Spring March 12, 2014

Strengthening the Science of Public Health Delivery: Complexities in Implementation, Inference & Translation
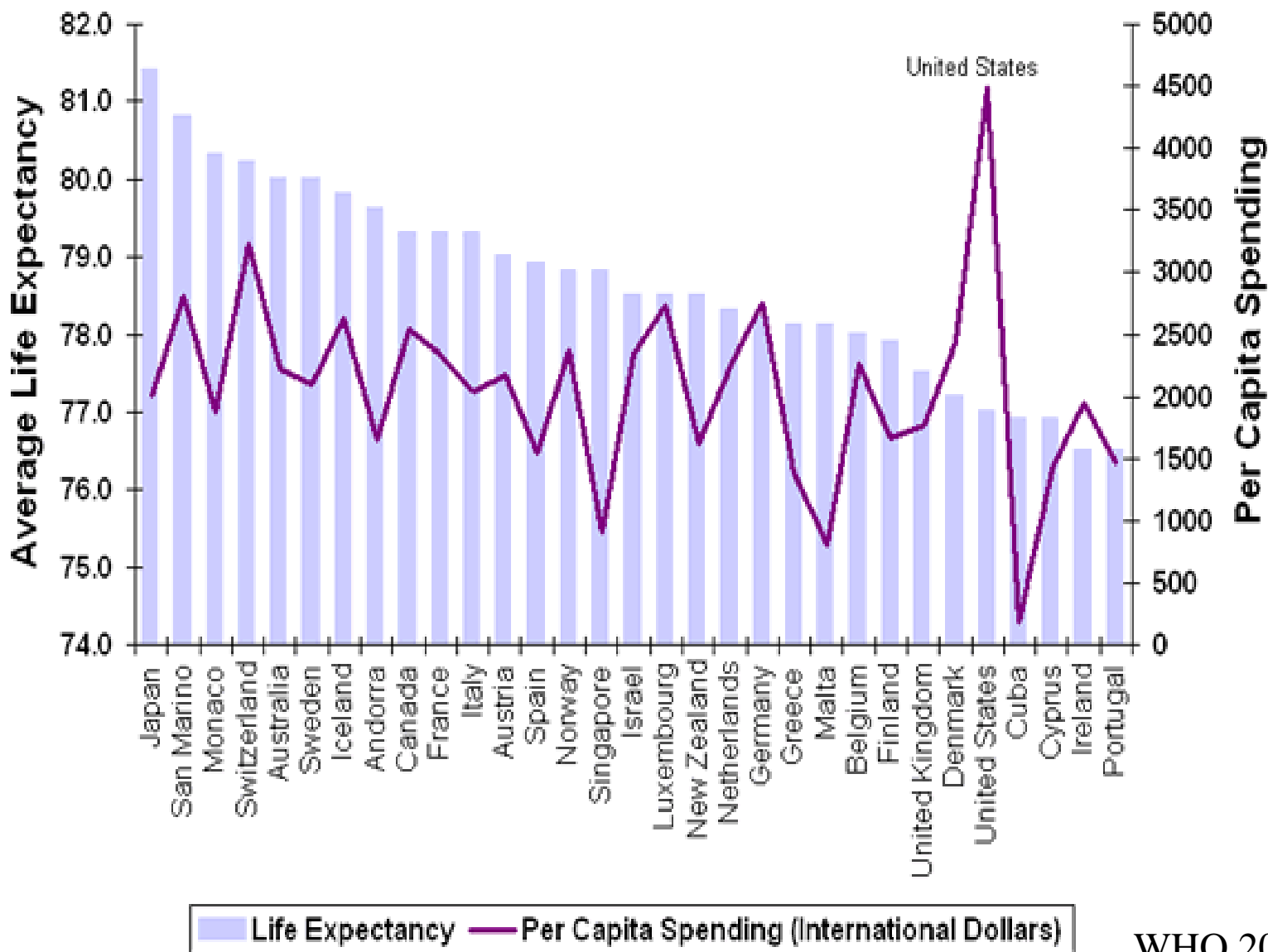
Glen P. Mays, *University of Kentucky*

Strengthening the Science of Public Health Delivery: Complexities in Implementation, Inference & Translation
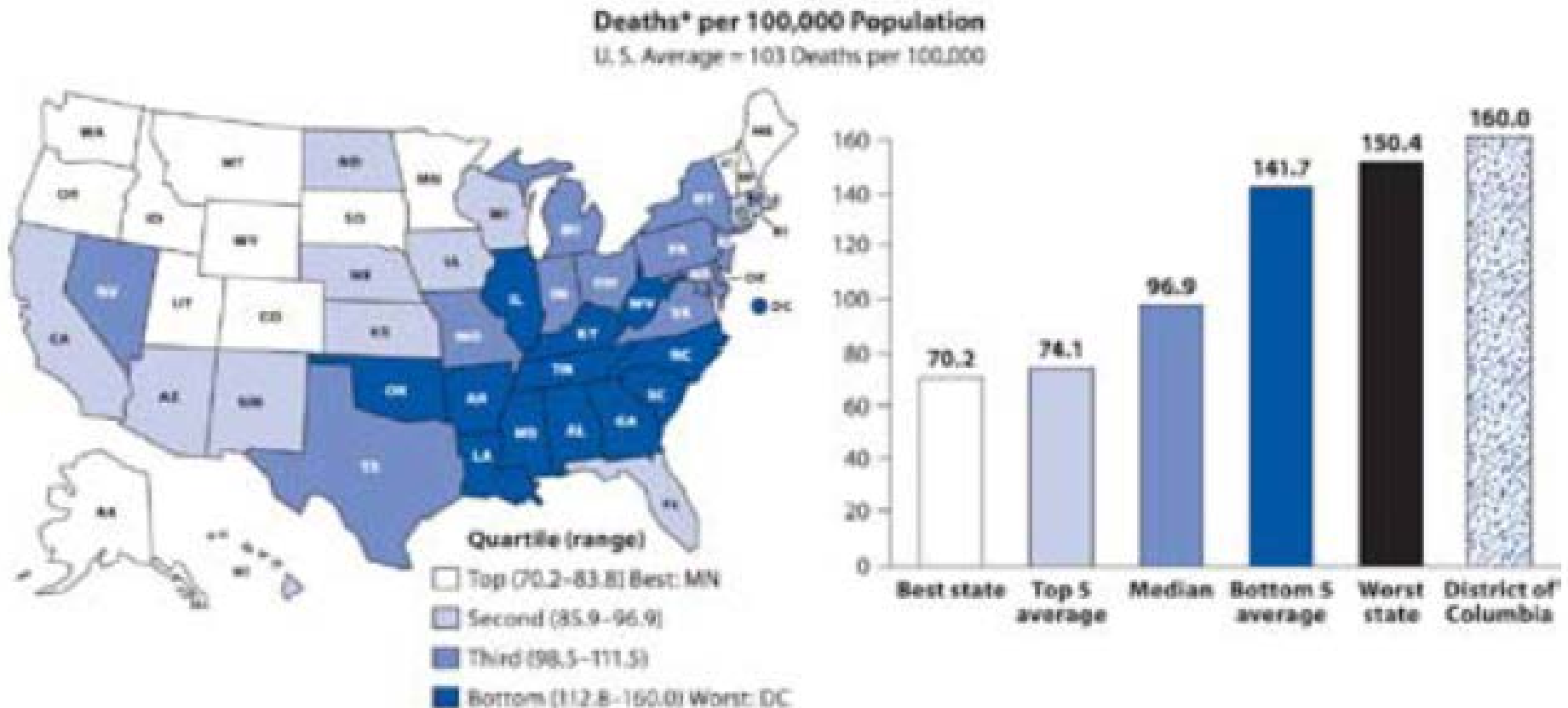
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University of Cincinnati Department of Environmental Health • Cincinnati, OH • 12 March 2014

UNIVERSITY OF KENTUCKY®
Center for Public Health Systems and Services Research

PUBLIC HEALTH SERVICES & SYSTEMS RESEARCH
PRACTICE-BASED RESEARCH NETWORKS
National Coordinating Center

Problems in health system performance

Life Expectancy — Per Capita Spending (International Dollars)

WHO 2010

Problems in health system performance

Source: Commonwealth Fund 2012

Preventable disease burden and national health spending

>75% of national health spending is attributable to conditions that are largely preventable

