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Public Health Systems as Dissemination & Implementation Mechanisms

Glen P. Mays, *University of Kentucky*

Available at: https://works.bepress.com/glen_mays/316/

Dissemination and Implementation Science Activities

UNIVERSITY OF KENTUCKY CENTER FOR CLINICAL & TRANSLATIONAL SCIENCE

Public Health Systems as Dissemination & Implementation Mechanisms

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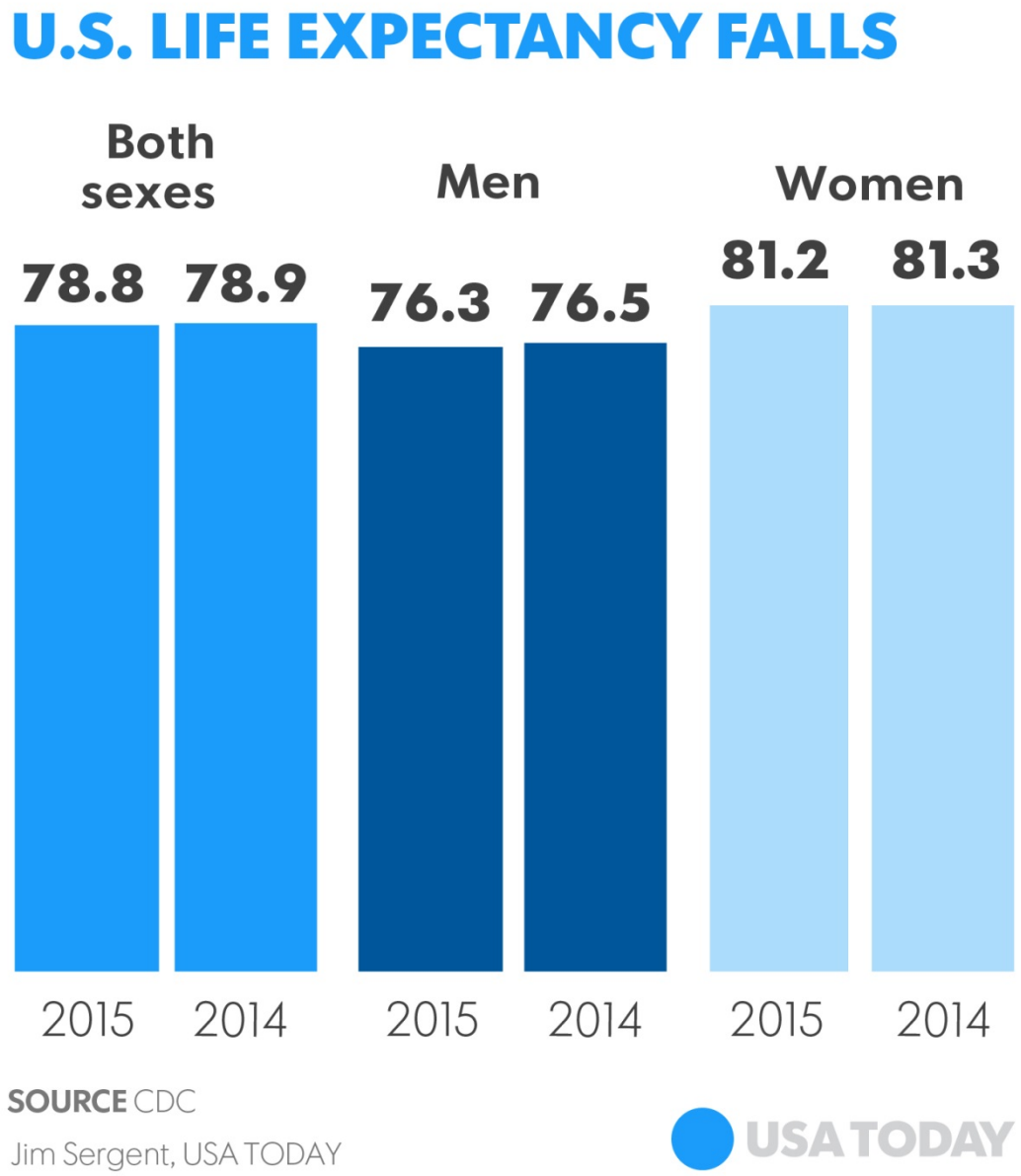
UNIVERSITY OF KENTUCKY
Center for Public Health Systems and Services Research

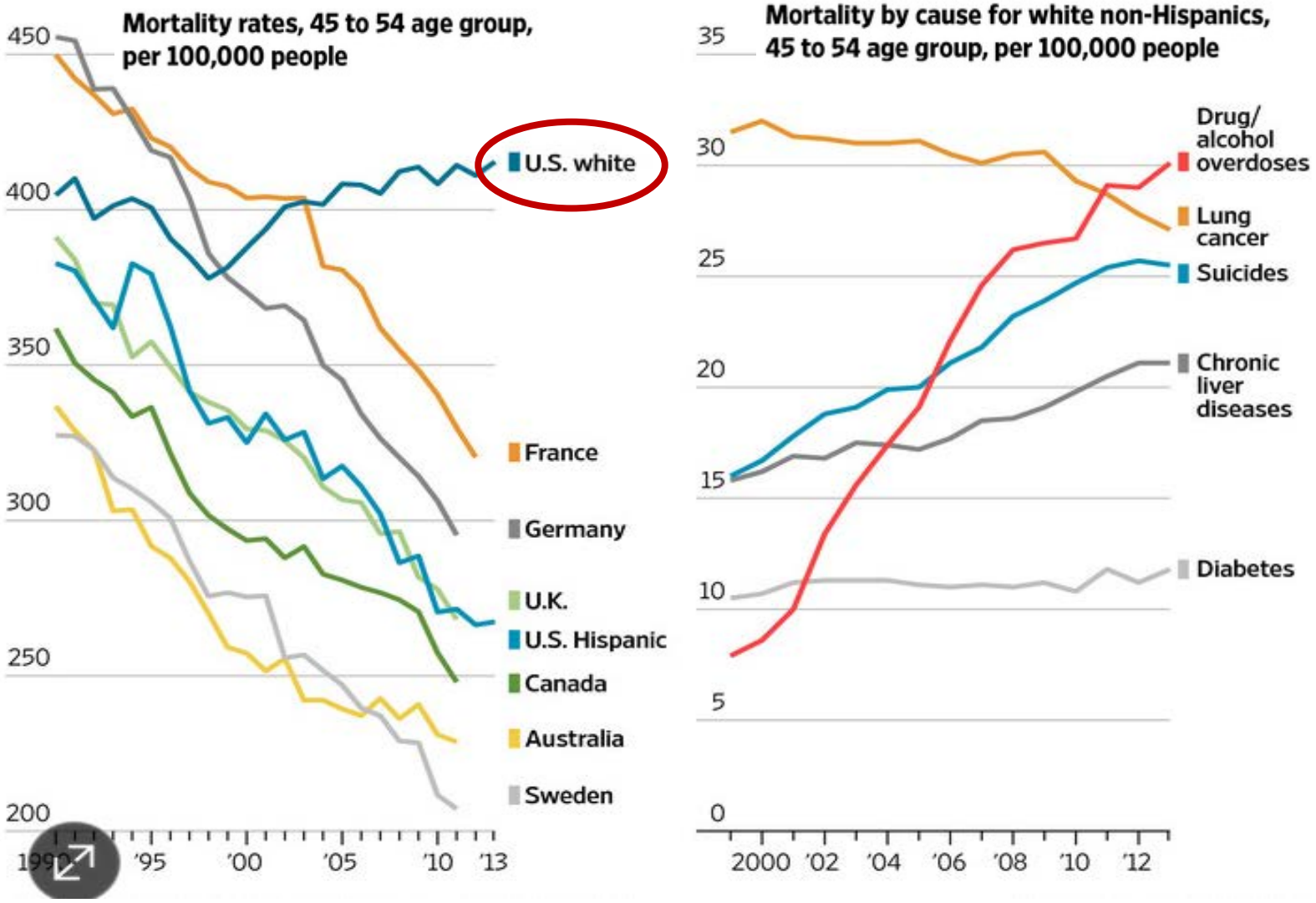
Systems for Action
National Coordinating Center
Systems and Services Research to Build a Culture of Health

