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Estimating the Costs of Public Health Services: Progress on the Institute of Medicine Recommendations

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Estimating the Costs of Public Health Services

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What's the big deal?

“Poor costing systems have disastrous consequences. It is a well-known management axiom that what is not measured cannot be **managed or improved**. Since providers misunderstand their costs, they are unable to **link cost to process improvements or outcomes**, preventing them from making good decisions....Poor cost measurement [leads] to huge **cross-subsidies across services**...Finally, poor measurement of costs and outcomes also means that effective and efficient providers **go unrewarded**.”



— R.S. Kaplan and M.E. Porter, The big idea: how to solve the cost crisis in health care. *Harvard Business Review*, 2011.

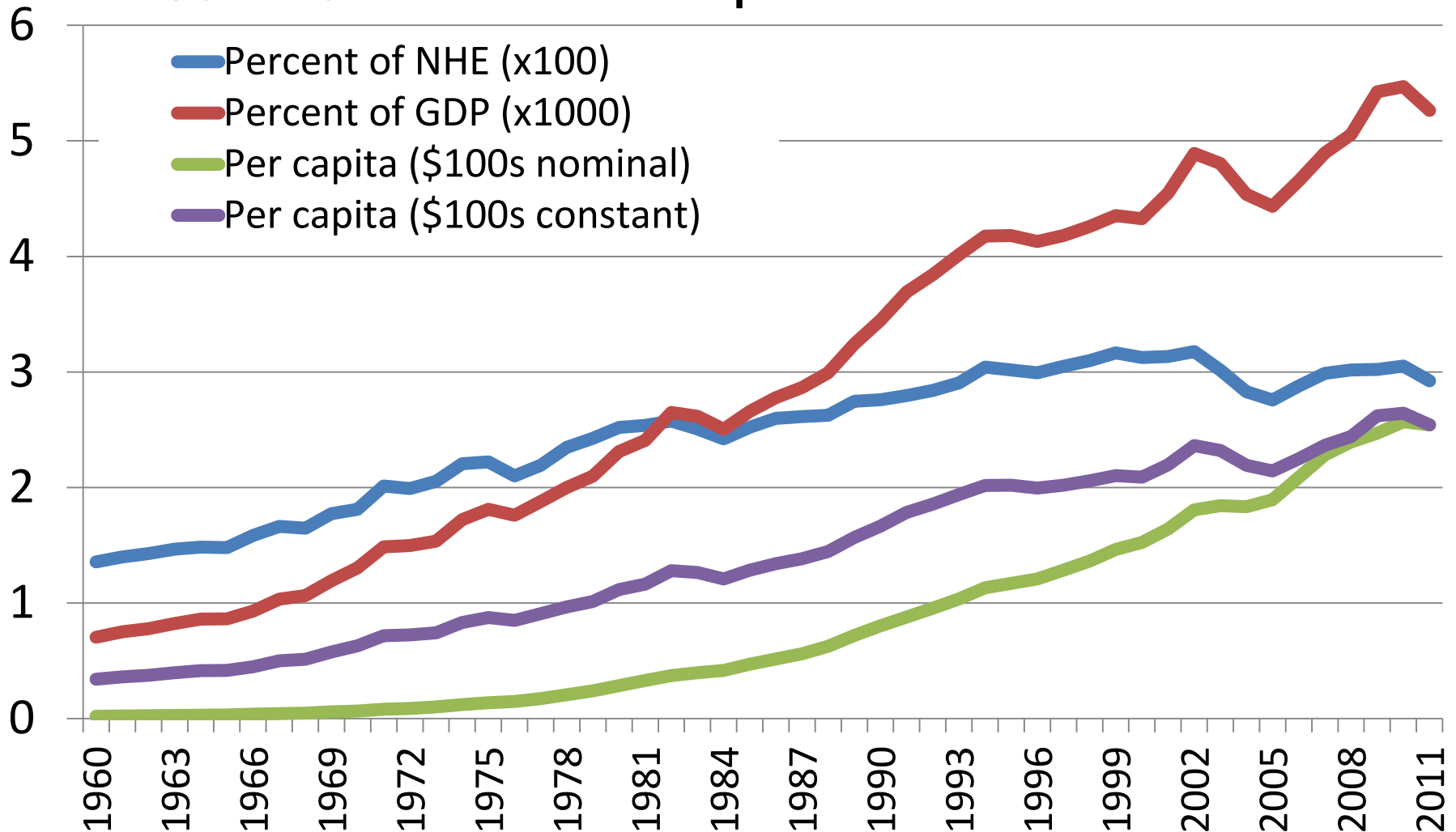
Informing practice and policy decisions

- Align spending with preventable disease burden
- Identify and address inequities in resources
- Improve productivity and efficiency
- Demonstrate value: linking spending to outcomes
- Strengthen fiscal policy: financing mechanisms