- – Cardiovascular disease
- – Diabetes
- – Lung diseases
- – Cancer
- – Injuries
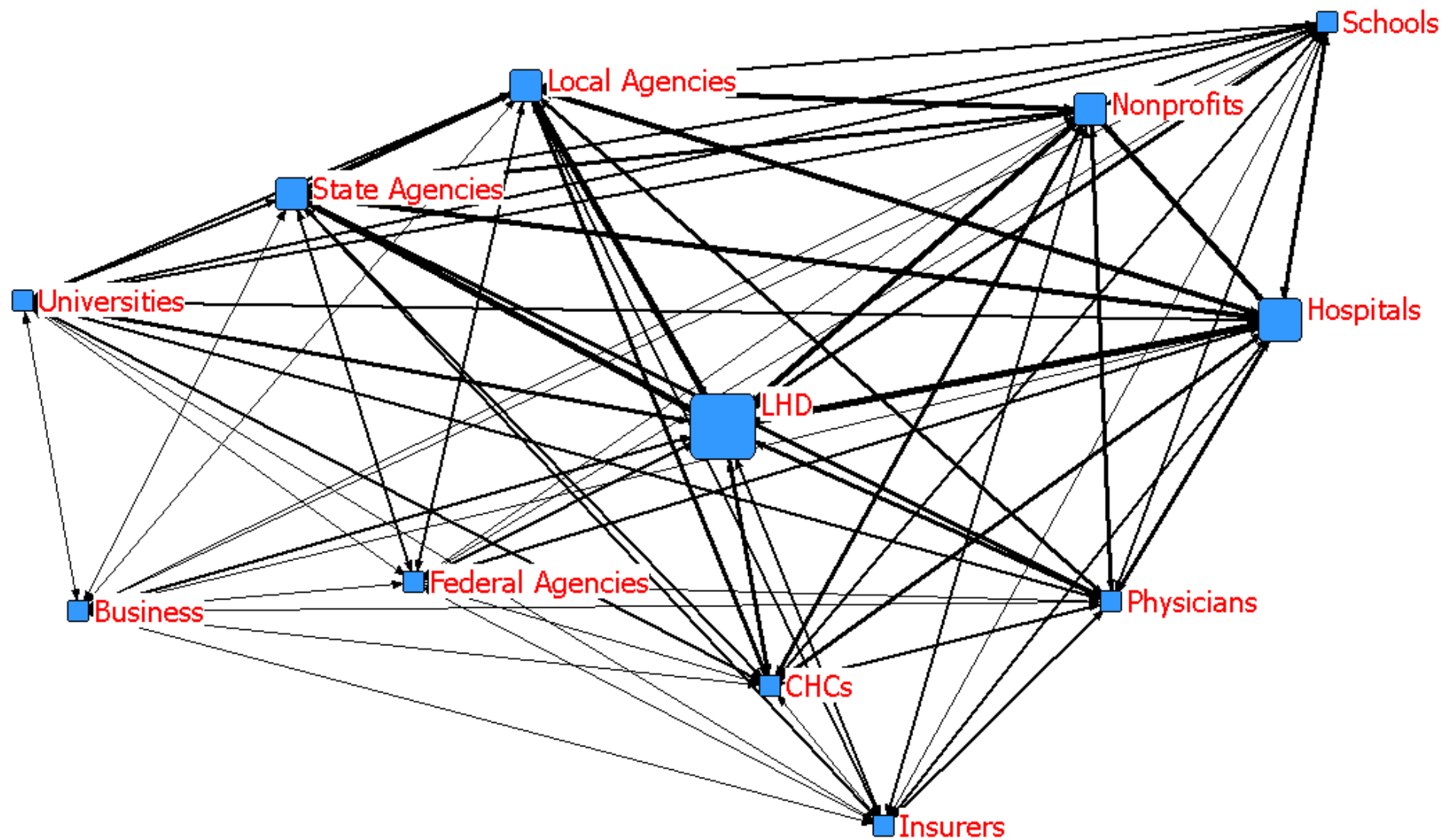- – Vaccine-preventable diseases and sexually transmitted infections

<5% of national health spending is allocated to public health and prevention

CDC 2008 and CMS 2011

What does the public health delivery system do?

Organized programs, policies, and laws to prevent disease and injury and promote health on a population-wide basis
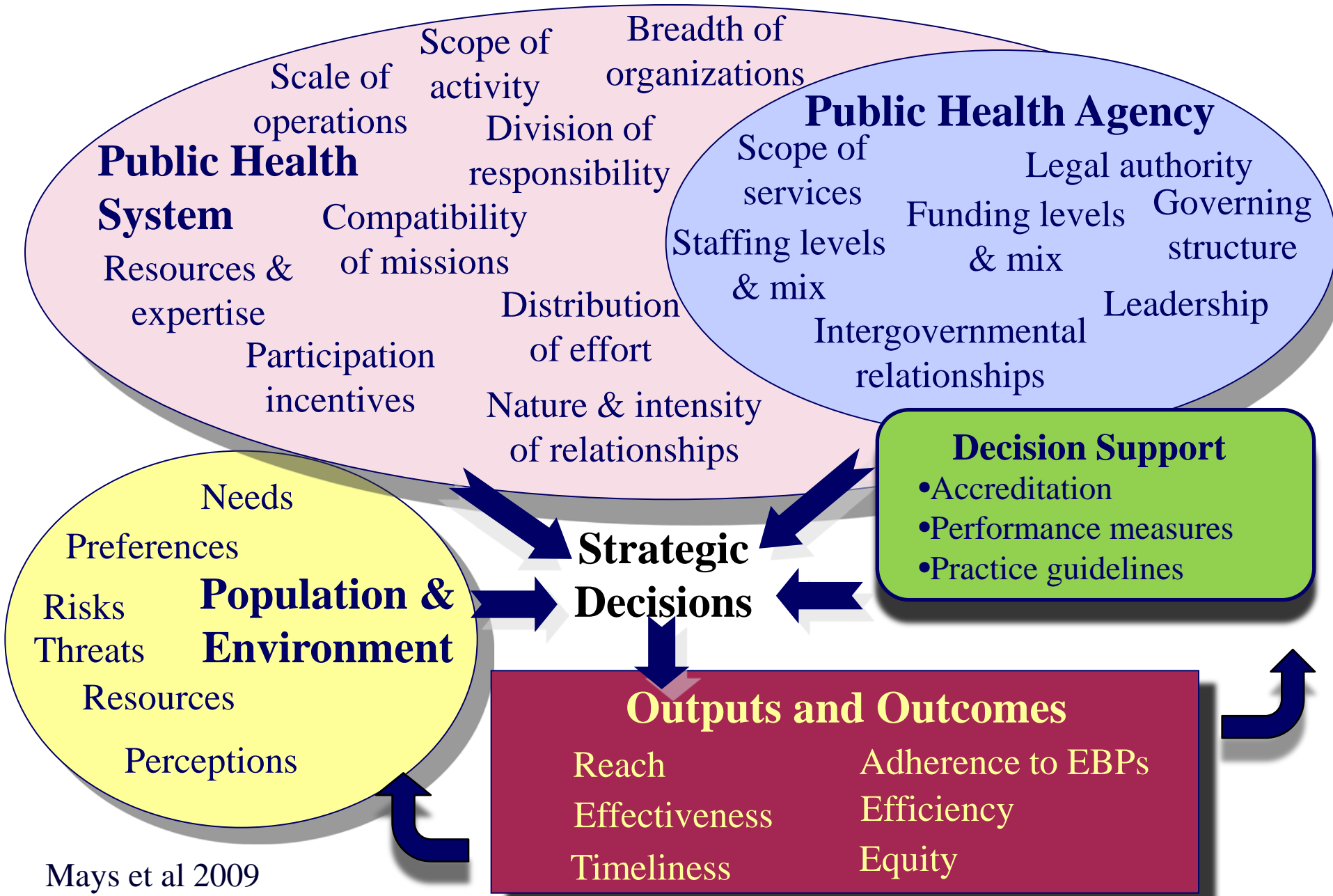
- – Epidemiologic surveillance & investigation
- – Community health assessment & planning
- – Communicable disease control
- – Chronic disease and injury prevention
- – Health education and communication
- – Environmental health monitoring and assessment
- – Enforcement of health laws and regulations
- – Inspection and licensing
- – Inform, advise, and assist school-based, worksite-based, and community-based health programming