Losing ground in population health



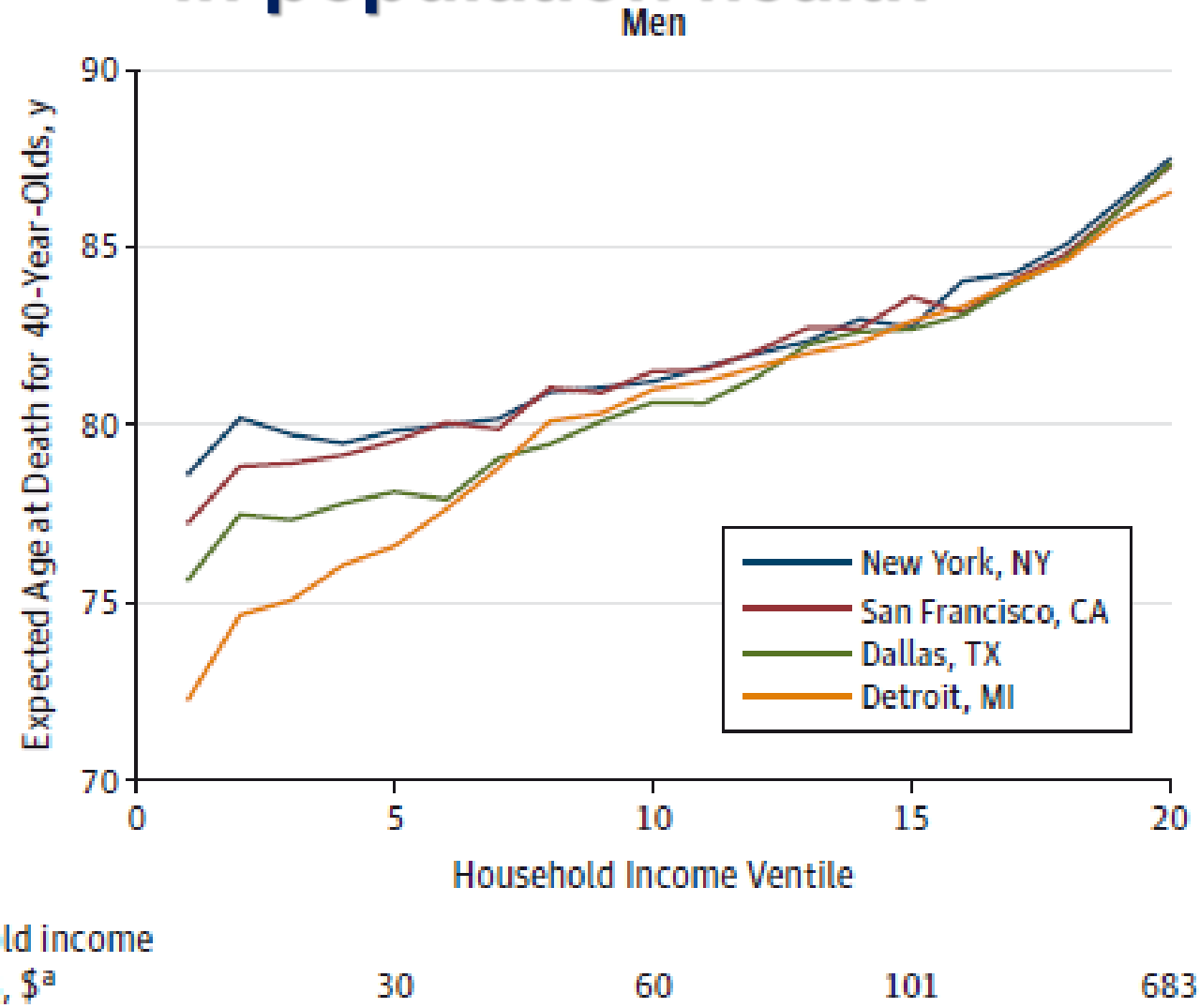
Published December 8, 2016

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

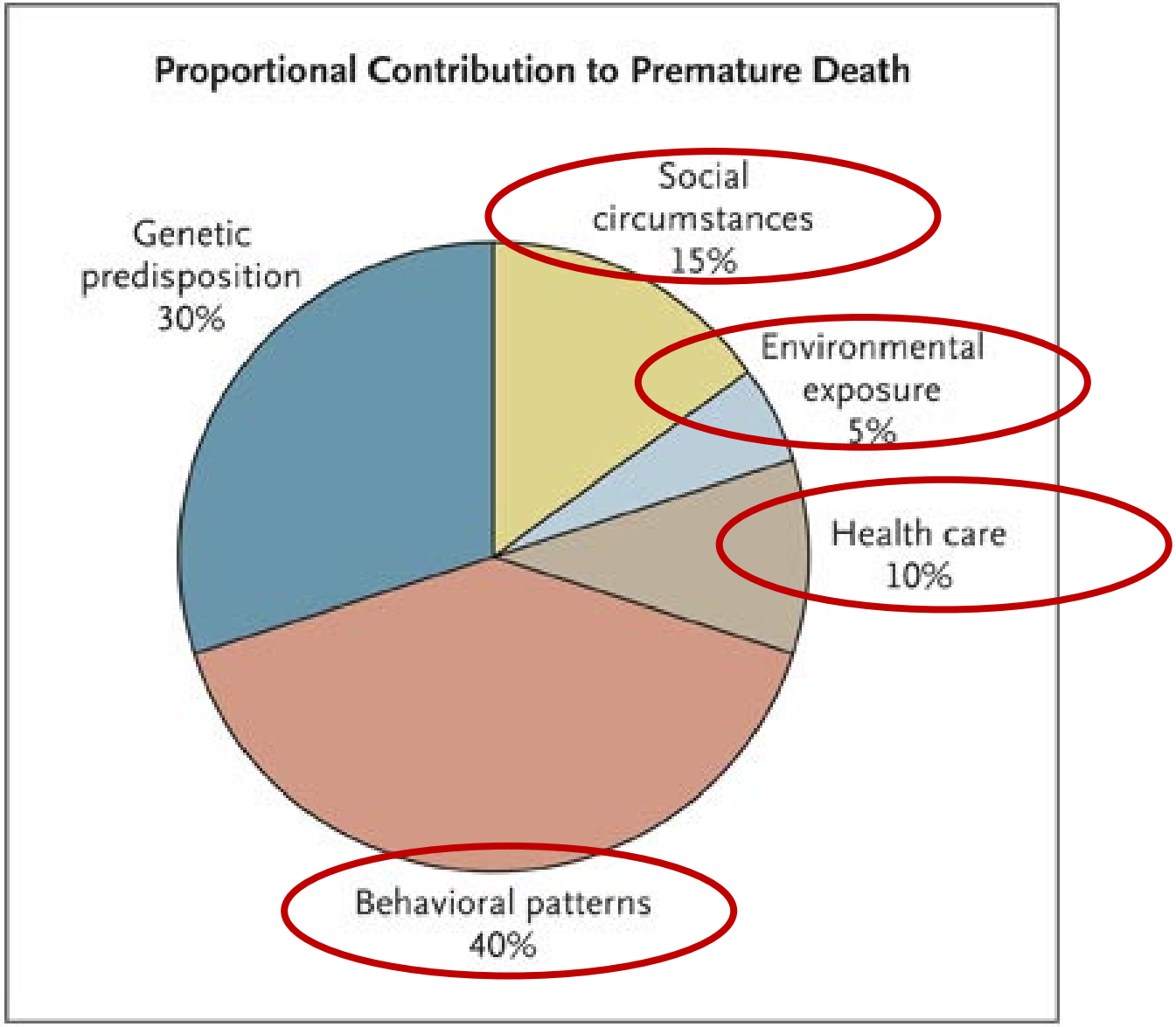
How do we implement effective population health improvement strategies?

- 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

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

Multiple systems & sectors drive health…



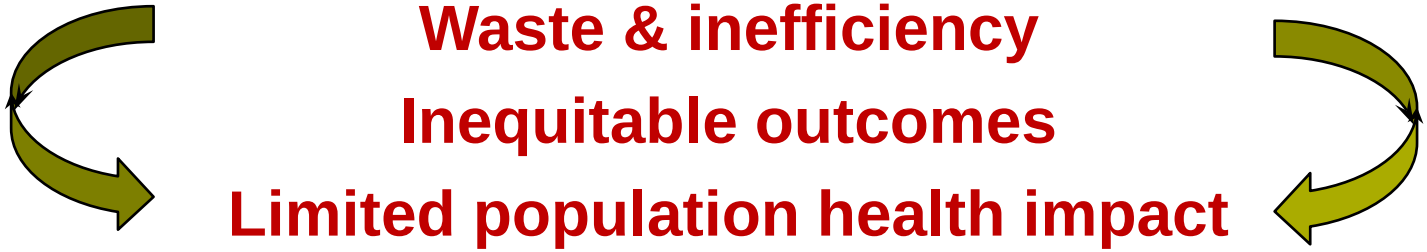
Schroeder SA. N Engl J Med 2007;357:1221-1228

