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# Harmonizing Systems to Achieve Health Equity: Novel Strategies to Align Medical, Social & Public Health Sectors

Glen P Mays, *University of Colorado*



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# Harmonizing Systems to Achieve Health Equity: Novel Strategies to Align Medical, Social & Public Health Sectors

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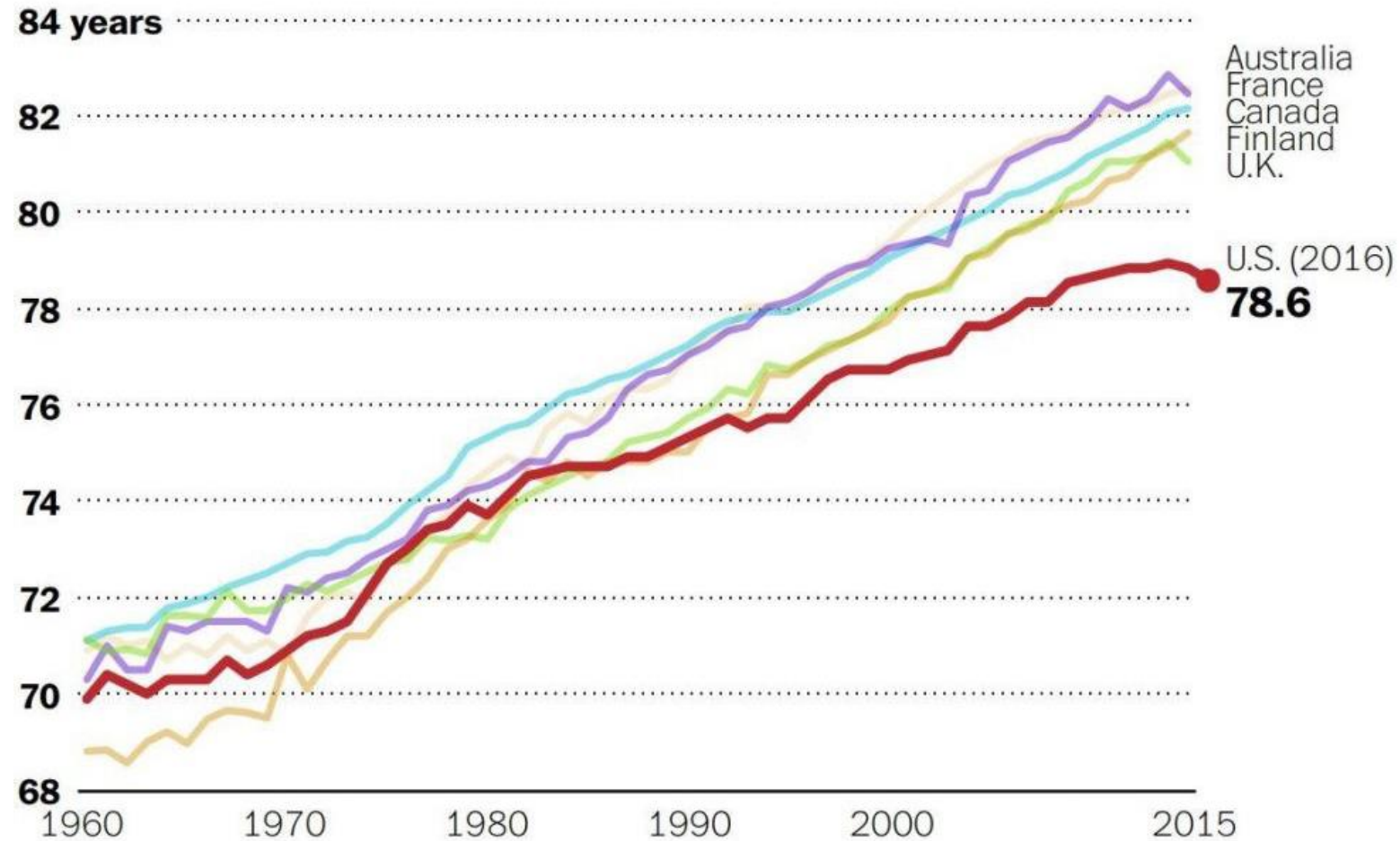
# Acknowledgements

- Core funding provided by the Robert Wood Johnson Foundation for the Systems for Action Research Program
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# Losing ground in population health