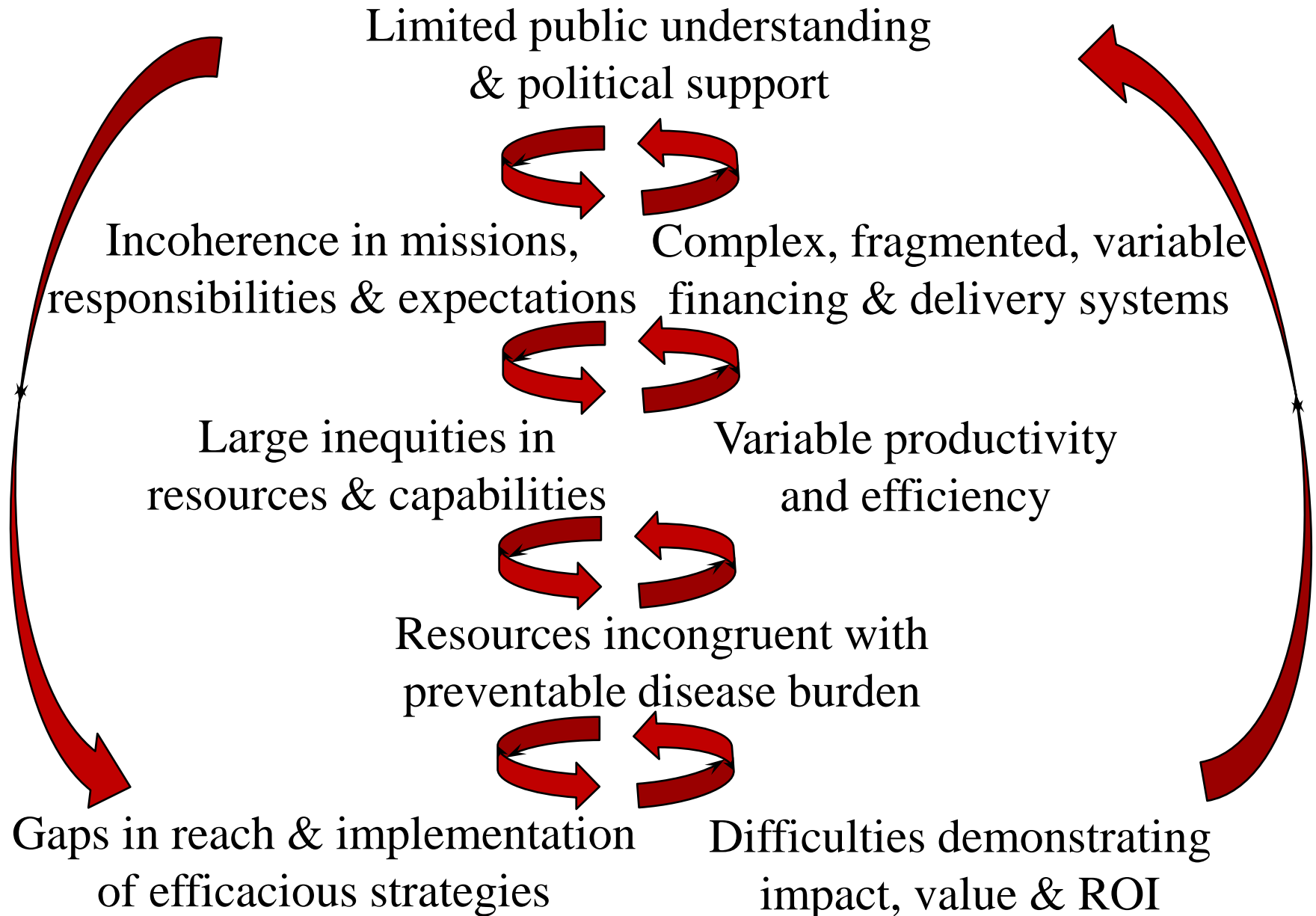…and roles in assuring access to medical care

Public health delivery systems

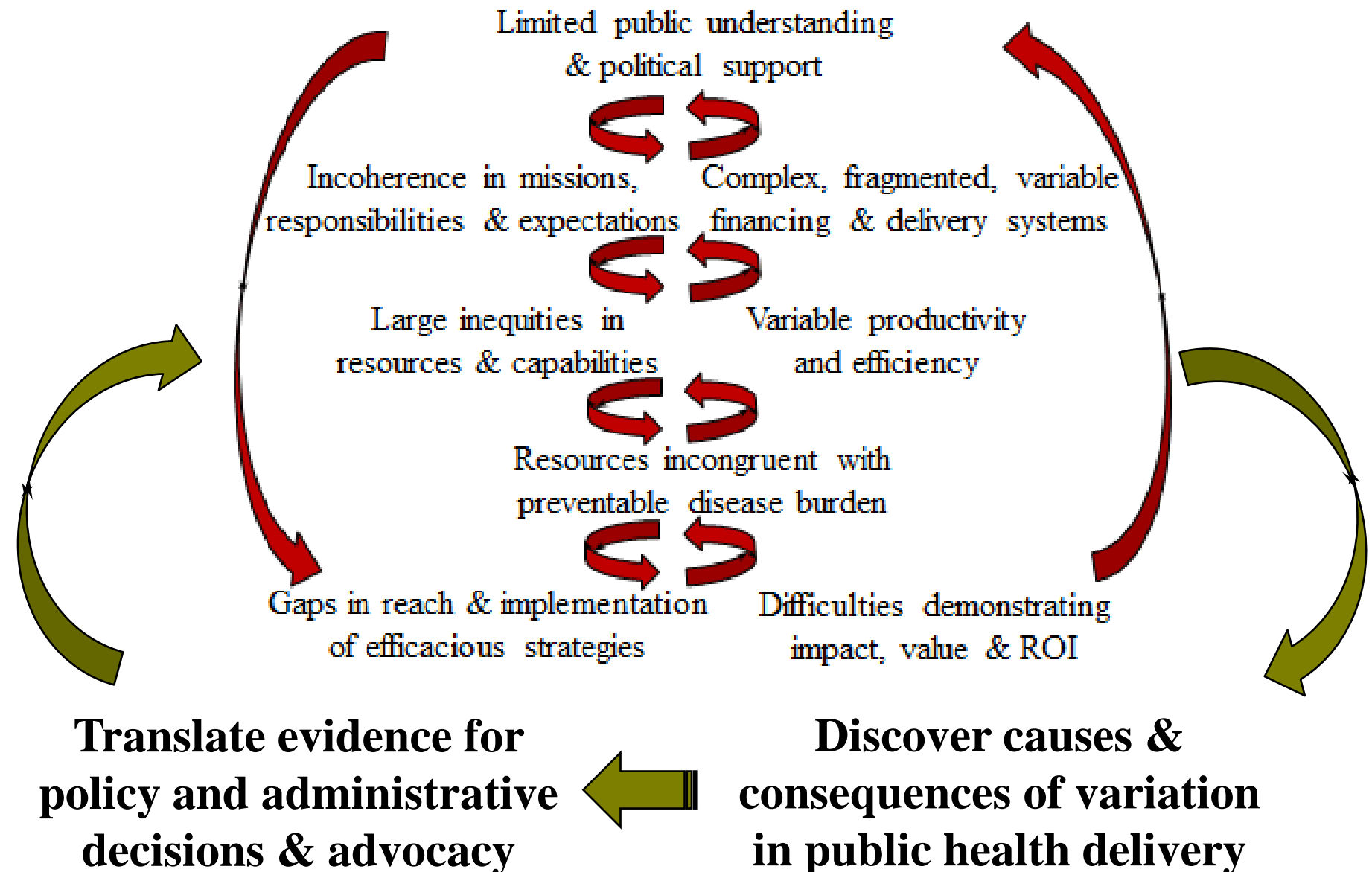National Longitudinal Survey of Public Health Systems, 2012

Complexity in public health delivery

Public Health System

- Scale of operations
- Scope of activity
- Breadth of organizations
- Division of responsibility
- Compatibility of missions
- Resources & expertise
- Distribution of effort
- Participation incentives
- Nature & intensity of relationships

Public Health Agency

- Scope of services
- Legal authority
- Funding levels & mix
- Governing structure
- Staffing levels & mix
- Leadership
- Intergovernmental relationships

Population & Environment

- Needs
- Preferences
- Risks
- Threats
- Resources
- Perceptions

Decision Support

- Accreditation
- Performance measures
- Practice guidelines

Strategic Decisions

Outputs and Outcomes

- Reach
- Adherence to EBPs
- Effectiveness
- Efficiency
- Timeliness
- Equity

Mays et al 2009

Vicious cycles in public health delivery

Limited public understanding
& political support

Incoherence in missions,
responsibilities & expectations

Complex, fragmented, variable
financing & delivery systems

Large inequities in
resources & capabilities

Variable productivity
and efficiency

Resources incongruent with
preventable disease burden

Gaps in reach & implementation
of efficacious strategies

Difficulties demonstrating
impact, value & ROI

Vicious cycles to learning systems

Limited public understanding & political support

Incoherence in missions, responsibilities & expectations

Complex, fragmented, variable financing & delivery systems

Large inequities in resources & capabilities

Variable productivity and efficiency

Resources incongruent with preventable disease burden

Gaps in reach & implementation of efficacious strategies

Difficulties demonstrating impact, value & ROI

Translate evidence for policy and administrative decisions & advocacy

Discover causes & consequences of variation in public health delivery

Public health services & systems research

A field of inquiry examining the *organization*, *financing*, and *delivery* of public health services at local, state and national levels, and the *impact* of these activities on population health

Mays, Halverson, and Scutchfield. 2003

Why study public health delivery?

"The Committee had hoped to provide specific guidance elaborating on the types and levels of workforce, infrastructure, related resources, and financial investments necessary to ensure the availability of essential public health services to all of the nation's communities. However, such evidence is limited, and there is no agenda or support for this type of research, despite the critical need for such data to promote and protect the nation's health."

—Institute of Medicine, 2003

PHSSR and policy relevance

Subtitle D—Support for Prevention and Public Health Innovation

Patient Protection and Affordable Care Act of 2010

SEC. 4301. RESEARCH ON OPTIMIZING THE DELIVERY OF PUBLIC HEALTH SERVICES.

(a) IN GENERAL.—The Secretary of Health and Human Services (referred to in this section as the "Secretary"), acting through the Director of the Centers for Disease Control and Prevention, shall provide funding for research in the area of public health services and systems.

(b) REQUIREMENTS OF RESEARCH.—Research supported under this section shall include—

(1) examining evidence-based practices relating to prevention, with a particular focus on high priority areas as identified by the Secretary in the National Prevention Strategy or Healthy People 2020, and including comparing community-based public health interventions in terms of effectiveness and cost;

(2) analyzing the translation of interventions from academic settings to real world settings; and

(3) identifying effective strategies for organizing, financing, or delivering public health services in real world community settings, including comparing State and local health department structures and systems in terms of effectiveness and cost.

Failing to connect

Connection not found ✕

[Connection Settings]   [Retry]   [Close]

- Why do medical care and public health delivery systems often fail to connect?

- What are the causes and consequences of this failure?

- Where are the opportunities for connection to improve population health?

