

turning knowledge into practice

## Measures and Mechanics of HRSA's Proposed Ryan White Program Severity of Need Index

David Rein, PhD  
RTI International

August 26, 2008

1 www.rti.org

---

---

---

---

---

---

---

---

## Presentation Overview

- Included Variables
- Severity of Need Index and the IOM Framework
- Discussion of Included Variables
  - Cases, Death Rate, and Prevalence (CDC)
  - Federal Insurance Reduction
  - Geographic Cost Index
  - Other Needs Index
- Index Part A Results
- Index Sensitivity

2 www.rti.org

---

---

---

---

---

---

---

---

## Included Variables

Component	Definition	Data Elements	IOM Category
<b>Cases</b>	• Living cases of HIV and AIDS	• Reported living cases, data from CDC with some exceptions	• Disease burden
<b>Federal Insurance Reduction (FIR)</b>	• Number of living cases whose care is provided by other federal programs	• SSA administration data • Compiled reports on Medicaid benefits	• Available resources
<b>Regional Costs</b>	• Variations in costs for HIV/AIDS outpatient care	• BLS wage data • HUD rent data	• Cost of care
<b>Death Rate</b>	• Percentage of AIDS patients who died	• 5-year CDC AIDS and death surveillance	• Cost of care • Available resources
<b>Poverty Rate</b>	• Average 5-year percent below 100% FPL	• U.S. Census data	• Cost of care • Available resources
<b>Prevalence Rate</b>	• Percentage of population with HIV/AIDS	• Reported living cases • U.S. Census population data	• Available resources

3 www.rti.org

---

---

---

---

---

---

---

---



## Index Properties (cont)

- Relative neediness of an area's cases

$$\frac{(Cases_i - FIR_i) \cdot \left( \frac{1}{2} \cdot Regional\ Cost\ Subindex_i + \frac{1}{2} \cdot Indirect\ Needs\ Subindex_i \right)}{Cases_i}$$

- Number of cases adjusted for need divided by actual number of cases
- When weighted by proportion of cases, mean = 1.00

7 www.rti.org

---

---

---

---

---

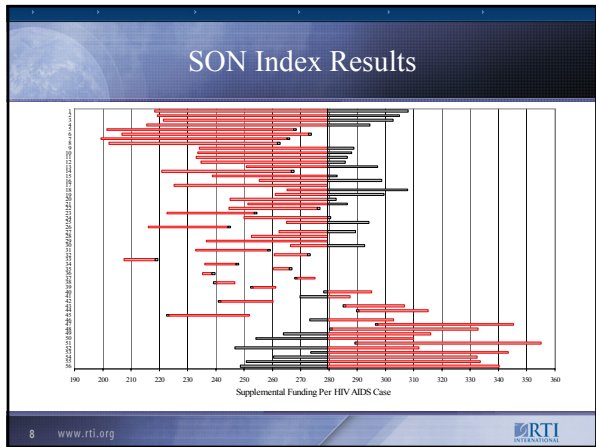
---

---

---

---

---




---

---

---

---

---

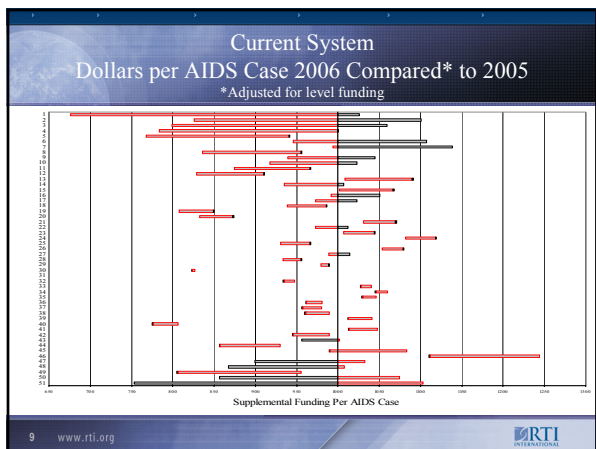
---

---

---

---

---




---

---

---

---

---

---

---


---

---

---

## Index Components

- Surveillance-based Measures (CDC)
  - Cases
  - Death Rate
  - Prevalence Rate
- Federal Insurance Reduction
- Geographic Cost Index
- Poverty Rate and Construction of Other Need Index

