population Health: What We Know & Need to Learn

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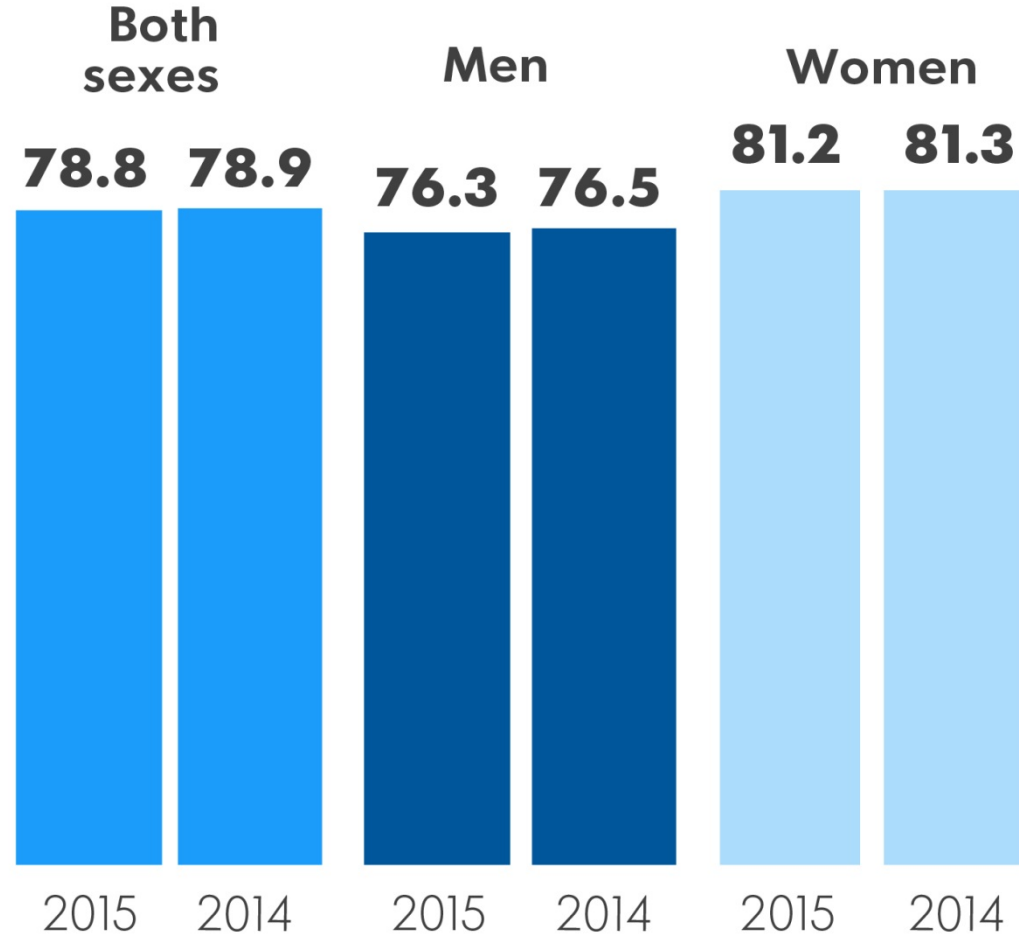
Systems for Action
National Coordinating Center
Systems and Services Research to Build a Culture of Health

Questions of interest

- How strong are the networks that support population health improvement work?
- 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

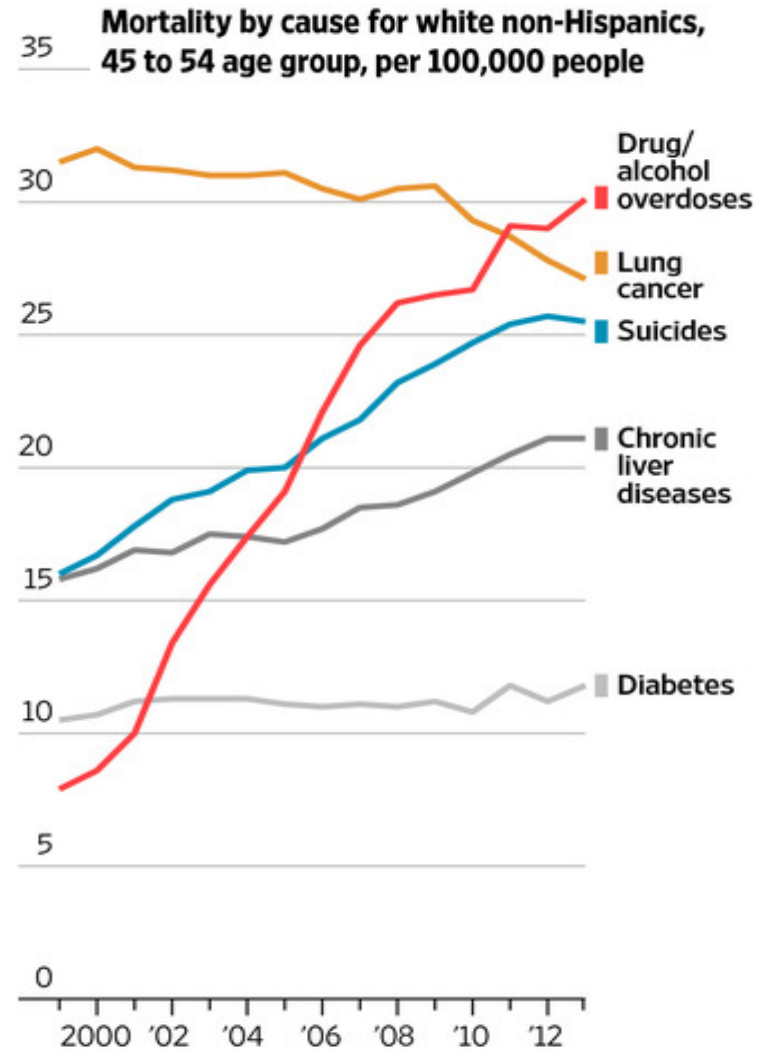
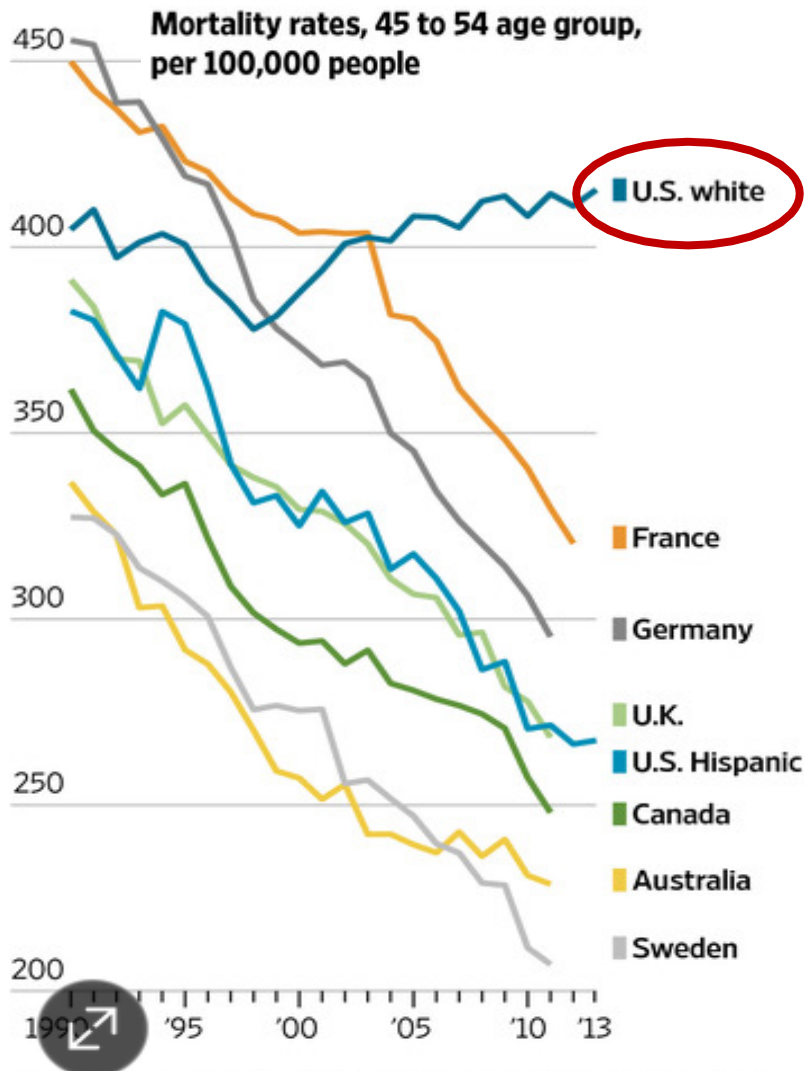
U.S. LIFE EXPECTANCY FALLS