Failing to connect

Medical Care Delivery

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

Public Health Delivery

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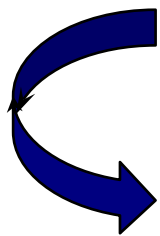
Inefficient delivery

Inequitable outcomes

Limited population health impact
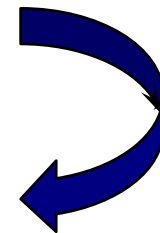
How Does the Public Health System Perform?
Delivery of recommended activities
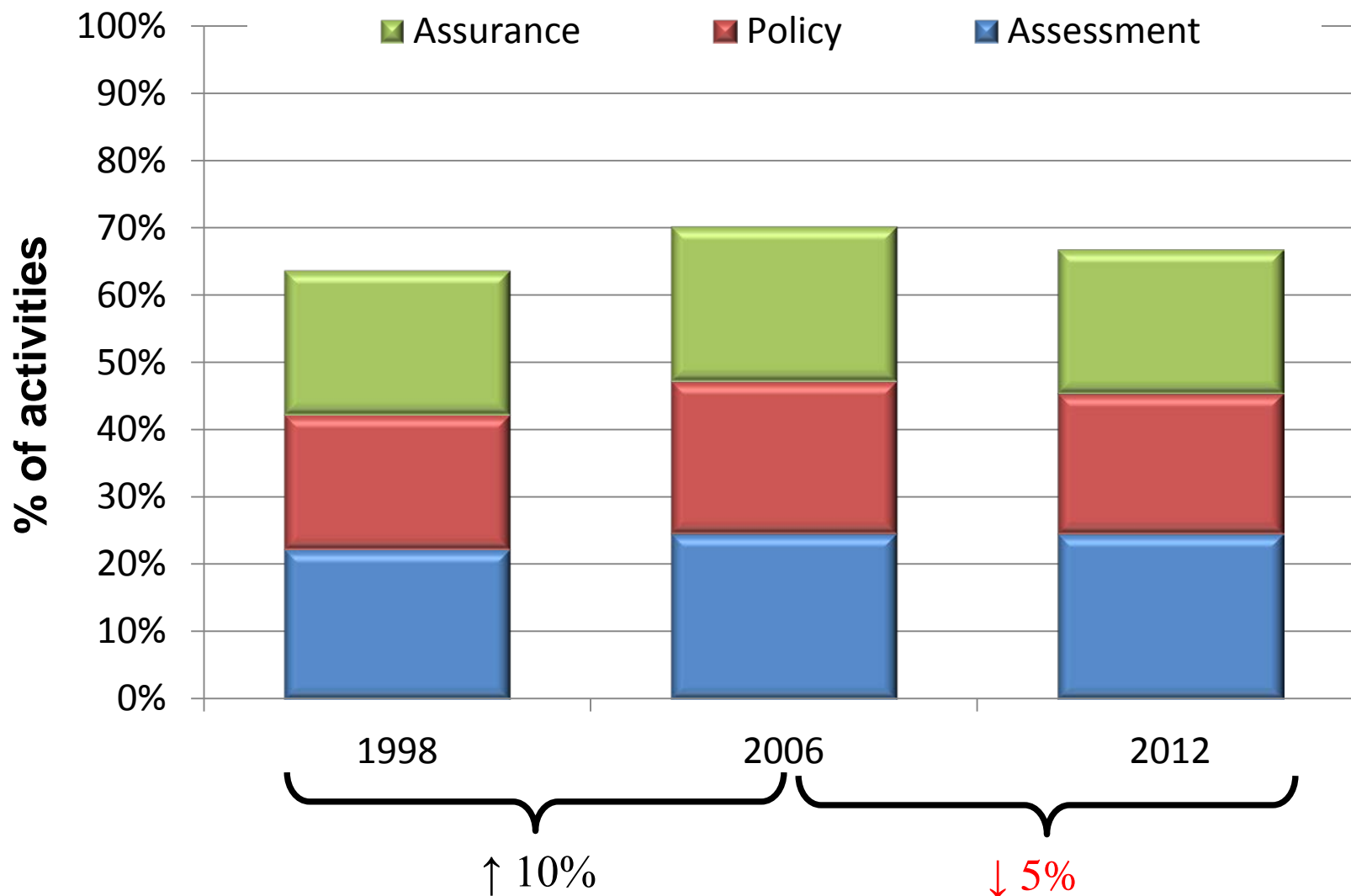
