Using Economic Analysis to Understand the Value of Population Health Improvement Strategies

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Available at: https://works.bepress.com/glen_mays/335/
Using Economic Evaluation to Understand the Value of Public Health Services

Mississippi Department of Health
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Glen Mays, PhD, MPH
Cezar Mamaril, PhD, MS
I. Fundamentals of economic evaluation
II. Examples of public health economic studies
III. Tools for economic evaluation in public health
IV. Interpretation, applications, limitations & caveats
Fundamentals of economic evaluation
Why economics in public health?

- Do outcomes achieved by public health interventions justify their costs?
- Where should new investments be directed to achieve their greatest impact?
Related questions of value...

- How much **health** can we produce through public health investments?
- Can public health investments help “bend the curve” to reduce **medical costs** or costs incurred by other stakeholders?
Transforming policy & practice with cost estimation

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

- **Cost savings** – a high bar
- **Cost effectiveness** – value for dollars spent
  - Compared to status quo
  - Compared to other possible investments
  - Compared to doing nothing

...Key concept: *opportunity costs*
Setting and managing expectations

![Graph showing proportion of published cost-effectiveness ratios for preventive measures and treatments for existing conditions across different cost-effectiveness ratios.](chart)

**Cost-Effectiveness Ratio ($ per QALY)**

Uncertainty and Controversy

Prevention Efforts Provide No Panacea on Health Costs

By JANET ADAMY

Preventing Chronic Disease: An Important Investment, But Don’t Count On Cost Savings

An overwhelming percentage of preventive interventions add more to medical costs than they save.

by Louise B. Russell

HEALTH AFFAIRS - Volume 28, Number 1

Prevention for a Healthier America:

INVESTMENTS IN DISEASE PREVENTION YIELD SIGNIFICANT SAVINGS, STRONGER COMMUNITIES
Some programs are more cost-effective than others

- School-Based Programs to Increase Physical Activity
- School-Based Violence Prevention
- Safe Routes to School
- Motorcycle Injury Prevention
- Tobacco Control Interventions
- Access to Clean Syringes
- Pricing Strategies for Alcohol Products
- Multi-Component Worksite Obesity Prevention

Changing the Context
Making the healthy choice the easy choice

Social Determinants of Health

HI-5
HEALTH IMPACT IN 5 YEARS

- Early Childhood Education
- Clean Diesel Bus Fleets
- Public Transportation System
- Home Improvement Loans and Grants
- Earned Income Tax Credits
- Water Fluoridation

Challenges in demonstrating economic value in public health

- **Time lag** between costs and benefits
- **Distribution** of costs and benefits: *concentrated* costs but *diffuse* benefits
- **Measurement** of costs and benefits requires good information systems
- **Attribution** of benefits to specific public health interventions
- **Estimating** the counterfactual
How public health activities relate to medical costs

Annual Growth Rate of Aggregate U.S. Medical Spending

- Growth rate due to cost per case
- Growth rate due to prevalence

Roehrig et al. Health Affairs 2011
Economic evaluation: key steps

1. Estimate resources used to implement intervention
2. Estimate effects attributable to the intervention
   - Health effects
   - Effects on resource use
3. Account for the timing of costs and benefits
4. Account for uncertainty in costs and benefits
5. Compare intervention costs to intervention benefits
Estimating value in public health: Key considerations - Costs

Direct costs
- Cost of implementing the activity
- Costs avoided or incurred due to the activity’s impact

Indirect costs
- Economic value of productivity gains/losses or time savings/costs attributable to the activity

Intangibles
- Quality of life, satisfaction, self-efficacy, social capital
Estimating value in public health: Key considerations

Targets of study
- Primary, secondary or tertiary prevention programs
- Quality improvement projects
- Cross-cutting infrastructure

Perspective
- Federal, state, agency, health system, or societal?

Time Horizon
- How long can you wait to realize a return?
Estimating value in public health: Key considerations - Benefits

**Health gains (captured in outcome measures)**
- Deaths averted
- Cases prevented
- Years of life gained (or QALYs)

**Efficiency gains (captured in cost measures)**
- Avoided medical care use (admissions, ED visits)
- Reduced labor costs
- Reduced material costs
- Reduced lost time from work, school, household production

**Productivity gains (captured in output measures)**
- Services delivered
- Cases detected

**Revenue gains (captured in financial measures)**
Valuing Prevention & Public Health


Estimating value in public health: Key considerations

Participation/Adherence

What proportion of the population at risk engages in the program/intervention?

Break even

How long does it take to recoup investment?

Maintenance/Persistence

How long do the benefits last?