…But existing systems often fail to connect

Medical Care ⟷ Social Services & Supports ⟷ Public Health

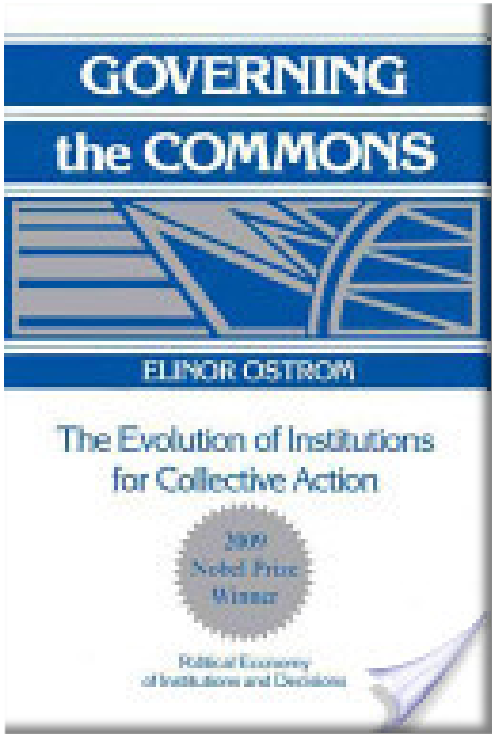
- Fragmentation
- Duplication
- Variability in practice
- Limited accessibility
- Episodic and reactive care
- Insensitivity to consumer values & preferences
- Limited targeting of resources to community needs

- Fragmentation
- Variability in practice
- Resource constrained
- Limited reach
- Insufficient scale
- Limited public visibility & understanding
- Limited evidence base
- Slow to innovate & adapt