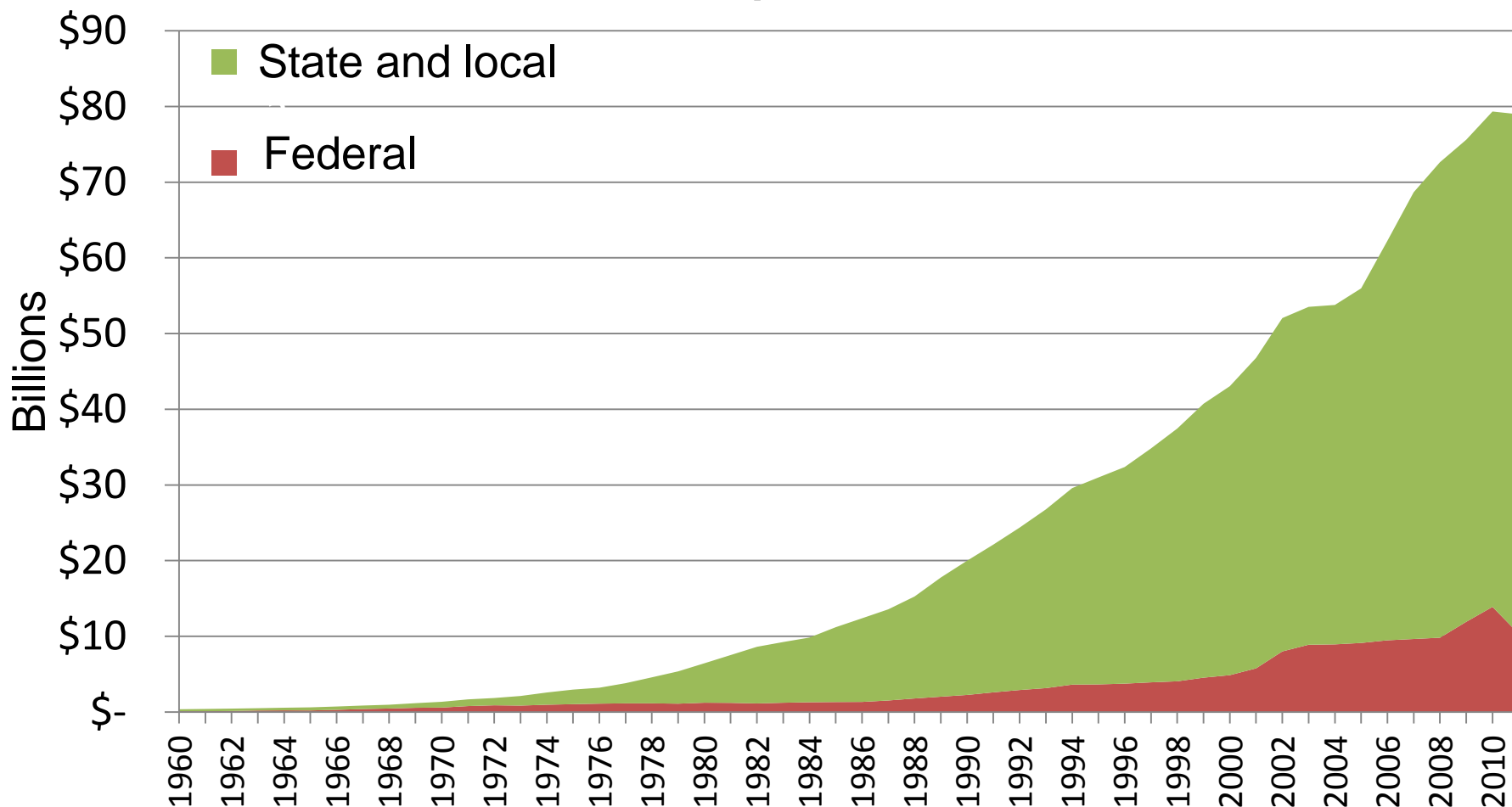
What we know, sort of...