Recurring costs?
Estimating value in public health: Key considerations

- **Economies of scale**: many public health interventions can be delivered more efficiently across larger populations.

- **Economies of scope**: efficiencies can be realized by using the same infrastructure to deliver an array of related programs and services.
Examples of economic evaluation in public health
Examples: Program ROI

Arkansas Colorectal Cancer Program

- 3-year, state-funded demonstration program
- Identify at-risk uninsured residents and navigate them to screening and support
- Track program costs and screening outcomes

www.visionproject.org

Felix, Mays et al. 2011
http://content.healthaffairs.org/content/30/7/1366.abstract
### Example: Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-period</th>
<th>Implementation</th>
<th>Post-period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months</td>
<td>14</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Program administration</td>
<td>$165,443</td>
<td>$249,435</td>
<td>$86,970</td>
</tr>
<tr>
<td>Clinical services</td>
<td>$0</td>
<td>$284,569</td>
<td></td>
</tr>
<tr>
<td>Supplies &amp; other</td>
<td>$780</td>
<td>$14,716</td>
<td>$15,636</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td>$166,237</td>
<td>$548,736</td>
<td>$102,623</td>
</tr>
<tr>
<td><strong>annualized total</strong></td>
<td>$142,489</td>
<td>$411,552</td>
<td></td>
</tr>
<tr>
<td>Number screened</td>
<td></td>
<td></td>
<td>390</td>
</tr>
<tr>
<td>Nominal cost per screen</td>
<td></td>
<td></td>
<td>$1,407</td>
</tr>
<tr>
<td>Amortization factor</td>
<td></td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>Total cost per screen</td>
<td></td>
<td></td>
<td>$1,428</td>
</tr>
<tr>
<td>Amortized total program cost</td>
<td></td>
<td></td>
<td>$555,860</td>
</tr>
</tbody>
</table>

Arkansas CRC Program Data
Example: Benefits

CRC Cancer by Stage of Diagnosis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Overall Prob</th>
<th>Uninsured Prob</th>
<th>Insured Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.19</td>
<td></td>
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</tr>
<tr>
<td>3 or 4</td>
<td>0.45</td>
<td>0.63</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Arkansas Cancer Registry
## Example: Costs & Benefits

### Table of Assumptions for CRC Demonstration Economic Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment costs for late-stage CRC (III-IV, net present value)</td>
<td>$120,000</td>
<td>AHRQ 2012</td>
</tr>
<tr>
<td>Treatment costs for early-stage CRC (0-II, net present value)</td>
<td>$30,000</td>
<td>AHRQ 2012</td>
</tr>
<tr>
<td>Five-year survival for late-stage CRC (III-IV)</td>
<td>40.25%</td>
<td>IOM 2015</td>
</tr>
<tr>
<td>Five-year survival for early-stage CRC (0-II)</td>
<td>85.03%</td>
<td>IOM 2015</td>
</tr>
<tr>
<td>Proportion of uninsured CRC patients diagnosed at late stage</td>
<td>63.00%</td>
<td>Cancer registry; Halpern et al. 2008</td>
</tr>
<tr>
<td>Proportion of insured CRC patients diagnosed at late stage</td>
<td>32.00%</td>
<td>Cancer registry; Halpern et al. 2008</td>
</tr>
<tr>
<td>Proportion of screened adults diagnosed with CRC</td>
<td>0.77%</td>
<td>Demonstration</td>
</tr>
<tr>
<td>Proportion of screened adults with adenoma detected</td>
<td>14.62%</td>
<td>Demonstration</td>
</tr>
<tr>
<td>Proportion of adenomas that transition to cancer</td>
<td>2.50%</td>
<td>IOM 2015</td>
</tr>
<tr>
<td><strong>Intervention costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical costs</td>
<td>$284,569</td>
<td>Demonstration</td>
</tr>
<tr>
<td>Administration, outreach, and navigation costs</td>
<td>$249,435</td>
<td>Demonstration</td>
</tr>
<tr>
<td>Supplies and equipment</td>
<td>$14,716</td>
<td>Demonstration</td>
</tr>
<tr>
<td>Start-up costs</td>
<td>$166,237</td>
<td>Demonstration</td>
</tr>
<tr>
<td>Amortization rate for start-up costs</td>
<td>5.00%</td>
<td>Author approx.</td>
</tr>
<tr>
<td>Number screened</td>
<td>390</td>
<td>Demonstration</td>
</tr>
</tbody>
</table>
Example: Economic Analysis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Tx Costs</th>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0-2</td>
<td>$30,000</td>
<td>85.03</td>
</tr>
<tr>
<td>Cancer</td>
<td>70.70</td>
<td></td>
</tr>
<tr>
<td>0.8%</td>
<td>$58,800</td>
<td></td>
</tr>
<tr>
<td>With screening program</td>
<td>99.77</td>
<td></td>
</tr>
<tr>
<td>$452</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 3-4</td>
<td>$120,000</td>
<td>40.25</td>
</tr>
<tr>
<td>Adenoma</td>
<td></td>
<td>100.00</td>
</tr>
<tr>
<td>14.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td>100.00</td>
</tr>
<tr>
<td>84.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Example: Economic Analysis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Tx Costs</th>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0-2</td>
<td>$30,000</td>
<td>85.03</td>
</tr>
<tr>
<td>Cancer</td>
<td>56.82</td>
<td>0.8%</td>
</tr>
<tr>
<td></td>
<td>$86,700</td>
<td></td>
</tr>
<tr>
<td>Stage 3-4</td>
<td>$120,000</td>
<td>40.25</td>
</tr>
<tr>
<td>Cancerous</td>
<td>56.82</td>
<td>2.5%</td>
</tr>
<tr>
<td></td>
<td>$86,700</td>
<td></td>
</tr>
<tr>
<td>Adenoma</td>
<td>98.92</td>
<td>14.6%</td>
</tr>
<tr>
<td></td>
<td>$2,168</td>
<td></td>
</tr>
<tr>
<td>Stage 3-4</td>
<td>$120,000</td>
<td>40.25</td>
</tr>
<tr>
<td>Benign</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$0</td>
<td>100.00</td>
</tr>
<tr>
<td>Without screening program</td>
<td>99.51</td>
<td>97.5%</td>
</tr>
<tr>
<td></td>
<td>$984</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>$0</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>84.6%</td>
</tr>
</tbody>
</table>
Example: Economic Analysis