Life expectancy at birth, selected OECD countries



Source: OECD, U.S. Census Bureau

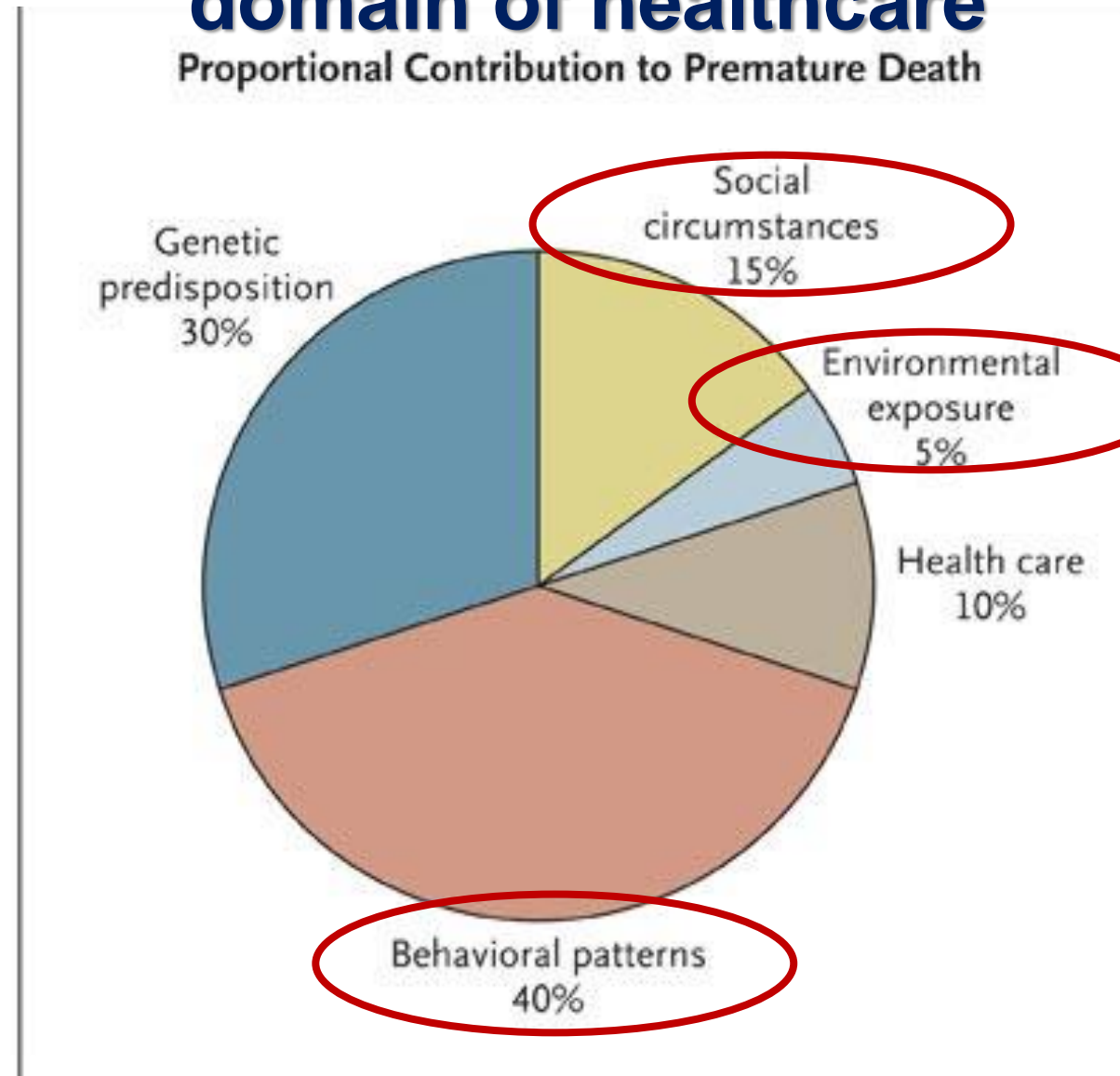
Motivation

Approach

Results

Discussion

# Important health determinants lie beyond the exclusive domain of healthcare



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

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# **Problem: health & social systems often fail to connect**



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## Testing **new mechanisms** for aligning systems across sectors

- New alliances and partnerships
- Inter-governmental and public-private ventures
- New financing and payment arrangements
- Incentives for individuals, organizations & communities
- Cross-sector governance & decision-making structures
- Information exchange and decision support
- New technology: m-health, information exchange
- Community engagement & deliberation
- New workforce and staffing models



# An under-used solution: voluntary cooperative networks

- Designed to achieve **large-scale** health improvement: neighborhoods, communities, regions
- Target **fundamental** and **multiple** determinants of health
- Prioritize disadvantaged population groups (**health equity**)
- 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>