SOURCE CDC
Jim Sergent, USA TODAY



Losing ground in population health



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

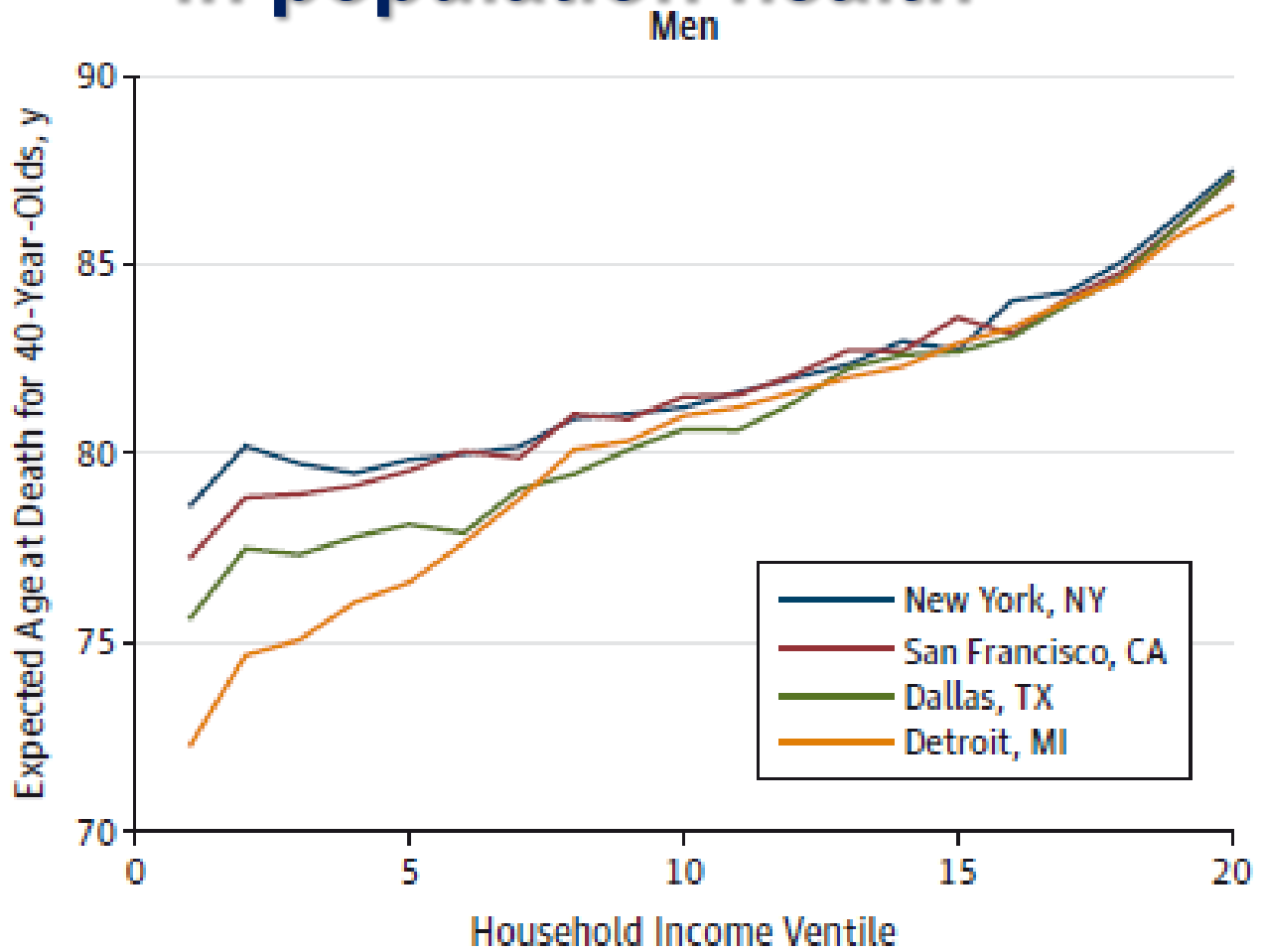
Motivation

Approach

Results

Discussion

Geographic & socioeconomic inequities in population health