National Longitudinal Survey of Public Health Systems, 2012
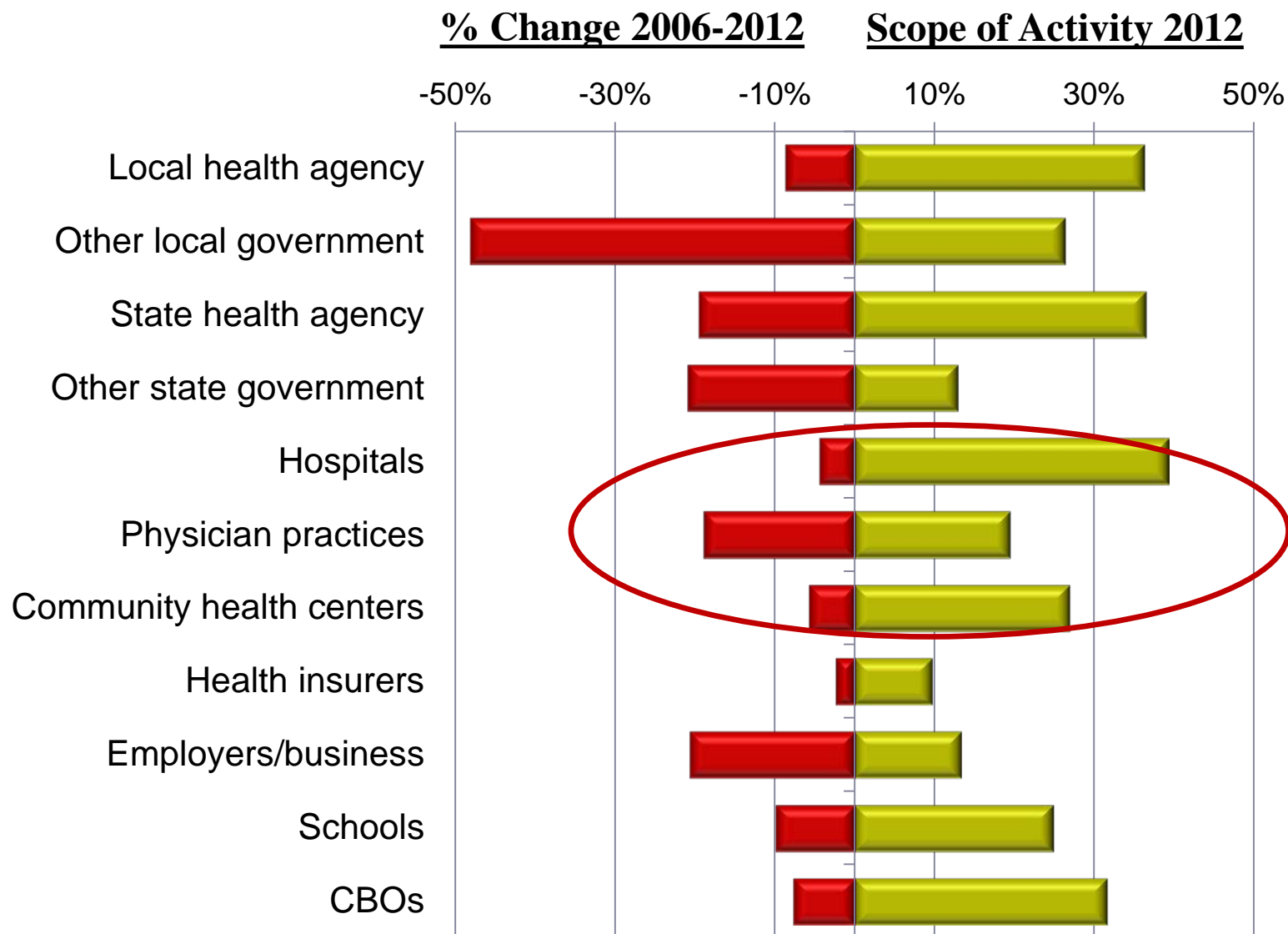
Variation in Public Health Delivery
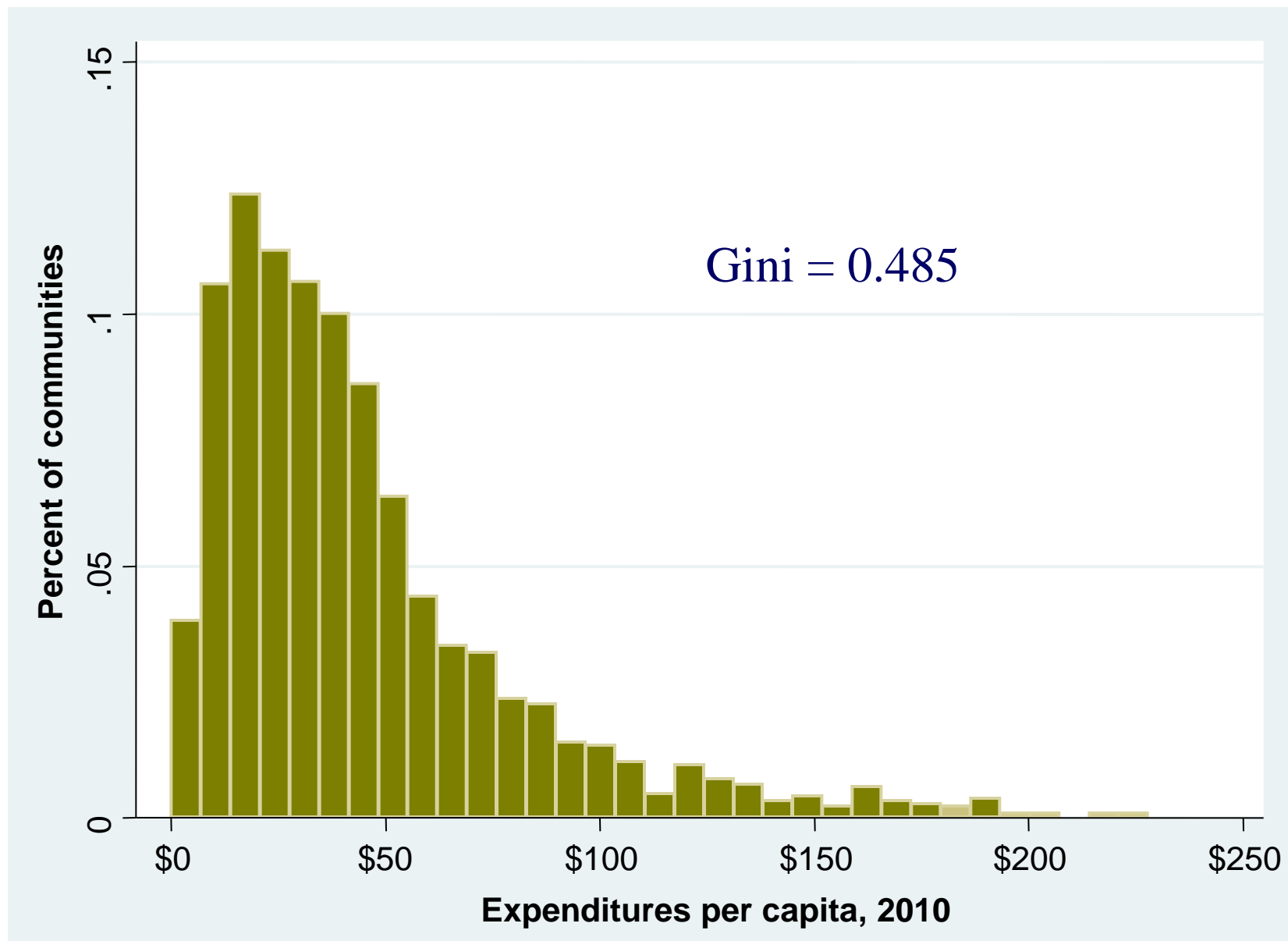## Delivery of recommended public health activities, 2012
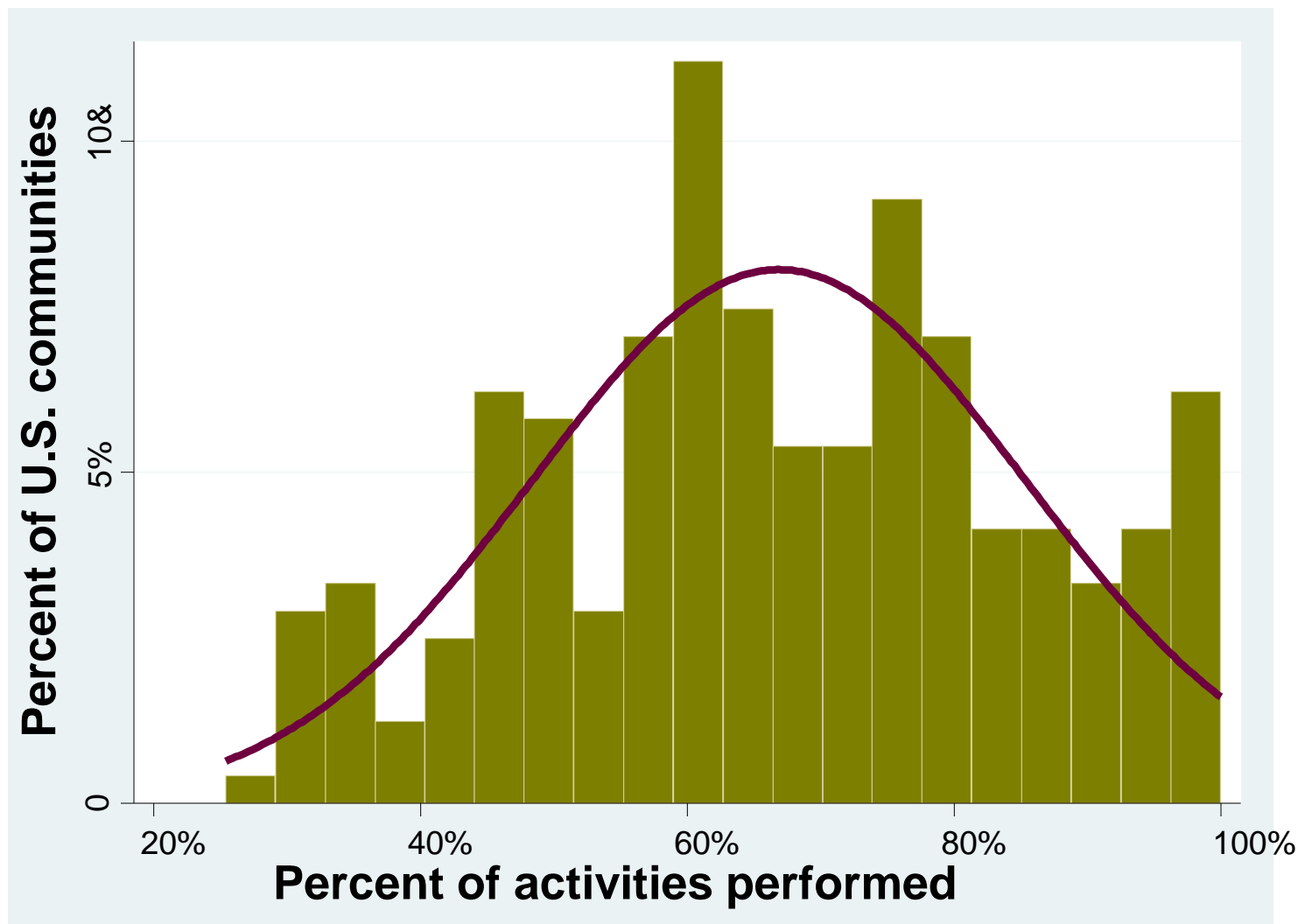
National Longitudinal Survey of Public Health Systems, 2012
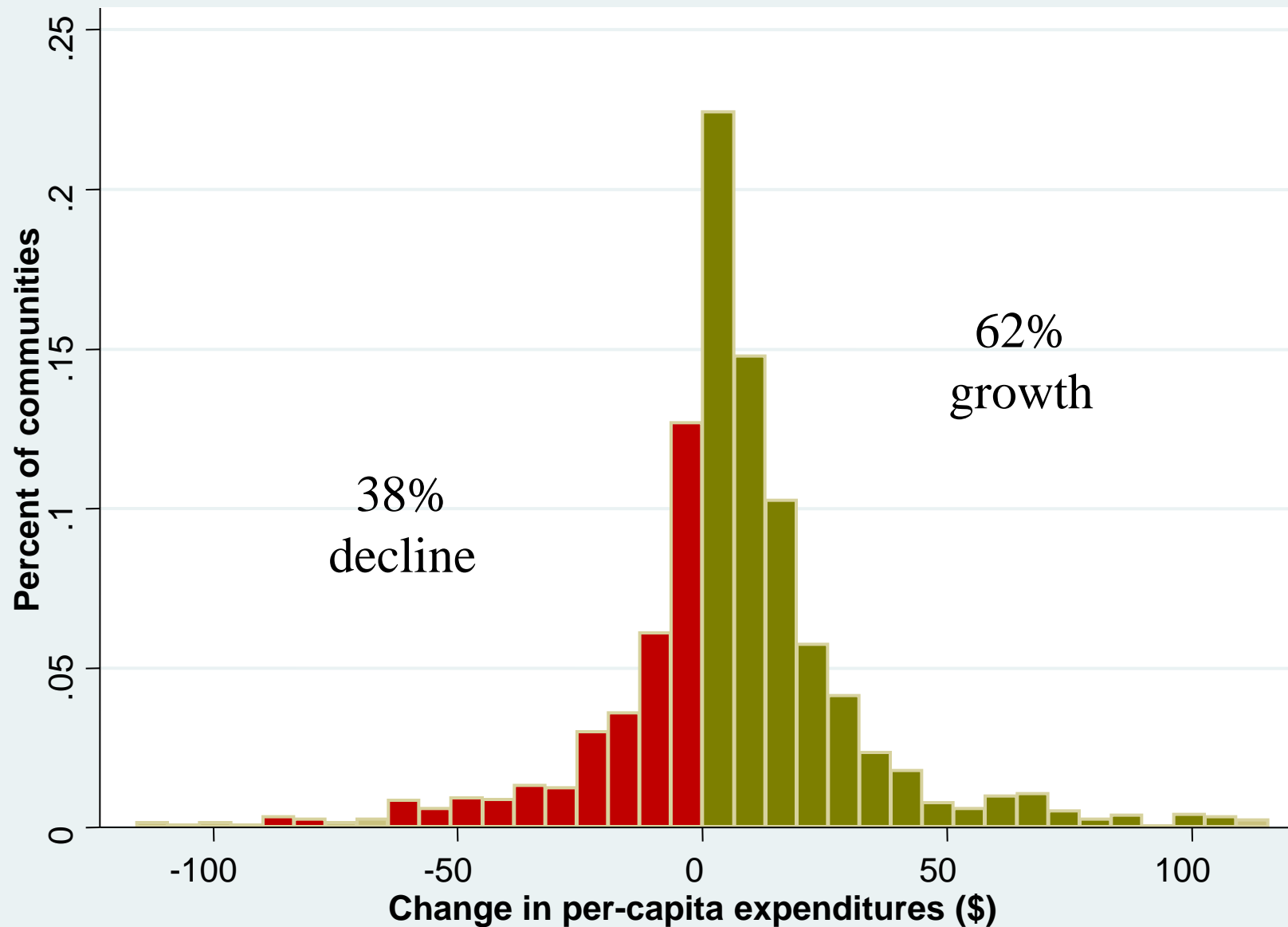
Organizations engaged in public health delivery
Delivery of recommended public health activities, 2012