# Questions of interest

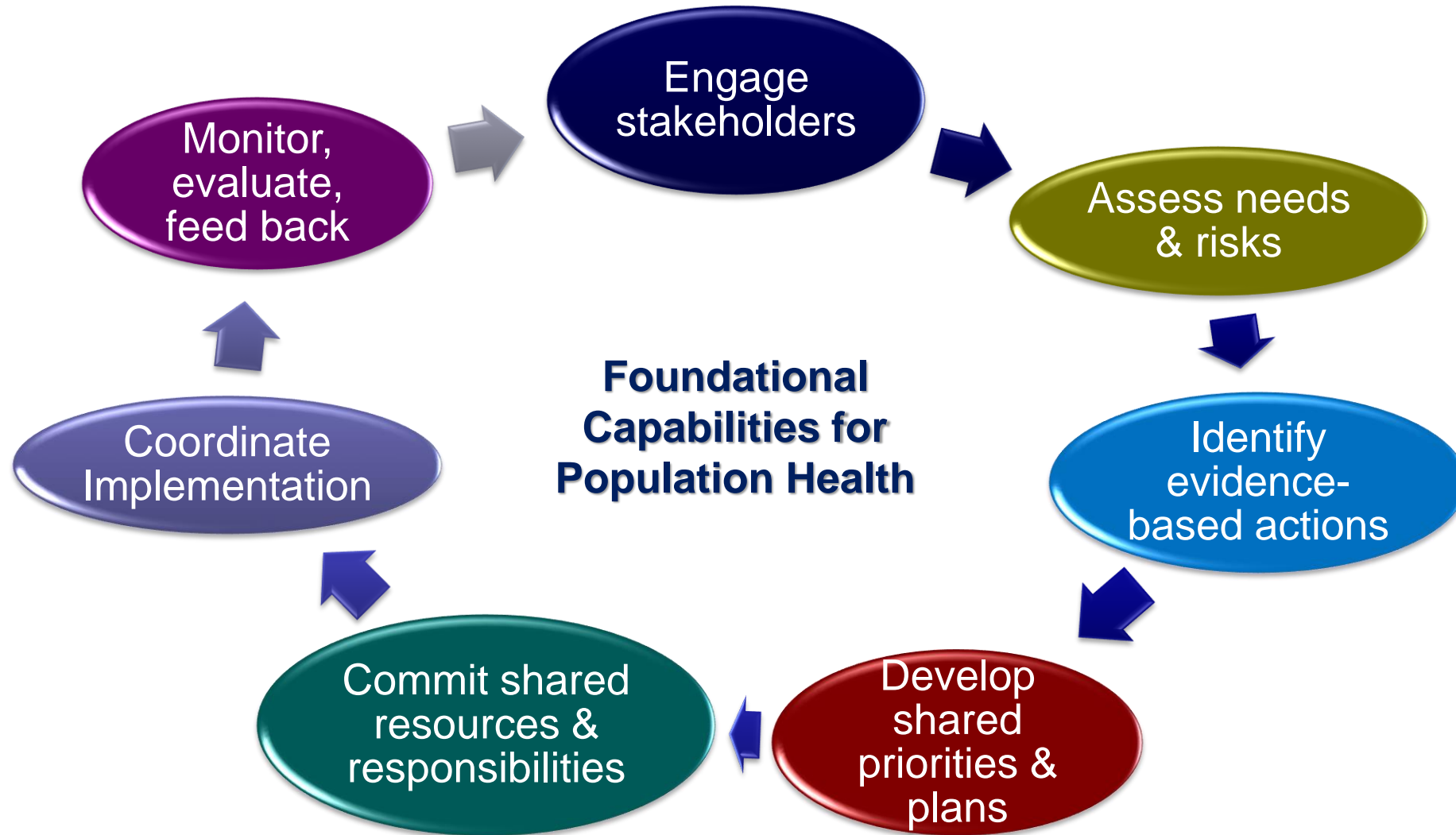
- How do relationships between health & social organizations (networks) vary across communities & change over time?
- How are networks shaped by policy and market forces?
  - Economic cycles
  - Competition
  - Health insurance expansion
  - Hospital community benefit requirements
- How do networks influence community 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: 1998-2020
- 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