Mean household income
in thousands, \$^a

30

60

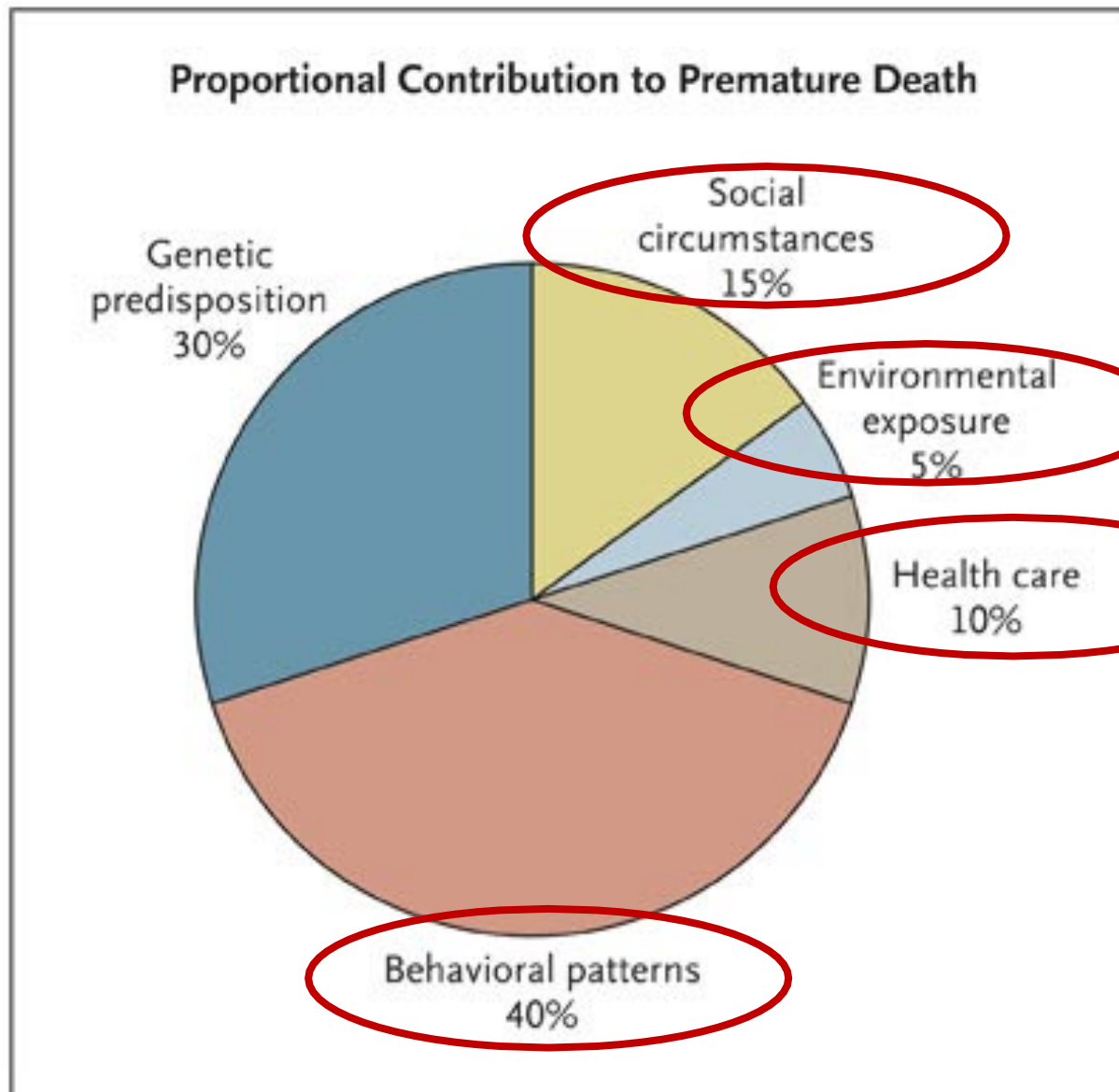
101

683

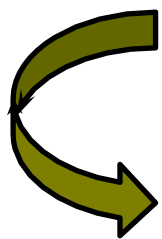
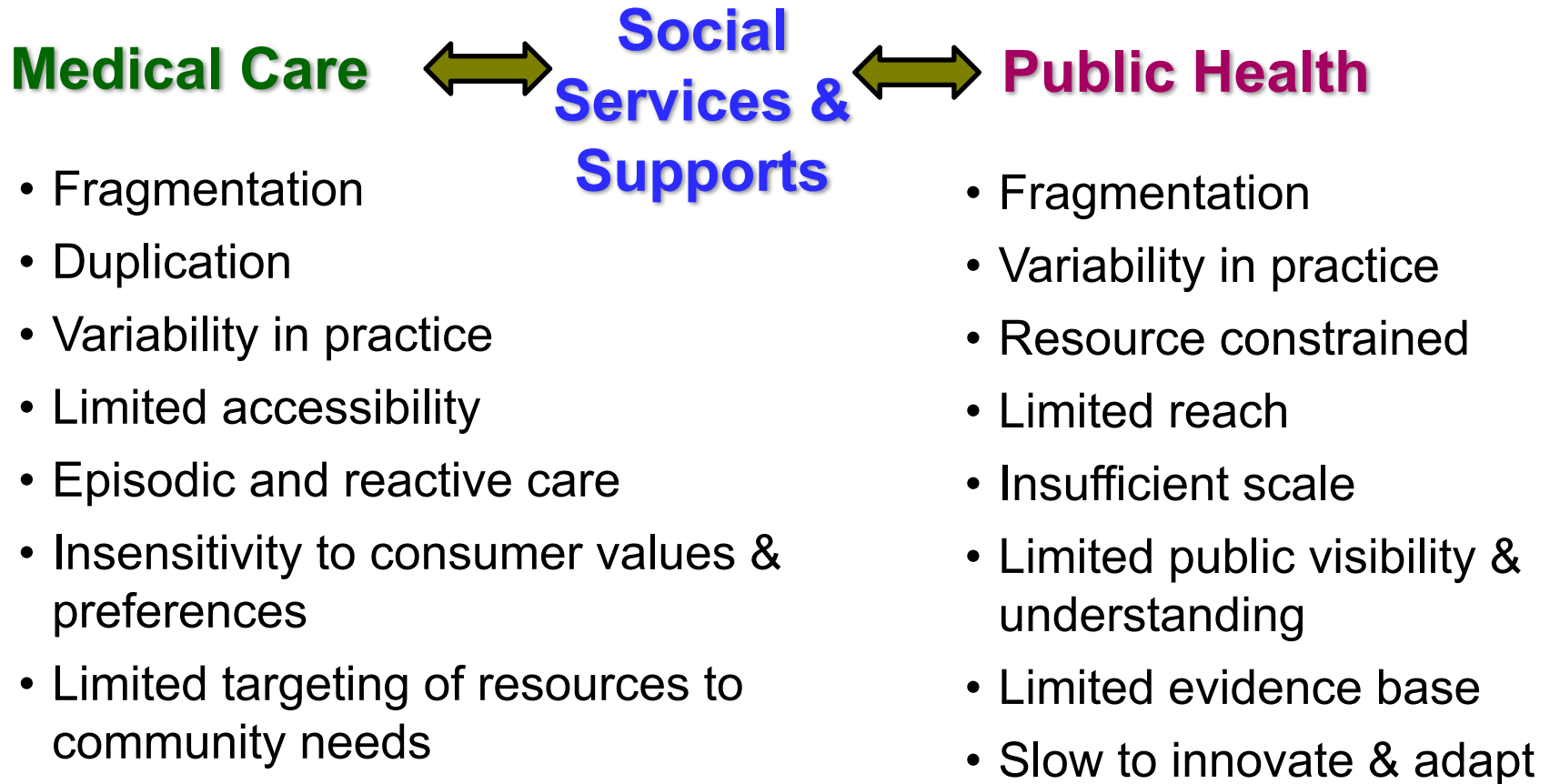
How do we **implement** effective population health improvement strategies?

