Community Based Management Pilot Programs for Youth with Mental Illness Involved in the Criminal Justice System

Program Evaluation Report: Year Two

A Report of Findings per C.R.S. 16-8-205

October 1, 2003

By
Anita Saranga Coen, LCSW
Focus Research & Evaluation

Cost Analysis conducted by Marsha Gould, Ph.D.

Conducted for and with Recommendations by
Office of Research and Statistics
Division of Criminal Justice
Colorado Department of Public Safety

Diane Pasini-Hill; Manager, Special Projects
Kim English; Research Director
Raymond T. Slaughter, Director, Division of Criminal Justice
C. Suzanne Mencer, Executive Director, Department of Public Safety

700 Kipling Street, Suite 1000
Denver, CO 80215
Tel 303-239-4442
Fax 303-239-4491
http://dcj.state.co.us/ors/

ACKNOWLEDGEMENTS

It takes the diligent effort of many individuals to conduct a program evaluation.

Thank you to the youth and their families who consented to participate in the evaluation and shared their personal information and invaluable insight.

Thank you to the clinicians, case managers, coordinators, and others at the Sterling Pilot Program and the Colorado Access/Access Behavioral Care University of Colorado Hospital Multisystemic Therapy Team. You honored the evaluation and took the time to collect the data from the youth and families and assist in clarifying and interpreting the data. For that we are extremely appreciative.

Thank you to Linda Harrison at the Department of Public Safety, Division of Criminal Justice, Office of Research and Statistics, for providing critical information and support in the interpretation and documentation of criminal records, data extraction, and file preparation.

Thank you to the many agencies that assisted with the data collection and determination of cost for various events, including: the Colorado Judicial Branch, the Division of Youth Corrections, the Colorado Mental Health Institutes at Ft. Logan and Pueblo, The Denver Safe City Diversion Program, Sterling Youth Services, the Denver Police Department, and the Sterling Police Department.

And finally, thank you to Colorado MST Services and the Sterling Pilot Program for their financial support of the program evaluation effort.

Anita Saranga Coen
Diane Pasini-Hill
Kim English

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EXECUTIVE SUMMARY

Introduction to the Summary

Pursuant to C.R.S. 16-8-205, passed in FY 2000 by the General Assembly, this report represents a comprehensive process and outcome evaluation of the programs authorized by the statute: the Community Based Management Pilot Programs for Persons with Mental Illness who are Involved in the Criminal Justice System. This legislation resulted from the work of the Colorado Legislative Interim Committee on the Study of the Treatment of Persons with Mental Illness in the Criminal Justice System, established by House Joint Resolution 99-1042 (1999).

The pilot programs were intended to target youth who had co-occurring mental health and criminal/juvenile justice involvement. The specific purpose of the pilot programs was to reduce incarceration, out-of-home placement, and hospitalization rates among these groups of high-risk juveniles.

SUMMARY OF FINDINGS

As of August 15, 2003, 53 of 88 (60%) youth had not received a new court filing and 68 (77%) had not been adjudicated after their admission to the pilot programs. For every criminal career averted, researchers estimate that $1 million are saved over the lifetime of that individual.

*Lifetime social costs averted by the **lack** of negative outcomes by high-risk youth can only be discussed from a theoretical perspective. Therefore, only **actual** costs incurred during the study period were factored into the primary cost analysis.*

However, these youth are at particularly high risk of negative life outcomes. Mental illnesses and antisocial behavior have converged, and without focused and intense intervention, the problems encountered by these youth will likely escalate. Yet this detailed evaluation of individual outcomes reveal improvement on measures of social and mental health indicators and high school completion. Seven youth received GEDs during enrollment or after discharge. Because they are no longer at risk for being dropouts, this accomplishment also represents $3 million in potential lifetime cost savings to society.

The greatest costs incurred after the pilot programs were the result of DYC and DOC sentences imposed on 7% of the youth. Developing and implementing alternatives to institutionally based sanctions for very high-risk youth such as these holds the promise of reaping long-term individual and social benefits. These include social costs averted from increased high school completion rates, decreased delinquent activity, improved family functioning and quality of life, and improved community safety. This 2-year snapshot of 88 youth engaged in intensive programming prescribed in legislation reveals 60% (conservatively) of the youth remain positioned for positive life outcomes.

Findings

The findings presented in this report suggest that the original program purposes have been achieved and the intent of the General Assembly has been realized. The methodology employed here for establishing program and client outcomes was ambitious and complex. The careful analysis and calculation of costs averted is ultimately conservative and most likely underestimates the potential savings generated by programs of this sort. This Executive Summary is intended to synthesize the information detailed in the full report and highlight the study findings.

Program Implementation

The *2002 Interim Report of Early Findings and Recommendations* prepared for the Department of Human Services concluded that the Denver MST Pilot Program met the expectations specified in the original legislation and identified a lack of family and non-CMHC based services in the Sterling Pilot. Recommendations for program improvement were made for both sites. The programs responded to these recommendations for modifications and changes so that, overall, the programs were implemented as intended.

One exception remains: there is insufficient family-based treatment in the Sterling program, as required by the legislation, Although the Sterling Pilot has implemented a successful Multi-Family Parenting Program, only 1% of program time involved family therapy. In addition, the RFP required that the services be research based with regard to effectiveness. The overwhelming majority of evidence-based practices for this population include home or other non-agency based services. Almost all of the Sterling Pilot Program Services are still provided on-site. These reflect a significant deficiency in the original intent of pilot project.

The characteristics of the program participants when they entered the two programs were different in important ways. On average, the Sterling youth were older, with a longer history of delinquency. The Denver youth were significantly more severe in their mental health symptoms and behaviors than the Sterling group. The average length of program participation for those who completed the program in Denver was 4.5 months compared to 10 months in the Sterling program.

The Denver program started eight months later than the Sterling program. This means that considerably more post-program time had elapsed for the Sterling youth compared to the Denver youth. In fact, 20 youth in Sterling logged a post-program discharge period of 18 or more months compared to one youth in Denver.

For these reasons, the program outcomes are not comparable. In particular, the cost analysis will reflect more post-discharge costs as well as savings associated with the Sterling youth since many more youth were in the long-term follow-up phase of the study.

Client Outcomes

As intended by the General Assembly, the programs targeted high-risk youth. Thirty percent of the Sterling program participants reported the onset of anti-social behavior by the age of 11; in Denver, 30% reported onset by age 9, and only 11% reported onset after age 13. *This early age of onset, combined with the serious mental*

health diagnoses required for participation in the pilot programs, suggests that many, if not most, of these youth are at high-risk to continue, and perhaps even escalate, their delinquent behavior.

Sterling Program

Mental Health Symptoms and Behavior. Youth in the Sterling Pilot Program showed improvement on ten of twelve CCAR scales measuring social problems, although it reached significance on only two: Overall Problem Severity, a single overall variable, and Aggressiveness/Dangerousness to Others. These improved domains were particularly relevant for this study. One domain reflects the high probability of imminent short- and long-term costs to the community and the State and the other reflects public safety concerns.

School. Seven youth had dropped out or been expelled at program discharge or follow-up, but another seven received their GED. Two other youth who were not enrolled in school at program admission were enrolled in school at program discharge or follow-up. Only one youth who was enrolled in school at admission had dropped out at discharge or follow-up.

Delinquency. The number of Sterling youth with new filings decreased by more than 30%, from 33 to 22, and the number of youth who were adjudicated fell by 57%, from 30 to 13 youth.

Non-violent misdemeanors, and violent felonies decreased substantially from pre- to post-admission, while violent misdemeanors and non-violent felonies increased among the Sterling youth.

With regard to use of DYC and DOC facility days from pre- to post-admission, the number of:

- Detention days used by youth decreased by 12%;
- Commitment days used by youth increased by 34%, as a result of the commitment of three youth to DYC; and
- One youth was committed to DOC.

Denver Program

Mental Health Symptoms and Behaviors. Upon entry into the program the Denver MST youth demonstrated statistically significant higher scores than Sterling on all twelve of the CCAR scales measuring mental health symptoms and behaviors, indicating a substantially higher level of overall severity. Furthermore, Denver MST youth showed statistically significant improvement at discharge on nine of the twelve domains as well as the Overall Problem Severity score.

School. Most of the youth admitted to the Denver MST Pilot Program were enrolled in school at the time of their admission to the program and stayed in school through discharge/follow-up. Success in school (or not) was considered a risk factor for later delinquency. While two youth were not enrolled at follow-up, three youth who were not enrolled in school at admission were enrolled at discharge or follow-up.

A Word About the Cost Analysis

Rarely does the system invoke consequences that decrease in seriousness and restrictiveness as offenders progress through their criminal careers. Rather, sanctions for antisocial behavior become more restrictive and longer in length over time, and the costs for these sanctions escalate accordingly. Any failure on the part of this high-risk group will result in significant post-program costs because these youth -- by virtue of their prior crime history, mental health issues and current involvement in the juvenile justice system -- will further penetrate these expensive systems. Researchers estimate that the lifetime social costs associated with a "typical career criminal" are over $1 million; of a heavy drug user, approximately $500,000; and of a high school dropout more than $300,000. All 82 youth in this cost study are at high risk for negative life outcomes given their age of onset, substance abuse, offending histories, and mental health issues. These lifetime costs are not included in this analysis.

Delinquency. As of August 15, 2003, about one-third of the Denver youth had sustained a court filing during all post-admission time periods, a 41% reduction from the pre-admission period. The number of youth with new adjudications decreased by 46% after admission to the program.

Non-violent misdemeanors, non-violent felonies, and violent felonies decreased substantially, while violent misdemeanors increased.

Fewer Denver MST youth had diversion, community service, probation, and jail sentences in the post-admission periods.

The number of youth with detention sentences increased and three youth were committed to DYC.

Costs

Of the 90 youth who had enrolled in the two Community Based Pilot Programs by June 30, 2003, non-pilot program costs were documented for 82 youth. These 82 youth have cost the state of Colorado more than $2.3 million dollars through August 15, 2003. Total career costs incurred by these youth ranged from a low of $106 to a high of $173,748.

Post-program costs decreased substantially for services related to Child Welfare (residential treatment and other group placements), new filings with the court, and new arrests in Denver and Sterling.

Costs averted to date total more than $300,000 for 10 of the 82 program participants who were included in the long-term (18 months post-discharge) cost analyses. As a result of Sterling's earlier start-up, all but one of these youth were Sterling Pilot Program youth.

Two-thirds of the pre- and post-program costs were incurred by the state Department of Human Services. Child Welfare (residential treatment and other group care) accounted for the majority of pre-program costs, while Youth Corrections' facility utilization accounted for the highest percentage of post-program costs.

Seven percent of the program participants (n=6) accounted for 25% of the total career costs (pre- and post-admission combined) of the entire cohort (n=82) because these youth received institutional sentences—one of the most costly placements; one youth was sentenced to the Department of Corrections.

Costs shifted over time from the local jurisdictions to the state. The Division of Probation Services almost doubled its costs while municipality costs decreased by more than 50% between the pre- and post-program periods. This is not surprising since youth who sustain multiple "episodes" will forfeit local diversion opportunities and be placed on more restrictive state sentences.

Youth were classified into High, Medium, and Low Cost based on the distribution of actual costs that each of 82 youth actually accrued before and after participation in the pilot program. Low Cost youth were those engaged in services totaling less than $10,000. The Medium Cost category designated youth who incurred costs between $10,000 and $50,000. High Cost was any amount greater than $50,000.

- When Career Costs (all pre- and post-admission periods) were examined for 82 youth, the 20% of youth who were in the High Cost category incurred approximately two thirds of the total cost.
- Of the 82 youth, three-quarters were in the Low Cost category before the program and three-quarters were in the Low Cost category in the post-admission periods, as of August 15, 2003.
- From the pre- to the post-admission periods, however, some youth shifted among cost categories, Low-to-High Cost and High-to-Low Cost, indicating that Post-program Costs cannot necessarily be predicted from Pre-program Costs.
- Twenty-one of the 82 youth in the cost study had been out of the program for 18 months or more, all but one of these Sterling youth. Of these, 13 were in the low-cost category before the program and 10 (77%) were in the low cost category afterwards.
- Of these 21 youth, there were no High Cost youth before the program; Four youth were High Cost afterward.
- Three who were Low Cost before the program moved into the High Cost category after the program.

Post-program costs exceeded pre-program costs by 3.2% for the 82 youth who participated in the program, a surprisingly low figure since post-program costs represent considerably more expensive governmental interventions.

Recommendations

Based on the empirical findings presented in this report, the Division of Criminal Justice, Office of Research and Statistics makes the following recommendations for enhanced program implementation for the purpose of maximizing positive client outcomes.

1) **We recommend that the Children's Health and Rehabilitation Unit, Office of Child and Family Services, Colorado Department of Human Services provide ongoing technical assistance to ensure the full implementation of the objectives specified in C.R.S. 16-8-205.**

§ The Sterling Pilot Program demonstrated a 33% completion rate and 15% of the youth who were admitted to the program did not meet the criteria for serious mental disturbance (SED) as required. We also recommend that Sterling Pilot Program administrators and staff and representatives from the state oversight agency work together to address these issues.

§ Since the interim evaluation findings were reported one year ago, the **Sterling Pilot Program** has made efforts to increase the involvement of families in the youth's intervention. The program is to be commended for its response to recommendations presented last year, particularly for the development of the Multi-Family Parenting Program, which has provided direct services to nine families.

However, family therapy still represented only 1% of overall services delivered in this model. The General Assembly intended that a substantial component of the pilot programs would be family-based; the General Assembly and the subsequent RFP drafters were responding to research that describes such an approach, along with home or non-agency based services as a best practice for reducing delinquency. For this reason, **we recommend that Sterling Pilot Program administrators and staff fully implement a family-based intervention rooted in outreach activities that include home or other non-agency-based services.**

In particular, the Sterling Pilot Program staff and administrators need technical assistance with developing a response to the research findings that the program lacks sufficient family involvement. **We recommend that representatives from the state oversight agency:**

- Meet with program staff to review the barriers to full family involvement identified in the research report.
- Work with program staff to develop a strategic plan with measurable objectives and timelines that address the barriers and incorporate a plan to track the objectives with the evaluator.
- Monitor the implementation of the strategic plan by conducting quarterly site visits, surveying parents, and documenting progress in this area.

We also recommend that Sterling Pilot Program administrators and staff:

- Work to further identify, understand, and overcome barriers to full implementation of a family-based intervention that includes non-agency based services, e.g., the economic downturn and the expensive and time-consuming travel time to family homes for staff or to the mental health center for families and issues that may be related to the rural culture.

- Work with the state program administrator to develop a strategic plan to fully implement a strong family-based intervention that includes non-agency centered services.

The program evaluation demonstrated that youth who completed their respective programs had improved cost outcomes. The Sterling Pilot Program demonstrated a 33% program completion rate. The Denver MST had a completion rate of 82%.

Therefore, **we also recommend that Sterling Pilot Program administrators and staff along with representatives from the state oversight agency work together to address this issue by:**

- Developing a strategic plan with measurable objectives and timelines that address program completion rates and incorporates a plan to track the objectives with the evaluator.