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

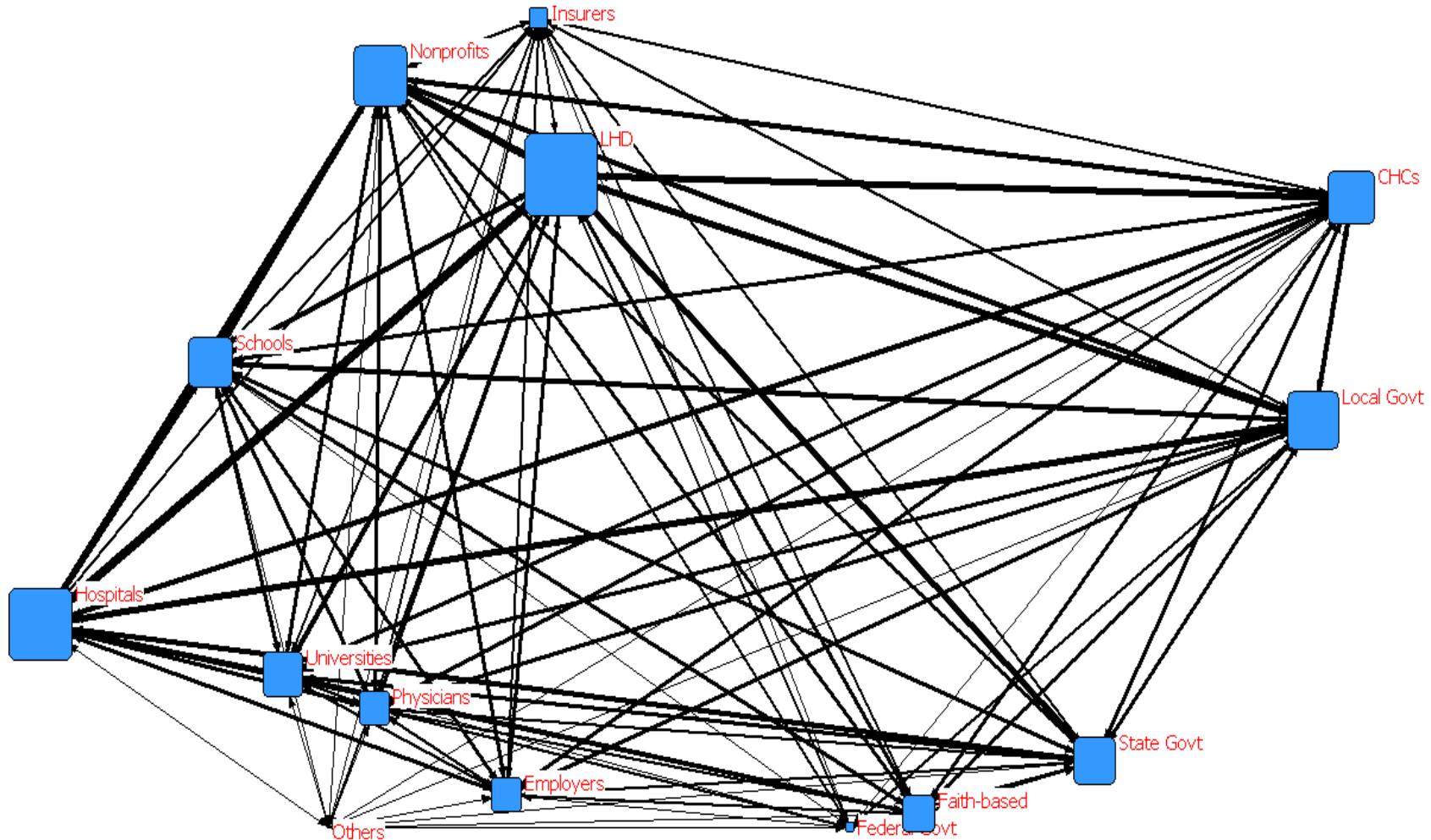


National Academy of Medicine: *For the Public's Health: Investing in a Healthier Future*. Washington, DC: National Academies Press; 2012.

