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Measuring the return on investment in public health in NC

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The call for help…

- Can you help us evaluate the work we do and measure ROI and health outcomes?
- *What we need is cost-benefit analysis - information on how to save money and still have impact*
- Local health departments need help communicating the value of what we do
- ***We need to create a better understanding of the definition and "value added" of government public health***

The basic idea

- **We can compare the overall "usefulness" of interventions by calculating the**

Cost / Good stuff*

****this is a technical term***

What approach should we use?

- Cost benefit
  - Are the benefits greater than the costs?
    - Requires benefits to be translated into dollar amounts
- Cost effectiveness
  - What is the cost per unit of outcome?
    - Outcomes are measured in units that are appropriate to the condition targeted
- Cost utility
  - What is the cost per standard unit of outcome?
    - Outcomes are measures in a standard unit (e.g.: QALY)

How do you measure it?

- Costs
  - Money, staff, programs, other resources
- Benefits
  - Health outcomes

RWJF PHSSR Study

- Natural experiment
  - Explores the effect of changes in spending on staffing, programs, & community health outcomes
    - North Carolina LHDs followed from 2005 - 2008
      - Cost information – LHD spending, programs services
      - "Good stuff" – reduced morbidity and mortality
  - Of the 85 NC LHDs:
    - 2005 survey, n=82
    - 2008 survey, n=83
    - Both surveys, n=80

Previous work

- Builds on previous study by Mays & Smith*
- Examined LHD spending and community outcomes 1993 – 2005
- Spending data from NACCHO
- Mortality outcomes
- Findings: mortality rates fell as spending increased
  - Infant mortality, heart disease, diabetes and cancer all statistically significant
    - Influenza and all cause mortality in the same direction but not statistically significant

*Mays GP, Smith SA. Evidence Links Increases In Public Health Spending To Declines In Preventable, *Health Affairs*, 30, no.8 (2011):1585-1593.

Measuring costs

- NACCHO profile data from 2005 & 2008
  - Total expenditures from most recent FY
  - Total revenue, sources of revenue most recent FY
- NACCHO profile data on population served
- Anticipated measures
  - per capita expenditures
  - per capita revenue
    - per capita revenue for medical care
    - per capita revenue for non-medical /public health core services

Data issue encountered

- Revenue
  - 2005 profile asked for the percent of revenue from each source (e.g.: county, state, federal, Medicaid, etc.) but did not ask for total revenue
  - 2008 profile asked for the dollar amount of revenue from each source, with instructions that the total from each source should equal the total revenue amount, also asked in a separate question

NC LHD Expenditures

Profile year	Average *	Lowest *	Highest *
2005	$74	$18	$218
2008	$87	$35	$218
Change 2005 - 2008	$10	-$21	$74

* All amounts expressed as per captia

Variation in spending in 2008

	Number of Counties	Mean total expenditures	Range
No Data	7	---	---
< $57	20	$49	$35 -- $56
$57 - $79	20	$69	$57 -- $79
> $79 - $106	19	$93	$83 -- $106
>$113 - $218	19	$142	$113 -- $218