Governmental Expenditures for Public Health Activity, USDHHS National Health Expenditure Accounts

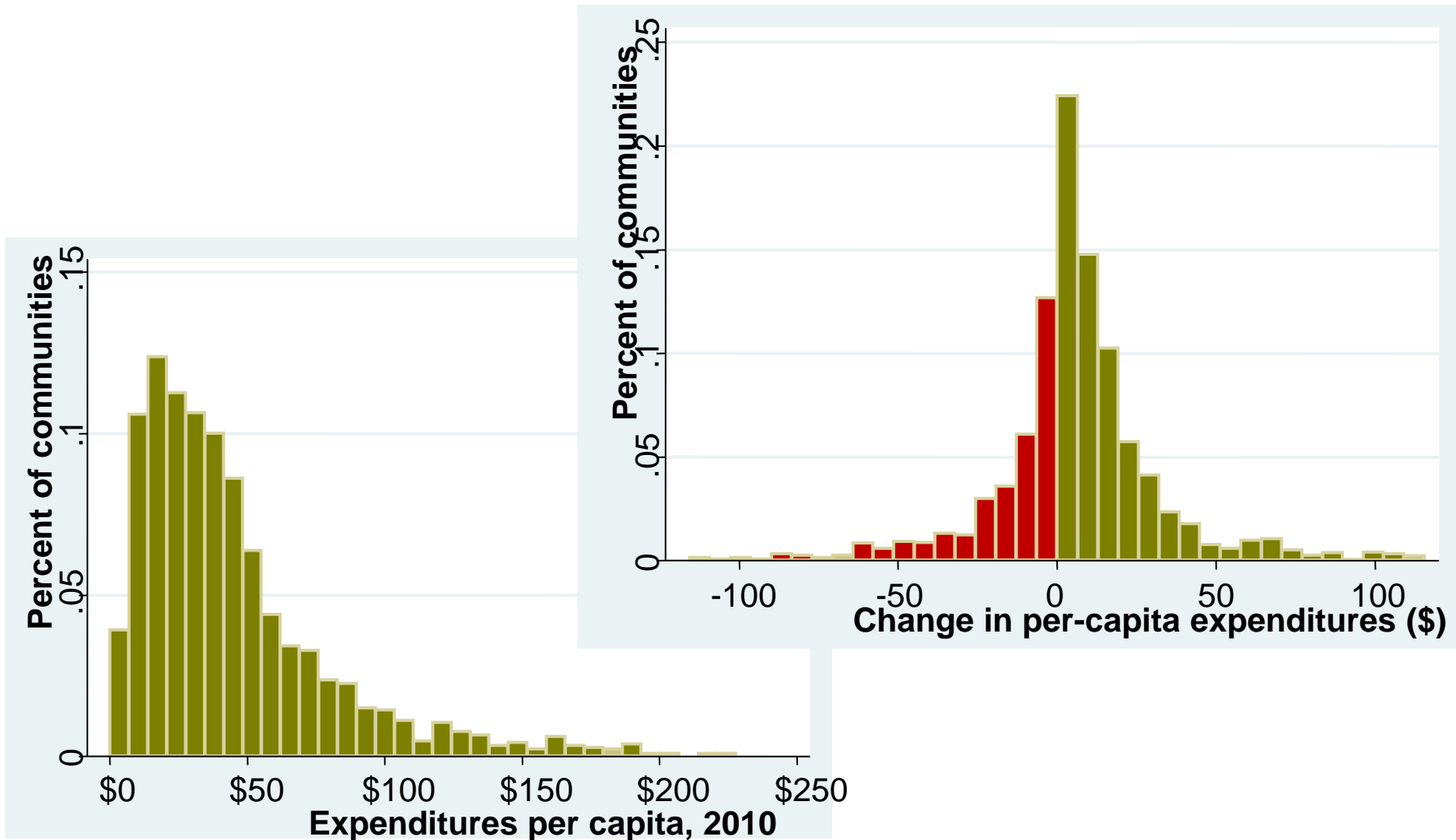


What we know, sort of...