- 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

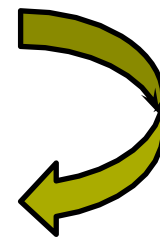
Multiple systems & sectors drive health...



...But existing systems often fail to connect

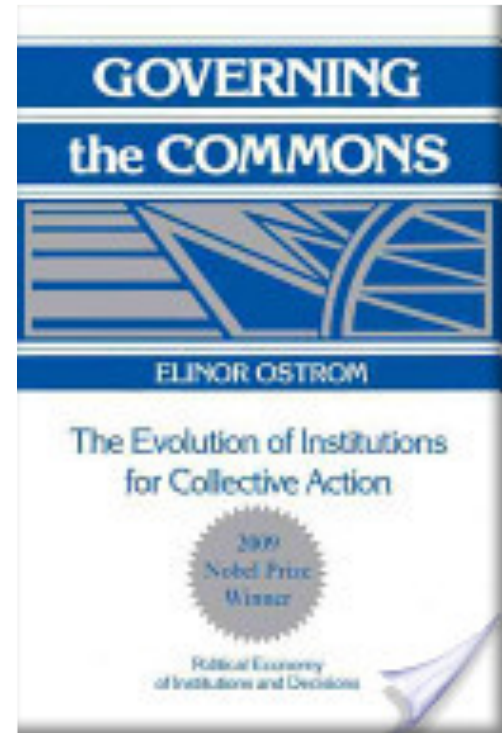


Waste & inefficiency
Inequitable outcomes
Limited population health impact



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

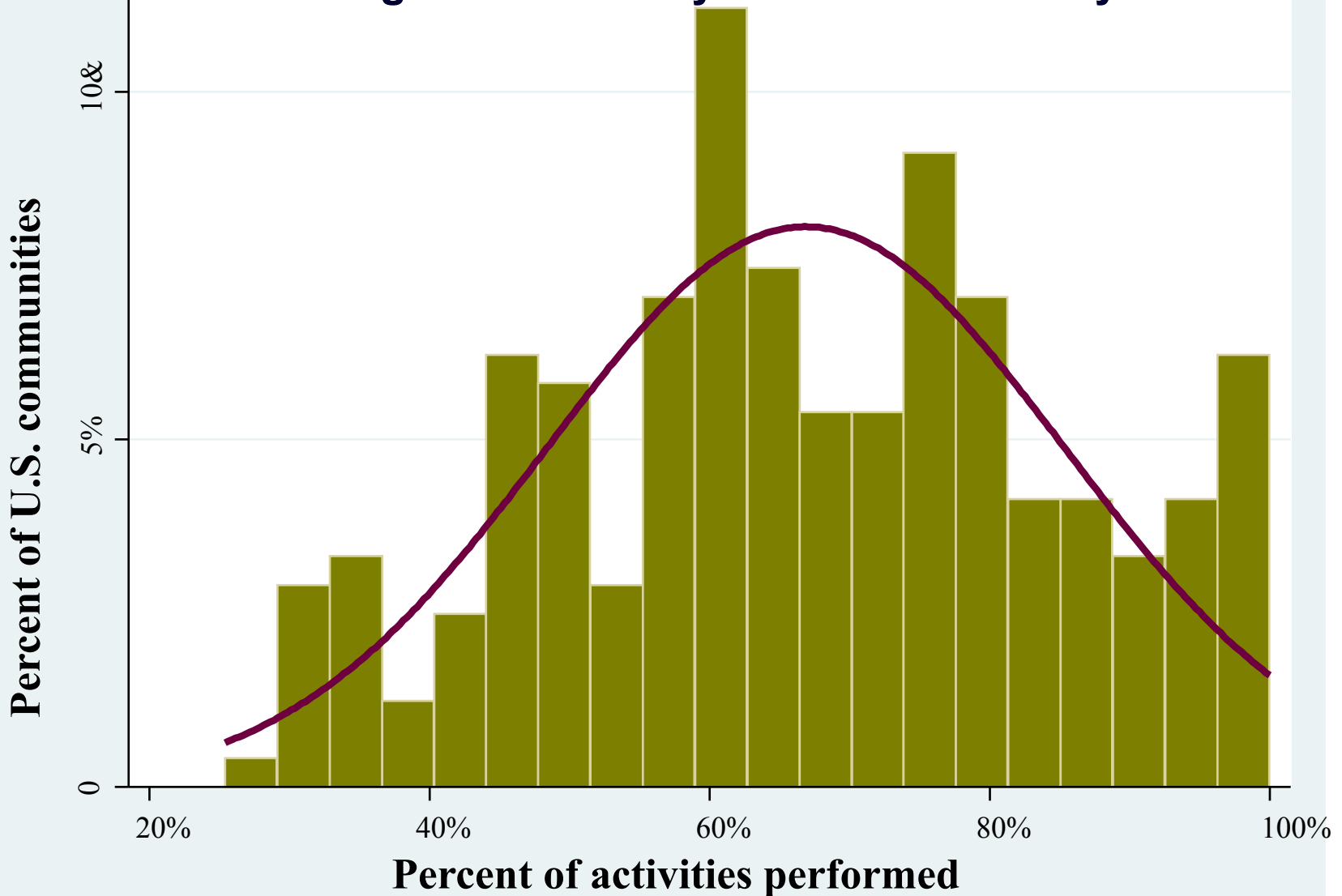
** Expanded sample of 500 communities < 100,000 added in 2014 wave