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number screened</td>
<td>390</td>
</tr>
<tr>
<td>Incremental treatment cost</td>
<td>-$207,248</td>
</tr>
<tr>
<td>Net cost of the screening program</td>
<td>$348,613</td>
</tr>
<tr>
<td>Incremental life years gained</td>
<td>20.64</td>
</tr>
<tr>
<td>Total cost per life-year gained</td>
<td>$16,893</td>
</tr>
</tbody>
</table>
Examples: Program ROI

Arkansas Community Connector Program

- Use community health workers & public health infrastructure to identify people with unmet social support needs
- Connect people to home and community-based services & supports
- Link to hospitals and nursing homes for transition planning
- Use Medicaid and SIM financing, savings reinvestment
- Costing with electronic time logs

Felix, Mays et al. 2011

http://content.healthaffairs.org/content/30/7/1366.abstract
Example: Program ROI

- Quasi-experimental research design
- Three year demonstration period + 1 year extension
- Measured expenditures for CCP participants one year before participation and up to 3 years after participation
- Constructed a statistically-matched comparison group of Medicaid recipients not served by CCP
- Use difference-in-difference models to estimate impact, controlling for time-varying covariates
Examples: Program ROI

Three Year Aggregate Estimates

- Combined Medicaid spending reductions: $3.515 M
- Program implementation costs: $0.896 M
- Net savings: $2.629 M
- ROI: $2.92

Felix, Mays et al. 2011
http://content.healthaffairs.org/content/30/7/1366.abstract
Examples: Program ROI

By Holly C. Felix, Glen P. Mays, M. Kathryn Stewart, Naomi Cottoms, and Mary Olson

THE CARE SPAN

Medicaid Savings Resulted When Community Health Workers Matched Those With Needs To Home And Community Care

Felix, Mays et al. 2011
http://content.healthaffairs.org/content/30/7/1366.abstract
Examples: Program Specific Estimates

- Smoking cessation interventions cost an estimated $2,587 for each life-year gained.
- $1 spent on STD and pregnancy prevention produces $2.65 in medical cost savings.
- $1 spent on preconception care for diabetic women produces $5.19 in medical cost savings.
- $1 spent on childhood immunization produces $6.30 in medical cost savings.

Source: Centers for Disease Control and Prevention 2011
Examples: Environmental Health Interventions

- $1 investment in lead paint hazard control saves $12-155 per household (Gould 2009)
- $1 spent on asthma control programs yields $71 in medical cost savings (CDC 2013)
- $1 spent on federal disaster mitigation yields $6 in savings (National Institute of Building Sciences 2017)
Example: Cross-cutting Public Health Infrastructure

- How strong are the delivery systems that support public health improvement activities?

- How do these delivery systems change over time?