10 www.rti.org 

---

---

---

---

---


---

---

---

## Federal Insurance Reduction (FIR)

- Rationale: Federal government pays for a portion of HIV/AIDS care through Medicare and Medicaid. The greater the number of patients cared for through these programs, the lower the need of the Ryan White Program. FIR is a direct measure of available resources.
- But . . .
  - Federal government only pays for a portion of the program (state contribution, co-pays)
  - Federal health benefits do not cover all Ryan White Program services
  - Medicaid benefits may be inadequate to cover all medical costs

11 www.rti.org 

---

---

---

---

---


---

---

---

## FIR (cont)

- Estimation Intuition
  - Find estimated enrollment from Medicaid and Medicare
    - ◆ How many patients?
  - Develop measure of benefit adequacy
    - ◆ Is the benefit likely to cover needed services
    - ◆ What quantity of Ryan White Program services does the benefit cover?
  - Adjust for non-federal contributions
    - ◆ How much of the benefit is provided by someone else?

12 www.rti.org 

---

---

---

---

---


---

---

---

## FIR Enrollment Estimate: Two Sources of Enrollment Data

	SSA Data	Medicaid Analytic Extract
Description	<ul style="list-style-type: none"> <li>Enrollment defined as patients who qualify for SSDI (Medicare eligible) or SSI (Medicaid Eligible) because of an HIV/AIDS diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>Patients defined in State Medicaid data using diagnosis and drug codes</li> <li>Generally a 3- to 4-year time lag</li> </ul>
Advantages	<ul style="list-style-type: none"> <li>Ideal for Medicare</li> <li>Federal eligibility criteria strongly similar between states                             <ul style="list-style-type: none"> <li>Greatly reduces disincentives for state-initiated eligibility criteria</li> </ul> </li> <li>Very strong data</li> </ul>	<ul style="list-style-type: none"> <li>Captures many more patients than SSA files</li> <li>Eligibility varies by state                             <ul style="list-style-type: none"> <li>Good for capturing variation in SON</li> </ul> </li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>Underestimates cases of HIV/AIDS with Medicaid coverage</li> <li>Does not capture patients who enter the rolls through non-disability eligibility pathways</li> </ul>	<ul style="list-style-type: none"> <li>No definitive definition of HIV patients</li> <li>Estimates of patients vary widely by definition</li> <li>Eligibility varies by state                             <ul style="list-style-type: none"> <li>Creates disincentives for state eligibility generosity</li> </ul> </li> </ul>

13 www.rti.org 

---

---

---

---

---

---

---

---

---


---

---

---

## Adjustments to Enrollment

- Proportion of Ryan White services covered by the benefit
  - Proportion of program services that are medical
  - Proportion of medical services that are reimbursed by the program
  - Proportion of the program that is paid for using federal funds

14 www.rti.org 

---

---

---

---

---

---

---

---

---


---

---

---

## Proportion of Program Services That Are Medical

- Estimated from Part A Data Reports
  - 76.2% devoted to medical services**
    - Assume that only this portion is reimbursed by Medicaid or Medicare
  - 12.9% devoted to support services
  - 10.9% for case management

