

Analyzing Return on Investment in Systems of Care

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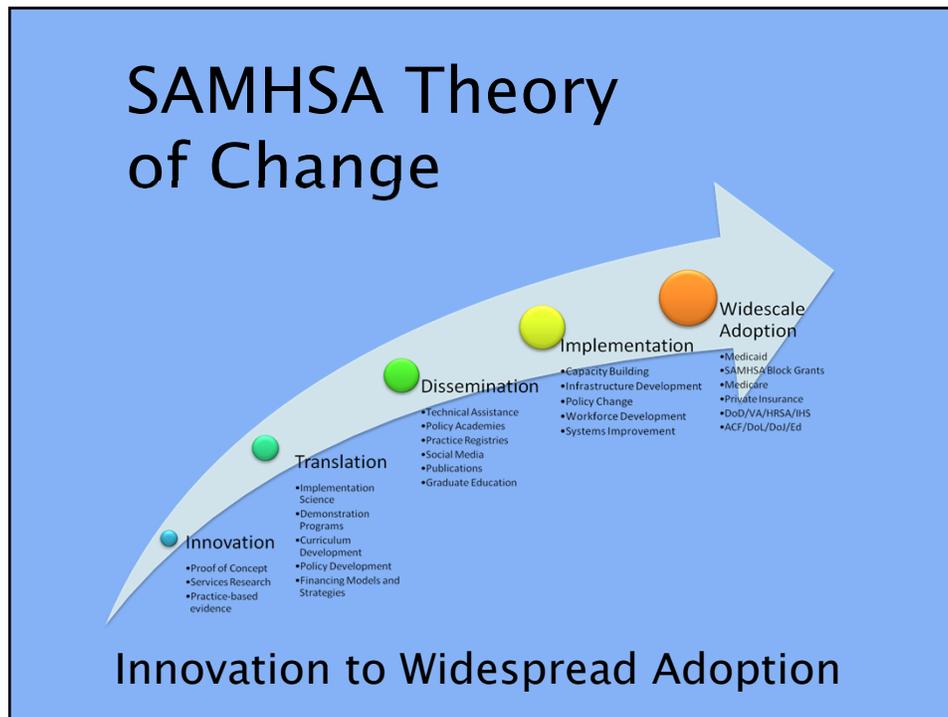
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System of Care Outcomes



- Federal Children's Mental Health Initiative (CMHI) launched in 1993 to fund communities, tribes, and territories to implement the system of care (SOC) approach
- National evaluation of the CMHI found
 - Positive outcomes for children and families
 - Improvements in systems and services
 - Better investment of limited resources
- Results have led to efforts to expand implementation of the approach so that more children and families benefit



Demonstrated Effectiveness of SOCs



- Improve the lives of children and youth – Decrease *behavioral and emotional* problems, *suicide rates*, and *substance use*; improve *school attendance* and grades; decrease involvement with *juvenile justice*; increase stability of living situations
- Improve the lives of families – Decrease *caregiver strain*, increase *capacity to handle* their child's challenging behavior, increase ability to *work*
- Improve services – Expand services to *broad array* of home and community-based services; customize services with *individualized, wraparound* approach; improve care coordination; increase *family-driven, youth-guided* services; increase *cultural and linguistic competence* of services; increase use of *evidence-informed* practices

Impact on Resource Investment



- *Redeploy resources* from higher cost restrictive services to lower cost home- and community-based services and supports
- *Increase utilization of home- and community-based* treatment services and supports
- *Decrease admissions and lengths of stay in out-of-home treatment settings* (e.g., psychiatric hospitals, residential treatment, juvenile justice, out-of-school placements)
- *Reduce costs across systems* (e.g., reduced out-of-home placements in child welfare and juvenile justice facilities with substantial per-capita savings)

Questions



1. How do you really know that you are maximizing your limited resources?
2. How do you choose among promising interventions when you can only afford one?
3. How do you demonstrate to stakeholders that the benefits of your program are worth the costs?



Analyze return on investment (ROI)

What Is ROI?