Data linkages expand analytic possibilities

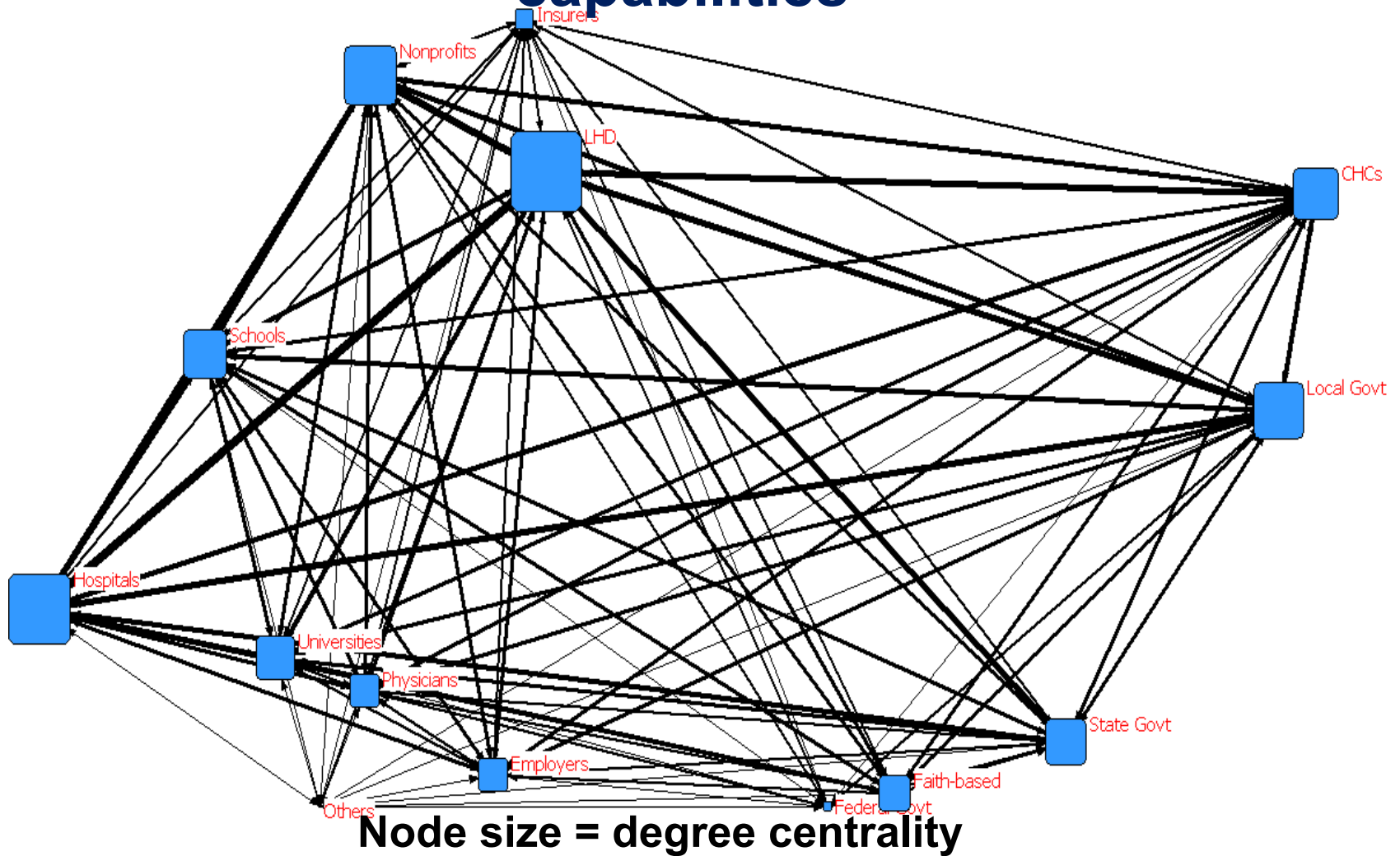
- **Area Health Resource File:** health resources, demographics, socioeconomic status, insurance coverage
- **NACCHO Profile data:** public health agency institutional and financial characteristics
- **CMS Impact File & Cost Report:** hospital ownership, market share, uncompensated care
- **Dartmouth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