§ **Colorado Access/Access Behavioral Care** would benefit from assistance regarding their strategy for securing regular non-Medicaid referrals and the required matching funds and services. This will involve representatives from the **state oversight agency accomplishing the following:**

- Meeting with program staff to review program operations related to obtaining matching funds.
- Reviewing with staff the barriers to implementing a match-funding scenario and identifying alternative strategies.
- Developing a strategic plan with measurable objectives and timelines that can be tracked by the evaluator.

2) **Representatives from the state oversight agency must document how matching funds and services are obtained and used in both sites.**

3) **We recommend that the state and these local agencies continue to build on the pilot programs' considerable strengths**, including:

§ Extremely solid community-based collaborations;
§ Commitment to creative solutions to enormously challenging situations in the lives of the participants;
§ Strong focus on school enrollment and completion; and
§ Staff dedication, energy, resourcefulness, and expertise.

4) Program effectiveness would be enhanced by **developing strategies to increase the number of referrals of younger at-risk youth** who are less involved in the criminal/juvenile justice system but who would benefit from early interventions. Programs would benefit from applying their two years of experience **to identify the youth who succeed and target those who will benefit the most for enrollment**.

§ Specific attention should be paid to identifying youth who meet the criteria for serious emotional disturbance (SED); 15% of Sterling's and 8% of Denver's enrollees did not meet this criterion.

5) **This program evaluation has demonstrated that the prediction of success is not straightforward and the collection of accurate data for these types of studies is challenging.** We recommend:

- The evaluation place an emphasis on examining the complex relationships between youth and family characteristics and successful youth and cost outcomes.
- The evaluator continues to identify barriers to and develop strategies for collecting inpatient psychiatric hospitalization and follow-up data.

The sites are committed to continuing to improve and respond to recommendations. The general assembly can expect continued positive outcomes and resources devoted to these programs resulting in significant cost savings and immeasurable improvements in the quality of life for those that participate.

The general assembly is to be commended for incorporating program evaluation in the overall program design expectations. Without the comprehensive analysis presented here, the program outcomes would remain unclear.

I. INTRODUCTION AND BACKGROUND

This is the two-year performance evaluation report of the implementation of The Community Based Management Pilot Programs for Persons with Mental Illness Who are Involved in the Criminal Justice System. The programs target youth who have co-occurring mental health and criminal/juvenile justice involvement and were to be designed specifically to reduce incarceration, out of home placement, and hospitalization rates.

The pilot programs were established by HB 00-1034 in fiscal year 2000 (Appendix 1) and were the direct result of the work of the Colorado Legislative Interim Committee on the Study of the Treatment of Persons with Mental Illness in the Criminal Justice System, established by Colorado House Joint Resolution 99-1042 (1999). The Advisory Task Force of the Committee published a Report of Recommendations on November 3, 1999 (Colorado Legislative Interim Committee, 1999), which included a recommendation to introduce legislation to expand intensive community management approaches, including Assertive Community Treatment (ACT) and Multisystemic Therapy (MST) programs, for persons with mental illness who are involved in the justice system.

HB 00-1034 details specific requirements, including the definition of Eligible Juvenile Offender, the types of services the programs were to provide, and the need to collaborate with community partners both programmatically and financially. After an RFP process and review, proposals submitted by Colorado Access/Access Behavioral Care in Denver (urban) and Centennial Mental Health Center in Sterling (rural) were selected for funding. Dollars became available for program implementation January 1, 2001. Meetings of key stakeholders and staff representing both newly funded sites began in early February 2001. Stakeholders included representatives of Children's Health and Rehabilitation Services, the Division of Youth Corrections, and the Alcohol and Drug Abuse Division (all in the Colorado Department of Human Services - CDHS), the Division of Criminal Justice in the Department of Public Safety, the Denver District Attorney Diversion Program, the Denver Department of Social Services, the Mental Health Corporation of Denver, and the Treatment Accountability for Safer Communities (TASC) program of the Denver Juvenile Justice Integrated Treatment Network (DJJITN). The meetings were designed to identify implementation barriers and strategies to facilitate implementation in both sites, including clarifying legislative intent, language, and financing, and defining terminology, eligibility requirements, and timelines. Meetings continue, with regular representation from Mental Health Services, Youth Corrections, the Division of Criminal Justice, both Pilot Sites, and the program evaluator.

This report includes:

- A brief overview of the program evaluation approach, including the Evaluation Questions, Design, and Methods;
- Evaluation findings for the Sterling Pilot Program and the Colorado Access/Access Behavioral Care-University of Colorado Hospital Multisystemic Therapy Team and the youth and families who were enrolled;
- Summary; and
- Recommendations and Next Steps.

II. PROGRAM EVALUATION APPROACH & METHODS

Legislative Requirements

Dollars for the programs were appropriated to the Department of Human Services; dollars for the evaluation component were appropriated to the Department of Public Safety, Division of Criminal Justice (DCJ). The legislation detailed several requirements for the evaluation, including:

- Collection and reporting information evaluating the program, to include at a minimum:
  - Number Participating;
  - Overview of services provided;
  - Revocations;
  - New offenses; and
  - Hospitalizations.
- Outcomes achieved by juveniles receiving services.
- Identification of the cost avoidance/cost savings.

Evaluation Planning Process

The Division of Criminal Justice contracted with Focus Research & Evaluation to conduct the evaluation of the Community Based Pilots. Beginning in the spring of 2001, the evaluator met with DCJ and the various stakeholders to discuss the requirements of the legislation, determine the evaluation needs of the various agencies involved in the project, and reach consensus on the evaluation questions and scope.

While most of the legislative language is defined, the requirement to report "outcomes achieved by youth" and "costs averted or cost savings" necessitated that both be operationalized and their scope defined. This was accomplished primarily through examination of relevant mental health and criminal justice literature, which documents the risks, outcomes, and costs that are most often associated with this population. Experts who work in Criminal Justice, Public Mental Health, and Substance Abuse as administrators and direct service providers augmented this information by sharing their experience-based expectations for the two pilot programs.

Context, Evaluation Questions, and Study Design

The program evaluation design was built around what is known about the economic and social impacts of youth who fail to transition to adulthood successfully.

For example, the benefits of high school completion or the receipt of a General Equivalency Degree (GED) Certificate have been well documented (Greene, 2002). Economically, high school graduates' median annual earnings are 91% greater than those of non-graduates (U.S. Department of Commerce, 2000, Schwartz, 1995). Those who do not graduate are more likely to become single parents, have children at a young age, and are more likely to receive public assistance or be in prison (Kaufman, Kwon, & Klein, 2000).

It is also well known that the addition of emotional or behavioral problems impacts graduation rates (Vander Stoep, Davis, & Collins, 2000; Greenbaum, Dedrick, Friedman, Kutash, Brown, et al., 1998). Table 1 was replicated from that contained in a landmark review of outcomes for youth in transition to adulthood and includes information for key outcome domains across several studies (Vander Stoep, Davis, & *Collings*, pp 13, 2000). Studies are listed in approximate decreasing order of mental health severity, with the McGraw study subjects having the most severe mental health-related disorders and treatment history. As Table 1 displays dramatically, emotional disturbance has severe consequences on youth achieving important developmental expectations, including graduation from high school. It is interesting to note that young adults with emotional disturbances are less likely to be living at home than their non-emotionally disturbed peers, a characteristic the author suggests might in part be due increased homelessness among this population (Vander Stoep, Evens, & Taub, 1997).

> Youth with SED enter the transition phase delayed in their developmental maturation and face additional challenges relative to their non-disabled peers. As a group, they are undereducated, underemployed and have limited social supports. Homelessness, delinquent activity, and drug use are prevalent (Davis, Vander Stoep, 1997, p 400).

Table 1. Outcomes for Young Adults: Comparison of U.S. General Population to Youth with Different Levels of Psychiatric Impairment and Prior Treatment of Youth Ages 18-21 Years.

Outcome Domain	U.S. General Pop.[1]	McGraw: Received Long Term Residential Treatment[2]	NACTS: Half Received Residential; Half Received Special Ed.[3]	NLTS: Seriously Emotionally Disturbed (SED); All Received Special Ed.[4]	CICS: Community Study: Youth W/ Psychiatric Disorders[5]	CICS: Community Study: Youth W/O Psychiatric Disorders[11]
High School Completion	81%	23%	26%	48%	61%	93%
Employed	78%	46%	52%	48%	59%	80%
Resides w/ Family	56%	43%	45%	45%	68%	74%
Recent Police Incident/Arrest	13%	37%	22%	21%	24%	11%
Pregnancy for Women	17%	50%	38%	48%	29%	14%

Source: Vander Stoep, A., et al., pp. 13, 2000

[1] U.S. Department of Commerce, 1993

[2] The McGraw Center Study, Vander Stoep, 1992

[3] The National Adolescent and Child Treatment Study; Kutash, Greenbaum, Brown, & Foster-Johnson, 1995

[4] National Longitudinal Transition Study; Valdes, Williamson, & Wagner, 1990

[5] Children in Community Study; Vander Stoep, Bresford, Weiss, McKnight, Cauce, & Cohen, 2000

Key evaluation questions focus on program implementation, youth and family characteristics, outcomes, and cost.

1. Do the program models implemented reflect the requirements set forth in the legislation? What type and amount of services do the youth and families enrolled in the programs receive?
2. Do the youth served in the programs meet the eligibility requirements of the legislation? What are other important characteristics of the youth and families served by the Pilot programs?
3. What outcomes are achieved by youth at the time of discharge and after discharge from services? Specifically,
   - § What is the depth and severity of criminal justice involvement for youth prior to and after their enrollment in the pilot programs?
   - § Do youth receive fewer new filings and probation revocations during and subsequent to receiving services?
   - § Do youth spend fewer days in out-of-home placement, including psychiatric hospitals and residential treatment, during and subsequent to receiving services?
   - § Do youth show improvement in other critical domains, including:
     - § Criminal/Juvenile Justice;
     - § Mental Health (problem and symptom severity);
     - § Education (performance, attendance, school completion);
     - § Substance Use (amount and type of substances, impact on functioning);
     - § Family Functioning (parenting skills {supervision, involvement, and discipline}, cohesion, and basic needs/resources);
     - § Risk Factors/Behaviors; and
     - § Strengths/Resiliency.
   - § What are the caregivers and youths perceptions of the pilot programs?
     - § What did they hope the pilot program would achieve?
     - § How much help have they received before enrollment from other programs and how much help did they receive from the pilot programs?
     - § What additional services are needed and what recommendations do caregivers and youth have?
     - § What are the costs averted or saved by these programs?
   - § Are the program costs per youth in the two programs offset by the savings (cost averted) from reductions in out-of-home placement, arrests, probation, filings, incarceration, etc?
     - § Are other high cost events (teen child birth, school failure, substance abuse) averted during the intervention and follow-up period, and how much would it have cost, had they occurred at expected frequencies?

Study Design and Methods

The study focused on the following three areas:

Program Fidelity

The evaluator used qualitative information, including document reviews, site visits and interviews, to determine whether the programs adhered to the legislative guidelines.

Youth/Individual Outcomes

Quantitative data were collected at Admission, Discharge, and Post Discharge to measure change in system expenditures, delinquency behavior and criminal justice involvement, mental health symptoms and problems, school enrollment and performance, substance use, family functioning, high-risk behaviors, and strengths and resiliency factors. Except for the documentation of cost-related events, which was collected by the evaluator, the programs collected Admission and Discharge Data. The evaluator collected all Post-discharge Data.

These youth in particular, owing to their involvement in justice, serious emotional disturbance, and high rate of substance use, are at considerable risk for escalation in mental health problems and delinquent behavior. Therefore, these analyses are predicated on the assumption that the best predictor of youths' future high-risk behavior is their past high-risk behavior and that youth prior to intervention, can serve as their own comparison following intervention. In almost all cases, events that occurred during youths' enrollment in the program, i.e., after admission and before discharge, are pooled with events that occurred after discharge. The exceptions are several of the cost comparisons, which control for the amount of time the youth has been discharged from the program.

Program Outcomes

The program evaluator or research interviewer conducted phone or in-person interviews with caregivers and/or youth approximately six months after discharge. Location information and written consent to allow post-discharge contact for research purposes was sought, and in most cases obtained, by the sites prior to each youth's discharge from the program.

Data were collected from caregivers and youth with modified versions of the instruments used at admission and discharge. Qualitative interviews were also conducted and addressed the following: reason for enrollment; age of onset and types of problems youth experienced, service system experiences prior to involvement in the pilot programs; helpfulness of the program and changes for youth since leaving the program; additional services that might have been helpful and/or are still needed; and their level of and satisfaction with family involvement.

It should be noted that this stage of the data collection effort was particularly challenging. This was due to several factors, including: youth were discharged without consent for follow-up; families refused follow-up contact; families moved and could not be located with available resources; and problems with interviewer staffing, par-

It should be noted that this stage of the data collection effort was particularly challenging.

ticularly in Sterling. In addition, even when consent to follow-up was obtained, this population overall was very wary of allowing information to be released, most notably in Sterling.

Table 2 lists each questionnaire/data collection instrument, its source/informant, and data collection point. The Evaluation Plan, which includes a complete description of each instrument, the domains it is designed to capture, as well as administration and data collection procedures, is in Appendix 2.

Table 2. Community Based Pilots Program Evaluation: Data Collection Instruments, Source/Informant, and Data Collection Points

Data Collection Instrument	Source/Informant	Date Collection Points
The Colorado Client Assessment Record (CCAR); See Appendix 3 for a copy of the CCAR.	Therapist/Case Manager	Admission/Discharge
The Community Based Pilot Record (CBPR)	Therapist/Case Manager	Admission/Discharge/Follow-up
The Adolescent Self Assessment Profile II (ASAP II), (Wanberg, 1999); modified with permission of Ken Wanberg, Ph.D.	Self-report by Youth	Admission/Discharge/Follow-up
The Family Resource Scale	Self-report by Caregiver	Admission/Discharge/Follow-up
The Family Assessment Device	Self-report by Caregiver and Youth	Admission/Discharge/Follow-up
The Parenting Measure	Self-report by Caregiver and Youth	Admission/Discharge/Follow-up
Cost-related Units/Events	State Agencies; Integrated Colorado Online Network (ICON); Colorado Trails[6]	Continuous
Program Evaluation/Satisfaction Follow-Up Interview	Self-report by Caregiver and Youth	Follow-Up

Source: Program Evaluation Records

Cost Outcomes

§ Cost studies examine the participants, their system involvement, the program interventions, and the outcomes achieved from the perspective of what they cost and what savings can be inferred. The cost methodology operates on very specific assumptions, which will be presented in the cost section of this report.

[6]Filing, adjudication, sentencing, and conditions of sentencing data (ICON) were obtained using the State of Colorado's Criminal Justice Decision Support System, a research-specific 'data mart' recently developed under SAC Grant # 2001-MU-CX-K006, OJJDP grant 2000-JB-VX-0008, and BJA NCHIP grants 20-RU-15b-16-1, 95-RU-15b-17-1, and 95-RU-15b-12-1. Records were matched on name or social security number and extracted electronically.