Governmental Expenditures for Public Health Activity, USDHHS National Health Expenditure Accounts



Understanding cost variation



Cost data collection methods

- ◆ **Prospective “expected cost” methods**
 - Vignettes
 - Surveys with staff and/or administrators
 - Delphi group processes
- ◆ **Concurrent “actual cost” methods (micro-costing)**
 - Time studies with staff
 - Activity logs with staff
 - Direct observation
- ◆ **Retrospective “cost accounting” methods**
 - Modeling and decomposition using administrative records
 - Surveys with staff and/or administrators

Examples: Survey methods

SPECIAL REPORT



The NEW ENGLAND
JOURNAL of MEDICINE

Results and Policy Implications of the Resource-Based Relative-Value Study

William C. Hsiao, Ph.D., Peter Braun, M.D., Daniel Dunn, Ph.D., Edmund R. Becker, Ph.D., Margaret DeNicola, M.P.H., and Thomas R. Ketcham, M.P.H.

N Engl J Med 1988; 319:881-888 | [September 29, 1988](#) | DOI: 10.1056/NEJM198809293191330

Four dimensions of work:

- Time
- Cognitive effort
- Physical effort
- Stress

Additional cost components:

- Practice expense
- Malpractice expense

Examples: Survey methods



- ◆ Surveys program managers
- ◆ Refers to expenditure records (not budgets)
- ◆ Explicit allocation of resources across multiple programs
- ◆ Available at:

<http://www.rti.org/page.cfm?objectid=7E6095C8-AE6E-4568-874839C81FAD414B>

Zarkin GA, Dunlap LJ, Homs G. The substance abuse services cost analysis program (SASCAP): a new method for estimating drug treatment services costs, **Evaluation and Program Planning** 2004; 27(1): 35-43,

Examples: Medicaid administrative claiming

- ✦ Public health agencies that claim Medicaid reimbursement for outreach and enrollment activities
- ✦ Requires periodic time studies to document agency time and effort devoted to reimbursable activities

Key issues: cost of capabilities

- ✦ Delineating state vs. local roles and division of effort
- ✦ Identifying scale and scope effects
 - By population served
 - By range of programs supported (portfolio effect)
- ✦ Identifying input factors that affect costs
 - Resource prices
 - Case mix
- ✦ Identifying key output differences across settings
 - Intensity
 - Quality
 - Reach

Defining what to cost: the public health package

- ✦ Washington State's Foundational Public Health Services
- ✦ Ohio's Public Health Futures Committee: Minimum Package of Services
- ✦ Colorado's Core Public Health Services



- ✦ National Workgroup on Foundational Public Health Capabilities

Defining what to cost:

Washington Public Health
Improvement Partnership

FOUNDATIONAL PUBLIC HEALTH SERVICES	FOUNDATIONAL CAPABILITIES	Foundational Programs	Additional Important Services
		Communicable Disease Control	Chronic Disease & Injury Prevention
		Environmental Public Health	Maternal/Child/Family Health
		Access/Linkage with Clinical Health Care	Vital Records
		← ACROSS ALL PROGRAMS →	
		Assessment (surveillance and epidemiology)	
		Emergency preparedness and response (all hazards)	
		Communications	
FOUNDATIONAL PUBLIC HEALTH SERVICES	FOUNDATIONAL CAPABILITIES	Policy development and support	
		Community partnership development	
		Business competencies	

Washington's Cost Estimates (preliminary)