- How do these delivery systems influence health and economic outcomes?
Widely recommended activities to support population health improvement

- Engage stakeholders
- Assess needs & risks
- Identify evidence-based actions
- Develop shared priorities & plans
- Commit shared resources & responsibilities
- Coordinate Implementation
- Monitor, evaluate, feedback

Foundational Capabilities for Public Health

A useful lens for studying public health delivery systems

National Longitudinal Survey of Public Health Systems

- Nationally representative cohort of 600 U.S. communities
- Followed over time: 1998-2018
- 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
Mapping delivery systems for public health

Node size = degree centrality
Line size = % activities jointly contributed (tie strength)

Comprehensive Delivery Systems
One of RWJF’s Culture of Health National Metrics

- **Broad scope** of public 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

Health effects attributable to public health systems

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.

Mays GP et al. Health Affairs 2016
Economic effects attributable to public health systems

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. Vertical lines are 95% confidence intervals.

Mays GP et al. Health Services Research 2017
Economic effects attributable to public health systems

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. Vertical lines are 95% confidence intervals.

Mays GP et al. *forthcoming* 2017
Aggregate economic benefit

- 1% increase in public health spending in average community over 10 years:

  - Public health cost: $7.2M
  - Medical cost offset: -$6.3M (Medicare only)
  - Deaths averted: 175.8
  - Life years gained: 1758
  - Net cost/LY: $546

Mays et al. 2017
“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.”

Estimating the Cost of Foundational Public Health Services (FPHS)
Toward a deeper understanding of costs & returns in public health

2012 Institute of Medicine Report* identified two fundamental barriers to improving the nation’s public health system

1. lack of agreement on a core set of public health capabilities that should be present in every U.S. community
2. lack of knowledge about the resources required to implement these capabilities.

The report concludes that sound policy for improving the nation’s public health system can move forward only when there is sufficient understanding and agreement about what the public health system should be able to do and how much it will cost.

2012 Institute of Medicine Recommendations

- Called for an expert panel process to identify the components of a “minimum package” of public health services and cross-cutting capabilities that should be available in every U.S. community to protect and improve population health.
- Undertake and expand research to estimate the resources required to implement these services and capabilities universally across the U.S.
- Develop and implement a **national chart of accounts** for tracking spending & flow of funds

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**

In response to IOM recommendations, RWJF commissioned a national expert panel in 2014 - Public Health Leadership Forum (PHLF)

- PHLF included representatives from federal, state, and local public health agencies, public health professional associations, universities, public health accrediting bodies, and health policy advisory commissions.
- Used available research, practical experience & expert opinion to distinguish two broad types of responsibilities or “actions” within the public health system: (1) categorical programs and policies; and (2) cross-cutting capabilities
**FPHS Definitions**

- The PHLF National Workgroup developed definitions of foundational public health capabilities, specified in the *Public Health Leadership Forum’s Articulation of Foundational Capabilities & Foundational Areas* (funded by RWJF, facilitated by RESOLVE): [http://www.resolv.org/site-healthleadershipforum/](http://www.resolv.org/site-healthleadershipforum/)
- FPHS Categories articulated and defined (V1)

**Foundational Areas (FA):** substantive areas of expertise or program-specific activities in all state & local health departments essential to protect the community’s health.

**Foundational Capabilities (FC):** Cross-cutting skills that need to be present in state & local health departments *everywhere* for the health system to work *anywhere*. Needed to support the foundational areas, & other programs & activities, key to protecting community health & achieving equitable health outcomes.

**Foundational Public Health Services (FPHS):** Suite of skills, programs, & activities that must be available in state & local health departments system-wide; includes foundational capabilities & areas.
# The FPHS framework

## Foundational Areas (5)

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communicable Disease Control</td>
</tr>
<tr>
<td>2</td>
<td>Chronic Disease &amp; Injury Prevention</td>
</tr>
<tr>
<td>3</td>
<td>Environmental Public Health</td>
</tr>
<tr>
<td>4</td>
<td>Maternal, Child &amp; Family Health</td>
</tr>
<tr>
<td>5</td>
<td>Access to and Linkage with Clinical Care</td>
</tr>
</tbody>
</table>

## Foundational Capabilities (6)

<table>
<thead>
<tr>
<th>Capability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessment (including Surveillance; Epidemiology; and Laboratory Capacity)</td>
</tr>
<tr>
<td>2</td>
<td>All Hazards Preparedness / Response</td>
</tr>
<tr>
<td>3</td>
<td>Policy Development / Support</td>
</tr>
<tr>
<td>4</td>
<td>Communications</td>
</tr>
<tr>
<td>5</td>
<td>Community Partnership Development</td>
</tr>
<tr>
<td>6</td>
<td>Organizational Competencies (including Leadership/Governance; Health Equity; Accountability/Performance Management; Quality Improvement; Information Technology; Human Resources; Financial Management; and Legal)</td>
</tr>
</tbody>
</table>