Colorado Trails is the automated data system that documents Child Welfare and Youth Corrections events. This system features a statewide client/server network that links state and county child welfare caseworkers, supervisors, and support staff, as well as Division of Youth Corrections staff.

III. PROGRAM EVALUATION FINDINGS

1. Program Models and Fidelity

Do the program models implemented reflect the requirements set forth in the legislation? What type and amount of services do the youth and families enrolled in the programs receive?

The pilot programs were mandated to provide, at a minimum:

- A low client-to-staff ratio;
- Documentation of research regarding the cost effectiveness and/or cost avoidance of the service proposed[7];
- Services designed to reduce delinquent activity and other destructive behaviors such as drug and alcohol abuse;
- Psychiatric services, medication supervision, and crisis intervention, as necessary;
- Treatment focused on the offender, the offender's family and peers, and the offender's educational and vocational performance;
- Integrative, cost-effective, family-based treatment; and
- The promotion of the development of neighborhood and community support systems for offenders and their families.

In addition, HB 00-1034 mandated that:

- The programs operate collaboratively with key agencies, including the District Attorney, The Division of Youth Corrections, Child Welfare Services, Judicial, Community Corrections, local law enforcement, substance abuse treatment agencies, county departments of social services, community mental health centers, and others.
- The collaborating agencies contribute money, services, or a combination of both equal to the amount provided by State General Fund for program operation.

The Sterling Pilot Program was developed within Centennial Mental Health Center, Inc. (CMHC), a private not-for-profit Community Mental Health Center. Through a contract with Colorado Mental Health Services, Centennial Mental Health Center provides public mental health services to a ten county region of northern and eastern Colorado. It is also a partner in the Northeast Behavioral Health (NBH) Mental Health Assessment and Service Agency (MHASA), which provides mental health services to Medicaid recipients in the same region. A full description of the pilot program is provided in Appendix 4.

The Sterling Pilot Program was developed within Centennial Mental Health Center, Inc. (CMHC), a private not-for-profit Community Mental Health Center. Through a contract with Colorado Mental Health Services, Centennial Mental Health Center provides public mental health services to a ten county region of northern and eastern Colorado.

[7] This requirement was added by the Department of Human Services in RFP # IHANC109053CMHS

Colorado Access/Access Behavioral Care (CA/ABC) is the Mental Health Assessment and Service Agency (MHASA) for Denver, providing, among other services, both directly and through provider contracts, public mental health services to Medicaid eligible individuals in the Denver area. ABC contracted with The University of Colorado Hospital (UCH)/Colorado Psychiatric Hospital, to design, develop, and implement a Multisystemic Therapy Team that followed the requirements and guidelines of MST Services in Charleston, NC. As a result of organizational restructuring at the University, the UCH MST did not become fully operational until October 2001. A full description of the program is provided in Appendix 5.

Colorado Access/Access Behavioral Care (CA/ABC) is the Mental Health Assessment and Service Agency (MHASA) for Denver, providing, among other services, both directly and through provider contracts, public mental health services to Medicaid eligible individuals in the Denver area.

Tables 3, 4, and 5 describe the structural, service, and enrollment characteristics, respectively, of each program.

The Sterling Pilot Program

As is shown in Table 3, the Sterling program model demonstrates important areas of fidelity to the legislative requirements and intent, including the low client to staff ratio of one Intensive Case Manger/Clinician to four to six youth. It is impossible to calculate the exact ratio because in this model a youth may be involved in individual, family, or group therapy with other CMHC staff in addition to their work with the Intensive Case Manager/Clinicians.

The Sterling program model demonstrates important areas of fidelity to the legislative requirements and intent, including the low client to staff ratio of one Intensive Case Manger/Clinician to four to six youth.

The co-location of a state certified alcohol and drug program reflects service integration in this challenging area. All youth entering the program are screened for substance abuse problems and, if appropriate, provided complete evaluations. In addition, both of the pilot program's full time staff have completed Certified Alcohol Counselor (CAC II) Training and conduct the Substance Abuse Treatment Group. Bi-lingual services have been an integral factor for at least one family where the caregiver spoke little or no English.

During the second year of program implementation, a formal Transitional Program, a seven-week Multi-Family Parenting Group, and Motivational Interviewing were added to routine operations. Using input from youth, families, and the interim program evaluation report, the pilot program worked specifically to increase parent involvement and develop strategies to assist youth in their transition from services. Five families have completed the Multi-Family Parenting Group Program and another four will have completed the program by October 1.

Interviews with staff indicated that at the program's onset, youth identified by Probation Officers as challenging and most in need of additional services were admitted first. This is a clear reflection of the pilot program's commitment to the collaboration and addressing local community needs.

Perhaps the most notable strength of this program is its ongoing collaboration with the community. Since the program's inception, Centennial MHC and pilot program staff worked to build a strong coalition of com-

munity support and participation. Interviews with staff indicated that at the program's onset, youth identified by Probation Officers as challenging and most in need of additional services were admitted first. This is a clear reflection of the pilot program's commitment to the collaboration and addressing local community needs. The monthly program/case review meetings, combined with frequent contacts between the staff and Probation in particular, are additional indicators of solid community collaboration.

Appendix 4, which contains the program materials for the Sterling Pilot Program, includes several letters that were submitted from significant stakeholders in the Sterling community. These include, Chief Judge Steven Shinn from the 13th Judicial District, Melissa Brown, a Senate Bill 94 Case Manager, and Betty Zimmerman, a Social Services Manager in the Logan County Department of Social Services. These letters confirm the critical need for this resource, and the collaborative role stakeholders have in its operation.

While there have been substantial programming changes, particularly in attempts to involve families, family therapy comprises less than one percent of the services provided, with almost all of the services provided on the grounds of the community mental health center in Sterling. While the model is community based compared to institutionally based treatment, the intention of the RFP was to provide research-based services for this population. Most of the pertinent literature cites the success of services provided in the home or other non-agency based site, within the youth's natural community and building on family, peer, and community strengths (U.S. DHHS, 2001). Pilot program staff members have determined that their current approach and model best reflects the cultural, economic, and service needs of the community it serves.

The Colorado Access/Access Behavioral Care: The University of Colorado Hospital Multisystemic Therapy Team

In addition to the legislative and Request For Proposal (RFP) requirements, implementation of a licensed MST Program requires the completion of a full site assessment to determine that the site has all the elements in place to be certified by MST Services as an MST site. The UCH team has been certified and has had regular contact first with MST, Inc. in North Carolina, and now with Colorado MST Services, for ongoing consultation and training. The team also makes an effort to collect data that measure therapist adherence to MST core principles. Since the legislative and the RFP requirements were modeled after those of a Multisystemic Therapy Team Model, it follows that the UCH MST demonstrates fidelity with all of the requirements.

The addition of the half-time Spanish-speaking Family Resource Coordinator (FRC) position was intended to be an enhancement to MST Therapy, providing follow-up services specifically to aid families as they transition out of MST services. This position has evolved somewhat during implementation. In addition to taking on some data collection responsibilities, the FRC has case management responsibilities, including assisting families with meeting their basic needs by providing, food, clothing, public assistance, housing and other resources. The position also provides advocacy, determines eligibility and facilitates enrollment into community and government programs (e.g., TANF, SSI), manages complaints, and provides support during crises.

Stakeholders in Denver also showed their involvement with and support of the MST Pilot Program. Letters, which are located in Appendix 5, were received from Betty Virdin, a senior caseworker with the Delinquency Unit of the Denver Department of Human Services, Ingrid Oliphant, a Senior Probation Officer from Den-

ver County Court Probation, and Miguel Nunez, a Case Manager with the Second Judicial District in the Detention Reduction program. Supporters referred to the effectiveness of the program in promoting long-term stability in the home and the community and decreasing the need for out-of-home placement and incarceration as well as an appreciation for the hard work and professionalism of the clinicians.

In the second year of the program, responding to findings from the first-year process evaluation, follow-up telephone contacts by therapists with family members were implemented. Therapists attempt to contact the family at one, three and six month intervals to see how things are going, reinforce MST strategies, and determine if additional services/referrals are needed. Also in the second year, the team implemented a Diversion Log on which clinicians record their specific interventions that have resulted in diversions from inpatient hospitalizations or out of home placement. A deidentified copy of the log is included in Appendix 5, with the other MST program materials. Both of these efforts demonstrate the UCH team's ongoing priority to monitor and improve outcomes.

The UCH team prioritized efforts to advance its ability to monitor and improve client outcomes.

Table 3. Program Structure Characteristics of the Sterling Pilot Program and the Denver MST Program

Program Characteristics	Sterling Pilot Program Description	Denver MST Program Description
Staffing & Client/Staff Ratio	2 FTE Intensive Case Manager/Clinicians, each carrying 4-6 youth/families and conducting groups. Both have Certified Addictions Counselor (CAC) Certifications; additional 5 (Lic. MA level) Family and other Therapists from Centennial MHC who provide about .4 FTE services.	.5 (Lic. MA Level) MST Trained Clinical Supervisor and Program Manager; treats at least one family. 1.6, with availability up to 3 FTE, (Lic. MA Level) MST Trained Therapists, each with 4-6 youth/families. .5 FTE Tri-lingual (Spanish, Italian, English) Family Resource Coordinator; provides case management services.
Research Basis	Proposal cites the effectiveness of integrated treatment models, which address multiple life domains simultaneously.	Proposal cites published articles that address the treatment and cost effectiveness of MST.
Location of Services/Infrastructure	Over 99% of the services are provided on the site of the Community Mental Health Center. This includes a large open space on the 2nd floor with a meeting table & recreational equipment, plus the meeting rooms & offices of the CMHC.	All services are provided in the community; about 60% in the family home, 20% in courts, about 10% in schools, and another 10% in sites of convenience (e.g., other service agencies, appointments). Therapists have office space that is used for meetings and administrative work.
Community Collaboration	Monthly meetings/case reviews with Community Mental Health, Logan County Department of Social Services, 13th Judicial District, Sterling Middle School, Chief District Judge, and Sterling Youth Services SB 94. Probation contributes in-kind support (grants/additional services; Logan County Extension Services contributes in-kind services. Pilot staff conduct presentations and education to the community.	The key collaboration efforts are focused on encouraging referrals from and building fiscal partnerships with Denver DHS, Probation, Denver Regional DYC, and Denver DA/Diversion. The ABC and MST partners also present the MST model in educational formats to other community agencies (e.g., SB 94, Human Services). Colorado ABC has also worked with the Colorado Cornerstone Children's Mental Health Initiative, building MST services into the options available for Cornerstone youth.[8]

Source: Interviews, Document Reviews

[8] Colorado Cornerstone is an initiative funded (with local match) by a grant from the National Center for Mental Health Services to Colorado's Dep't. of Human Services that addresses the needs of youth with serious emotional disturbance involved or at-risk of involvement, with juvenile justice and their families (see: http://www.coloradocornerstone.org for more information).

Table 4. Services Provided by the Sterling Pilot Program and the Denver MST Program

Program Characteristics	Sterling Pilot Description of Services	Denver MST Description of Services
General [9]	Individual, family, group, multi-family, and substance abuse treatment, including Spanish Speaking capability.	Special focus on youth with co-occurring mental health and substance abuse disorders.
Group Therapy & Activities	83.5% of Services. Includes: Substance Abuse, Anger Management, Vocational/Job Skills, Strategies for Self Improvement and Change, Mentoring, Tutoring, Psycho-educational, Boys/Girls Groups, Community Service, Recreational, Drop-in Center, Study Hall. Second year includes introduction of Multi-Family Parenting Groups and Motivational Interviewing.	Service Not Provided
Individual Therapy & Intensive Case Management	15% plus 1% Drug Testing	10% Case Management with Stakeholders
Family Therapy	.5%	90% of total services provided: About 50%, with full family configuration; 10% with caregivers and youth, without siblings; and 30% with caregivers only.
Psychiatric, Medication, Crisis	All provided through Centennial MHC Psychiatry and Emergency.	Provided as needed through Team's Medical Director, UCHSC Dep't of Psychiatry and UCH Child Outpatient Clinic.
Transitional Services	Consists of 2 sessions per week for eight weeks post completion of primary program.	Therapists initiate telephone contact with families 1, 3, and 6 months post completion of program.
Respite Services	Service Not Provided	Provided through the Mental Health Corporation of Denver by contract.
Service Integration	CMHC has a state-licensed Alcohol/Drug Treatment Program (A/DTP). Youth are screened for SA and have access to services of Certified Alcohol Counselors. Program staff has frequent contact with Probation Officers, coordinating interventions and sharing information.	As part of the MST treatment philosophy and protocols, the MST Therapist takes responsibility for all families' needs in all service areas, including substance abuse. As such, service integration is a de facto feature of the MST intervention.

Source: Interviews, Document Reviews

[9] All information regarding amount and type of service for the Sterling Pilot Program was derived from Centennial MHC's Management Information System.

Table 5 describes the program completion and length of stay characteristics for each program. Again, we see substantial differences in the two programs, with the Denver MST having an 82% program completion rate and the Sterling Pilot Program a 33% rate. Furthermore, the average Length of Enrollment for Sterling youth who complete the program is more than two times that of the Denver MST. For Sterling, we speculate that older youth who are more involved in delinquent activities would be very challenging to retain in long-term programs, suggesting that these factors are related to one another.

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Table 5. Program Enrollment Characteristics of the Youth who were Admitted to the Sterling Pilot Program and the Denver MST Program

Program Characteristics	Sterling Pilot		Denver MST	
Admitted through 6/30/2003	48		42	
Discharged through6/30/2003	40		33	
	Number	Percent	Number	Percent
Reason for Discharge				
Completed Program	13	33%	27	82%
Dropped Out	17	43%	2	6%
Long Term Placement	4	10%	4	12%
Other (e.g., Moved)	6	15%	0	NA
Average Length of Enrollment for all Youth	6.4 Months		4.2 Months	
Average Length of Enrollment for Youth who Completed the Program	10.4 Months		4.4 Months	

Source: CCAR; CBPR

2. Program Eligibility and Other Characteristics of Youth and Families

Do the youth served in the programs meet the eligibility requirements of the legislation? What are other important characteristics of the youth and families served by the pilot programs?

The stated purpose of the Community-Based Management Pilot Program for Juvenile Offenders is "*to provide supervision and management services to eligible juvenile offenders who are charged with or adjudicated for an offense or who are found not guilty by reason of insanity.*" The legislation defined "Eligible Juvenile Offender" as a person who:

- "Has been diagnosed by a mental health professional as having serious mental illness;"
- Is under age 18;
- Is involved with the criminal justice system or has been committed to the Division of Youth Corrections; and
- Has not been adjudicated for or convicted of a Class 1 Felony or sexual assault.

For those youth for whom CCAR data were available, each criterion and the percentage of youth that meets the criterion are shown in Table 6 below. As can be seen, most of the youth meet the eligibility requirements.