- Type of economic evaluation
- Compares the cost of an investment with its benefits measured in monetary terms
- Can be communicated to different stakeholders—policymakers, funders, administrators, providers, service recipients, and the general public—to explain the value of an investment
- High ROI in an intervention indicates greater gains relative to its cost

Types of Economic Evaluation



- ***Cost Minimization Analysis*** – Compares the costs of alternative interventions or programs when outcomes are assumed to be equal
- ***Cost-Effectiveness Analysis*** – Compares the costs of alternative programs or interventions to their outcomes, measured in non-monetary units (e.g., measure of functioning)
- ***Cost-Utility Analysis*** – Compares the costs of alternative programs or interventions to their outcomes, measured by a generic utility (e.g., quality of life)
- ***Cost-Benefit Analysis*** – Compares the costs of alternative programs or interventions to their outcomes, measured in monetary units (e.g., dollar value of reduced arrests)

Common Elements of Economic Evaluation



- Calculation of the costs of resources used to deliver the program or intervention
- All compare the costs of the investment to the benefits derived from the investment
- Methods differ primarily in how benefits are measured and expressed:
 - Intangible outcomes
 - Monetary values (including intangible outcomes expressed in terms of monetary values)
- Partial economic evaluations when full economic evaluations cannot be conducted due to lack of capacity or resources, or based on what the study requires

ROI Analysis for the SOC Approach



- Subset of cost-benefit analysis
- Examines benefits/cost savings associated with implementation of the SOC approach
- May assess benefits and costs from the perspectives of payers (e.g., government agencies), children and families, taxpayers, society in general
- “Monetizes” or assigns monetary values to particular outcomes

Monetized Outcomes	Costs
Mental Health	Costs to health care system Labor market earnings and taxes paid
Substance Use	Costs to health care system Labor market earnings and taxes paid
Crime	Costs to juvenile justice system Costs to adult criminal justice system Costs to victims
High School Graduation	Labor market earnings and taxes paid
Special Education Placements	Costs to K-12 education system
Child Welfare	Costs of out-of-home care

Examples of Monetizable Outcomes

Benefits of ROI Analyses on SOC's



- Informs resource allocation for children's mental health services
- Supports use of the SOC approach for Medicaid and insurance benefits, managed care strategies, health homes, and services across child-serving systems
- Provides information to make the case for SOC expansion
- Encourages systematic data collection on utilization and cost

Polling Question

For what purposes would you use ROI analyses? (Select two primary purposes)

- To make the case for SOC expansion
- To inform resource allocation decisions for children's mental health services
- To influence Medicaid, MCOs, and commercial insurance to cover home- and community-based services
- To generate support and resources for SOCs across child-serving systems

Challenges in Analyzing ROI in SOCs



- ***Obtaining resources and expertise*** - Time, money, and skilled staff (particularly with more complex methods)
- ***Obtaining data from multiple sources*** - Data across systems, Medicaid claims data, internal MIS system data, etc.
- ***Determining the cost implications of changes in service utilization*** - Translating changes in service utilization patterns into the impact on expenditures (e.g., decreased utilization of inpatient and residential treatment)
- ***Monetizing benefits from SOCs*** - Quantifying specific outcomes that typically are not assigned monetary values
- ***Assessing short-term and long-term costs*** - Both immediate and longer term cost implications associated with the SOC approach

Need for ROI Information



- Need for additional data on cost implications of implementing the SOC approach
- Context of SOC expansion initiative and decisions about taking SOCs to scale
- Multi-site studies, states, and communities have analyzed ROI in SOCs
- Project to synthesize available information relevant to ROI in SOCs
- Subsequent project to develop a guide to help jurisdictions analyze ROI and use these data more systematically

Data Sources



- National evaluation of the federal CMHI that funded over 250 local SOCs since its start in 1993
- Evaluation of the Medicaid Psychiatric Treatment Facility (PRTF) Waiver Demonstration
- Published literature
- State and communities that have conducted their own analyses

Common Characteristics of the SOC's



- Serve population of children and youth with serious and complex disorders (priority risk of out-of-home placement)
- Array of home- and community-based treatment services and supports
- Individualized, wraparound approach
- Intensive care management at low ratios
- Goal of diversion and/or return of children and youth from inpatient and residential treatment settings
- Evidence of positive clinical and functional outcomes
- Some may not use the term "SOC" but approach reflects SOC characteristics

Most Common Methods Used for ROI Analysis in SOC's



1. Analyses of trends in aggregate expenditures
2. Analyses of types of services used and associated costs
3. Pre-post comparisons
4. Comparison group studies