FPHS CE Data-Collection & Research Effort

- **Workgroup on Foundational Public Health Services (FPHS) Cost Estimation (CE)** convened to develop a methodology for estimating the resources required by governmental public health agencies to implement foundational public health services. Released a report on recommended methodology:

  **Estimating the Costs of Foundational Public Health Capabilities: A Recommended Methodology**

- Pilot-Tested Methodology with KHDA Finance Workgroup comprised of 6 Kentucky Health Departments (June-October 2014)

- Pre-Tested web-based survey questionnaire using FPHS V2 definitions with selected Ohio LHDs from AOHC (February 2015-May 2015).

- Incorporated data from DACS study of Washington PHAST Study Team*

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“Based on your understanding of how each public health foundational capability & foundational area is defined, please provide your global or overall assessment on the following question: For each foundational category, what is the estimated percentage currently being met by your health department?”
Illustrating the Model Simulation Approach: Current Per Capita Costs

In summary, the FPHS CE Methodology produces three sets of cost estimates: (1) costs currently incurred by an agency to implement each FPHS element (current costs); (2) expected costs that would be incurred by the agency to implement each FPHS at full attainment levels; and (3) unmet resource gap that is calculated as the difference between expected costs and current costs for each FPHS element.

Total Foundational Public Health Services (FPHS) Costs = \( \sum FC + \sum FA \)
Primary Results: Overlay of probability density graphs for current & expected FPHS per capita costs

FPHS CE Results in context...

• If we were to scale per capita resource gap estimates to a national level, results imply full attainment of FPHS recommendations would require an estimated $34.29 per capita or around $10.94 billion in additional resources per year (~318 mil. 2014 US Pop).

• Increase SLG PH activity spending by 16.1% over the levels estimated in the National Health Expenditure Accounts for 2014.

• Alternatively, resource gap could be filled by doubling federal govt spending on PH activities from the $11.0 billion estimated in 2014.

• Consistent with these estimates, the 2012 IOM report recommended a doubling of the federal government’s expenditures for public health activities in order to fund a minimum package of public health services.

• Continued efforts towards collecting data to generate national estimates via alignment/crosswalk strategies with existing or established SLG accounting/reporting systems.
  • Uniform Chart of Accounts initiative (http://phastdata.org/research/chart-of-accounts)
Tools for economic evaluation in public health
Existing public use tools

AHRQ Asthma ROI calculator

http://statesnapshots.ahrq.gov/asthma/Required.jsp

CDC Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC)

http://apps.nccd.cdc.gov/sammec/

CDC LeanWorks Obesity Cost Calculator

http://www.cdc.gov/leanworks/costcalculator/index.html

RWJF Diabetes Self-Management ROI Calculator

http://www.diabetesinitiative.org
Existing public use tools

County Health Calculator: impact of education and income
http://countyhealthcalculator.org/

OSHA Safety Pays Cost Calculator for Occupational Health

Economic Impact Analysis Tool
https://www.raconline.org/econtool/

CommunityFlu 2.0
http://www.cdc.gov/flu/pandemic-resources/tools/index.htm

Integrated Disease Surveillance and Response Cost Calculator
http://www.cdc.gov/globalhealth/healthprotection/ghsb/idsr/default.htm
Estimating value in public health:
ASTHO Public Health ROI Template

- **Goal**: Develop approaches to assess value of improvements in public health capacity, infrastructure, administrative processes
- **Near-term**: capture effects on labor costs, time costs, productivity
- **Longer-term**: capture effects on program delivery (reach, effectiveness), population health
The Public Health ROI Calculator

Requires data on:

– Operating costs before and after implementation of your public health strategy
– Revenues (if any) before and after implementation of your public health strategy
– Measures of outputs/services before and after
– Measures of health and economic outcomes (if available) before and after
Interpretation, Limitations and Caveats
Conclusions and implications

- Sizable health and economic benefits are attributable to public health infrastructure and foundational capabilities
- Gains are not immediate – accrue over time
- Larger gains for low-income populations & communities
- Equity and opportunity: two-thirds of communities currently lack strong public health infrastructure

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
Advancing Economic Analysis in Public Health

- Enhanced tracking of public health expenditures
- Enhanced monitoring of program performance
  - Reach/targeting
  - Effectiveness
  - Efficiency
  - Equity
- Analysis of cross-cutting infrastructure needed to implement/maintain programs
For More Information

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

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