Table 6. Eligibility Characteristics of Youth who were admitted into the Sterling Pilot Program and the Denver MST Program

Characteristic	Sterling Pilot n	Sterling Pilot %	Denver MST N	Denver MST %
Number with Admission Data	47		39	
Meet SED Criteria[10]	40	85%	34	92%
Under Age 18 at Admission	42	90%	39	100%
Documented or reported Juvenile/Criminal Justice Event[11]*(without Class 1 Felony or Sexual Assault)	47	100%	39	100%

Source: CCAR

[10] The Community Based Pilot Programs are using the definition of Serious Emotional Disturbance (SED) that is used by State Mental Health Services and that is determined by an algorithm based on Colorado Client Assessment (CCAR) data. First, the youth must have a mental health diagnosis as his or her primary or main diagnosis (excluding Mental Retardation, Alcohol or Drug Use, Autism, or Dementia as the Primary Diagnosis). Second, the youth must also meet criteria in any one (1) of three (3) criteria: Problem Severity, Problem Type, or Residential (youth lives out of the family home).

[11] Documented Criminal/Juvenile Justice Events are those gathered by the evaluator from several government and agency sources. Reported events were those known by program staff but not documented in files.

Table 7 presents a more comprehensive description of the program enrollees in each site.

Table 7. Characteristics of Sterling Pilot and Denver MST Youth at Admission to the Pilot Programs through June 30, 2003

Selected Characteristic	Sterling Pilot n	Sterling Pilot %	Denver MST N	Denver MST %
Number Admitted	48		42	
Number Discharged	40	83%	33	79%
Gender: Male	28	75%	28	75%
Mean Age at Admission	15.7 Years		14.7 Years	
Ages 12-13	3	16%	8	22%
Ages 14-15	17	36%	20	55%
Ages 16-17	22	43%	9	24%
Age 18	5	10%	0	NA
Ethnicity				
White	28	60%	5	14%
Hispanic	11	23%	8	22%
African American	0	NA	14	38%
American Indian	0		1	3%
Multiracial	8	17%	9	24%
Residence at Admission				
At Home	46	98%	31	84%
Residential	0	NA	1	3%
Inpatient Psychiatry	0	NA	3	8%
Who Lives with Youth				
Mother	27	57%	18	49%
Father	4	9%	4	11%
Both Parents	11	23%	8	22%
Admission/Legal Status				
Voluntary	6	13%	23	62%
Court Directed Vol.[12]	39	83%	14	38%
Referral Source				
Probation/Parole	33	70%	2	5%
Social Services	5	11%	13	35%
Court	6	6%	0	NA
Inpatient Psychiatry	1	2%	3	8%
OP Mental Health	0	NA	4	11%
Number of Documented Pre-Admission Juvenile Justice Events, e.g., Filings, Diversion, Detention, Probation	218		86	
Family Income	(N=19) Mean = $19,791 Median = $16,500		Mean = $25,716 Median = $17,280	
Medicaid Status	4	9%	30	81%

Source: CCAR; Integrated Colorado Online Network (ICON); Colorado Trails. Numbers and percentages do not necessarily add to totals due to missing data

[12] Includes treatment as a condition of probation/parole or deferred prosecution.

The Sterling Pilot Program and the Denver MST Program and the youth who enrolled in each are different from one another in important ways. The MST program is an intensive family therapy, non-office-based intervention, with 90% of their services provided in a family context. The Sterling Pilot Program is an office-based model where group therapy, and other group interventions, accounts for about 84% of services. The 4½ months average length of enrollment for youth who complete the Denver MST is less than half that of the Sterling Pilot Program, which has an average of over 10 months.

Youth admitted to the Sterling Pilot Program are, on average, older, more white, more likely to be Court Directed and referred to the program by Probation, and less likely to be insured by Medicaid than the Denver MST youth. Moreover, the Sterling admission cohort, with only six more youth than Denver, experienced 2.5 times as many Juvenile Justice events prior to their admission to the program.

Since the two pilot programs differ substantially from one another in key characteristics, including geography, youth characteristics, including delinquency history and experience in the Juvenile Justice System, program design, and services provided, the remaining findings will be presented by site within each outcome area. In this way, the outcomes can be examined within the context of the youth, families, and the community served by each program.

Since the two pilot programs differ substantially from one another in key characteristics, including geography, youth characteristics, including delinquency history and experience in the Juvenile Justice System, program design, and services provided, the remaining findings will be presented by site within each outcome area. In this way, the outcomes can be examined within the context of the youth, families, and the community served by each program.

3. Outcomes

What outcomes are achieved by youth after enrollment in the Community Based Pilot Programs?

This section of the report includes findings for youth outcomes in the following domains:

- Juvenile Justice;
- Mental Health;
- Substance Use;
- School Enrollment;
- Perceptions of Caregivers and Youth; and
- Cost Avoidance/Savings.

Juvenile/Criminal Justice

What is the severity of delinquent behavior evidenced by youth prior to and after their enrollment in the pilot programs?
What is the depth of their involvement in the Juvenile Justice System prior to and after their enrollment in the pilot programs?

A Note About Age of Onset and Seriousness. The criminology literature has documented the correlation between early anti-social behavior and later delinquent behavior (Loeber, Farrington, Stouthamer-Loeber, &

Van Kammen, 1998; Butts, Snyder, 1997). While approximately 50-60% of arrested juveniles in the general population do not acquire a subsequent arrest (Wolfgang, Thornberry and Figlio, 1987), those who begin delinquent behavior earlier in life are at significant risk to commit serious delinquent acts in adolescence (Loeber and Farrington, 1998). In fact, according to an expert advisory group on serious and violent juvenile offenders convened by the federal Office of Juvenile Justice and Delinquency Prevention (OJJDP), several studies have found that serious and chronic criminal careers are marked by the onset of minor problems at age 7, moderate problems at age 9.5 and serious delinquency by age 12. The average age of onset for all delinquents is approximately 14.5 (Loeber and Farrington, 1998). Recent research has sought to establish that antisocial behaviors that start before age 12 have a greater probability of a genetic link compared to those that begin in adolescence (Taylor, Iacono, and McGue, 2000). Thirty percent of the Sterling program participants reported anti-social behavior by the age of 11; in Denver, 30% reported onset by age 9, and only 11% reported onset after age 13 (see Figures 1 and 2).

The generally very early age of onset of the target populations suggests that many of these youth are at high-risk to continue, and perhaps even escalate, their delinquent behavior (Loeber and Farrington, 1998). This early age of onset, combined with the serious mental health diagnoses required for participation in the pilot programs, suggests that these are indeed very high-risk youth who would likely continue and perhaps increase their delinquent behavior without intervention.

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As discussed in the methods section, to estimate the impact of the pilot programs on subsequent offending, each youth served as its own control. That is, it is assumed that each youth will continue his or her involvement in delinquent behavior at the same level of penetration into the juvenile or criminal justice system. This is a conservative assumption, given the prior discussion regarding age of onset combined with a diagnosed mental illness. That is, one could argue that these particular youth, without intervention, would not only continue their delinquent behavior but the seriousness of the offending behavior is likely to escalate. However, in an effort to guard against overestimating the impact of the interventions, the youth are assumed to be on a flat behavioral trajectory.

It is assumed that each youth will continue his or her involvement in delinquent behavior at the same level of penetration into the juvenile or criminal justice system. This is a conservative assumption, given the prior discussion regarding age of onset combined with a diagnosed mental illness.

Delinquent and Criminal Involvement. Three types of events are included in the analysis of delinquent and criminal involvement prior to and during the pilot programs. These events are as follows:

- Juvenile/Criminal Justice prosecution related events:
  - Filings - intent by the State District Attorney to prosecute a case;
  - Adjudications – a juvenile conviction; and
  - Crime Severity – violent/non-violent; felony/misdemeanor.
- Sentencing related events, including:
  - Diversion;
  - Community Services;

- Juvenile Probation, regular and Intensive Supervision Probation (ISP);
- Detention;
- Commitment;
- Jail; and
- Work Release.
- Other Juvenile Justice related events, including:
- Probation Revocations; and
- Electronic Monitoring.
- Facility Days: Division of Youth Corrections, Department of Corrections.

Finally, although the numbers are too low to interpret rates, the number of filings, adjudications, and revocations that occurred after admission, are presented for the subgroup of youth who entered the program on probation. Definitions of recidivism vary widely and may differ depending on whether the individual has completed his/her probationary period when being assessed. In a 2002 recidivism study by the Colorado Judicial Branch, Division of Probation Services, the definition of pre-release recidivism/failure used is that which was agreed to by Colorado's criminal justice agencies in 1999 (Pullen, S., 1999)

> *An adjudication or conviction for a felony or misdemeanor, or a technical violation relating to a criminal offense, while under supervision in a criminal justice program.* (Division of Probation Services, 2002).

The same report concluded that for juveniles on regular probation, a total of 24.4% had their probation revoked. This rate almost doubles for youth on Juvenile ISP, with about 48% terminating for technical violations or a new crime.

In a recent Juvenile Accountability Incentive Block Grant funded evaluation report,

> *"…criminal recidivism is measured as new criminal filing both during probation and after termination, allowing at least a 12-month at risk period."* (Readio, S. and Harrison, L., 2002).

In the Multnomah County (Oregon) Department Community Justice Recidivism Report on Juvenile Offenders in 2000, recidivism is defined as "any criminal re-referral committed *within one year* of an initial criminal referral in the year of interest." They report a recidivism rate of 32%, on average, over six years (Keir, 2002).

It is important to note that although Denver had 40 enrollees and Sterling had 48, the number of youth who enrolled in the program on probation and who experienced new filings, adjudications, or revocations after admission to or discharge from the pilot programs, is quite small when compared to the studies cited earlier. For example, the Colorado rates are based on over 5000 regular probationers and over 400 on ISP. The Multnomah County, study reports on over 4000 youth for year 2000. Therefore, caution should be used in the interpretation of results presented for the current evaluation where the total number of cases is 90. Further, intensive programs with high-risk individuals often report high failure rates, whether measured by program failure or later post-supervision recidivism because of the increased surveillance/case contact combined with the increased likelihood of failure for high-risk populations.

Data Sources. All the data presented in this section were extracted from the Judicial Branch's Integrated Colorado Online Network (ICON) provided by the Division of Criminal Justice's CICJIS Research System and the Colorado Trails Database, which documents Child Welfare and Youth Corrections Events. Each documented event was coded as starting

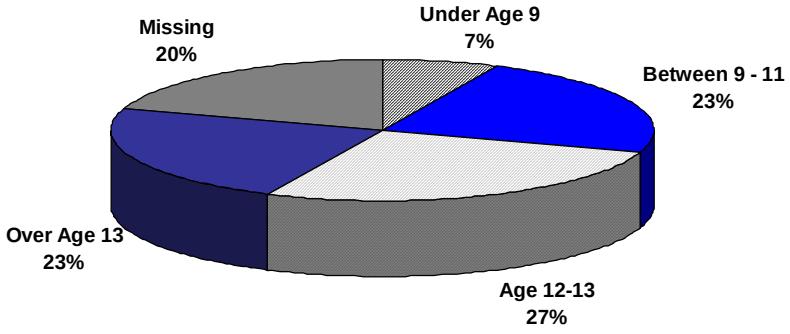
- More than 6 months before the youth's program admission day;
- Within 6 months of the admission date;
- Between admission and discharge;
- 6 months after discharge, but less than 1 year after discharge;
- 1 year after discharge, but less than 18 months after discharge; or
- 18 months or more after discharge.

The length of the episode was determined either by sentencing information or available start and end dates. The total days in the episode were distributed over each of the periods described above.

The Sterling Pilot Program

Age of Onset of Anti –Social Behavior. Figure 1 shows that over half of the youth enrolled in the Sterling Pilot Program began demonstrating anti-social behaviors by age 13, 30% by age 11. One-quarter began as young adolescents or older. Their young age of onset, overall, suggests a high risk of their continued involvement in delinquency and adult criminal activity as well as more serious crimes over time.

Figure 1. Age of Onset of Anti-Social Behavior for Sterling MST Youth (n=30)



Source: Community Based Pilot Record (CBPR)

Juvenile Justice Involvement. First, it is important to acknowledge that at the time of the evaluation, August 2003, youth represented different periods of time past discharge from the programs, and some were still enrolled. This is important because the time that has passed since the youth was discharged represents the amount of time he or she is "at risk" for committing delinquent acts or becoming involved with other systems. This factor will be incorporated into the cost analyses, which are presented later in this report. For this presentation, Figure 8 shows that well over half of the Sterling youth have been discharged from the pilot program for one year or longer and 42% for 18 months or longer.

Table 8. Number and Percent of Youth by Time Period Post-discharge for the Sterling Pilot Program.

Time Period Post-discharge	Sterling (n=48)	Sterling %
Still Enrolled	8	17%
6 Mos. Post-discharge or less	7	14%
6 Mos. or longer and less than 12 Mos.	5	10%
12 Mos. or longer and less than 18 Mos.	8	17%
18 Mos. or longer	20	42%
Total	48	100%

Source: Program Evaluation Database

Table 9 presents a comparison of the juvenile justice involvement of all youth enrolled in the Sterling Pilot Program prior to and after their admission, *including all time periods after discharge*. This analysis focused on the cohort as a whole, not individual youth. Please note that some numbers are very small and caution should be used in interpretation, especially percents.

With regard to filings and adjudication events from pre- to post-admission:

- The number of youth with new filings decreased by 33% after admission to the program.
- The number of youth with adjudications decreased by 57% after admission to the program.
- Non-violent misdemeanors and violent felonies decreased substantially from pre- to post-admission, while violent misdemeanors and non-violent felonies increased.

With regard to sentencing events from pre- to post-admission, the number of youth with:

- Sentencing episodes decreased slightly after admission, from 72 to 70 (not shown).
- Diversion, Community Service, and Probation (regular and ISP) sentences remained about the same.
- Detention sentences decreased by two-thirds.
- Jail sentences remained the same.
- Commitments to DYC increased, with three additional commitments.
- There was one commitment to the Department of Corrections in the post-period.

With regard to use of DYC Facility Days from pre- to post-admission, the number of:

- Detention days used by youth decreased by 12%.
- Commitment days used by youth increased by 34%.

With regard to probation revocations, the number of youth with:

- Probation Revocations stayed the same.