National Longitudinal Survey of Public Health Systems, 2012

Variation in Local Public Health Spending

Gini = 0.485

Percent of communities (y-axis: 0, .05, .1, .15)

Expenditures per capita, 2010 (x-axis: $0, $50, $100, $150, $200, $250)

Changes in Local Public Health Spending 1993-2010

38% decline

62% growth

Public health's share of national health spending

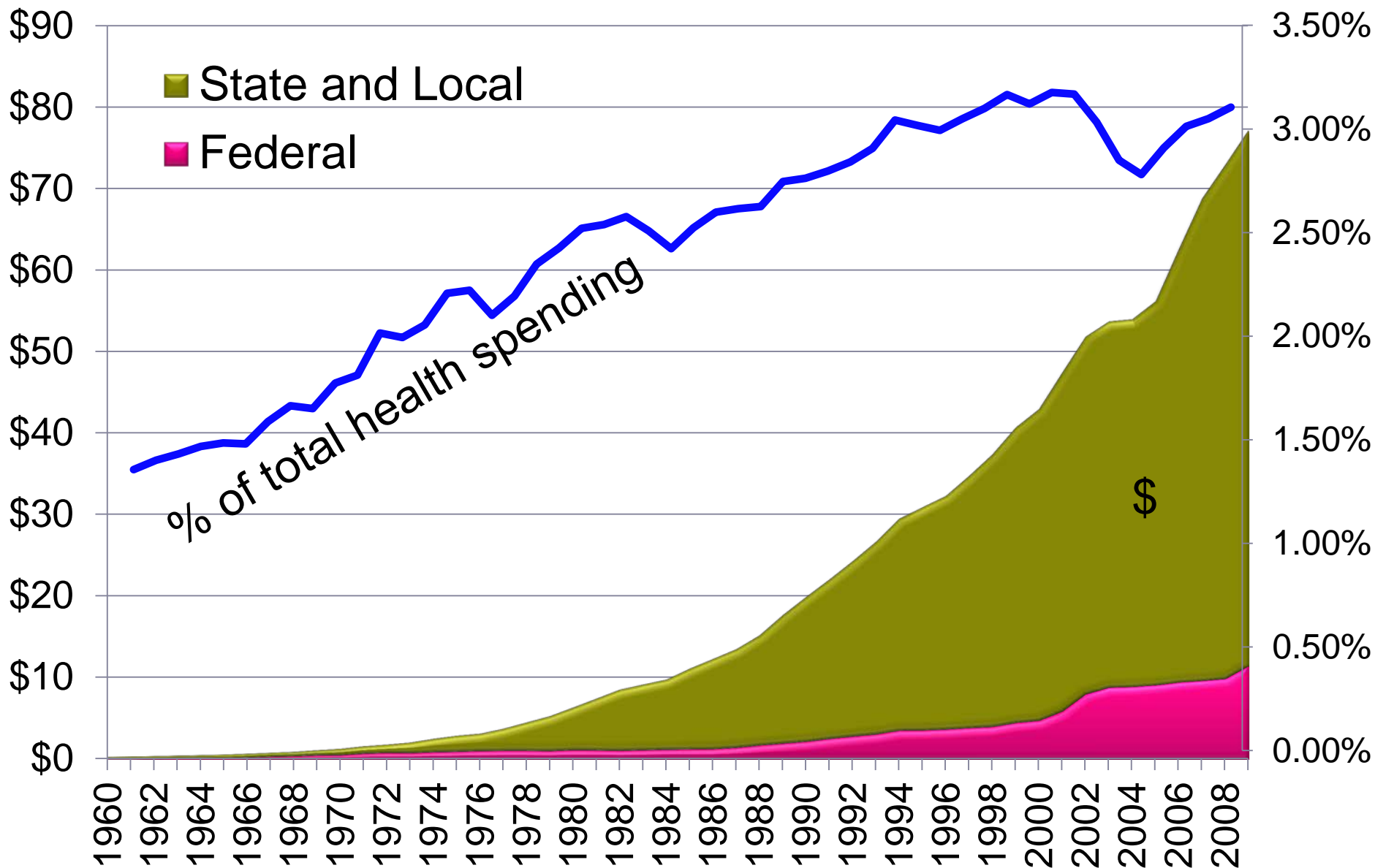## USDHHS National Health Expenditure Accounts
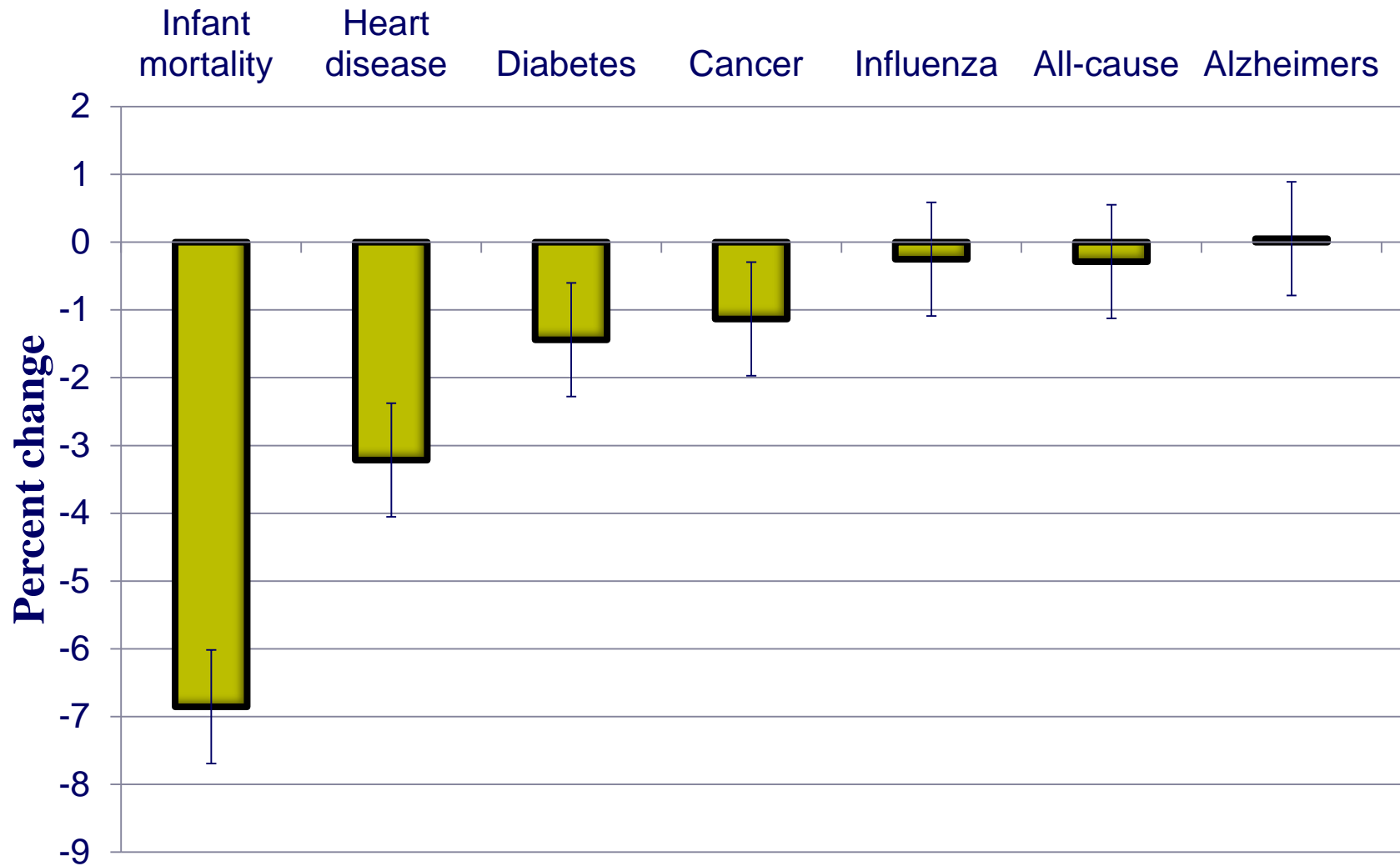
$Billions