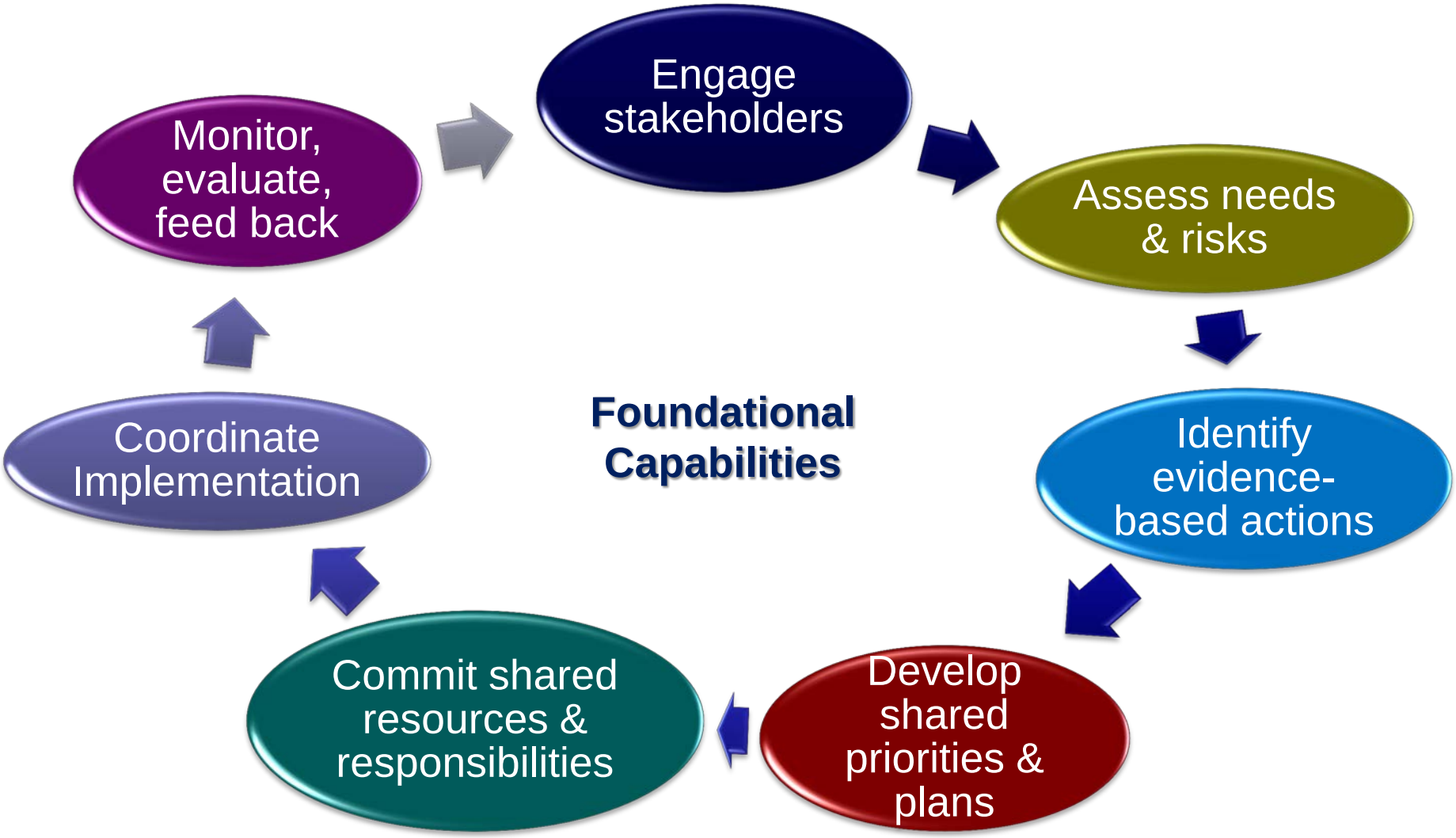
Challenge: overcoming collective action problems in implementation

- 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



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 in public health?
- How do these delivery systems influence dissemination & implementation of health interventions?
- How do these delivery systems impact health and economic outcomes?

A useful lens for studying multi-sector work

National Longitudinal Survey of Public Health Systems

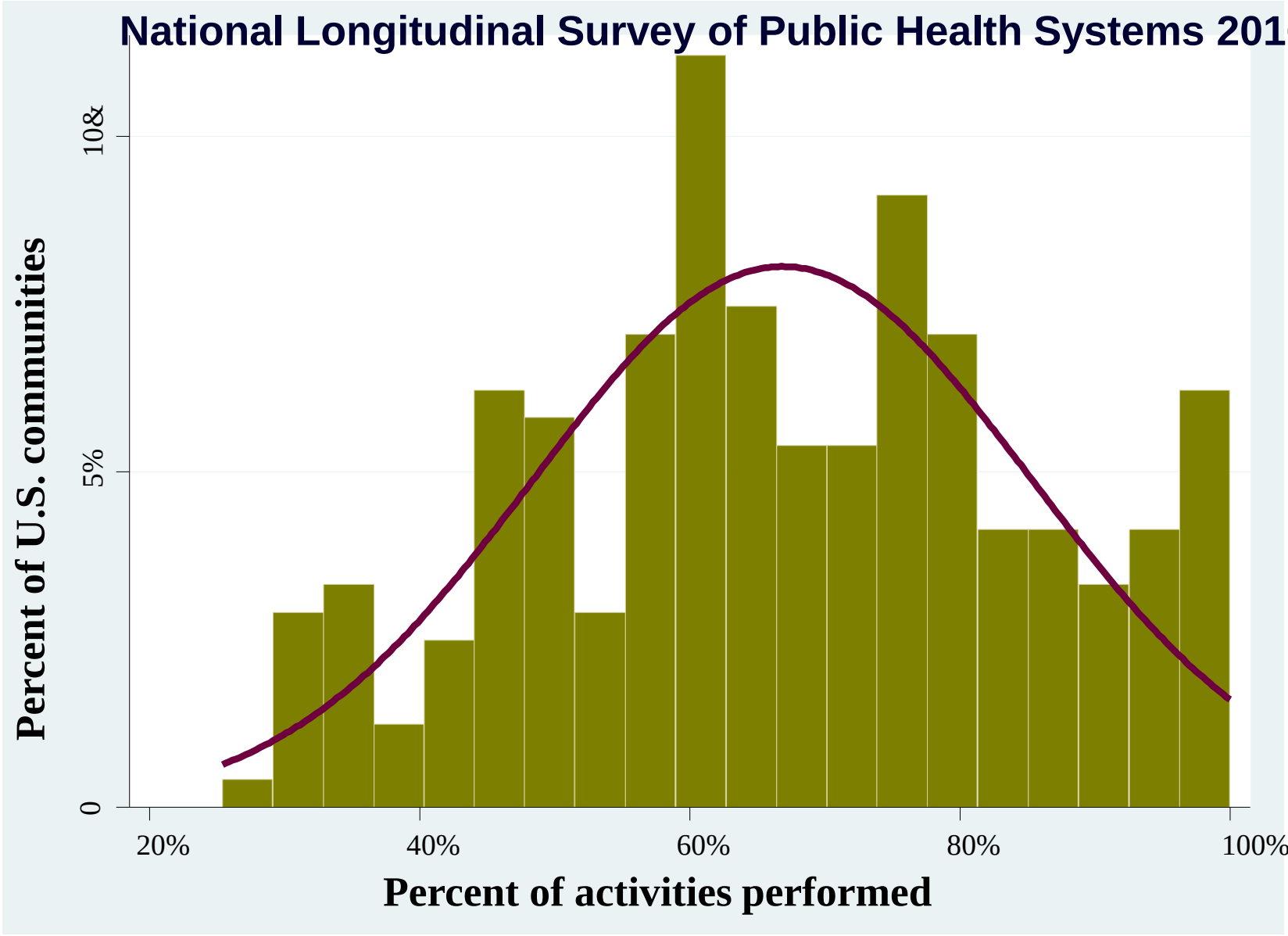
- Cohort of 360 communities with at least 100,000 residents
- Followed over time: 1998, 2006, 2012, 2014**, 2016
- Local public health officials report:
  - ***Scope***: implementation of 20 recommended public health capabilities
  - ***Network***: organizations contributing to each capability
  - ***Centrality 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