Table 9. Sterling Pilot Program: Comparison of and Percent change in Juvenile Justice Involvement for All Youth: Prior to Admission and After Admission (including During Enrollment and after discharge) to the Program

Cost Event	Pre-admission (n=48)		All Post-admission Periods through August 15, 2003		% Change # Youth Pre-Post
Filings, Adjudications, and Crime Severity	Number of Youth	(%) of Total Youth Admitted	Number of Youth	(%) of Total Youth Admitted	
Filings	33	69%	22	46%	(-33%)
Adjudications	30	63%	13	27%	(-57%)
Severity of Crimes for which youth were Adjudicated	# Previous Crimes (n=91)	% Previous Crimes (n=91)	# New Crimes (n=64)	% New Crimes (n=64)	%Change Crime Severity
Non-Violent Misdemeanor	52	57%	12	19%	(-77%)
Non-Violent Felony	22	24%	31	49%	(41%)
Violent Misdemeanor	0	NA	10	38%	All New
Violent Felony	17	19%	11	17%	(-35%)
Sentences	Sentence Started Before Admission- (# of Youth)	(%) of Total Youth Admitted	Sentence Started after Admission- (# of Youth)	(%) of Total Youth Admitted	
Diversion	18	38%	17	35%	(-6%)
Community Service	17	35%	17	35%	0%
Probation	14	29%	15	31%	7%
Intensive Supervision Probation	5	10%	5	10%	0%
Detention	6	13%	2	4%	(-67%)
Jail	2	4%	2	4%	0%
Work Release	1	2%	2	4%	100%
Commitment	1	2%	3	6%	200%
Department of Corrections	0	NA	1	2%	All New
Other Juvenile Justice Events					
Probation Revocations	6	13%	6	13%	0%
Electronic Monitoring	2	4%	1	2%	(-50%)
DYC Facility Days	Episode Started Before Adm. #(%) Youth	Total Days Mean Median Days	Episode Started after Adm. #(%) Youth	Total Days Mean Median Days	% Change in Total Days
Detention Days	14 (29%)	642 Days 26 Days 9 Days	18 (38%)	567 Days 20 Days 9 Days	(-12%)
Commitment Days	1 (2%)	457 Days 457 Days 457 Days	3 (4%)	900 Days 150 Days 47 Days	34%

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Denver Sterling Youth Services
Due to low n, please use caution in interpretation

We also looked at youth who entered the program with a probation sentence. Table 10 shows that 13 youth (27%) were on regular probation and five (10%) were on Intensive Probation. Seven of these youth had new filings, 5 of which were adjudicated. Only one of the youth on regular probation had his/her probation revoked. The court may have kept the other youth on probation and added a new crime rather than revoking the probation, perhaps because of their enrollment in the pilot program and mental health diagnosis.

Three of the five youth on ISP had revocations, along with new filings and adjudications. One additional youth showed a Filing that apparently did not result in an adjudication or revocation.

Table 10. Sterling Pilot Program: New Filings, Adjudications, and Revocations for Youth on Probation When Admitted to the Program

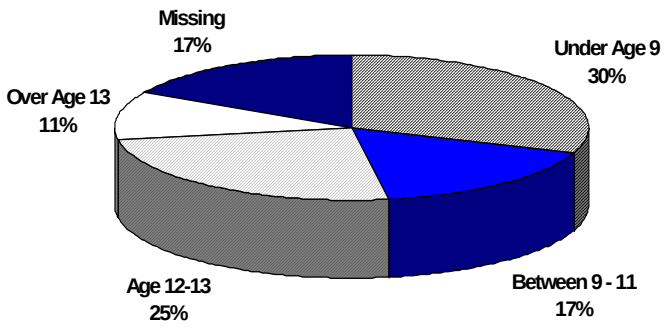
Type of Probation	Youth on Probation At Admission N (% of 48)	Youth on Probation with New Filings N	Youth on Probation with Adjudications N	Youth on Probation with Revocations N
	At Admission	All Periods After Admission	All Periods After Admission	All Periods After Admission
Regular Probation	13 (27%)	7	5	1
Juvenile Intensive Supervision Probation (JISP)	5 (10%)	4	3	3

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Denver Safe City Diversion Program
% Are not included in post-period due to low n, please use caution in interpretation

Denver MST Pilot

Figure 2 shows that almost one third of the youth enrolling in the Denver MST began demonstrating anti-social behavior prior to age nine, and another 17% between ages 9 and 11. This indicates that nearly half of the Denver group was at very high risk of continued delinquency, based on the age of onset alone, including the increased severity of crimes committed. When mental illness is factored in, most, if not all of these youth, can be expected to re-offend.

Figure 2. Age of Onset of Anti-Social Behavior for Denver MST Youth (n=36)



Source: Community Based Pilot Record (CBPR)

Juvenile Justice Involvement. As was stated earlier, it is important to acknowledge that at the time of the evaluation, August 2003, youth represented different periods of time past discharge from the programs, and some were still enrolled. Table 11 shows the percentage of youth by their time period post-discharge, indicating the amount of time he or she was "at risk" for committing delinquent acts or becoming involved with other systems.

This factor will be incorporated into the cost analyses, which are presented later in this report. For this presentation, note that 40% of the Denver MST youth were still enrolled were within six months of their discharge. Only one youth had been discharged from the pilot program for 18 months or longer.

Table 11. Number and Percent of Youth by Time Period Post-discharge for The Denver MST Program.

Time Period Post-discharge	Denver MST (n=40)	Denver MST %
Still Enrolled	6	15%
6 Mos. Post-discharge or less	10	25%
6 Mos. or longer and less than 12 Mos.	13	32%
12 Mos. or longer and less than 18 Mos.	10	25%
18 Mos. or longer	1	3%
Total	40	100%

Table 12 presents a comparison of the juvenile justice involvement of all youth enrolled in the Denver MST Pilot Program prior to and after their admission, including all time periods after discharge. This analysis focused on the cohort as a whole, not individual youth. Please note that some numbers are very small and caution should be used in interpretation, especially percents.

With regard to filings and adjudication events from pre- to post-admission*:*

- The number of youth with new filings decreased by 41% after admission to the program, from 22 to 13.
- The number of youth with adjudications decreased by 46% after admission to the program, from 13 to 7.
- Non-violent misdemeanors, non-violent felonies, and violent felonies decreased substantially from pre to post-admission, while violent misdemeanors increased.

With regard to sentencing from pre- to post-admission, the number of youth with:

- Sentencing episodes decreased slightly after admission, from 29 to 27 (not shown).
- Diversion and Community Service sentences decreased by almost 67% and 56%, respectively.
- Probation Revocations increased substantially, with five revocations, compared to none in the prior period.
- Detention episodes, rose from one to three.
- Commitments to DYC increased, with three commitments.

With regard to use of DYC Facility Days from pre- to post-admission, the number of:

- Detention days used by youth decreased by 46%.
- Commitment days used by youth increased substantially due to the commitment of 3 youth.

With regard to probation revocations, the number of youth with:

- Revocations, increased from none to 5.

Table 12. Denver MST Program: Comparison of and Percent change in Juvenile Justice Involvement for All Youth: Prior to Admission and After Admission (including During Enrollment and after discharge) to the Program

Filings and Revocations	Pre-admission (n=40)		All Post-admission Periods through August 15, 2003		% Change # Youth Pre-Post
	Number of Youth	(%) of Total Youth Admitted	Number of Youth	(%) of Total Youth Admitted	
Filings	22	55%	13	35%	(-41%)
Adjudications	13	34%	7	18%	(-46%)
Severity of Crimes for which Youth were Adjudicated	# Previous Crimes (n=42)	% Previous Crimes (n=42)	# New Crimes (n=39)	% New Crimes. (n=39)	% Change; Crime Severity
Non-Violent Misdemeanor	20	48%	5	13%	(-75%)
Non-Violent Felony	9	21%	17	44%	(-89%)
Violent Misdemeanor	7	17%	15	39%	114%
Violent Felony	6	14%	2	5%	(-200%)
Sentences	Episode Starts Before Admission; (# of Youth)	(%) of Total Youth	Episode Starts After Admission; (# of	(%) of Total Youth	
Diversion	6	15%	2	5%	(-67%)
Community Service	9	23%	4	10%	(-56%)
Probation	11	28%	10	25%	(-9%)
Intensive Supervision Probation	0	NA	0	NA	NA
Detention	1	3%	3	8%	200%
Jail	1	3%	0	NA	(-100%)
Work Release	0	NA	0	NA	NA
Commitment	1	NA	3	8%	200%
Other Juvenile Justice Events					
Probation Revocations	0	NA	5	13%	All New
Electronic Monitoring	0	NA	0	NA	NA
DYC Facility Days	Episode Starts Before Admission # Youth (%)	Total Days Mean Median Days	Episode Starts After Admission # Youth/	Total Days Mean Median Days	% Change in Total Days
Detention Days	14 (35%)	446 Days 17 Days 5 Days	9 (23%)	239 Days 15 Days 6 Days	(-46%)
Commitment Days	0	NA	3 (8%)	750 Days 107 Days 24 Days	All New

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Denver Safe City Diversion Program
Due to low n, please use caution in interpretation

Although the numbers are very small, we also looked at youth who entered the program with a probation sentence. Table 13 shows that 11 youth (28%) were on regular probation; none were on Intensive Probation. Of these, four experienced New Filings, Adjudications, and Revocations. One additional youth showed a Adjudication that was likely from an earlier filing, i.e., prior to admission to the program.

Table 13. Denver MST: New Filings, Adjudications, and Revocations for Youth on Probation When Admitted to the Program

Type of Probation	Youth on Probation Prior to Adm. N (% of 40)	Youth on Probation with New Filings N	Youth on Probation with Adjudications N	Youth on Probation with Revocations N
	Prior to Admission	All Periods After Admission	All Periods After Admission	All Periods After Admission
Regular Probation	11 (28%)	4 (36% of 11)	5 (45% of 11)	4 (36% of 11)
Juvenile Intensive Supervision Probation (JISP)	0	NA	NA	NA

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Denver Safe City Diversion Program
Due to low n, please use caution in interpretation

Mental Health Problems, Symptom Severity and Functioning, Including Inpatient and Residential Services

Do youth show improvement in Mental Health problems and symptom severity?
Do youth spend fewer days in out-of-home placement, including psychiatric hospitals and residential treatment, during and subsequent to receiving services?

Three approaches were used to examine outcomes in the Mental Health Domain.

The Colorado Client Assessment Record (Admission/Discharge). The CCAR is a multidimensional screening and assessment instrument that assesses risk and behavioral factors and functioning in twenty problem and seven strengths mental health dimensions. The instrument uses a problem severity rating scale and a set of related checklist items for each dimension. The following twelve problem scales were selected by MHS as being the most reliable and will be used in these analyses (Altschul, D.B., Wackwitz, J., Coen, A.S., and Ellis, D, 2001; Wackwitz, J. and Ellis, D., 2002).

- Suicide/Danger to Self;
- Depression;
- Self-Care/Basic Needs;
- Thought;
- Aggressiveness/Danger to Others;
- Socialization/Disrespect;
- Legal;
- Substance Use;
- Manic;
- Attention;
- Family; and
- Security/Behavior Management.

A copy of the CCAR can be found in Appendix 3.

Clinician, Caregiver, and Youth Perception of Change (Discharge and Follow-up). The Community Based Pilot Record (CBPR) includes a set of questions for seven domains: Criminal Justice, Mental Health, Education, Substance Abuse, Parenting, Family Relationships, and Transition to Adulthood. The questions capture perceptions of problem severity, how much of the intervention focused on this domain, change over time, i.e., from Much Better to Much Worse, and how the respondent thought the youth would manage in this domain in the year after discharge. Clinicians completed the ratings at discharge and youth were asked the same set of questions at follow-up. If the youth was not contacted, the caregiver was asked. The Mental Health Section of this questionnaire was analyzed and is presented.

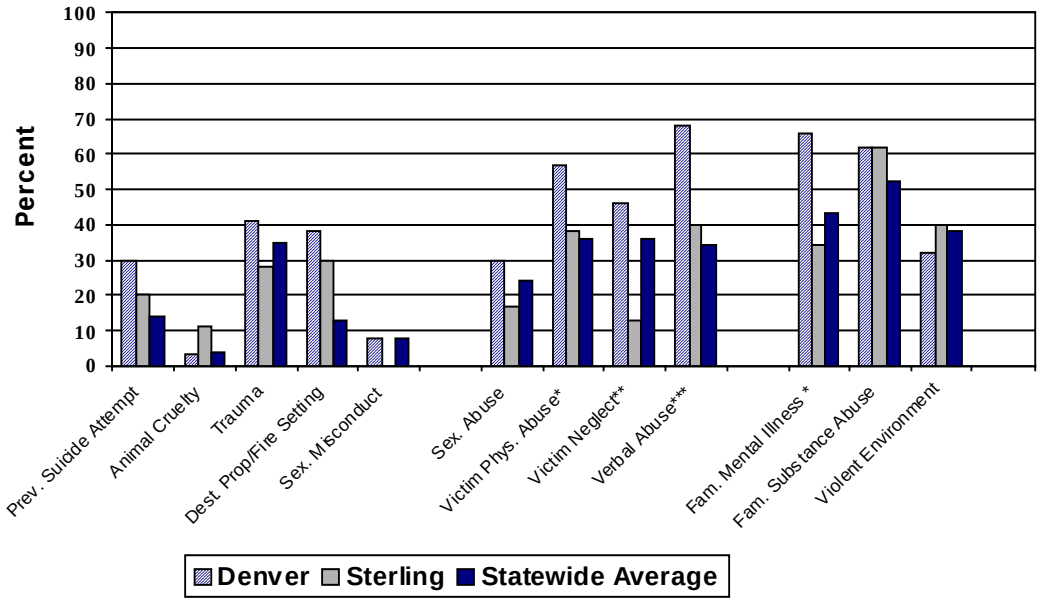
Utilization of Inpatient and Residential Services Prior To and After Admission to the Pilot Program. The evaluator extracted the number of residential days from the Colorado Trails Database[13] for those youth from whom an appropriate Release of Information was obtained. If a release was provided, inpatient hospital days were collected directly from the Colorado Mental Health Institutes and other hospitals. It should be noted that the initial releases were completed at the program sites and in many cases the family did not identify the use of a non-state facility for inpatient care or refused to allow the release of any more than just basic information. This continued to be a challenge when the releases were updated at the time of follow-up contact. Therefore, almost all the inpatient units reported are from Colorado Mental Health Institute Ft. Logan and Colorado Mental Health Institute Pueblo.

Behavioral, Abuse, and Risk Factors. Before presenting the results for each site separately, risk factors identified by clinicians on the CCAR at the time of admission are presented for both sites along with statewide averages for youth with Severe Emotional Disturbance in Figure 3.

Figure 3 shows that the Denver MST youth have a trend toward higher rates than the Sterling Pilot youth and statewide averages for most risk factors. The differences between pilot sites for Family Mental Illness, Neglect, and Verbal Abuse are statistically significant, with Denver MST youth showing greater severity. When compared to statewide rates for youth with serious emotional disturbance (SED), youth in both sites have higher rates in five areas, History of Suicide Attempts, Destroys Property/Sets Fires, Victim of Physical Abuse, Victim of Verbal Abuse, and Family History of Substance Abuse. Sterling youth show a higher rate of Animal Cruelty, a very serious risk factor, than either the statewide average or Denver MST Youth. Sterling youth also show a trend for higher rates of Violent Environment than Denver youth. Overall, Denver youth demonstrate a relatively severe level of risk at admission to the pilot program, while Sterling youth are closer to the state averages.

[13] **Colorado Trails** is Colorado's Department of Human Services' automated data system that features a statewide client/server network that links state and county child welfare caseworkers, supervisors, and support staff, as well as Division of Youth Corrections staff.