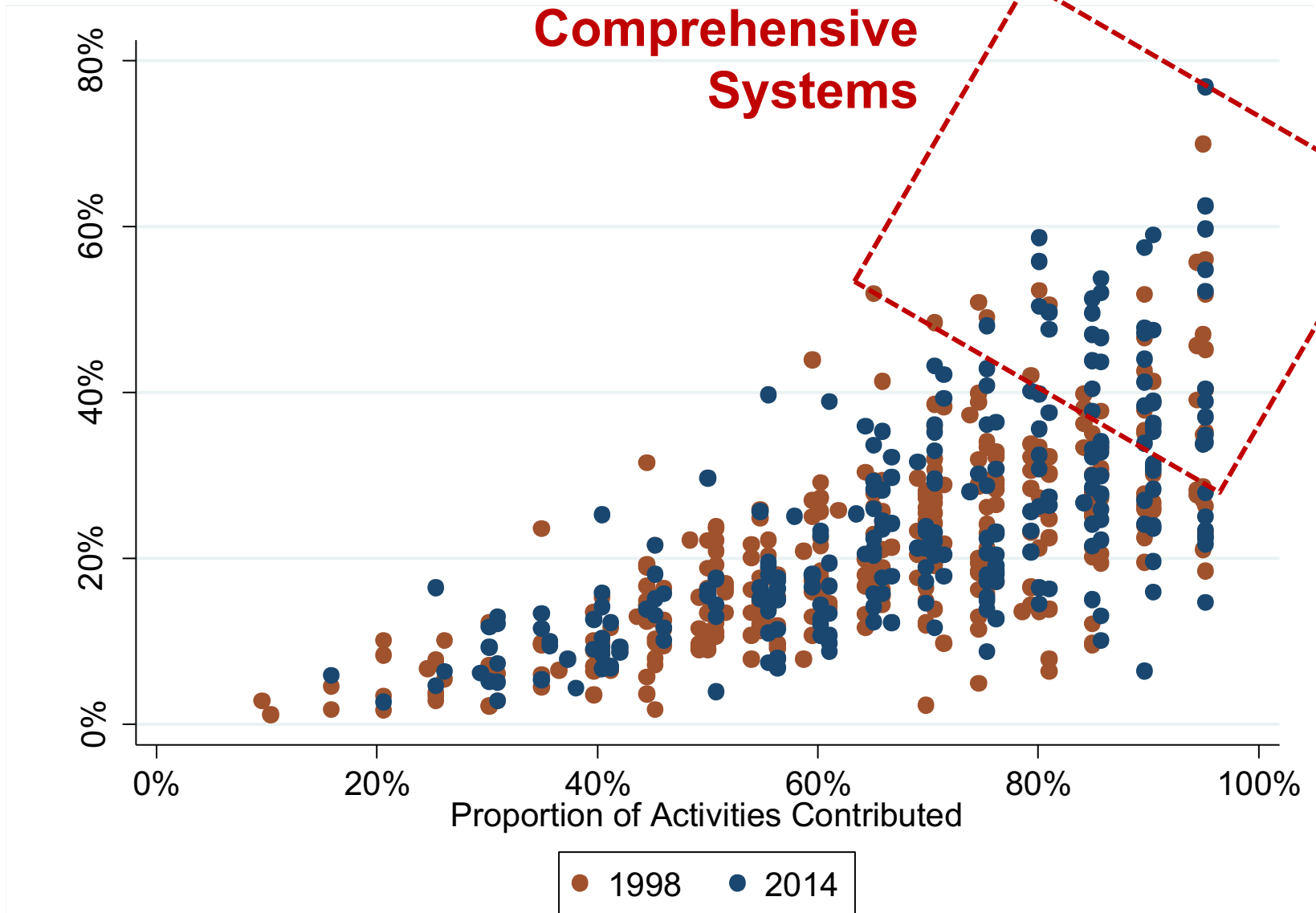
Access to public health

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).