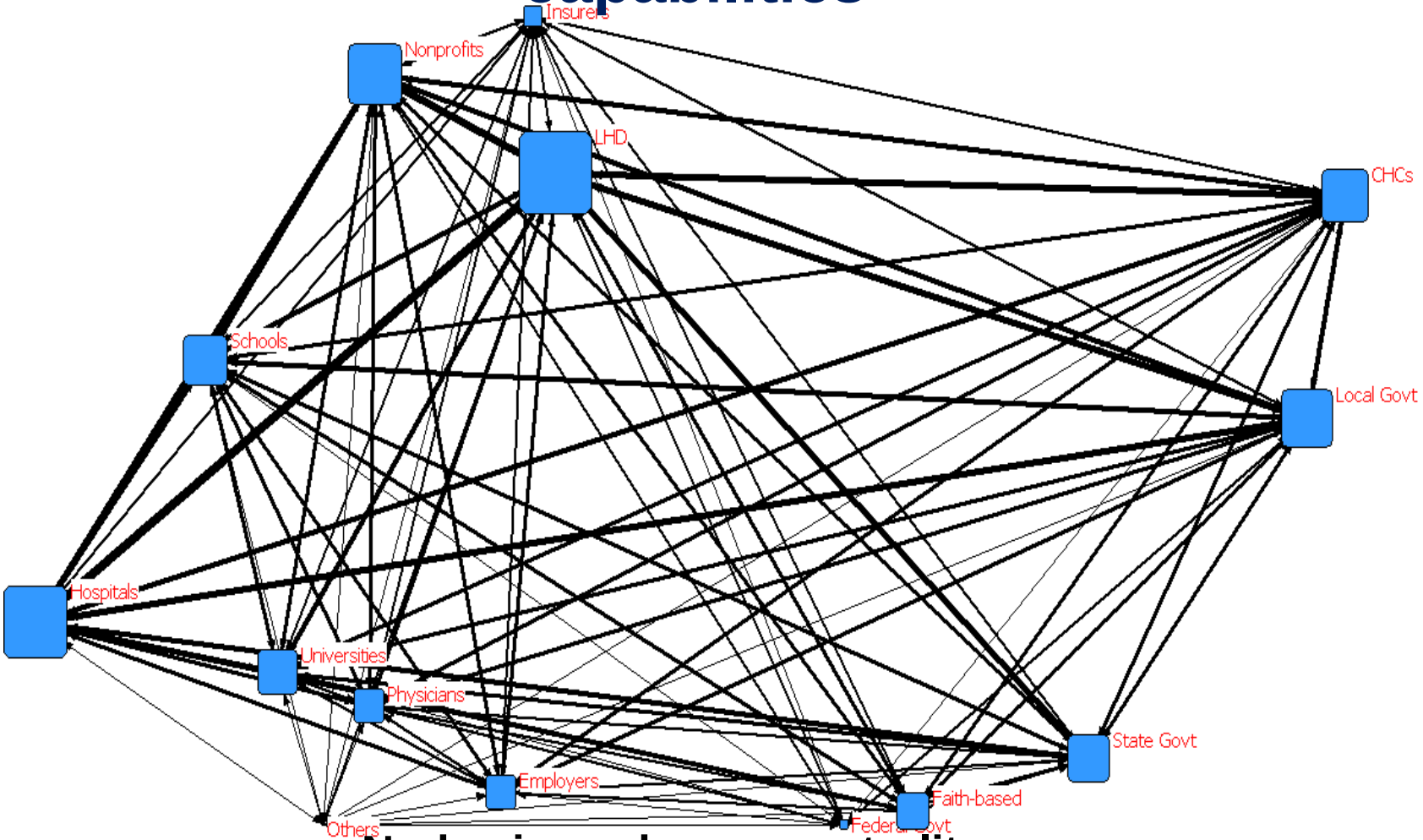
Data linkages expand analytic possibilities