Figure 3. Percent of Pilot Youth with High-Risk Behaviors, Experiences, Abuse, and Family Factors at Admission: Sterling Pilot (n=47) and Denver MST (n=37) Compared to Statewide Average (n=10,271)[1]



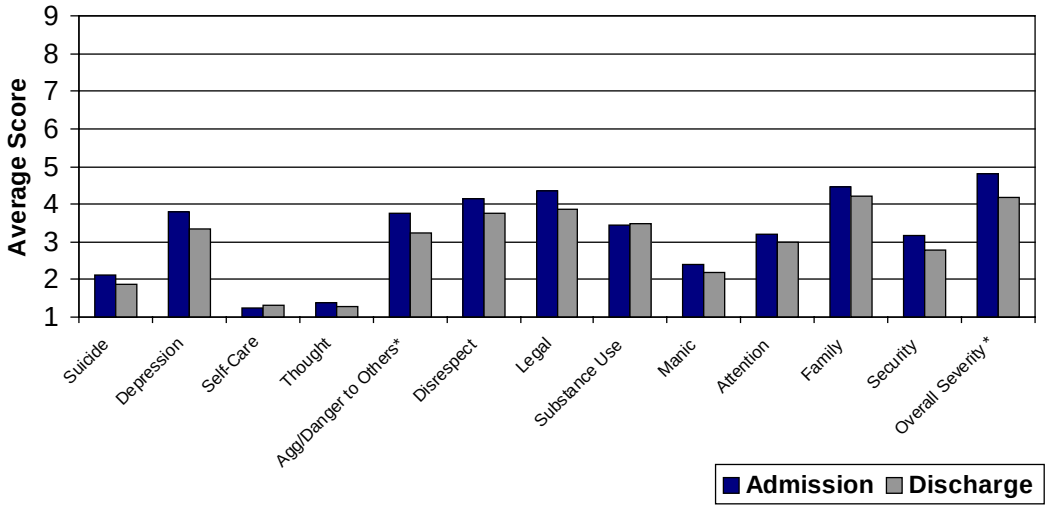
[1] Colorado Mental Health Services, CCAR Database FY 2002
•*t* = 3.198, *p* = .002; ** *t* = 3.437, *p* = .001; ***t* = 20537, *p* = .013
• *Source: Colorado Client Assessment Record*

Sterling Pilot Program

CCAR Domains. When the Denver MST and Sterling Pilot Program admission scores on the twelve key scales were compared (not shown), MST youth averaged significantly higher scores on each of the twelve scales. Thus, Sterling youth started the pilot program at a substantially lower level of severity with regard to mental health symptoms and problems than the Denver MST Youth. As shown in Figure 4, youth in the Sterling Pilot Program did, however improve on ten of the twelve scales from admission to discharge, although significance was achieved on only two: Overall Problem Severity, a single overall variable, and Aggressiveness/Dangerousness to Others. The two domains that improved are particularly relevant for this study. One domain reflects short- and long-term costs to the community and the State and the other reflects public safety concerns. The improvement across the majority of the indicators reflects that the program was having an influence in the expected direction.

Youth in the Sterling Pilot Program did, however improve on ten of the twelve scales from admission to discharge, although significance was achieved on only two: Overall Problem Severity, a single overall variable, and Aggressiveness/Dangerousness to Others. The two domains that improved are particularly relevant for this study. One domain reflects short- and long-term costs to the community and the State and the other reflects public safety concerns.

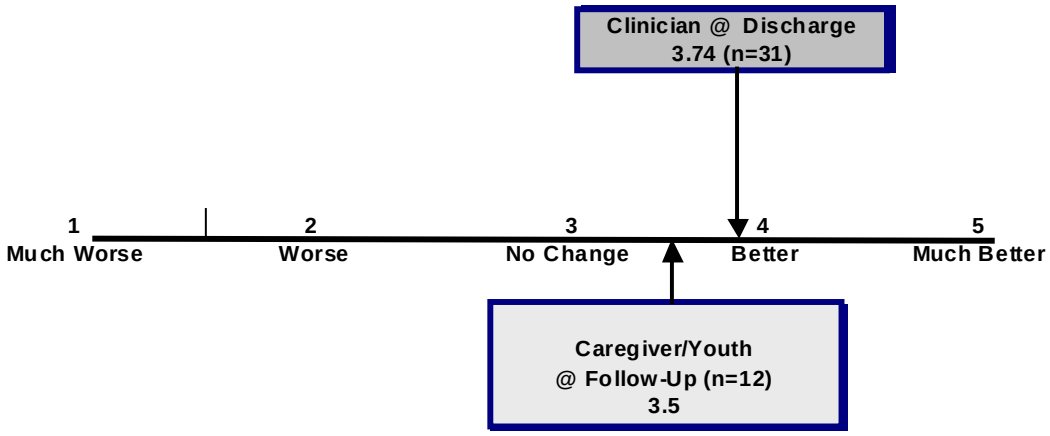
Figure 4. Sterling Pilot Program: CCAR Problem Scales at Admission and Discharge (n=34)



•Scores range from 1 to 9, with higher scores indicating greater severity
•$p \leq .05$ for Paired t-tests
•Source: Colorado Client Assessment Record

Change Scales. Figure 5 displays the Mental Health Domain Change Scale and the average scores at discharge and follow-up for the Sterling Pilot youth. At discharge, Pilot clinicians' ratings fell just below the Better ranges (mean=3.74). At follow-up, youth/caregivers reported average ratings somewhat below this, at 3.5, but still above the No Change point.

Figure 5. Sterling Pilot Program: Ratings of Improvement in Mental Health Status by Clinician at Discharge (n=31) and Youth or Caregiver at Follow-Up (n=12)



Source: Community Based Pilot Record (CBPR)

Utilization of Inpatient and Residential Services. As can be seen in Table 14, there is some documentation of inpatient psychiatric services for the Sterling Pilot Program Youth, but no noteworthy change over time. Caution should be used in interpreting these findings, as there is at least anecdotal information that a hospital in Greeley has also been used by these youth.

Residential Treatment and other residential episodes, on the other hand, look quite different, with the total number of youth and episodes post-admission reaching less than half of the pre-admission numbers. This finding holds for Other Residential Services as well.

Table 14. Sterling: Inpatient, Residential Treatment, and Other Residential Services Before and After Admission to the MST Pilot; Number of Youth & Number of Episodes.

Episode Type	Total Pre-Admission n=48	Total After Admission
	# Youth /# Episodes	# Youth /# Episodes
Inpatient Psychiatric	3/4	4/6
Residential Treatment Center	9/15	5/7
Other Residential (RCCF/Group Home)	4/7	0/0

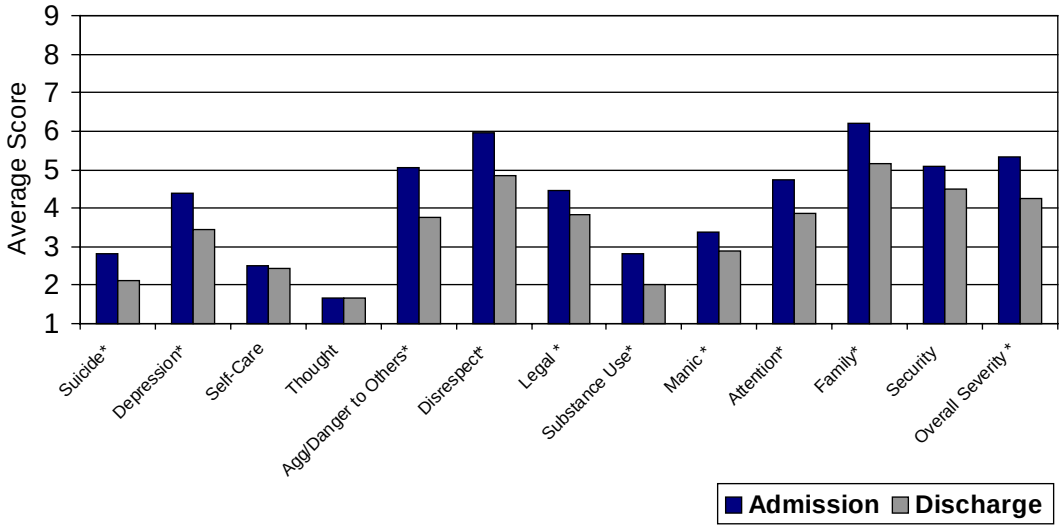
Source: Colorado Trails, Colorado Mental Health Institutes - Ft. Logan and Pueblo

Denver MST Pilot

The youth enrolled in the Denver MST demonstrated statistically significant improved scale scores on nine of the twelve CCAR scales.

CCAR Domains. The youth enrolled in the Denver MST demonstrated higher levels of mental health severity than the Sterling Pilot youth as well as statistically significant improved scale scores on nine of the twelve CCAR scales. Figure 6 shows mean scores for the twelve key CCAR scales. Two of the non-significant areas, Thought, indicating confused thinking and sometimes psychosis, and Self-Care/Basic Needs, were not identified as serious problem areas at admission and remained unchanged in Denver. The need for security or behavior management, however, was identified as one of the more serious problems for this cohort and did show improvement, but not at a significant level. Denver's youth also demonstrated significant improvement in Overall Problem Severity, a single overall variable that is not included in the set of key variables.

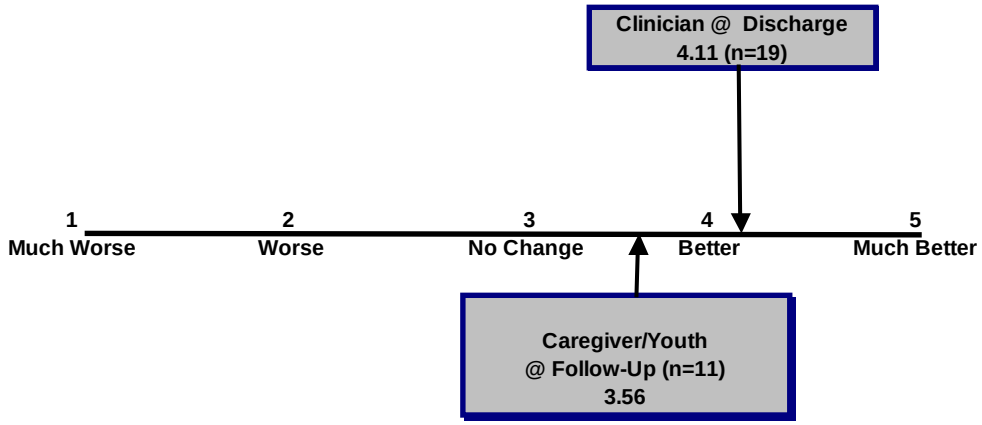
Figure 6. Denver MST: Paired CCAR Problem Scales at Admission and Discharge (n=24)



- *Scores range from 1 to 9, with higher scores indicating greater severity*
- *$p \leq .05$*
- *Source: Colorado Client Assessment Record*

Change Scales. Figure 7 displays the Mental Health Domain Change Scale and the average scores at discharge and follow-up. At discharge, MST clinicians' ratings fell just above the Better ranges (mean=4.11). At follow-up, youth/caregivers reported average ratings somewhat below this, at 3.56, but still above the No Change point.

Figure 7. Denver MST: Ratings of Improvement in Mental Health Status by Clinician at Discharge (n=19) and Youth or Caregiver at Follow-Up (n=11).



Source: Community Based Pilot Record (CBPR)

Utilization of Inpatient and Residential Services. As can be seen below, there is almost no documentation of inpatient psychiatric services for the Denver youth. Caution should be used in interpreting these findings, as there is at least anecdotal information that other local Denver hospitals have been used by these youth. Residential Treatment and other residential episodes, on the other hand, were documented. For the Denver cohort, there does not appear to be notable change from pre to post-admission for either the number of youth who used these services or the number of episodes documented.

Table 15. Denver MST: Inpatient, Residential Treatment, and Other Residential Services Before and After Admission to the MST Pilot, Number of Youth & Number of Episodes.

Episode Type	Total Pre-Admission (n=40)	Total Post-Admission
	# Youth (# Episodes)	# Youth (# Episodes)
Inpatient Psychiatric	1/1	0/0
Residential Treatment Center (RTC)	6/10	6/8
Other Residential (RCCF/Group Home)	1/1	2/2

Source: Colorado Trails, Colorado Mental Health Institutes at Ft. Logan and Pueblo

School Enrollment and Completion

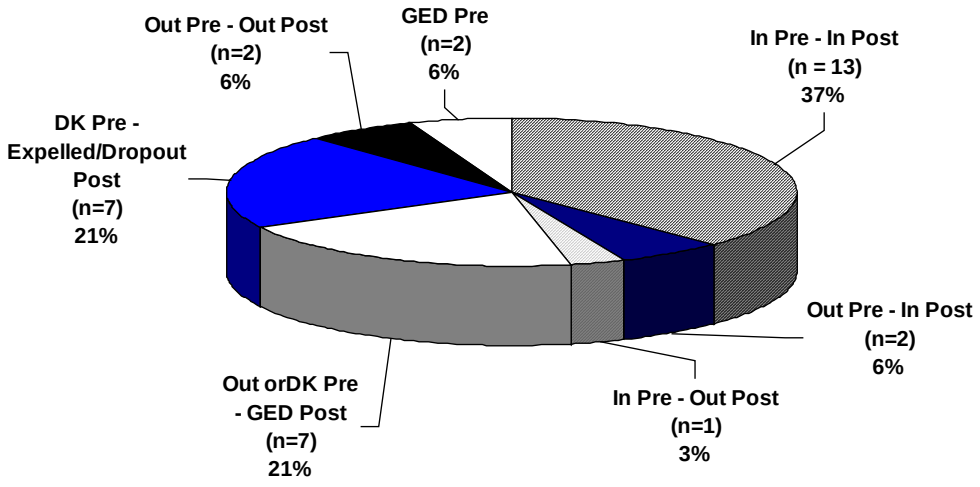
Clinicians were asked to report school information for youth at admission and discharge. This information was updated at the time of follow-up. For this analysis, attention is focused on whether youth who were enrolled in school at the time of admission stayed in school and if youth who were not enrolled at admission, re-enrolled, or eventually received their GED.

Sterling Pilot Program

These youth present a complex picture with regard to school enrollment; over one-third of the youth were in school at both admission and discharge/follow-up and two youth already had their General Equivalency Diploma (GED) upon admission to the pilot program. As displayed in Figure 8, while seven youth had dropped out or been expelled at program discharge or follow-up, another seven received their GED. Two other youth who were not enrolled in school at program admission were enrolled in school at program discharge or follow-up. Only one youth who was enrolled in school at admission had dropped out at discharge or follow-up. Please note that due to missing data, a youth's school enrollment status at admission was not always known – these are indicated by DK-Pre.

Given the relatively large number of youth who were not enrolled in school at the time of admission to the program, these results are encouraging. To the extent that the program intervention supported the re-enrollment of youth in school and the completion of GED requirements, these results will lead considerable savings in societal cost.