15 www.rti.org 

---

---

---

---

---

---

---

---

---

---

---

---

### Proportion of Medical Services Reimbursed by the Program: Medicare

- Medicare =  $[(\$ \text{ Ideal Care} - \$ \text{ Premiums paid}) \times (1 - \text{coinsurance rate})] / \$ \text{ Ideal Care}$ 
  - ◆ \$ Ideal Care = \$27,821 = Average undiscounted lifetime cost of HIV/AIDS / Years of HIV/AIDS life expectancy (Shackman et al., 2006)
  - ◆ Adjustment of ideal care costs to reflect variations in regional medical expenses
  - ◆ Premiums paid = \$1,080 in 2006 (changes annually)
  - ◆ Outpatient coinsurance rate = 0.20
  - ◆ =  $[(\$27,821 \times 1.28 - \$1,080) \times (1 - 0.80)] / (\$27,821 \times 1.28) = 0.776$
- Interpretation:
  - 77.6% of outpatient medical costs are paid for by Medicare
- Geographic cost adjustment explained in next section

16 www.rti.org

---

---

---

---

---

---

---

---

---

---

### Proportion of Medical Services Reimbursed by the Program: Medicaid

- Medicaid = Average annual payment per disabled patient enrolled / \$ Ideal Care
  - Average annual payment data from Kaiser Family Foundation data
    - ◆ Limitation, for all disabled enrollees, not just patients with HIV/AIDS
  - \$ Ideal Care the same as for Medicare
  - Adjusted for regional costs
  - Examples:
    - ◆ State A  $\$9,553 / (\$27,821 \times 0.96) = 0.36$
    - ◆ State B  $\$25,945 / (\$27,821 \times 1.13) = 0.82$

17 www.rti.org

---

---

---

---

---

---

---

---

---

---

### Proportion of Program Paid for Using Federal Funds

- Medicare = 100%
- Medicaid = Federal Medical Assistance Percentage
  - Ranges from 50% to 75.9%

18 www.rti.org

---

---

---

---

---

---

---

---

---

---



## Geographic Cost Index Descriptive Properties

	Median	Standard Deviation	Minimum	Maximum
Rent Component	1.02	0.26	0.46	1.65
Wage Component	0.96	0.14	0.49	1.18
Geographic Cost Index	1.02	0.15	0.49	1.28

---

---

---

---

---

---

---

---

---

---

## Geographic Cost Index Correlations

	Rent	Wage	Geographic Index
Rent	1.00		
Wage	0.67	1.00	
Geographic Index	0.84	0.96	1.00

---

---

---

---

---

---

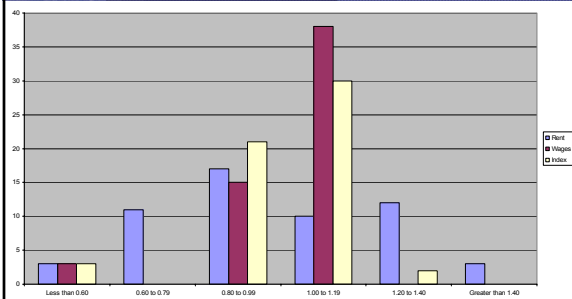
---

---

---

---

## Number of Areas with Each Score on Each Component




---

---

---

---

---

---

---

---

---

---

## Other Needs Index

- Death rate among people with AIDS
  - Based on 5 years of reported death data
- Population poverty rate
  - Average of 5 years of poverty data
  - Calculated at county level
- HIV/AIDS prevalence rate
  - Basic prevalence (cases divided by population) without adjustments

25 www.rti.org

---

---

---

---

---

---

---

---

## Other Needs Index (cont)

- Each variable indexed by dividing by the national average
- Three component indexes are combined using explicitly stated policy weights
  - $\text{Death Rate} \times 0.5 + \text{Poverty Rate} \times 0.25 + \text{Prevalence Rate} \times 0.25$
- Actual link between variables and severity of need is unknown
- Weights can be altered in the future given new data or changing policy priorities

26 www.rti.org

---

---

---

---

---

---

---

---

## Other Needs Index Descriptive Properties

	Median	Standard Deviation	Minimum	Maximum
Death Rate	0.98	0.33	0.48	1.93
Poverty Rate	0.86	0.60	0.45	3.90
Prevalence Rate	0.81	0.59	0.34	2.71
Other Need Index	0.91	0.34	0.50	1.83

27 www.rti.org

---

---

---

---

---

---


---

---

### Other Needs Index Correlations

	Death Rate	Poverty Rate	Prevalence Rate	Other Need Index
Death Rate	1.00			
Poverty Rate	0.30*	1.00		
Prevalence Rate	0.35*	0.25	1.00	
Other Need Index	0.78*	0.69*	0.71*	1.00

\*Significant at the  $p < .05$  level.