Analyses of Trends in Aggregate Expenditures



Analyze changes in total expenditures for various types of services following implementation of the SOC approach

- Example: New Jersey analyzed changes in overall state expenditures for residential treatment and inpatient services that occurred as the SOC approach was implemented statewide

Advantages

- Straightforward
- Requires little additional data beyond what is routinely collected
- Provides a broad estimate of changes in cost

Caveats

- Attributes change in expenditures to implementing SOC approach
- Other factors could impact expenditures during the same timeframe, e.g., changes in population size or characteristics

Analyses of Types of Services Used and Costs



Analyze changes in service utilization patterns and associated costs for children and youth following implementation of the SOC approach

- Example: Wraparound Milwaukee analyzed changes in utilization of services such as inpatient, residential, and juvenile correction placements and computed resultant changes in costs

Advantages

- Focuses more specifically on children and youth receiving different types of services
- Standardizes for changes in the population size by calculating the cost per child/youth or cost per child/youth for a particular timeframe (e.g., per day, per month, or per episode)

Caveats

- Does not control for the characteristics of the children and youth receiving each of the services
- Risk of making comparisons in utilization and cost between children and youth at different levels of severity of mental health conditions

Pre-Post Comparisons



Compare data at two points in time, typically a period of time prior to entry into services using a SOC approach, with a period of time subsequent to involvement

- Example: National evaluation of the CMHI compared costs during the 6 months prior to intake in a SOC with costs during the 6-month period prior to the 12-month follow-up interview

Advantages:

- Uses the children in SOCs as their own control group
- Avoids issues about comparability of youth receiving specific services

Caveats:

- Does not control for potential systematic changes that may occur post-entry into a SOC that may impact costs, e.g., changes in treatment approaches

Comparison Group Studies



Compare costs for children receiving services using a SOC approach with comparison groups receiving conventional services or "usual care"

- Example: Study of the Mental Health Services Program for Youth (MHSPY) in Massachusetts compared Medicaid costs for a SOC group with a matched comparison group
- Randomized controlled trials are rare, found in only one ROI study

Advantages:

- Isolate effect of SOC involvement by comparing children receiving services within SOC to a similar group of children not receiving SOC services
- Only difference between the two groups should be exposure to SOC; any differences in costs should be attributable to SOC involvement

Caveats:

- More complex and difficult to implement
- Require comparison group children with similar characteristics and data collection on the comparison group
- Require more resources, expertise, and time

Polling Question

What method for cost analyses would be *most* feasible in your state or community? (Select one)

- Analyses of trends in aggregate expenditures
- Analyses of types of services used and associated costs
- Pre-post comparisons
- Comparison group studies

Monetizable Outcome Measures



Trends in Expenditures

- Changes in total Medicaid spending on psychiatric inpatient services, residential treatment services, and home- and community-based services
- Changes in total spending by state child-serving agencies on specific services, e.g., psychiatric inpatient services, residential treatment services, home- and community-based services, juvenile corrections placements, and child welfare placements

Monetizable Outcome Measures



Comparisons of Service Utilization and Costs for Youth

- Comparison of Medicaid and/or state costs for youth in SOC with **average costs in other service settings**, including comparing the costs of SOC services with the average cost of inpatient, residential treatment; juvenile justice placements; child welfare placements (e.g., cost per day in a SOC versus average cost per day in a residential treatment center)
- Comparison of Medicaid and/or state costs for youth in SOC with youth receiving **usual care**, including comparing the costs of inpatient, residential treatment; juvenile justice placements; child welfare placements; ER use; physical health care services; and total service utilization (e.g., with comparison groups)
- Comparison of **placement costs** incurred by child welfare and juvenile justice for youth served with the SOC approach with costs for youth not involved with the SOC approach

Monetizable Outcome Measures



Changes in Costs for Youth Following SOC Involvement

- Changes in costs (Medicaid and/or state costs) per youth following involvement in a SOC, including changes in costs for inpatient, residential treatment, home- and community-based services, ER use, and physical health care services
- Changes in total cost (Medicaid and/or state costs) per youth served with the SOC approach
- Changes in costs post-SOC involvement related to arrests, juvenile justice recidivism, school dropout, grade repetition, caregiver employment and missed work
- Changes in cost per family served

Polling Question

What data are available for cost analyses in your state or community? (Select all that apply)