Figure 8. The Sterling Pilot Program: School Enrollment Status at Admission Compared to Discharge/Follow-up (n=34)



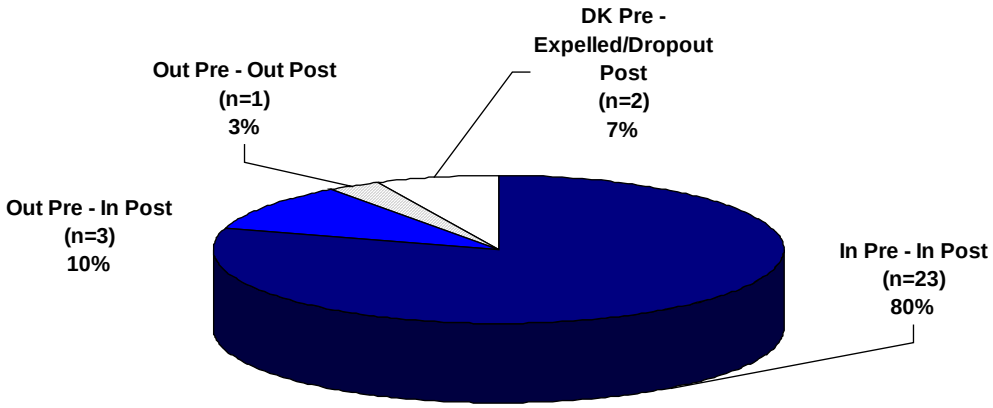
Note: Pre indicates pre-admission; Post indicates Discharge or Follow-up, using latest update available; DK indicates that the youth's status regarding school enrollment was missing information.

Source: Community Based Pilot Record (CBPR)

Denver MST Pilot

Figure 9 shows that the overwhelming majority of the youth admitted to the Denver MST Pilot Program was enrolled in school at the time of their admission to the program and stayed in school through discharge/follow-up. This is a significant accomplishment since success in school (or not) is considered a risk factor for later delinquency. While two youth were not enrolled at follow-up, three youth who were not enrolled in school at admission were enrolled at discharge or follow-up. Please note that due to missing data, a youth's school enrollment status at admission was not always known – these are indicated by DK-Pre.

Figure 9. The Denver MST Pilot Program: School Enrollment Status at Admission Compared to Discharge/Follow-up (n=29)



Note: Pre indicates pre-admission; Post indicates Discharge or Follow-up, using latest update available; DK indicates that the youth's status regarding school enrollment was missing information.

Source: Community Based Pilot Record (CBPR)

Perceptions of Caregivers and Youth

What Did They Hope the Pilot Program Would Achieve?

How Much Help Have They Received Before Enrollment Through Other Services and How Much Help Did They Receive from the Pilot Programs?

What Additional Services Are Needed and What Recommendations Do Caregivers and Youth Have?

Interviews were conducted with caregivers and youth about six months after the youth was discharged from the pilot program. Caregivers and youth were paid for the interviews. The relatively low number of interviews conducted reflects a combination of families' refusal to participate, the inability to locate families, and difficulties with interviewer staffing. Findings reported here are based on the following numbers of responses:

Table 16. Follow-up Interviews with Youth and Caregivers from the Sterling Pilot Program and the Denver MST Program

Program Characteristics	Sterling Pilot	Denver MST
Caregiver Interviews	15	12
Youth Interviews	13	11

Source: Program Evaluation Records

Results will be presented for each site in the following areas:

- Reason for enrollment;
- Age of onset, types of problems experienced, and experience with other agencies/programs;
- Helpfulness of the program and changes for youth since receiving the program;
- Additional services that might have been helpful or are still needed; and
- Amount and satisfaction with parent involvement in the program[14].

Findings for caregiver and youth will be presented separately. The interviews were also divided based on whether the youth was discharged during the first or second year of the programs so that changes in perceptions of the programs could be detected. Results will only be presented that way if there was notable change in caregiver or youth perceptions over time.

In addition to the information collected through evaluation interviews, a site review was conducted with the Sterling Program by William Bane, M.S.W., from Mental Health Services and Carey Chamberlain, Psy.D., from the Division of Youth Corrections, Some notes from this May 2003 visit as well as Personal Statements submitted by youth in the Sterling program will also be included in this section.

[14] Asked only of parents.

Qualitative Results for The Sterling Pilot Program

Most families in the Sterling Program were referred by probation.

Age of Onset, Types of Problems Experienced, and Experience with Other Agencies/Programs

Caregiver View. Caregivers reported a wide range for the age of onset of problems – from ages 6 to 17. Most Year 1 caregivers identified grades 7 and 8 as the beginning of serious problems, while most Year 2 caregivers noticed problems even earlier—with many problems beginning in elementary school. Despite noticing problems at an early age, few caregivers reported receiving any services prior to the child's adolescence (and prior to the Sterling Program). Most service involvement prior to admission to the Pilot Program came from the schools and child welfare, but was rated poorly overall. Typical issues were defiance, depression and drug use, attention deficit, lying, acting out in the classroom and lost of interest in or skipping school.

Despite noticing problems at an early age, few caregivers reported receiving any help services prior to the child's adolescence (and prior to the Sterling Program).

Youth View. Interestingly, Year 1 youth reported an earlier onset in problems, some as early as age 3, than did their caregivers. Youth perspectives on care received prior to adolescence and the Sterling program were similar to that of their caregivers, i.e., little if any help. Youth described problems with school (e.g., skipping, not doing homework and fighting), depression, family, bipolar disorder, and sexual molestation.

Helpfulness of the Sterling Pilot Program and Changes Seen in Youth Since Receiving Program Services

Caregiver View. Overall, caregivers were pleased with the help received from the program. Several parents cited the Sterling Program as the most helpful service their child had ever received. Caregivers commented on the dedication of pilot program staff and praised current probation officers as well. Among other positives, caregivers commented that probation officers had a strong commitment to youth, and that they were willing to do "whatever it takes."

Caregivers commented on the dedication of pilot program staff and praised current probation officers as well. Among other positives, caregivers commented that probation officers had a strong commitment to youth, and that they were willing to do "whatever it takes."

Caregivers reported better communication with their child; the child was no longer taking drugs, and he/she was no longer in trouble with police. Some caregivers noted benefits for themselves as well, such as being more accountable and receiving help to improve communication with their children.

Caregivers reported anecdotally that some of their children were now adults, married or moved out. Pregnancies in girls and boys causing pregnancies were reported. Caregivers also noted that employment was a formidable problem for these youth and those who were working put in long hours for low wages. Several youth were unemployed.

Youth View. Most youth agreed with caregivers—they found that the Sterling program was the most helpful program that they had received. Year 1 youth reported that individual counseling, group therapy, and structure were most helpful. Year 2 youth cited assistance with drug abuse, GED classes, and hands on activities as important.

When reporting what they achieved, several youth said they had stopped using substances. Other achievements included better friends and better family relations. Some were back in school or had received a GED. They also reported being more assertive (speaking up for themselves) and having a better attitude.

Additional Services that Might Have Been Helpful or Are Still Needed:

Caregiver View. Caregivers who thought their child needed additional services cited counseling, anger management and additional support services as potentially useful.

Youth View. Some youth agreed with the need for more counseling and anger management.

Family Involvement[15]. Almost all Year 1 caregivers would have liked more involvement with the program; few participated in regular family sessions. Cost of gas, the inability to attend sessions that interfered with work schedules and the perception that the program was primarily for youth and not parents kept parents from attending. While Year 2 caregivers were more involved in the program, with most participating in weekly family sessions, they reported they would have liked still more involvement and offered the following suggestions: later hours, more information on how to communicate with youth, and developing a parent support group.

Personal Statements from Youth

In addition to information collected with interviews, several Sterling youth have either spoken at formal presentations in the Sterling community or written Personal Statements about their experiences in the pilot program and the impact this has had on their lives and that of their families. These personal statements are included in Appendix 5.

A few excerpts from these Personal Statements:

> *Without individual sessions with Mindy, I would have felt like I had no one to talk to or confide in. Without Anger Management, I would not be able to control my anger like I can now. I would be in more trouble by fighting everyone I don't like…I would still be fighting with my Mom and be in more trouble than I am now.*

> *I think that pilot is great and can help a lot of people, because it has help [sic] me so much in S.A. (Substance Abuse) and A.M. (Anger Management). I think it can help people who want to start getting in trouble to make good decisions.*

[15] Asked only of parents.

I have been to the correctional facility in Greeley and will never go back. If I only had to say one thing about this program is that it gave me my old life back with school and family.

Site Visit Interviews. The site visit included a review of program descriptions, and interview with staff, community agencies, and parents and youth. The notes from the interviews are included in Appendix 4 with other Sterling Pilot Program materials.

Excerpts from the notes:

The parents reported that the multi-family groups were very helpful to them. In particular they benefited from the curriculum that was used and the opportunity to interact with other families who were experiencing similar difficulties.

Each of the parents spoke about how the program helped them through difficult times concerning their children; and served as a lifeline in times of crises. This is of particular importance because each of the youth, in addition to experiencing serious mental health and substance abuse problems, had significant legal troubles due their delinquent behavior.

Qualitative Results for The Denver MST Program

Reason for Enrollment. Most families stated they were court-ordered to receive services as part of the youth's probation or diversion programs. Some said they were referred by social services.

Age of Onset of Problems, Types of Problems Youth Experienced, and Agency Program Experience Prior to Involvement in the Denver Program

Caregiver's View. Caregivers reported a wide range for the age of onset of problems – from ages 6 to 17. Caregivers hoped the program would address depression, anger, medication issues, and concentration and sleep problems. Alcohol use, fire setting, and dropping out of school were also cited as concerns.

Most of the caregivers said that their children had received assistance prior to adolescence but rated the services received as providing no help. Some saw the services as being of some help and one reported that Denver Diversion had been very helpful.

Youth View. Youth agreed with caregivers regarding age of onset of problems. Interestingly, most youth described their problems as anger related, but also reported that they sold drugs, stole, had ADHD, had been beaten up or had witnessed sexual activity.

Most youth rated services received prior to adolescence as being of no help; a few rated them as some help and one rated the services as extremely helpful.

Helpfulness of the Denver MST Pilot Program and Changes Seen in Youth Since Receiving Program Services

Caregiver View. Most caregivers found that the program was very helpful; a few found it to be of some help and one found that it was not helpful. Most reported that the program was the most helpful service their child had ever received.

Caregivers noted that the MST approach helped their families deal with depression and family issues. Also mentioned were improved communication and providing new perspectives on problems. Many noted that they were pleased or comfortable with the MST therapist or impressed with the time that the MST therapist had spent with the family.

Youth View. Most youth found the Denver program to be very helpful or of some help and was often cited as the most helpful program they had ever received. A few youth found the program to be of some help or not helpful.

A few youth cited specific changes in themselves, including fewer problems with anger, fewer problems with their families, and fewer problems overall. One youth reported no longer being involved in a gang, and one reported better grades and being happier.

Services that were helpful included the availability and encouragement of MST therapists, and treatment that dealt with family issues.

Additional Services That Might Have Been Helpful and/or Are Still Needed

Caregiver View. The most frequently suggested recommendation for program improvement was that treatment should be longer.

Youth View. Youth cited Job Corp, therapy with families and help with finances, dealing with personal loss, and anger management as services that could be useful. Some seemed aware of programs that included therapy with animals and remarked that this would be useful. Some youth also indicated that treatment could be longer.

Family Involvement. Almost all caregivers felt that they were very involved in the treatment their child received. Caregivers noted that all family members, including siblings, were generally involved in treatment, and that having the therapist come to the home made involvement easier.

Costs Averted or Saved by the Pilot Programs?

Costs provide a useful way to represent individuals' need for human services. By documenting and adding the costs of an individual's service utilization, and costs averted, we can assess the economic impact of an intervention (Dresser, K. and Utsumi, D., 1991).

Methods

- *Documentation of Cost Events*. The events used in this analysis are the same events as described earlier, which detailed the delinquency, mental health, and school enrollment outcomes for youth. The primary data sources were both electronic- and paper-based and include:
- The Integrated Colorado Online Network (ICON);
- Colorado Trails;
- The Sterling and MST Pilot Programs;
- The Sterling and Denver Police Departments;
- The Sterling and Denver Juvenile Diversion Programs; and
- The Colorado Mental Health Institutes at Ft. Logan and Pueblo.
- *Documentation of Costs*. Each service system was contacted and asked to provide the actual cost of service, if available. Average daily rates provided by the system were used if actual costs were unavailable. Appendix 6 contains documentation of the data source and methodology used to attribute dollar amounts to each monitized event.
- *Calculation of Savings for Social Costs*. In any calculation of costs averted, it is legitimate to consider potential as well as actual costs (Cohen, M., 1996). This theoretical basis is used in some of these analyses.

Of the 90 youth who had enrolled in the two Pilot Program sites by June 30, 2003, non-program system costs were documented for 82 youth. It is important to note that while the data sources cited are likely the most accurate available for these events, all have limitations, some of which are due to when data were entered or extracted. Therefore youth may have accumulated additional costs after the data were extracted. The last data extraction for the ICON data was August 15, 2003, while the last search in the Colorado Trails Database, where cases were looked up individually, was in July. Owing to the challenges inherent in this type of data collection effort, we cannot assume that there were no pre- or post-program costs for the remaining youth, only that they did not appear in these data sources at the time the data were extracted or collected.

Definitions

This cost analysis is based on the specific operational terms defined below.

Program Cost = The average cost per youth for the Community Based Pilot Programs as documented by the program sites.

Pre-Program System Costs = Cost for individual youth in the designated time periods preceding admission to the program. This includes six months prior to admission as one period and anytime prior to the six months as another period.

Post-program System Cost = Cost for individual youth in the designated periods after admission to the program. Time periods include: during enrollment; within six months after discharge, between six months and one year following discharge; greater than one year but less than 18 months following discharge; greater than 18 months following discharge. This does not include Program Cost.

Career Cost = Total cost per youth for all service utilization time periods (any time pre-intervention, during the intervention, and up to the evaluation time period-August 2003), including juvenile/criminal justice (e.g., diversion, arrests, probation, and DYC facility days), mental health inpatient treatment, special education and child welfare out-of-home placements. This figure does not include the cost of the programs being evaluated (Cohen, M., 1996)

Pre-program Cost Profile = Cost picture of each youth's service utilization prior to admission to the pilot programs, ranked High, Medium, or Low.

Post-program Cost Profile = Cost picture of each youth's service utilization during and after the pilot program, ranked High, Medium, or Low. The Program Cost is not included in this calculation.

Long-term Cost-averted = Post-program Cost minus Pre-program Cost. (often referred to as Cost Avoidance)

Short-term Cost-averted = Costs incurred six months prior to the intervention minus system cost incurred during and in the six months following the intervention.

Cost Savings = Program Cost minus Post-program System Cost

The cost methodology operates on very specific assumptions:

- It is possible (and important) to attribute dollar amounts to various program services and outcomes.
- *Ideally, c*ost expended in programs should generate at least an equivalent amount of savings from problems lessened or additional services averted.
- Program dollars spent at one point in time are expected to save money at a later time.
- Youth with extensive public system involvement prior to participation in the project will probably have different outcomes from youth with lower system involvement.
- For youth with serious mental disturbance, delinquent behavior, and substance abuse, we can expect their system involvement to continue or escalate. Therefore, the best predictor of their future behavior is their past behavior. Youth prior to intervention, therefore, can serve as their own comparison following intervention.
- In the absence of actual dollar amounts, useful comparisons can be made between participant costs and state specific average costs as well as national averages for high cost events such as teen pregnancy or school failure.