28 www.rti.org 

---

---

---

---

---

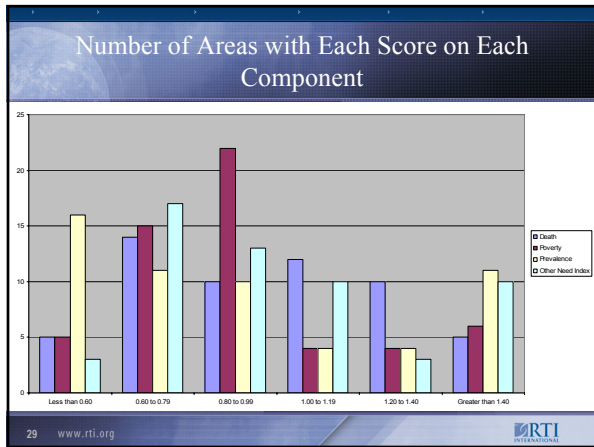
---

---

---

---

---




---

---

---

---

---


---

---

---

---

---

- ### Overall Results
- Funding per case
  - Relationship between funding per case, geographic costs, and other need
  - Relationship between funding per case and each component of the index
  - Sensitivity of index to inclusion/exclusion of different variables
- 30 www.rti.org 

---

---

---

---

---

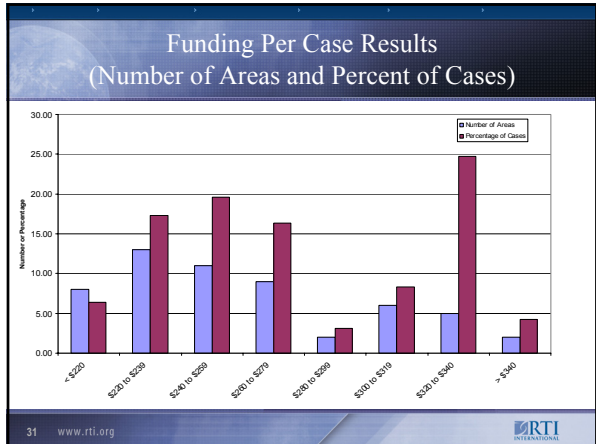
---

---

---

---

---




---

---

---

---

---

---

---

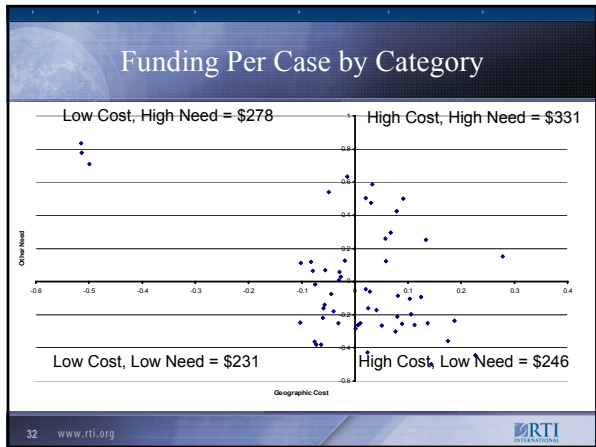
---

---

---

---

---




---

---

---

---

---

---

---

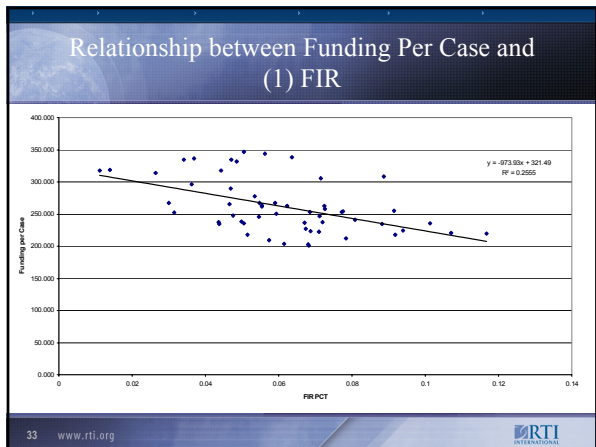
---

---

---

---

---




---

---

---

---

---

---

---

---

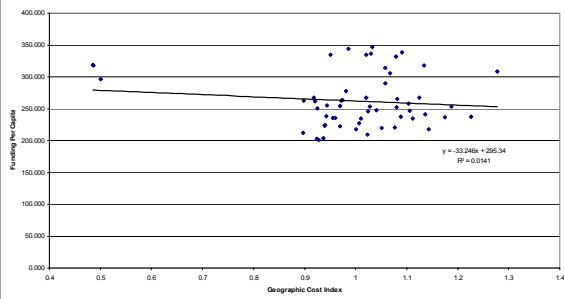
---

---

---

---

## Relationship between Funding Per Case and (2) Geographic Cost Index



34 www.rti.org



---

---

---

---

---

---