- **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



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

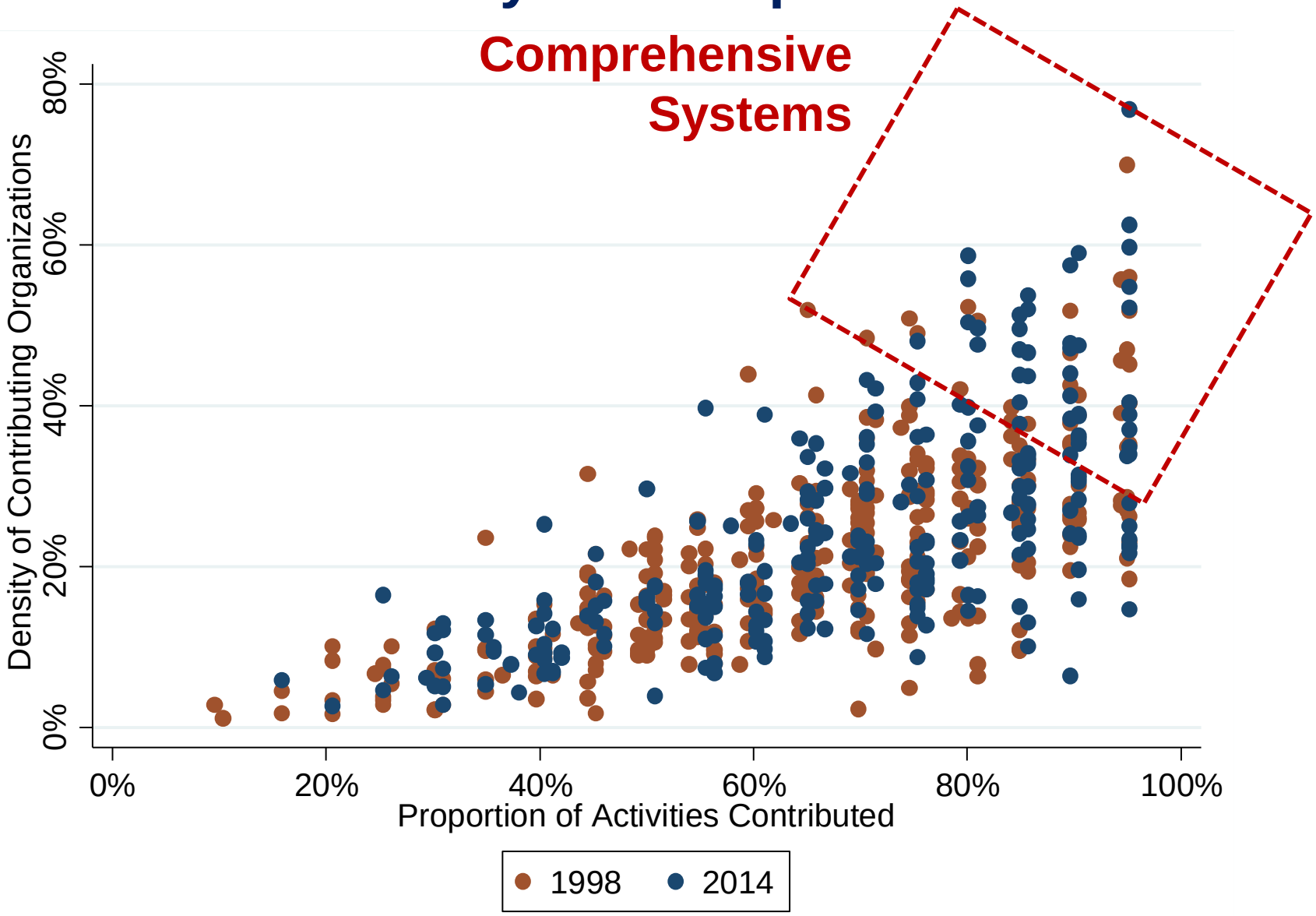
Overall, 47.2 percent of the population is covered by a comprehensive public health system. Individuals are more likely to have access if they are non-White (51.5 percent vs. 45.5 percent White) or live in a metropolitan area (48.7 percent vs. 34.1 percent in nonmetropolitan areas).

47.2%

of population served by a comprehensive public health system

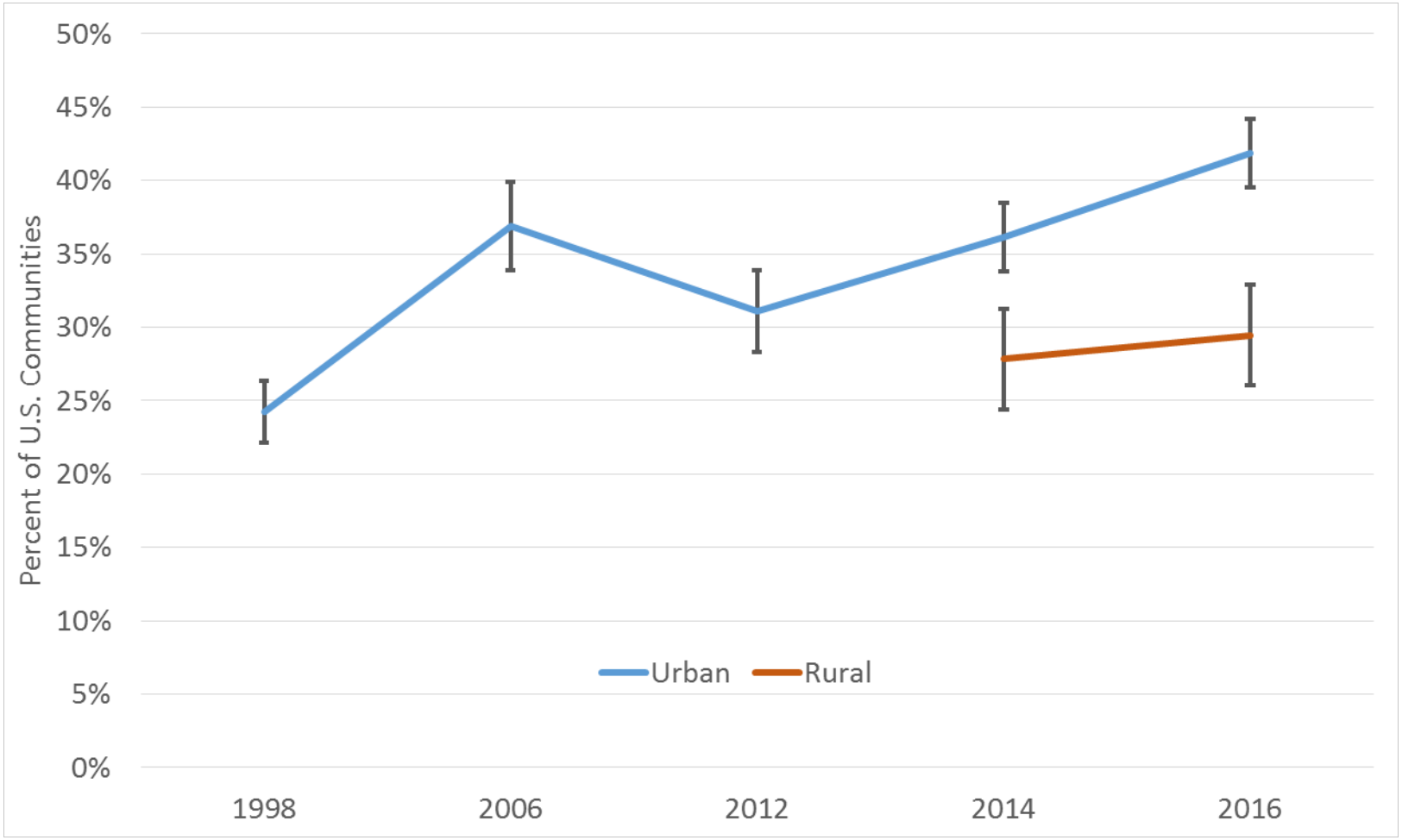
http://www.cultureofhealth.org/en/integrated-systems/access.html