Estimated Cost of Providing Foundational Public Health Services Statewide

Services Ranked By Cost	Total Estimated Cost of FPHS	State Dept. of Health	Local Health Jurisdictions	<div> <div></div> State DOH <div></div> LHJs </div>	
<u>Foundational Capabilities</u>	75,700,000	27,750,000	47,945,000	37%	63%
A. Assessment	11,350,000	5,410,000	5,935,000	48%	52%
B. Emergency Preparedness and Response	10,825,000	3,620,000	7,205,000	33%	67%
C. Communication	3,960,000	750,000	3,210,000	19%	81%
D. Policy Development and Support	4,415,000	1,115,000	3,300,000	25%	75%
E. Community Partnership Development	4,885,000	860,000	4,025,000	18%	82%
F. Business Competencies	40,265,000	15,995,000	24,270,000	40%	60%
<u>Foundational Programs</u>	252,290,000	134,890,000	117,405,000	53%	47%
A. Communicable Disease Control	33,760,000	9,010,000	24,750,000	27%	73%
B. Chronic Disease and Injury Prevention	24,855,000	12,590,000	12,265,000	51%	49%
C. Environmental Public Health	95,800,000	33,760,000	62,045,000	35%	65%
D. Maternal/Child/Family Health	25,175,000	13,765,000	11,410,000	55%	45%
E. Access/Linkage with Clinical Health Care	65,585,000	62,145,000	3,440,000	95%	5%
F. Vital Records	7,115,000	3,620,000	3,495,000	51%	49%
Total Cost	327,990,000	162,640,000	165,350,000	50%	50%

Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

Local per capita: \$24.0 State per capita: \$23.6

Source: Washington Public Health Improvement Partnership. Foundational Public Health Services Preliminary Cost Estimation Model. 2013.

Defining what to cost: Ohio

Figure 1.

Ohio Minimum Package of Local Public Health Services

CORE PUBLIC HEALTH SERVICES

All local health departments should be responsible for providing the following services in their district, directly or by contracting

- Environmental health services
- Communicable disease control
- Epidemiology services
- Access to birth and death records
- Health promotion and prevention
- Emergency preparedness
- Linking people to health services
- Community engagement

OTHER PUBLIC HEALTH SERVICES

Local health departments play a role in assuring these services are provided in their community, by public health or other organizations

- Clinical preventive and primary care services (e.g., immunizations, clinics)
- Specific maternal and child health programs (e.g., WIC, Help Me Grow)
- Non-mandated environmental health services (e.g., lead screening)
- Other optional services (e.g., home health, school nurses)

FOUNDATIONAL CAPABILITIES

All local health departments should have access to the following skills and resources.
Access can occur through cross-jurisdictional sharing.

- Quality assurance
- Information management and analysis
- Policy development
- Resource development
- Legal support
- Laboratory capacity
- Support and expertise for community engagement strategies

Ohio's Cost Estimates (preliminary)

Exhibit 4. Model of Core Spending.

Core spending	Multipliers			Sample Computation		
	A	B	C	D	E = B * D	F = C * D
	Estimated impact of agency features	Estimated impact of population features	Quick estimate	Actual	Computed estimate B	Computed estimate C
Type of agency = city	-0.4340	0.0000		0.0000	0.0000	
Type of agency = county	0.0000	0.0024		1.0000	0.0024	
Population size (log)	0.8572	0.9053	0.9701	10.4096	9.4235	10.0979
Percent population rural	0.2747	0.5795	0.7892	0.6458	0.3742	0.5097
Percent population nonwhite	2.5749	2.7096	2.9770	0.0291	0.0790	0.0868
Percent non-English speaking	1.0886	-5.5211		0.0050	-0.0276	
Percent 65 + years old (%)	-2.1059	0.3036		0.1407	0.0427	
Income per capita (\$100,000)	-2.3900	-1.1500		0.1984	-0.2281	
Percent uninsured (%)	-1.3601	3.4406		0.1095	0.3768	
Physicians per 100,000 population	0.0006	0.0004		27.1000	0.0120	
NACCHO % of Core Svc	1.0009	1.4116		0.6500	0.9175	
Constant	4.9783	2.9009	3.0476		2.9009	3.0476
Total				1,127,485	1,059,516	929,085

Local per capita: \$32.2

Source: Patrick Bernet and Ohio Research Association for Public Health Improvement.