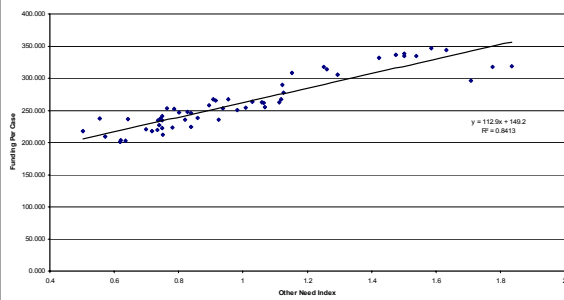
---

---

---

---

## Relationship between Funding Per Case and (3) Other Need Index



35 www.rti.org



---

---

---

---

---

---

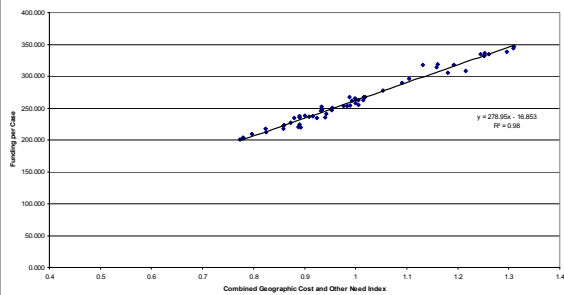
---

---

---

---

## Relationship between Funding Per Case and (4) Geographic + Other Need Index



36 www.rti.org



---

---

---

---

---

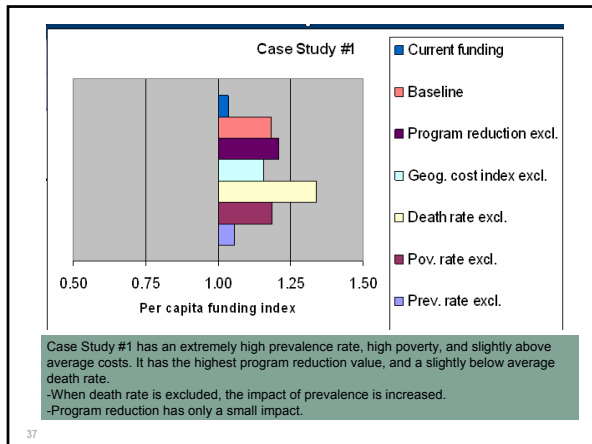
---

---

---

---

---




---

---

---

---

---

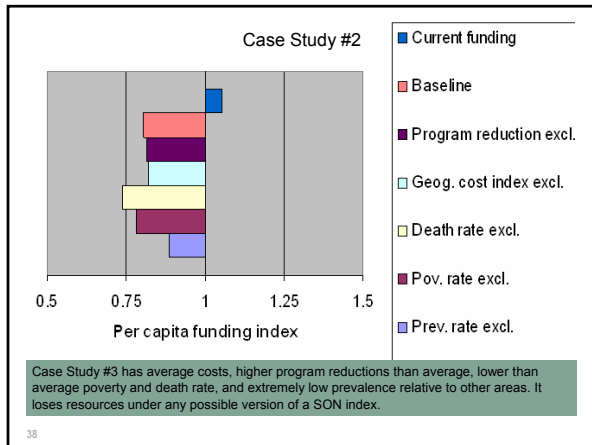
---

---

---

---

---




---

---

---

---

---

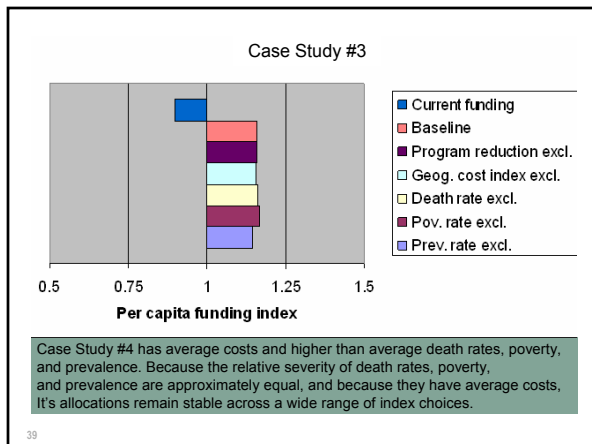
---

---

---

---

---




---

---

---

---

---

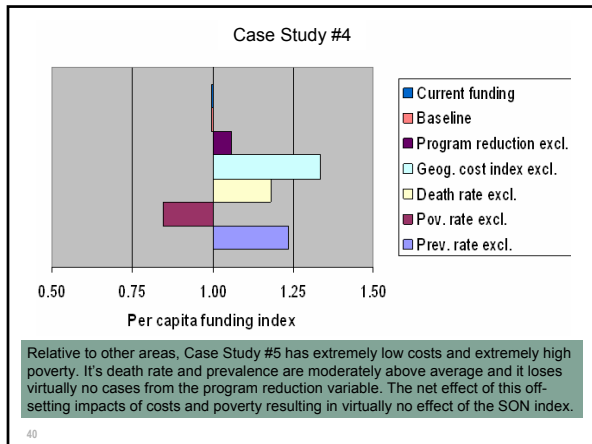
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

## Summary

- Index depends on other needs more than geographic costs
  - Other needs vary more than geographic costs
- Geographic costs and the poverty component of the other need index for the most part cancel each other out
  - Omitting either one would systematically favor either wealthy or poor areas
  - Either both variables in or both out
- Death rate and prevalence rate are related and are both strongly related to allocations

41 www.rti.org

---

---

---

---

---

---

---

---

---

---

## Conclusions

- Developed an index that incorporates input from
  - Academic experts
  - Grantees
  - Federal staff
- Measures are scientifically driven, transparent, and reproducible
- Future refinements of the SON Index will be based on new scientific evidence
- Index appears to have face validity, fulfills congressional requirements, and includes different factors and components whose weights can be modified to fit different aspects of the Ryan White HIV/AIDS Program

42 www.rti.org

---

---

---

---

---

---

---

---

---

---

Next Steps

- External evaluation
- Public input
- Index refinements
- Congressional report
- Congressional implementation

43 www.rti.org RTI

---

---

---

---

---

---

---

---