- Medicaid service utilization and cost data
- Mental health service utilization and cost data
- Cost per child for specific services (e.g., residential treatment, psychiatric hospital, home and community-based services)
- Partner agency service utilization and cost data (e.g., placement rates and costs in child welfare or juvenile justice)

Outcome	Cost Savings
Reduced Inpatient Use	<ul style="list-style-type: none"> • Average cost/child reduced by 42% • \$37 million saved when applied to all children and youth in funded SOCs
Reduced ER Use	<ul style="list-style-type: none"> • Average cost/child reduced by 57% • \$15 million saved when applied to all children and youth in funded SOCs
Reduced Arrests	<ul style="list-style-type: none"> • Average cost/child reduced by 39% • \$10.6 million saved when applied to all children and youth in funded SOC
Reduced School Dropout	<ul style="list-style-type: none"> • Fewer school dropouts in SOCs (8.6%) than national population (20%) • Potential \$380 million saved when applied to all children and youth in funded SOCs <ul style="list-style-type: none"> ▪ Based on monetizing average annual earnings and earnings over lifetime
Reduced Caregiver Missed Work	<ul style="list-style-type: none"> • Estimated 39% reduction in average cost of lost productivity <ul style="list-style-type: none"> ▪ Based on imputed average daily wage of caregivers

Examples: National CMHI Evaluation

9 States	Cost Savings
Evaluation of Medicaid PRTF Waiver Demonstration – 9 States	<ul style="list-style-type: none"> • Waiver expenditures cost 32% of services provided in PRTFs (home- and community-based services with wraparound process) • Average savings of 68% • Average per child savings of between \$35,000 and \$40,000

Examples: PRTF Evaluation

State	Cost Savings
Georgia	<ul style="list-style-type: none"> • PRTF use declined by 62%–73% • Inpatient hospital use declined by 86%–89% • Average costs to Medicaid declined by 56%, with estimated savings of \$44,008 annually per youth • Juvenile correction facility costs declined by 45%, with savings of \$3,180 per youth
Maine: THRIVE System of Care	<ul style="list-style-type: none"> • Inpatient use decreased by half; 51% savings in Medicaid inpatient hospital costs • Costs for ER visits decreased by 40% • Average per-child per-month costs decreased by 30%
Oklahoma	<ul style="list-style-type: none"> • 41% reduction in average total behavioral health charges vs. 17% reduction for control group • 60% reduction in average inpatient charges vs. 17% for control group • Savings of \$357 per youth per month, projected \$18 million savings if all youth in study participated in SOC

Examples: States

Community	Cost Savings
California: Los Angeles	<ul style="list-style-type: none"> • 56% of youth graduating from SOC approach with wraparound had subsequent out-of-home placements vs. 91% of youth graduating from services in a residential treatment setting • Average post-graduation costs nearly 60% less for SOC group than comparison group (\$10,737 versus \$27,383) • Placement costs for residential treatment group were 2.5 times the cost for SOC group
Massachusetts, Mental Health Services Program for Youth (MHSPY)	<ul style="list-style-type: none"> • Total per-child per-month Medicaid claims expense for SOC group less than half of that of comparison group (both physical and behavioral health) • Claims 31% lower for ER, 73% lower for inpatient

Examples: Communities

Community	Cost Savings
Wraparound Milwaukee (WM)	<ul style="list-style-type: none"> • \$3,200 average total all-inclusive cost per child per month vs. \$6,083 group home, \$8,821 correctional facility, \$9,460 residential treatment, \$39,100 inpatient • Reduced use of psychiatric hospitalization by 96% and residential treatment center placements by 87% in Milwaukee County from 1996 to 2012 • Reduced costs by over 50% (\$8,000 per child per month to about \$3,450 per child per month) since inception, attributed to reduced utilization of inpatient and residential treatment • Nearly all youth at risk of juvenile correctional placement are enrolled in WM (80% have diagnosed mental health condition) Average number of youth in juvenile correction placements declined, and costs to the county declined by 37% from 2007 to 2102 (nearly \$9 million savings) • Estimated costs avoided by Milwaukee County since the inception of WM. In 1996, there was an average of 337 youth placed in residential treatment centers. Factored in modest increases in the number of youth placed and cost increases and projected potential expenditures by child welfare and juvenile justice agencies of \$85 million from 1996 to 2012 without WM. With WM's SOC, placement costs were only \$10 million in 2012, cost avoidance of about \$75 million