# Data linkages expand analytic possibilities

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

# Mapping the structure of community networks



**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.

Motivation

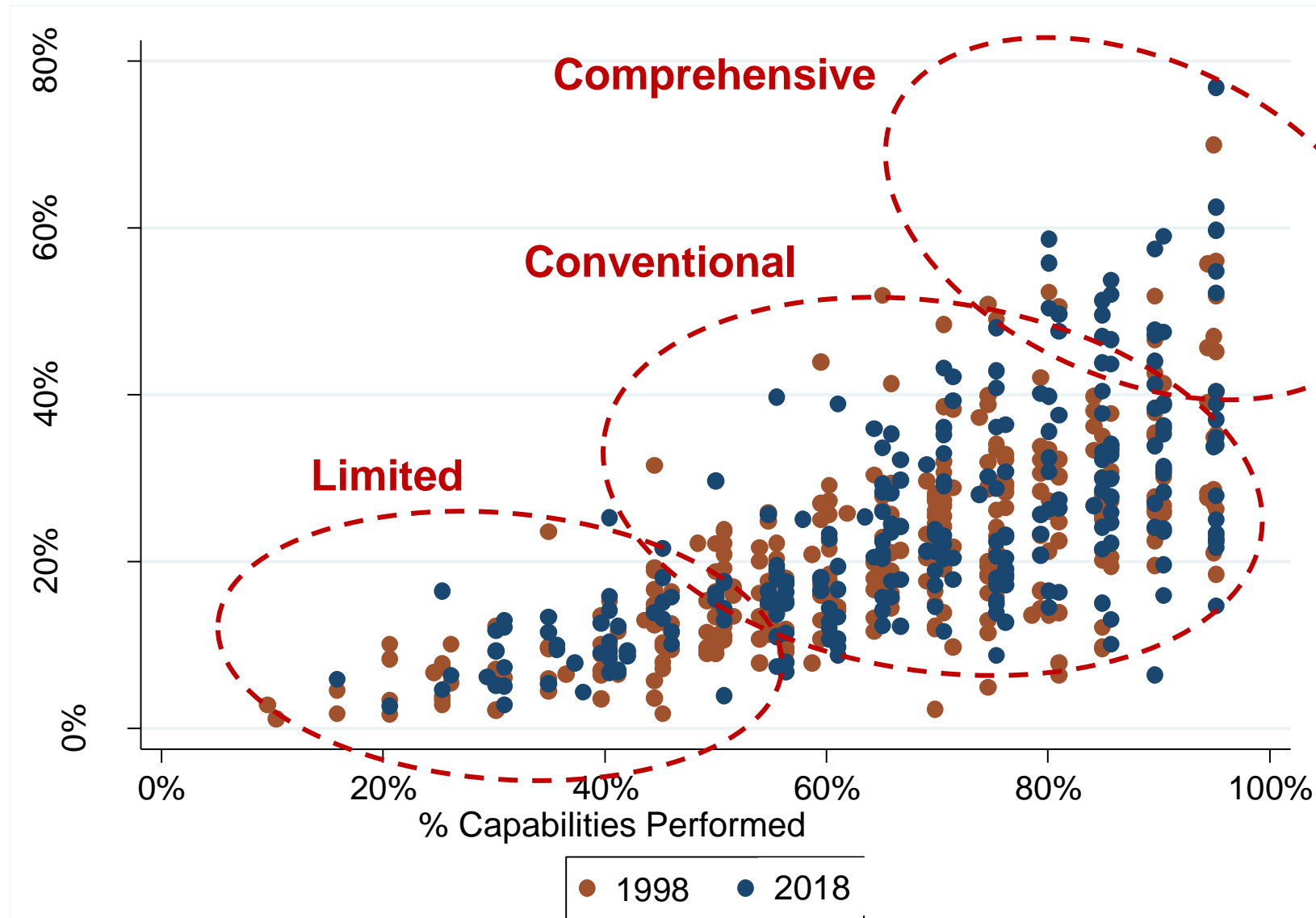
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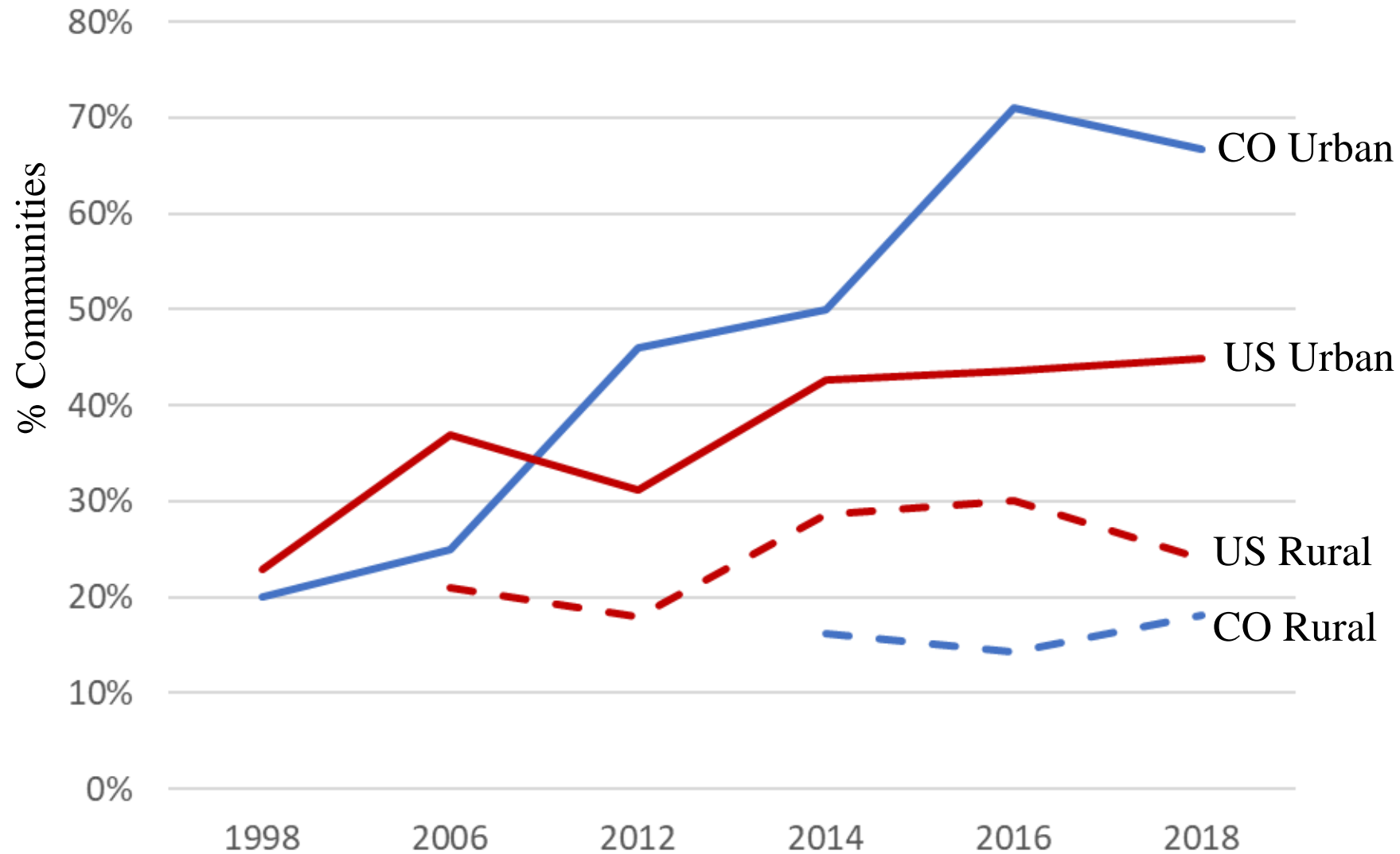