Network density and scope of activities



Mays GP et al. *Health Affairs* 2016

Variation and change in comprehensive delivery systems

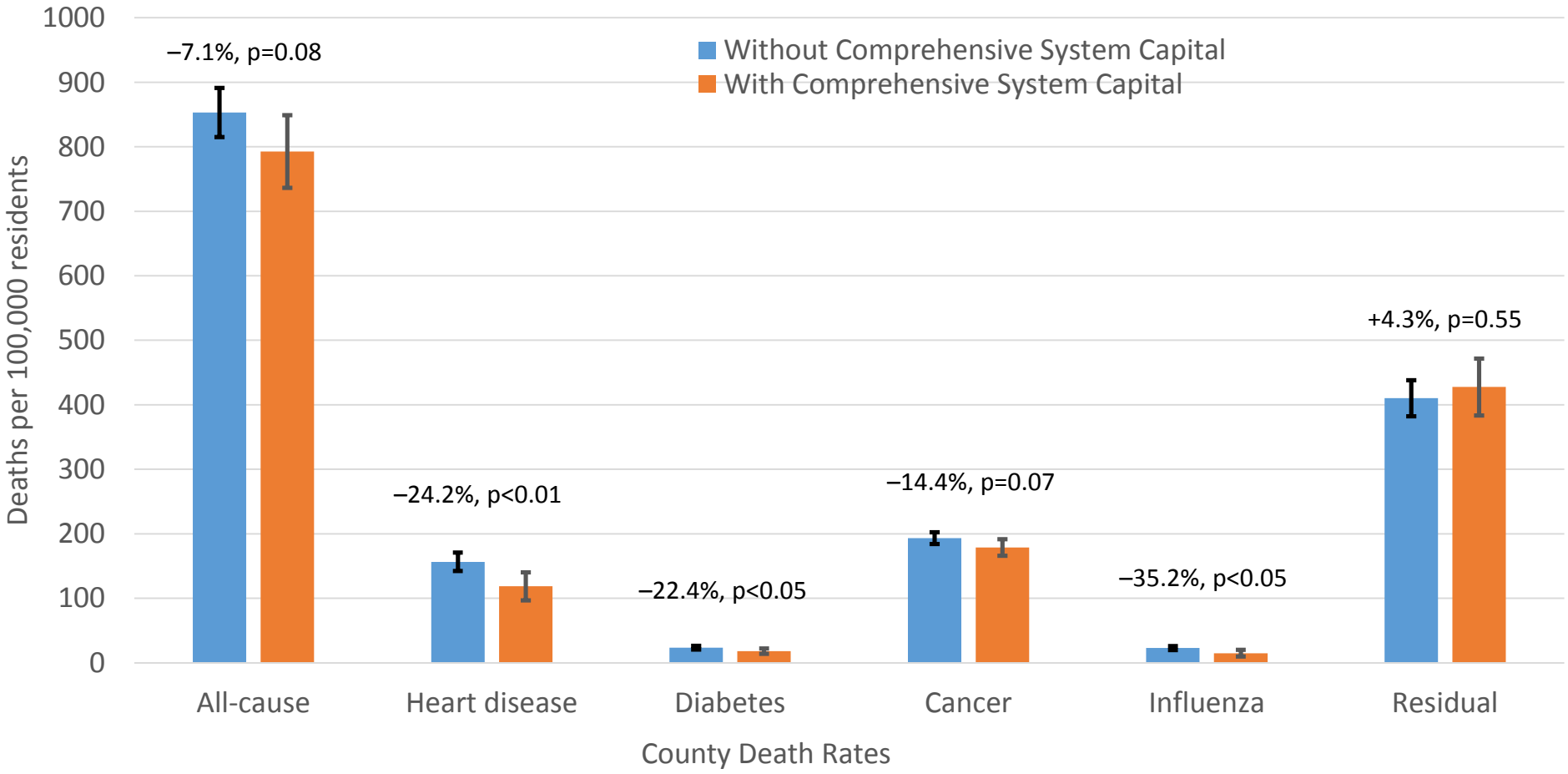


Organizational contributions to public health capabilities, 1998-2016

Type of Organization	% of Recommended Capabilities Contributed 1998	2016	Percent Change
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