Examples: Communities

State	Cost Savings
Colorado: Projected ROI from Investment in Early Intervention	<ul style="list-style-type: none"> • Projected potential cost savings and cost avoidance by implementing an early childhood SOC approach (Kids Connects) • Focused on future costs for (1) mental health care, (2) TANF and Food Stamps, (3) high school dropout, and (4) child welfare • Cost of Kids Connects was “scaled up” as if the SOC served all low-income children aged 0–5.25 in Boulder County • Conservative estimate was used of a 40.6% reduction in the overall budgets for each of the four future expenditure areas based on a specified estimation methodology • Estimated that the county could avert \$4,327,443 in costs, yielding a net savings of \$1,927, 443 • For each dollar spent, there would be a return of \$1.80 • The early childhood system of care would pay for itself if only 12.3% of the future costs in these areas were averted

Projected Savings

Step 1: Determine the Purpose and Uses of the Analysis



Purpose and Questions to be Addressed

- Why is the ROI analysis being undertaken?
- What specific questions need to be answered through the analysis? What do policy makers and other stakeholders need to know?
- What perspectives will be considered when selecting SOC outcomes and costs to be measured (e.g., policy makers, child-serving systems, providers, payers, children and families, taxpayers, society)?
- Who should be involved as advisors to frame and plan the analysis?

Target Audience and Uses of Data

- Who will primarily use the results and how will they use them?
- What other audiences will be interested in the results of the analysis and for what purposes?
- How can the results be used strategically to support SOC implementation and expansion?

Step 1, Continued



Types of Products

- What products will best communicate the results of the ROI analysis?
- What different types of products are needed for strategic communications with different target audiences to convey information on ROI in the SOC approach?
- How will products for strategic communications be developed?

Timeframe and Resources

- What is the timeframe for completion of the analysis?
- What staff and/or consultants can be used to plan and implement the analysis, and what is their level of expertise?
- What financial resources are available for the analysis?

Step 2: Create a Plan for the Analysis



Method to be Used

- What method is most appropriate to address the specific questions?
- Over what time period will outcomes and costs be examined?
- What sample will be used for analysis (e.g., how many and which SOC sites, which youth)?

Outcomes and Costs to be Analyzed, Compared, Monetized

- What are the goals and intended outcomes of the SOC?
- What outcomes will be measured based on the goals of the SOC and the purposes and questions to be addressed in the analysis (e.g., service utilization changes, child functional measures)?
- What comparisons will be made (e.g., children pre- and post-involvement in the SOC, comparison with children in usual care)?
- What costs will be measured and what will be included in the cost analysis (e.g., program or intervention costs, administrative costs, costs to service recipients)?
 - How complete are the costs? Do they include all the inputs needed to produce the effects on which outcomes are based?
 - What outcomes will be monetized?

Step 2, Continued



Data Needed and Available and Data Sources

- What data are needed to assess the specified outcomes and costs?
- What data are readily obtainable for the analysis and what are the sources for each of the data elements or indicators (e.g., outcomes from service utilization data, evaluations, reporting systems; costs from budgets, agency accounting systems, claims data)
- How will outcomes be monetized and what data sources will be used (e.g., national cost estimates, research, statistics for outcomes such as economic value of high school graduation)?
- What rate will be used to convert the value of future benefits and cost to their present value (i.e., value of costs in 2020 to 2014 dollars)?
- What arrangements and procedures are needed with agencies or organizations that have relevant data?

Data Collection Process

- How will data be collected? Who will be responsible and when?
- How will data be organized and managed (e.g., data housing, electronic system, software)?

Step 3: Implement the Analysis



- Collecting data according to the plan
- Analyzing results by evaluators
- Varying the assumptions used to analyze outcomes and costs to determine the extent to which differences in the valuation of outcomes or costs affect ROI
- Interpreting results with the group of key advisors

Step 4: Develop Products and Use the Results for Strategic Communications



- Developing products that communicate the value of the SOC approach based on the analysis (e.g., policy briefs, announcements, reports, Web-based communication)
- Developing products geared to specific stakeholders and constituencies, including internal and external decision makers and investors (e.g., policymakers, Medicaid agencies, child-serving agencies, managed care organizations, families and youth, community leaders, advocates, articles for the literature on SOC's)
- Using the products for strategic communications with intended target audiences