www.raphi.org

Defining what to cost: Colorado

Colorado Core Public Health Services

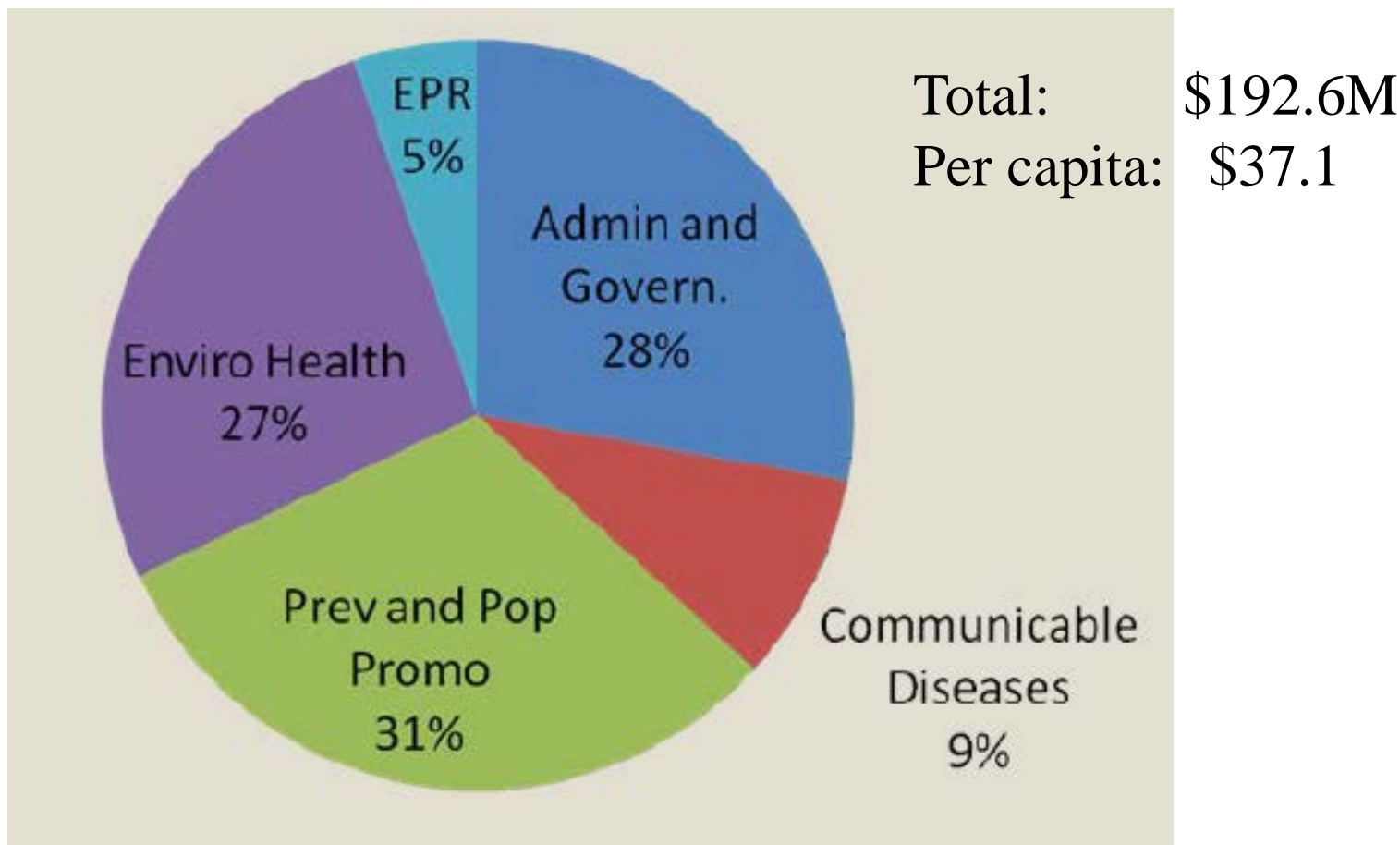


- Core Services Promulgated into Rule October 2011:
 - Assessment, Planning, and Communication
 - Vital Records and Statistics
 - Communicable Disease Prevention, Investigation, and Control
 - Prevention and Population Health Promotion
 - Emergency Preparedness and Response
 - Environmental Health
 - Administration and Governance

...performed in accordance with the 10 Essential Public Health Services

Colorado's Cost Estimates (preliminary)