%NHE

Legend:
- State and Local
- Federal
- % of total health spending

$

Mortality reductions attributable to local public health spending, 1993-2008

Hierarchical regression estimates with instrumental variables to correct for selection and unmeasured confounding
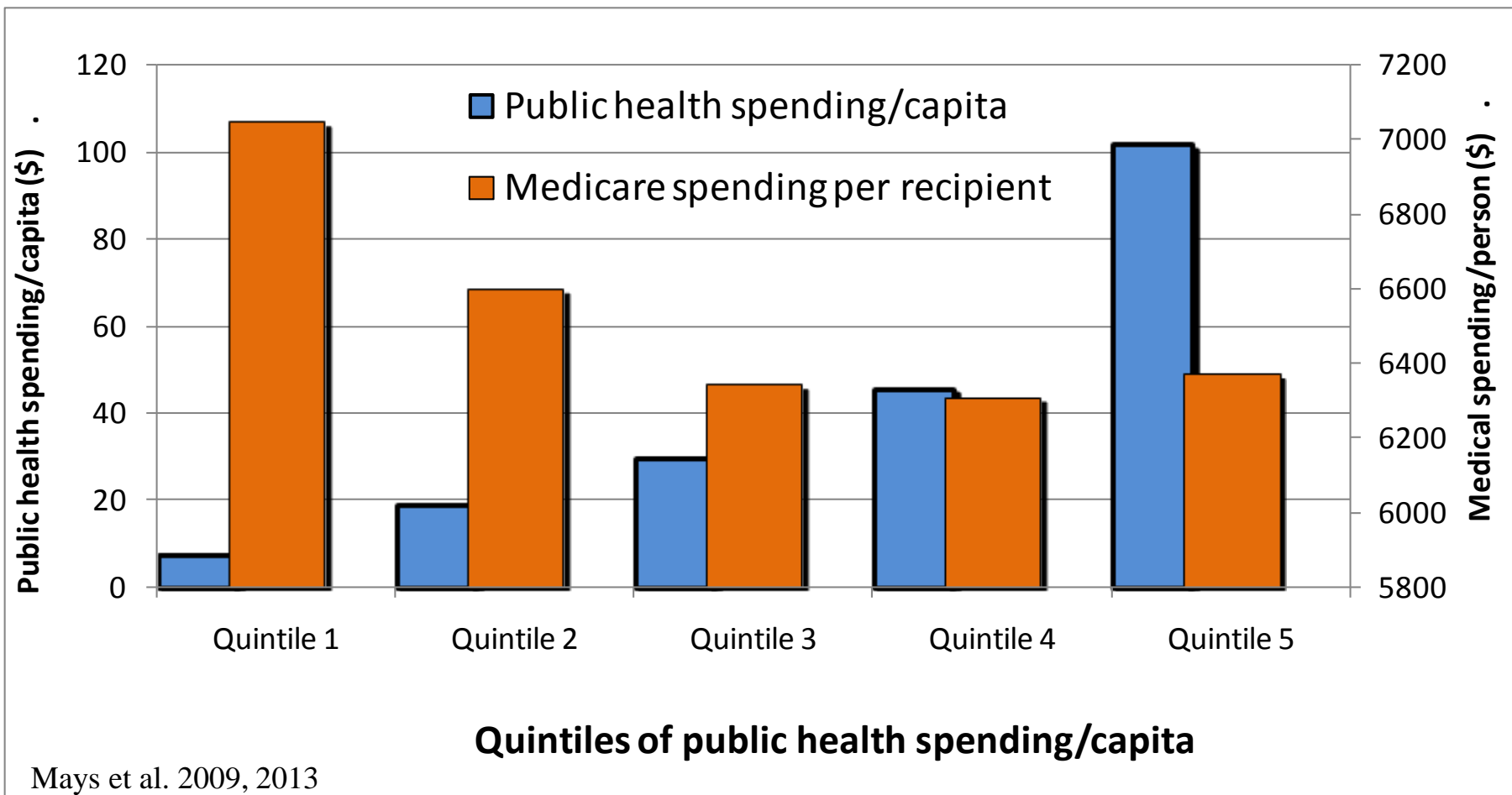
Mays et al. 2011

Factors driving growth in medical spending

Health spending growth rate 1996-2006

Roehrig et al. Health Affairs 2011
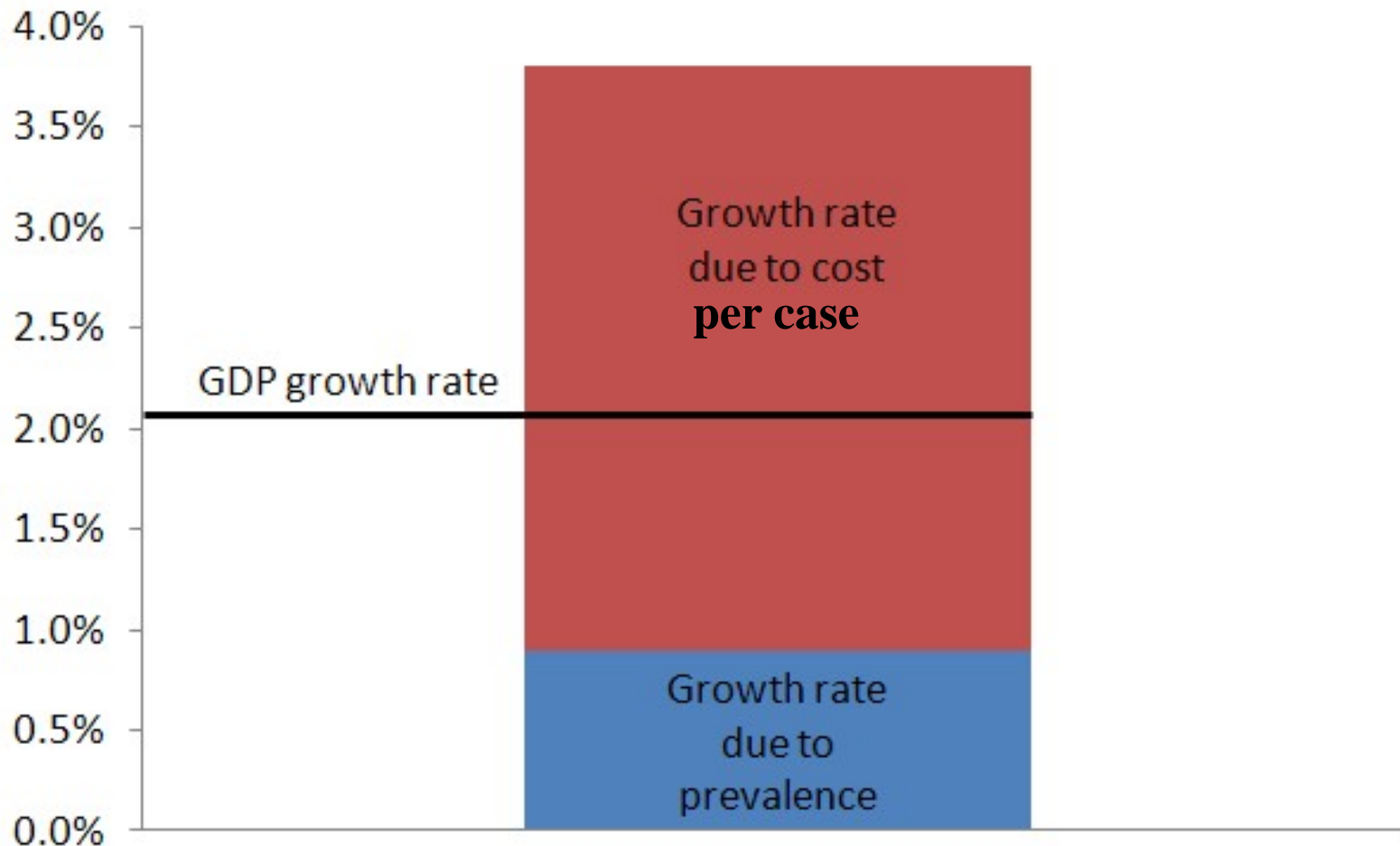
Medical cost offsets attributable to local public health spending, 1993-2008

For every $10 of public health spending, ≈$9 are recovered in lower medical care spending over 15 years

Mays et al. 2009, 2013

Bridging the Gap: Why Now?