*Values represent expenditures per capita

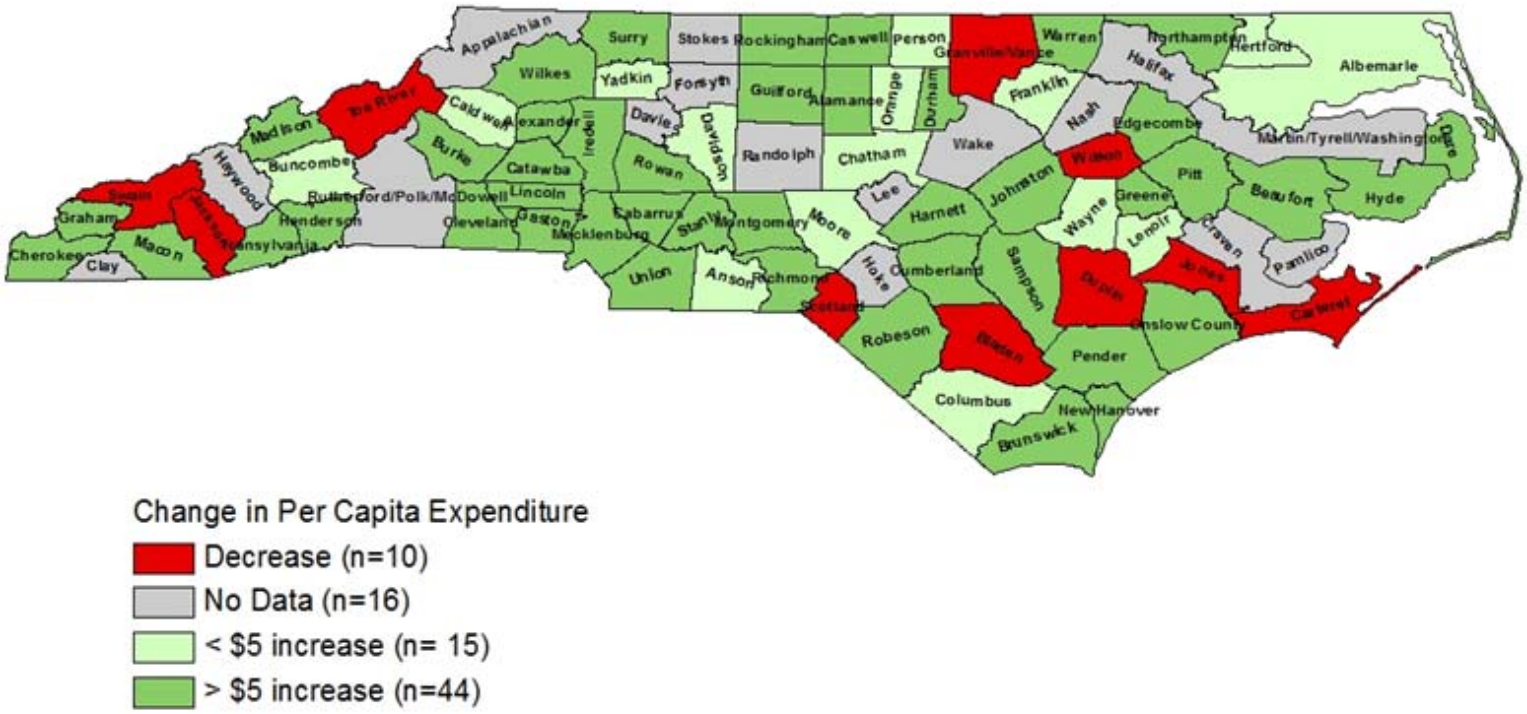
Change in expenditures 2005-2008

	Number of counties	Mean change in expenditures	Range
No Data	16	---	---
Decrease	10	-$7.10	-$21.20 -- --$0.15
< $5 increase	15	$2.80	$0.10 -- $4.90
> $5 increase	44	$16.90	$5.50 -- $74.50

*Values represent expenditures per capita

Change in NC LHD spending

Change of Per Capita Expenditure in North Carolina Local Health Department, 2005-2008



Change in Per Capita Expenditure

- Decrease (n=10)
- No Data (n=16)
- < $5 increase (n= 15)
- > $5 increase (n=44)

Challenges with NACCHO cost data

- "Most recent" fiscal year
  - 2005 profile contains 2004 (37%) and 2005 data
  - 2008 profile data contains 2007 data (6%)
- Missing data
  - Missing items, questions not asked
- Comparability of NACCHO values and state collected data unclear
- Huge variation from year to year
- Time lag between profiles

Addressing the challenges

- Secondary sources of data
  - Revenue and expenditure data collected by state department of public health
  - Verifying data with LHDs
- Discussions with LHDs about what the data mean

How can we use these data?

- Describe public health spending at county levels
- Engage around questions of
  - what these data mean
  - additional questions that need answered
- Contribute to the larger conversations about how best to capture the value of public health services

Next steps

- Analyze outcome measures
  - Mortality
    - Infant mortality, and mortality due to heart disease, cancer, diabetes and influenza
  - Morbidity using insurance claims data
    - Hospitalization rates for heart disease, cancer, diabetes and influenza
    - Rates of food borne illnesses, vaccine preventable diseases, sexually transmitted diseases and cancer screening

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For follow up questions

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