# Classifying network strength



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

## Prevalence of Comprehensive Networks: Urban-Rural Differences



Motivation

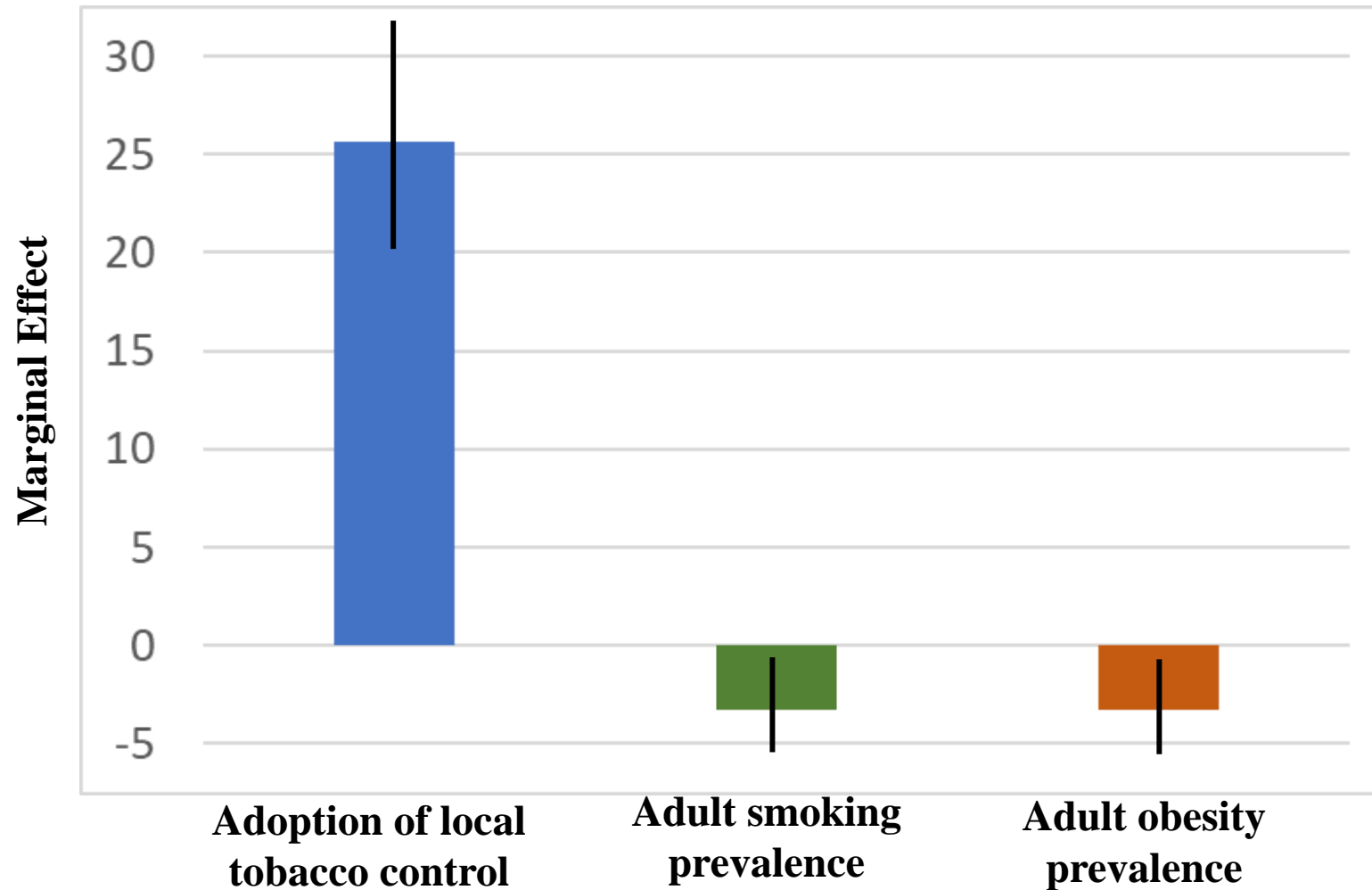
Approach

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# Health effects attributable to network strength