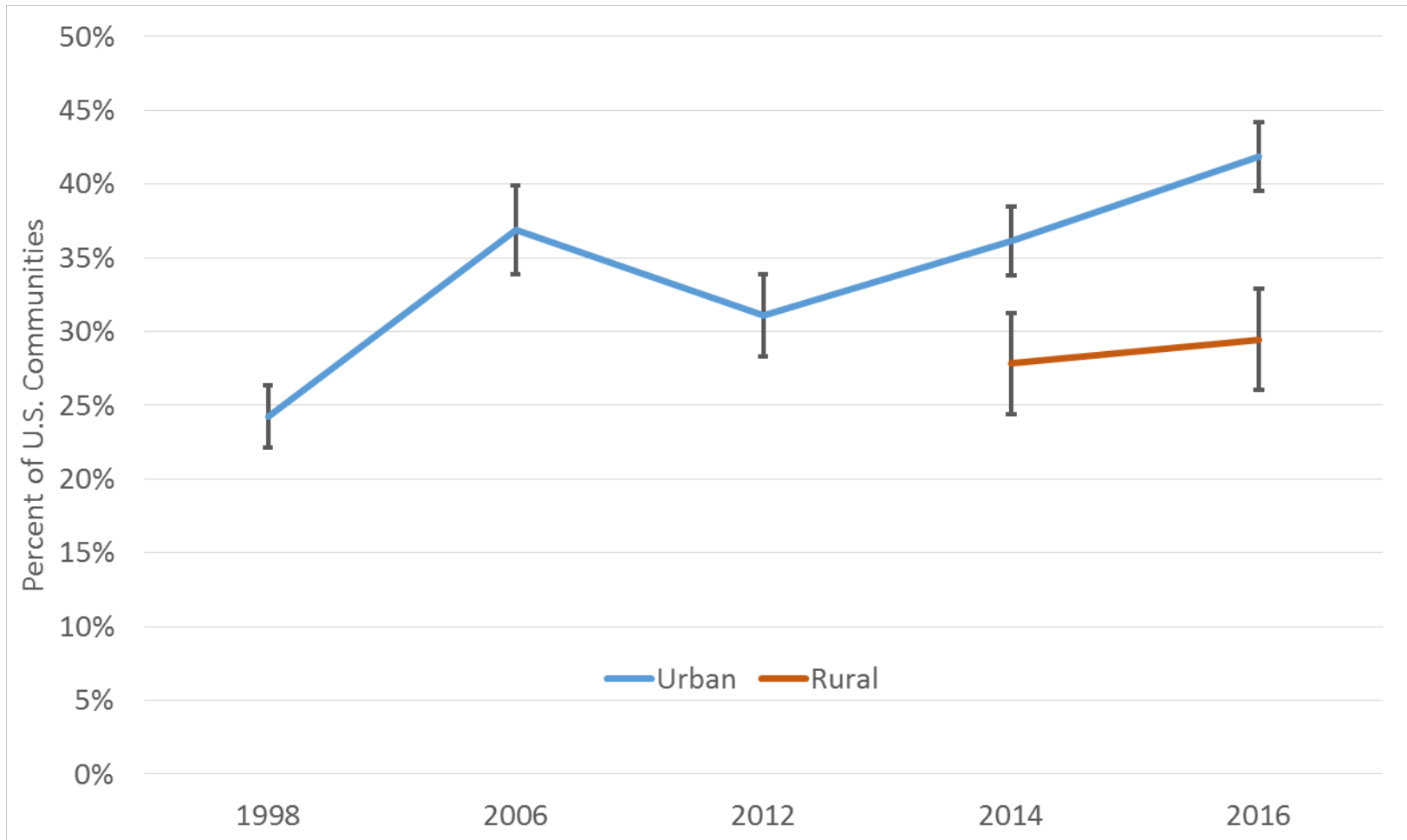
47.2%

of population served by a
comprehensive public
health system

Network density and scope of activities



Variation and change in comprehensive delivery systems



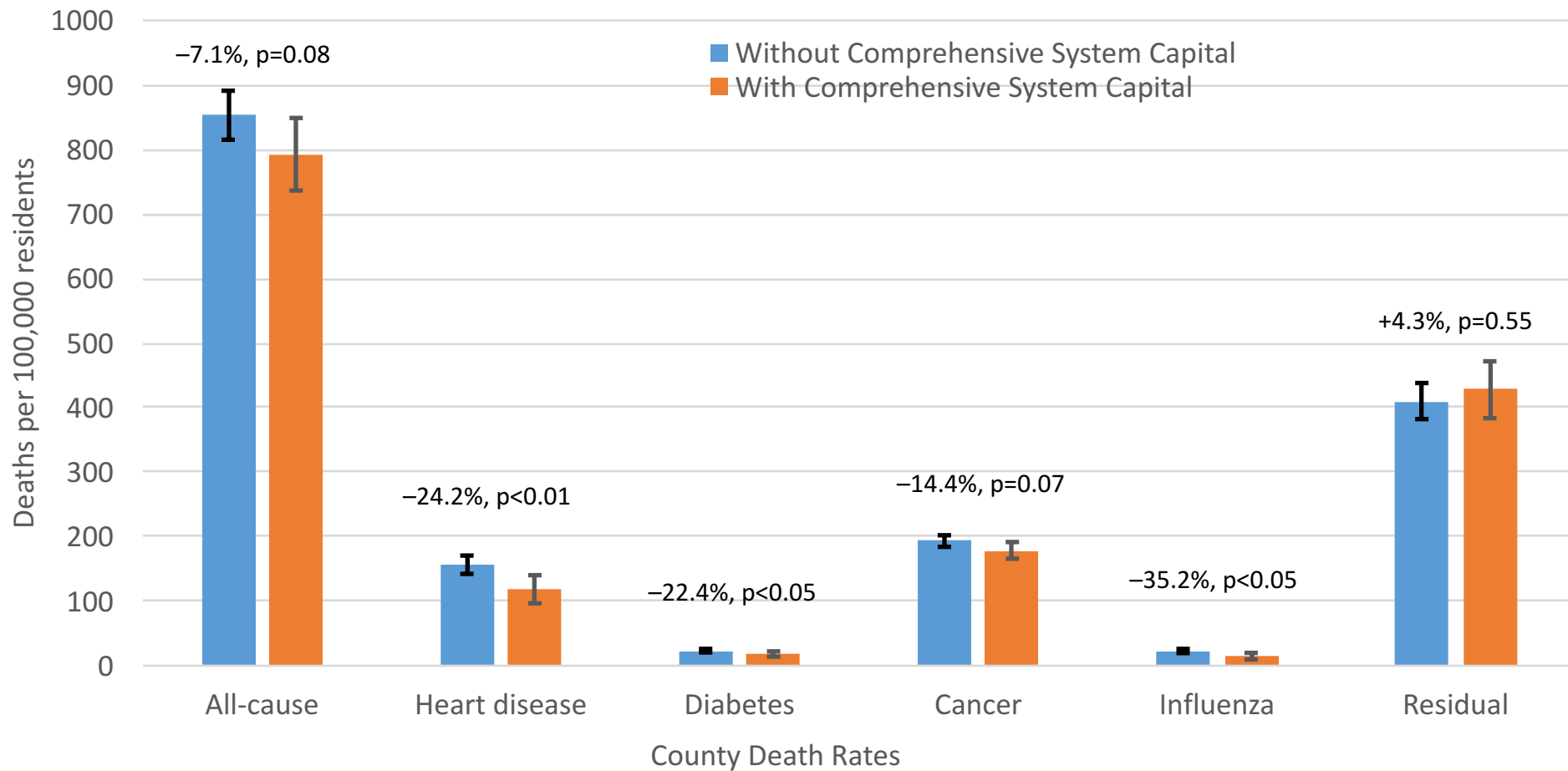
Organizational contributions to public health capabilities, 1998-2016

% 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

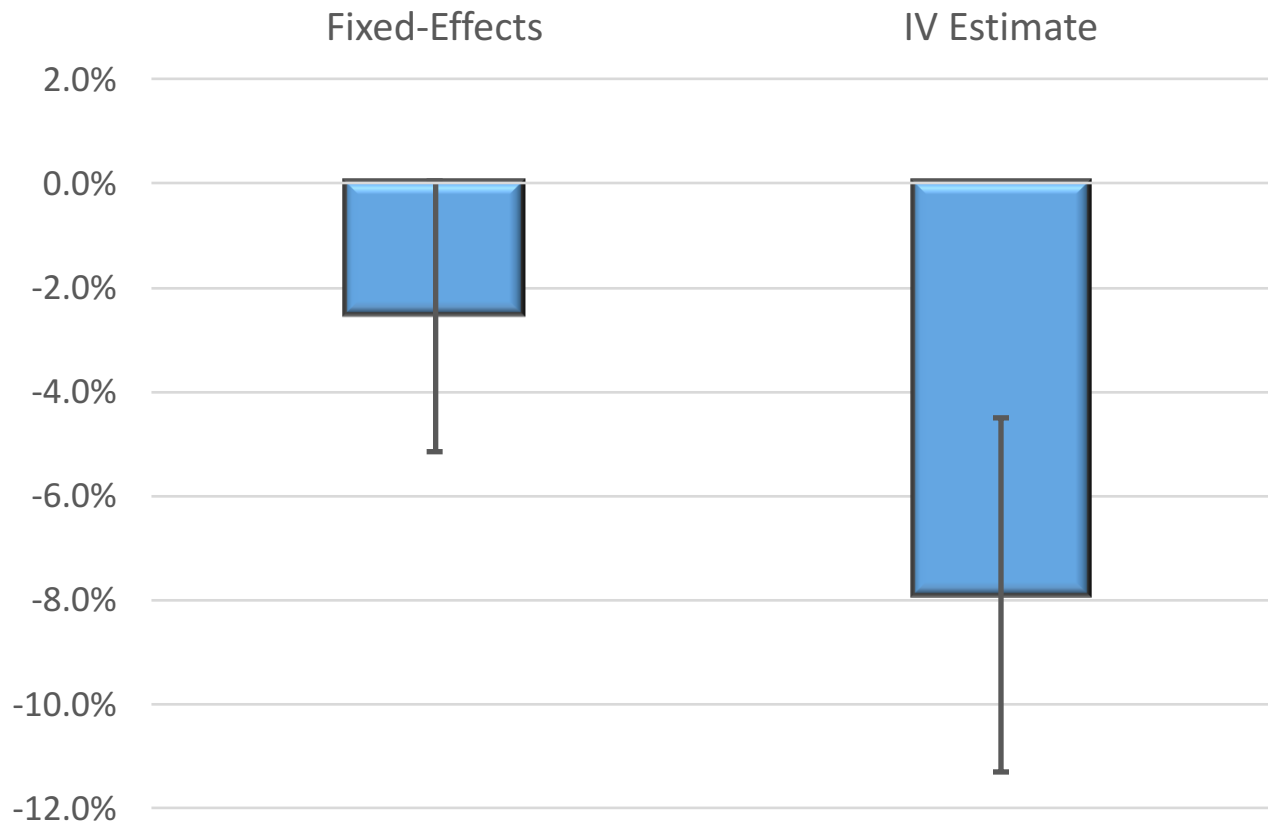
Impact of Comprehensive Systems on **Mortality**, 1998-2014