Integrated Medical Care & Public Health Delivery

Hospital community benefit regs

Funding constraints

Payment reform

Accountable care organizations

Patient centered medical homes

Employer wellness incentives

Health insurance expansions

Health information exchange

Public Health Accreditation

Some Leading Examples
Hennepin Health ACO

- Partnership of county health department, community hospital, and FQHC

- Accepts full risk payment for all medical care, public health, and social service needs for Medicaid enrollees

- Fully integrated electronic health information exchange

- Heavy investment in care coordinators and community health workers

- Savings from avoided medical care reinvested in public health initiatives
  - Nutrition/food environment
  - Physical activity

Some Leading Examples

Akron Accountable Care Community

- Partnership of multiple hospital systems, county health department, FQHCs, schools, libraries and CBOs

- Targets community-wide population at risk for diabetes

- Invests in primary prevention, screening, and active disease management

- Savings from avoided medical care reinvested in prevention initiatives
  - Nutrition/food environment
  - Physical activity

Some Leading Examples

Massachusetts Prevention & Wellness Trust Fund

- $60 million invested from nonprofit insurers and hospital systems

- Funds community coalitions of health systems, municipalities, businesses and schools

- Invests in community-wide, evidence-based prevention strategies with a focus on reducing health disparities

- Savings from avoided medical care are expected to be reinvested in the Trust Fund activities

Toward next generation public health

Public health as a chief health strategist for the community

- Articulate population health needs & priorities

- Engage community stakeholders

- Plan with clear roles & responsibilities

- Recruit & leverage resources

- Develop and implement policies

- Ensure coordination

- Promote evidence-based practices

- Monitor and feed back results

- Mobilize performance improvement

- Ensure transparency & accountability: resources, results, ROI

Evidence gaps: toward a "rapid-learning system"

Green SM et al. *Ann Intern Med*. 2012;157(3):207-210
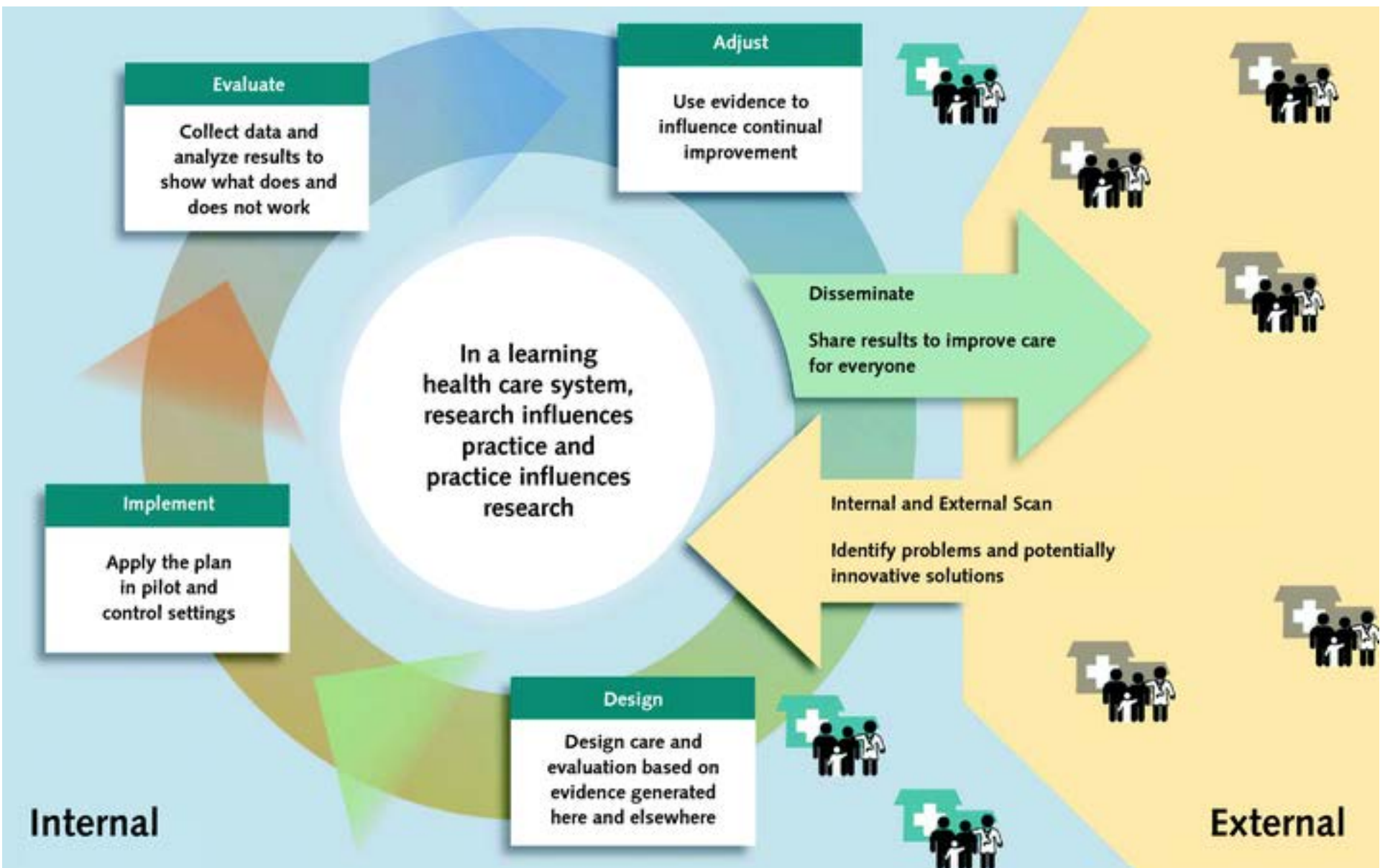
Public Health Practice-Based Research Networks (PBRNs)

Legend:
- First cohort (December 2008 start-up)
- Second cohort (January 2010 start-up)
- Affiliate/Emerging PBRNs (2011-13)

PUBLIC HEALTH
Practice-Based Research Networks
National Coordinating Center
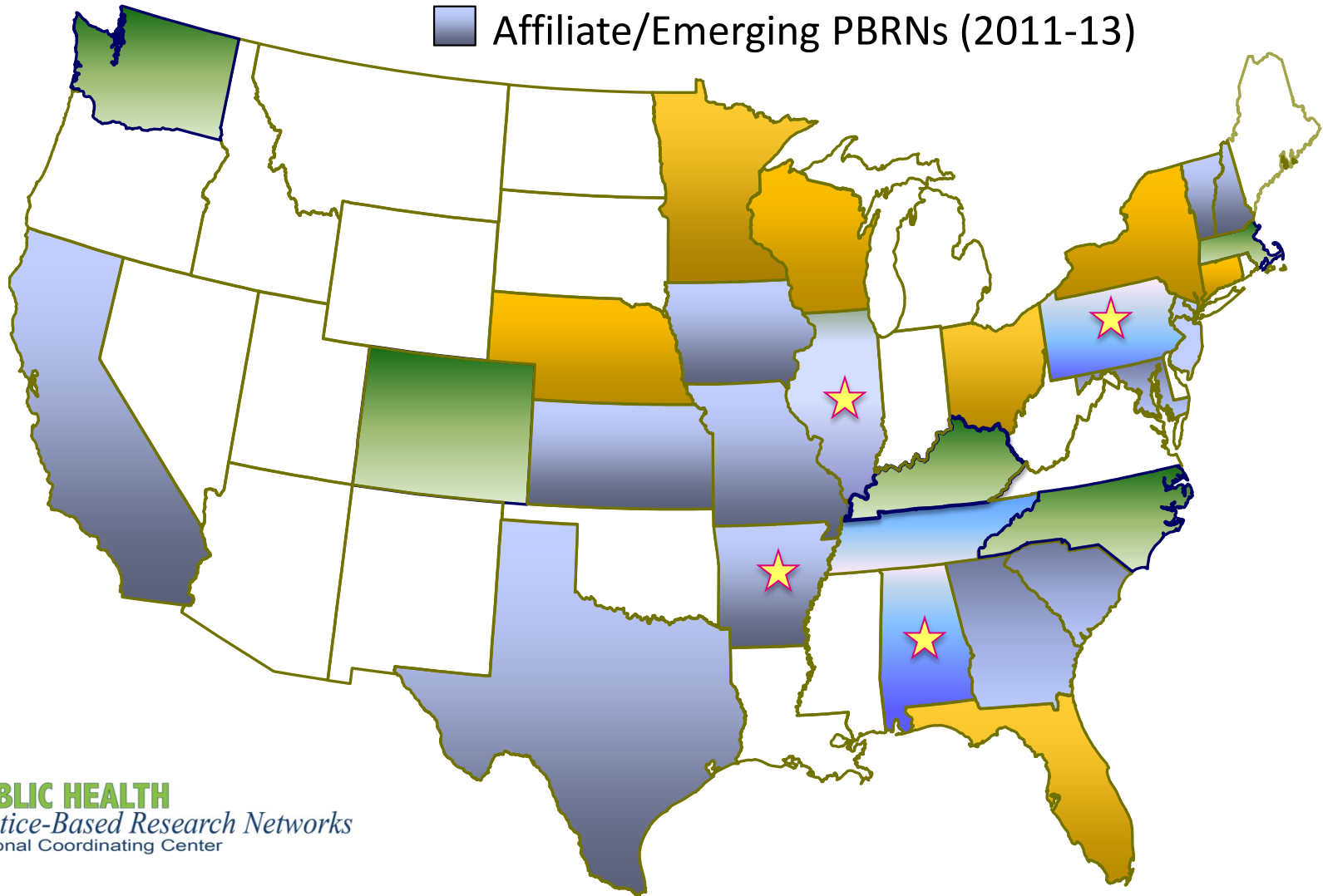
Conclusions: getting inside the box

- Engagement of practice and research partners

- Better measures and data sources

- Research designs in real-world settings

- What works best
  in which settings and why

- Informed public health
  decisions

- Smarter investments and
  greater value

For More Information

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