## Impact of Comprehensive Networks on Policy & Behavior



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 Affairs* 2016

Motivation

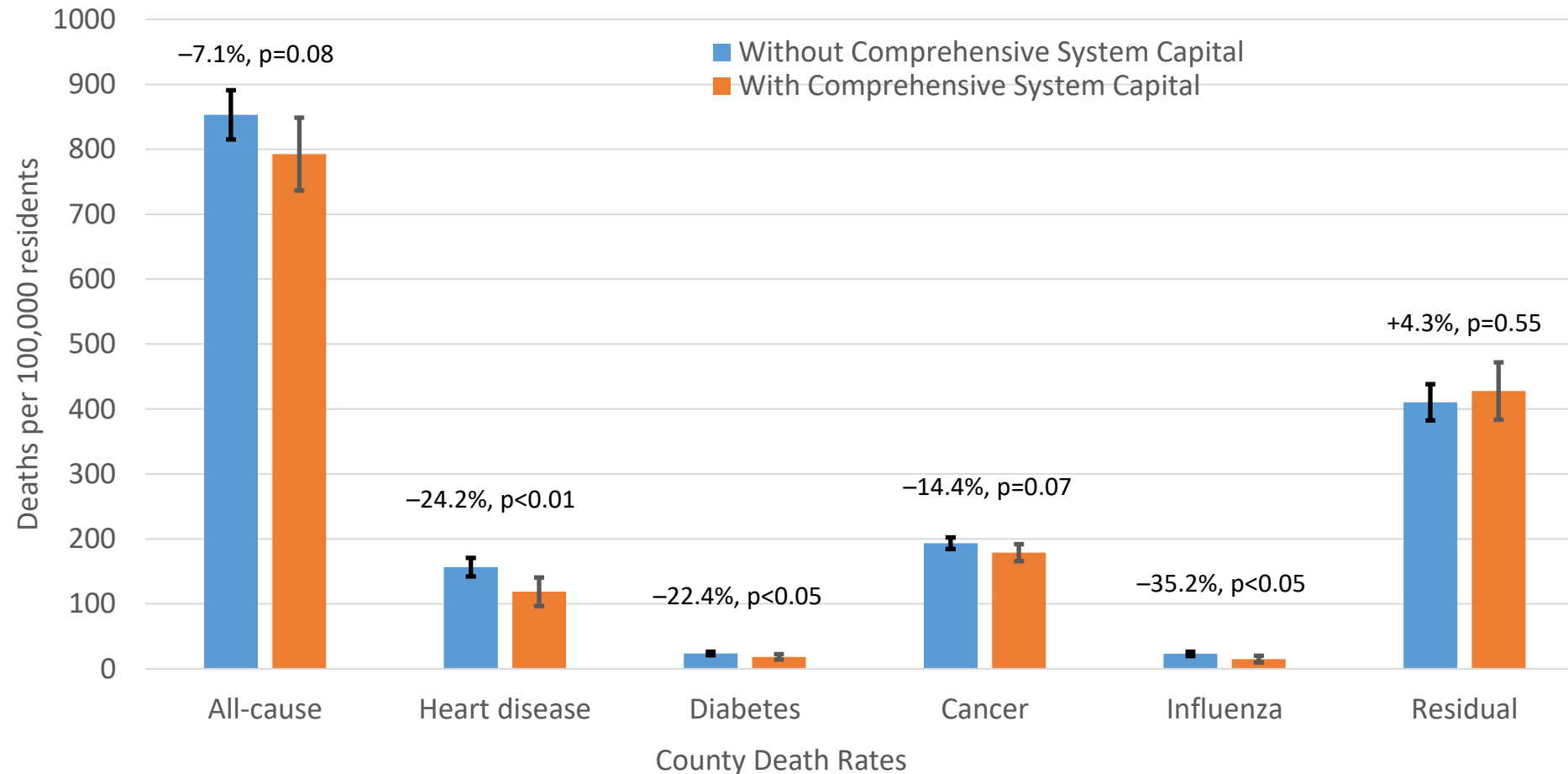
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# Health effects attributable to network structure

## Impact of Comprehensive Networks 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

Motivation

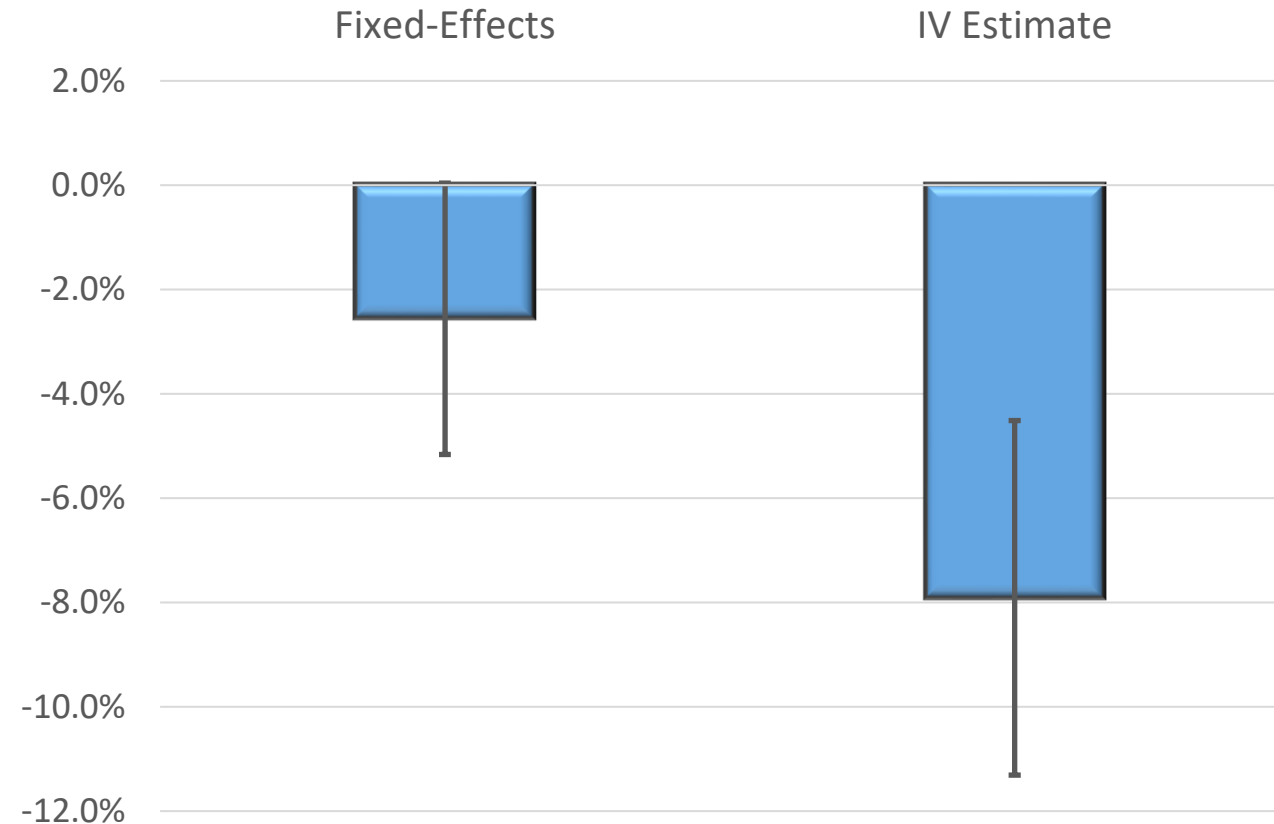
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# Economic effects attributable to network structure