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

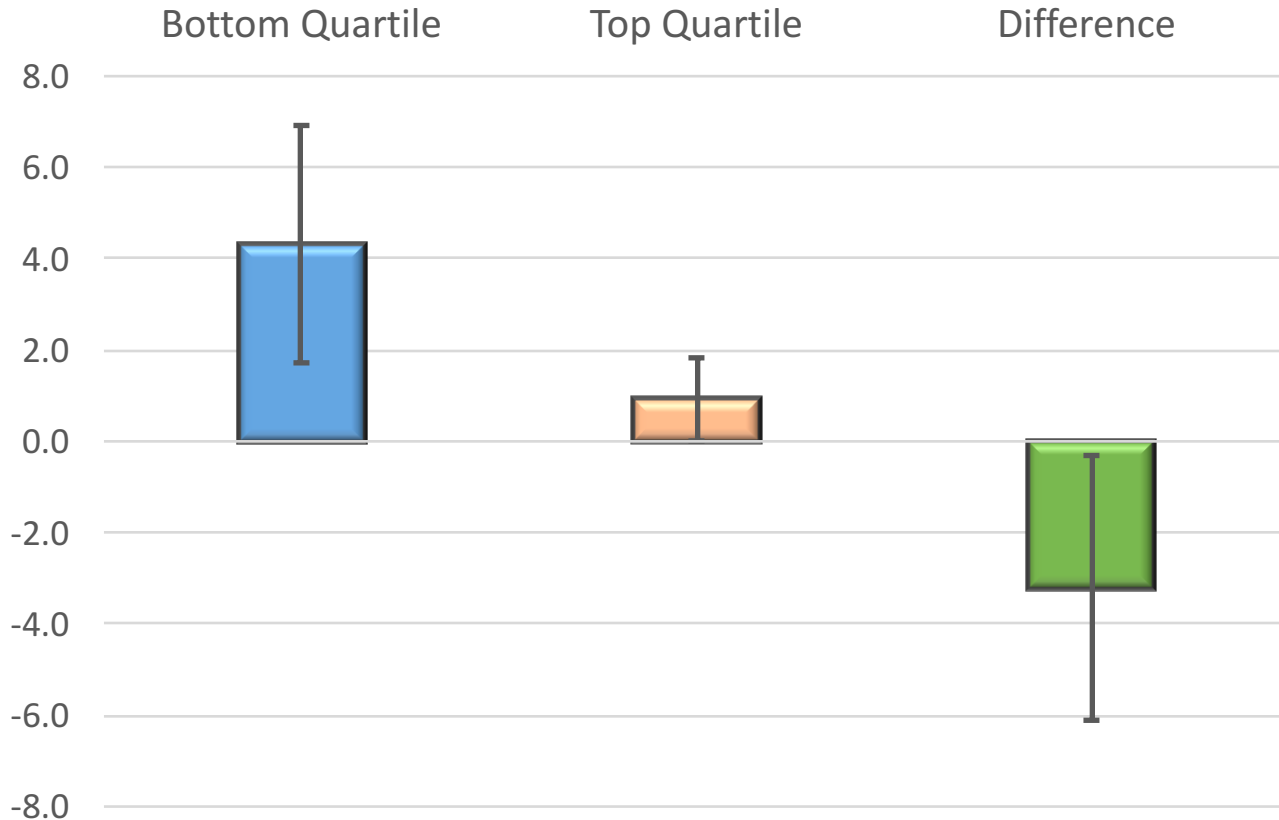
Impact of Comprehensive Systems on **Medical Spending** (Medicare) 1998-2014



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

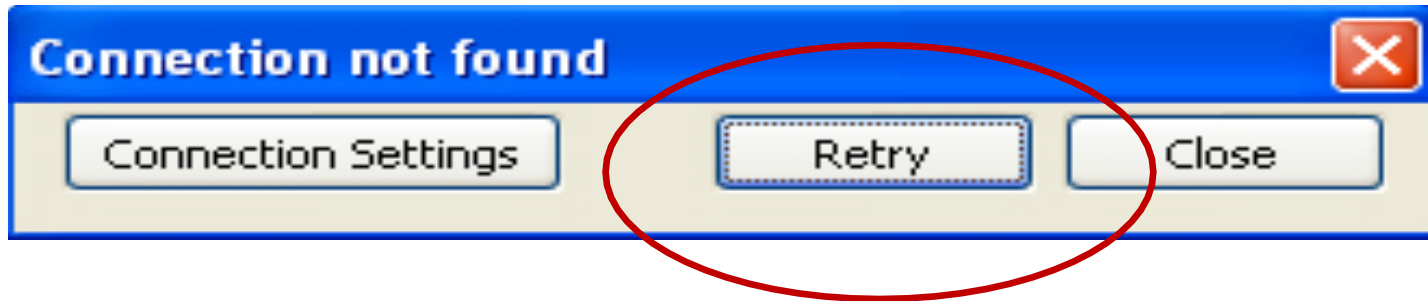


Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals

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

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