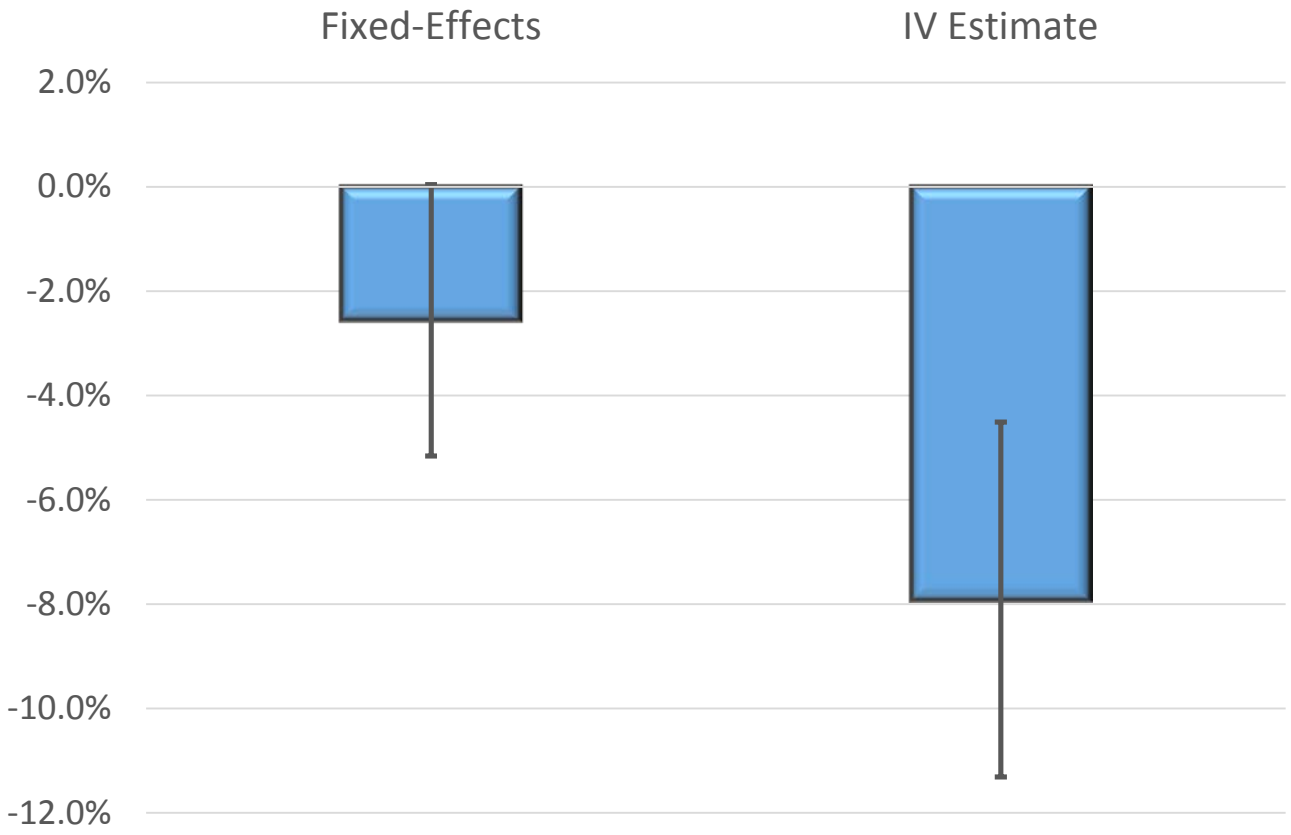


Fixed-effects instrumental variables estimates controlling for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years

Mays GP et al. *Health Affairs* 2016

Economic effects attributable to multi-sector work

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

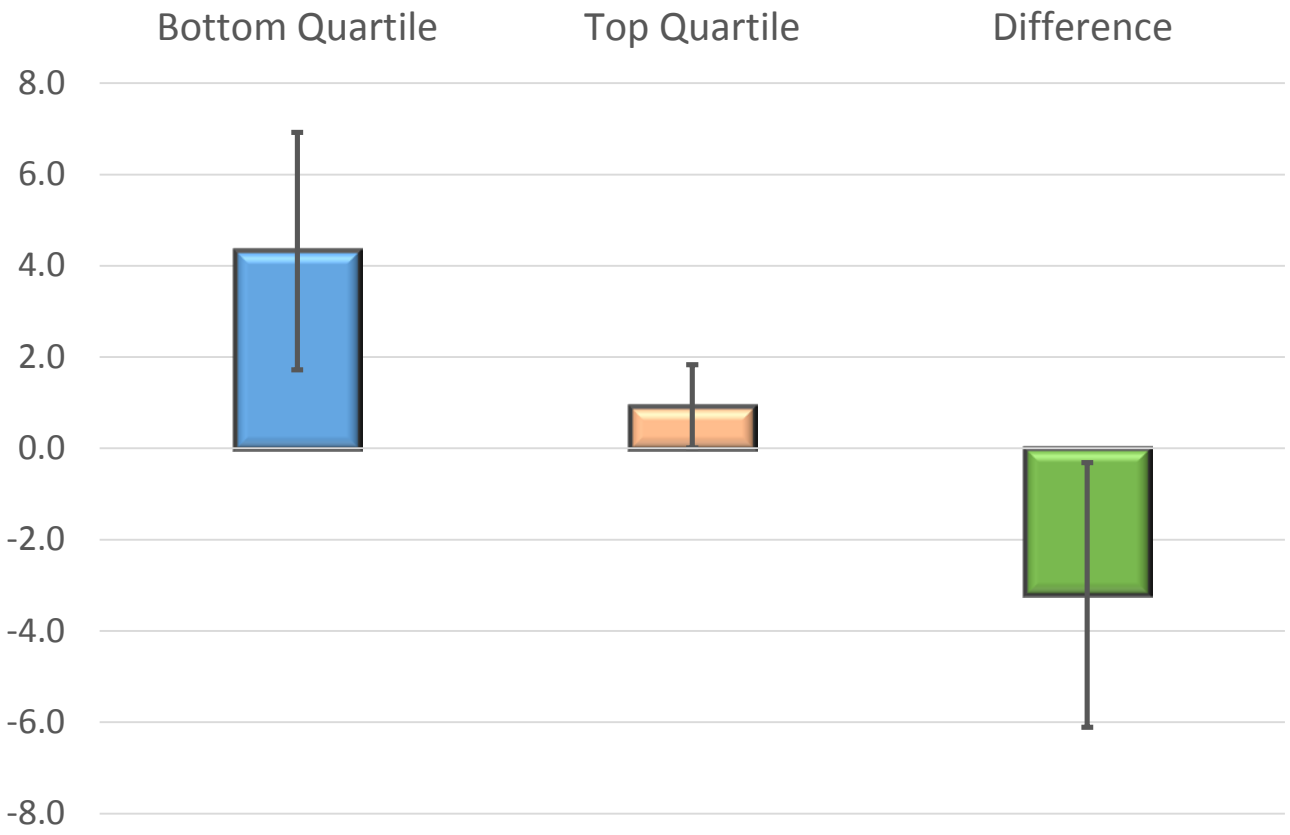


Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals

Mays GP et al. *Health Services Research* 2017

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

http://www.systemsforaction.org

For More Information

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