## Impact of Comprehensive Networks 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* 2018

Motivation

Approach

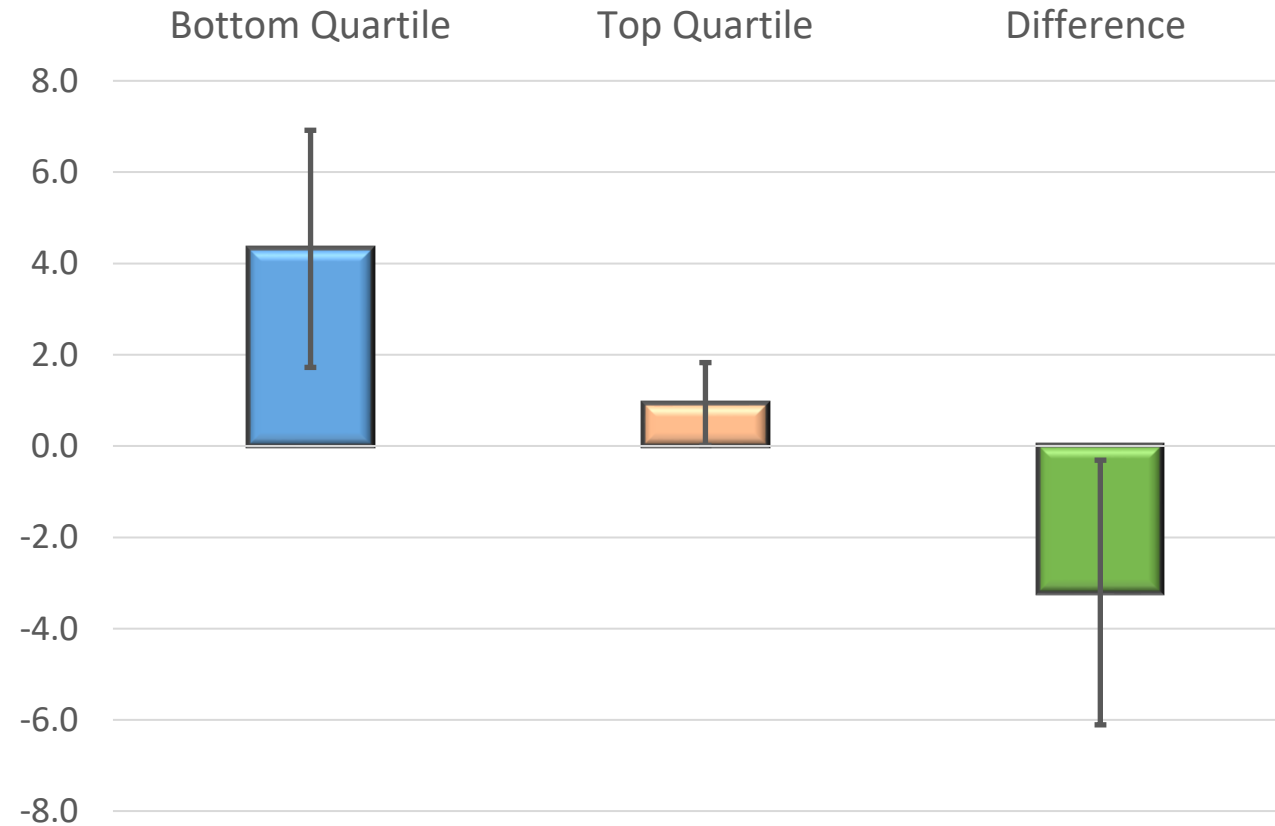
Results

Discussion



# Equity effects attributable to network structure

Impact of Comprehensive Networks  
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*

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# Cumulative effects of strong networks

## Estimated 10 and 20-Year Impact of Comprehensive Networks on Premature Mortality and Medicare Spending

<u>Outcome</u>	<u>Estimate</u>	
	<u>10 Year</u>	<u>20 Year</u>
Premature Mortality	-0.072**	-0.221**
Medicare spending per recipient	-0.089**	-0.254**

Instrumental variables models also controlling for racial composition, educational attainment, age composition, and state and year fixed effects.

\*\*\*p<0.001   \*\*p<0.05

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## Conclusions and implications

- Large health gains in places with strong multi-sector networks
- Larger gains for low-income populations & communities
- Comprehensive networks do more than just plan: prioritize, invest, implement, evaluate
- Equity and opportunity: most communities lack strong networks, especially in rural areas
- 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

# For More Information

## Systems for Action

**National Coordinating Center**

*Systems and Services Research to Build a Culture of Health*

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