Colorado Local Core Public Health Services, 2012



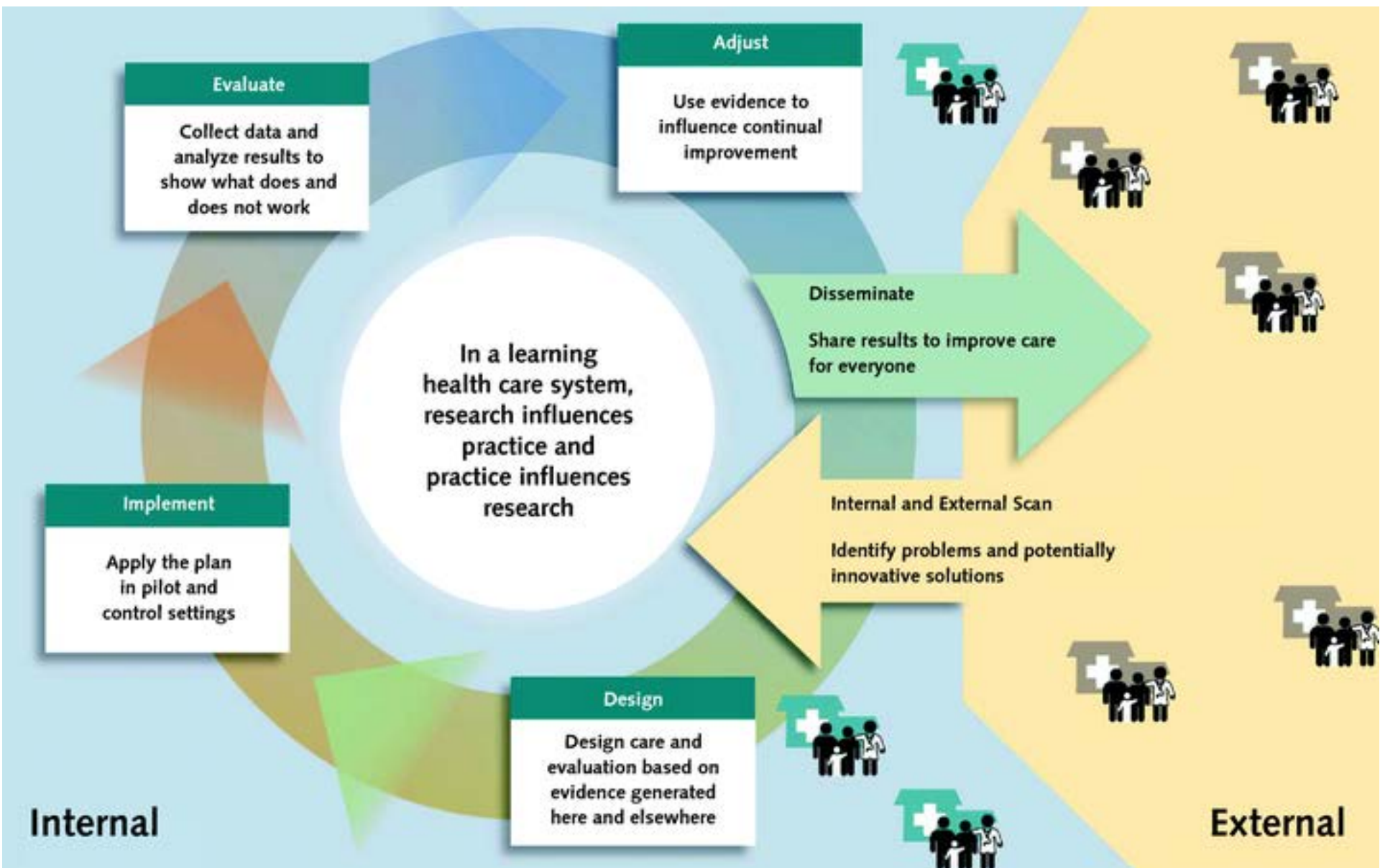
Source: Lampe et al. Colorado Public Health PBRN Research-in-Progress, 2013

http://www.publichealthsystems.org/uploads/docs/MonthlyPBRN_WebinarSlides_091913.pdf.

Ongoing work: Public Health Delivery and Cost Studies (DACs)

- Set of 11 new studies conducted by PBRNs
- Focus on 1 or more public health services
- Estimate costs and cost variation across multiple settings
- Identify factors that drive variation in costs
- Use standardized approaches to cost measurement and cost analysis

Toward a “rapid-learning system” in public health



For More Information



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