This section now address the following questions:

- § What are the Career Costs of youth served in the two Pilot Programs? How are they distributed across various public systems and High, Medium, and Low Cost Groups?
- § What are the Pre- and Post-cost Profiles for youth served in the pilot programs and is Pre-Program Cost a predictor of Post-program Cost?
- § What are the Short- and Long-Term Costs Averted, i.e., are the Post-program System Costs per youth less than the Pre-Program Costs incurred for the same youth?
- § What are the savings yielded from the pilot programs and how are they affected by program completion?
- § Are other high cost events (e.g., teen child birth, heavy drug use, school failure), averted during the intervention and follow-up period, and how much would it have cost had they occurred at expected frequencies?
- § What are the implications of cost analyses for program planning?

One Cost Caution. As offenders progress through their criminal careers, the system rarely invokes consequences that are less serious. Thus, as placements become more restrictive and greater in length, the costs will naturally escalate. Any failure on the part of this high-risk group then, will result in significant Post-program System Costs because these youth - by virtue of their prior history, mental health issues, and current involvement in the juvenile justice system - will further penetrate this expensive system.

What are the Career Costs of Youth Served in the Two Pilot Programs?

How Are They Distributed Across Various Public Systems and High, Medium, and Low-Cost Groups?

Career Costs. The 82 youth served in the two Community-Based Pilot Programs have, through August 15, 2003, cost the state of Colorado more than $2.3 million dollars. This total includes per youth cost for all service utilization time periods (pre-, during, and post-program enrollment), including delinquency related costs, mental health inpatient treatment, child welfare (all out-of-home placements), and placements, and special education. Table 17 documents the extensive scope of expenditures for these youth.

Table 17. Career Costs for Total Cohort for All Time Periods: Denver MST and Sterling Pilot Program Youth

Cohort	Number of Youth	Cost
Sterling	44	$1,435,203
Denver	38	$ 886,568
Total	82	$2,321,770

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Table 18 displays these Career Costs broken down by the system that incurred the cost for the total pre-admission period and the total post-admission period, including post-discharge. Also shown is the percent change in cost between the periods by system. Within this system breakdown, the cost figures may represent multiple services received from the same system by one youth as well as one youth accruing cost across multiple systems over their lifetime.

As shown, two-thirds of the costs were incurred by the Department of Human Services both pre- and post-program enrollment. Prior to enrollment Child Welfare (residential treatment and other group care days) accounted for the vast majority of costs, while in the post-admission period, youth corrections accounted for the highest percentage of costs. It should be noted that Mental Health costs represent inpatient costs at the two mental health institutes only and do not include the mental health costs incurred by Pilot Programs. While the pilot programs are in fact mental health costs, for this analysis they are considered program costs, and thus are separated out from overall system costs.

The Judicial Branch and Municipalities accounted for one-third of the total costs pre- and post-admission, all related to delinquency. The Division of Probation Services almost doubled their costs and the Municipalities decreased theirs by more than a 50% from the pre- to post-periods. This is not surprising since youth who sustain multiple "episodes" will forfeit diversion opportunities and be placed on more restrictive state sentences.

In addition to demonstrating the wide distribution of costs across multiple child serving systems in Colorado, these analyses also show how the distribution can change over time. It is important to note, however, that shifts in system costs cannot necessarily be attributed to the intervention of the Pilot Programs. The age at which the youth enrolled in the program, as well as the point in his or her particular "career" at the time of enrolment, could both have significant effects on which systems are used when by which youth and the consequent costs. These comparisons also show the ease that the most severely affected youth can move from one system to another in relatively short periods of time.

The age at which the youth enrolled in the program, as well as the point in his or her particular "career" at the time of enrolment, could both have significant effects on which systems are used when by which youth and the consequent costs.

Table 18. Career Costs for 82 Youth by Public System Incurring the Cost for the Total Pre-Admission Period and the Total Post-admission Period and Percent Change in Cost Between the Periods by System

Public System	Cost Events	Pre Admission Total Cost	% Pre-Admission Cost	Post-Admission Cost	% Post-Admission Cost	% Change
Dept of Human Services		$740,940	65.1%	$780,557	66.4%	5.3%
Child Welfare	RTC, RCCF, Group	$426,759	37.5%	$258,836	22.0%	(-39.3%)
Youth Corrections	Detention Days and Commitment Days	$201,794	17.7%	$406,854	34.6%	101.6%
Mental Health	Inpatient Psychiatric	$152,004	13.4%	$ 75,250	6.4	(-50.5%)
Colorado Judicial Branch		$149,889	13.2%	$217,731	18.5%	45.3%
Probation	Probation Days, Intensive Prob. Days, Electronic Monitoring	$102,867	9.0%	$189,518	16.1%	84.2%
Filings	Court Costs	$47,022	4.1%	$ 28,213	2.4%	(-40.0%)
Special Education[16] (Denver, RE-1 Valley School Districts	Special Education Days	$69,410	6.1%	$125,167	10.7%	80%
Municipal (Denver, Sterling)	Diversion Episodes, Arrests, Community, Service, Jail	$185,351	16.3%	$ 91,175	7.8%	(-50.8)
Department of Corrections	Sentence Days	$ 0	NA	$ 27,867	2.4%	100%
Total		$1,137,866		$1,174,667		3.2%

Note: Post-admission period includes post-discharge periods
Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Although not shown on this chart, it is important to note that the days that were documented on Tables 9 and 12 for post-admission/discharge Commitments to the Division of Youth Corrections (1650 days) and the Department of Corrections (365 days) were for only 6 youth and account for $291,537 (25%) of post-admission costs.

Career Cost Groups. Career Costs for the youth in the two programs ranged from a low of $106 for one youth to a high of $173,748 for another, including actual costs documented during all time periods. One way to conceptualize Career Cost is to de-

One way to conceptualize Career Cost is to develop a "cost profile" by classifying the range of costs as High, Medium, or Low. Based on the actual distribution of Career Cost for the 82 youth in this cost study, Low Cost was considered any amount of Career Cost below $10,000. Medium was used for costs between $10,000 and $50,000 and High Cost was any amount greater than $50,000.

[16] Special Education Days were based on clinician report for each youth pre- and post-admission status. Since external validation was not available, only 6 months pre-admission and 6 months post-discharge, plus the enrollment period were counted for each youth so designated.

velop a "cost profile" by classifying the range of costs as High, Medium, or Low. Based on the actual distribution of Career Cost for the 82 youth in this cost study, Low Cost was considered any amount of Career Cost below $10,000. Medium was used for costs between $10,000 and $50,000 and High Cost was any amount greater than $50,000. Table 19 shows the number of youth in each group, the percentage of the total cohort that the number represents, the sum of all Career Costs for that group and the percentage of all costs represented by that sum. This shows that for the total cohort and for both sites, High Cost youth, who represent less than one forth of all the youth, account for approximately two thirds of all Career Costs.

Table 19. Career Costs by Site and High, Medium and Low Cost Profile

Profile Group	Number of Youth	% Of All Youth by Site	Career Costs	% Of Career Costs by Site
Sterling				
High	11	25%	$1,084,508	75%
Medium	11	25%	$ 249,898	17%
Low	22	50%	$ 107,578	8%
Total	44	100%	$1,441,984	100%
Denver				
High	5	13%	$438,775	50%
Medium	17	45%	$345,813	40%
Low	16	42%	$ 85,962	10%
Total	38	100%	$870,550	100%
Total Cohort				
High	16	20%	$1,523,283	66%
Medium	28	34%	$ 595,711	26%
Low	38	46%	$ 193,540	8%
Total	82	100%	$2,314,534	100%

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

What are the Pre- and Post-cost Profiles for Youth Served in the Pilot Programs and Is Pre-program Cost a Predictor of Post-program Cost?

Pre-program Cost Profiles. Cost Profiles only look at the total period of time *prior* to the intervention. Cost Profiles are a way to characterize youth for purposes of predicting outcome. The assumption here is that High Cost youth, those with extensive service utilization, will present more challenges in the intervention and are at higher risk for poorer outcomes.

This analysis used the same cutoff points for High, Medium, and Low that were developed for Career Costs. In Table 20, we see that prior to the start of the intervention, only 7% of the youth, across both sites, were in the High Cost Category. Sterling had four youth the High Cost Category, compared to two in Denver. Since only youth with more than $50,000 in costs are in this category, this represents a considerable sum.

Table 20. Pre-Program Cost Profiles of Total Cohort and Denver and Sterling Youth (% of N by Site)

Cohort	High Cost	Medium Cost	Low Cost	Total
Denver	2 (5%)	6 (16%)	30 (79%)	38 (100%)
Sterling	4 (9%)	10 (23%)	30 (68%)	44 (100%)
Total	6 (7%)	16 (20%)	60 (73%)	82 (100%)

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Before presenting outcome information, it is important to reiterate that at the time of the evaluation, August 2003, youth represented different periods of time past their discharge from the programs, and some were still enrolled. Table 21 shows the percentage of youth in each site by their time period pos-discharge, showing that 21% of the youth were more than 18 months post-discharge, while 10% were still enrolled in the program. For the total cohort, the youth are fairly evenly distributed across the post-discharge time periods. The Sterling program, however, began operation about seven months prior to the Denver program; therefore, almost half of their youth are in the "18 months or longer" post-discharge period. This is important because the further a youth is from their discharge date; the longer they are at risk for accumulating costs. This was considered when outcomes related to cost were calculated.

Table 21. Number and Percent of Youth by Time Period Post-discharge for the Total Cohort and Two Sites (% of N by Site)

Time Period Post-discharge	Denver	Sterling	Total
Still Enrolled	4 (11%)	4 (9%)	8 (10%)
6 Mos. Post-discharge or less	10 (26%)	7 (16%)	17 (21%)
6 Mos. or longer and less than 12 Mos.	13 (34%)	5 (11%)	18 (22%)
12 Mos. or longer and less than 18 Mos.	10 (26%)	8 (18%)	18 (22%)
18 Mos. or longer	1 (3%)	20 (46%)	21 (25%)
Total	38 (100%)	44 (100%)	82 (100%)

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Post-program Cost Profiles. This analysis used the same cutoff points for High, Medium, and Low that were developed for Career Costs. In Table 22 below, we see that following the start of the intervention, i.e., post-admission, and up until the evaluation period, the vast majority of the youth were in the Low Cost Category. In fact, the overall distribution is almost identical to that seen in the Pre-Program Cost Profile.

Table 22. Post-program Cost Outcomes of Total Cohort and Denver and Sterling Youth, N=82 (% of N by Site)

Cohort	High Cost	Medium Cost	Low Cost	Total
Denver	2 (5%)	9 (24%)	27 (71%)	38 (100%)
Sterling	5 (11%)	6 (14%)	33 (75%)	44 (100%)
Total	7 (9%)	15 (18%)	60 (73%)	82 (100%)

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Comparison of Pre-Program and Post-program Cost Profiles. While the proportion of youth in the High, Medium, and Low Cost categories are about the same from the pre- to the post-periods, it is instructive to see that *individual youth do not always remain in the same groupings.*

In order to examine how many youth shifted from one profile group to another, we compared the Pre- and Post-program Profiles directly. To be certain that we would not under-report the total possible Post-program Costs accrued, this analysis looked only at the 21 youth who were 18 months or more post-discharge, giving the youth the maximum time span possible for this evaluation to experience any "cost events". Because the Sterling Pilot started much earlier than the Denver Pilot, this analysis represents 20 Sterling youth and 1 Denver youth.

What we see in Table 23 is that for the youth with the longest time post-discharge, youth with Low Cost Profiles pre-intervention are most likely to have a Low cost profile post-intervention. The three High Cost youth in this group, however, have shifted their pattern; even after more than 18 months post-discharge, their costs are in the low range. Moreover, three youth who were Low Cost pre-admission shifted to High Cost 18 months later. This is a counterintuitive finding that suggests that a youth's Pre-Program Cost Profile cannot predict High Costs post-intervention.

Table 23. Comparison of Pre-Program Cost Profiles and Post-program Cost Outcomes for Youth 18mos Post-discharge

	Post-program Cost Group			
Pre Program Cost Group	**High Cost**	**Medium Cost**	**Low Cost**	**Total**
High Cost			3 (100%)	3 (100%)
Medium Cost	1 (20%)	3 (60%)	1 (20%)	5 (100%)
Low Cost	3 (23%)		10 (77%)	13 (100%)
Total	4	3	14	21

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

What Are the Short- and Long-term Costs Averted, i.e., Are the Post-program System Costs Per Youth Less Than the Pre-program Costs Incurred for the Same Youth?

As stated earlier in this report, these youth in particular, owing to their involvement in criminal justice, serious emotional disturbance, and high rate of substance use, are at considerable risk for escalation in mental health problems and delinquent behavior. This cost study operated on the assumption that youth can serve as their own control if they are compared pre and post-intervention on the same variable. It is also important, however, to control for the length of time they are at risk for incurring costs by ensuring that the same periods of time are considered before and after the start of the intervention.

Because the youth in the cost study had different periods of time post-discharge, this analysis looked at two distinct groups rather than at the whole cohort of 82 youth. The first analysis included all youth who were at least 6 months post-discharge, and a separate analysis focused only on the *subset of these youth* who were at least 18 months post-discharge.

Short-Term Costs Averted. There were 57 youth who had been out of the program at least 6 months. The documented costs attributed to these youth in the 6 months prior to the intervention, during the intervention and in the 6 months post-intervention were compared. Table 24 shows that for all the youth grouped together, there were no costs averted because the short-term post-program costs are almost twice as great as the pre program costs.

Table 24. Comparison of Total Pre Program and Short Term Post-program Cost for Youth 6 months or more Post-discharge and Percent Change

Site	N	$ 6 months Pre	$ During and 6 months post	% Change	Costs Averted (+)
Denver	24	$110,304	$198,814	+ 80%	-$ 88,480
Sterling	33	$164,961	$303,645	+ 84%	-$143,684
Total	57	$275,295	$507,459	+ 84%	-$232,164

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

However, looking at costs for the combined group masks this fact: compared to Pre-Program Costs, Post-program System Costs for any failure will inherently be more restrictive and therefore more expensive than the less expensive sanctions used earlier in one's criminal career. Still, there were considerable costs averted for almost 23% of the youth.

Table 25 below distinguishes youth for whom costs were averted from those for whom costs were not averted. This analysis shows that more than $60,000 in costs was averted for 13 youth. The percent of youth for whom costs were averted was about the same in each site, 21% in Denver, and 24% in Sterling. Quality of life for the thirteen youth and their families, and contributions these will make to the community following this period of success is not accounted for in the costs averted calculations.

Table 25. Cost Averted/Not Averted for Youth > 6 Mos. Post-discharge – Total Cohort (N = 57)

	N	$
Costs Averted	13	$ 63,099
No Costs Averted	44	$ -295,263
Total	57	$ - 232,162

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Long-term Costs Averted. There were 21 youth (all but one from Sterling) who had been out of the program for at least 18 months. Their cost comparison involved all costs prior to program enrollment and all system costs that the youth incurred after entering the program, *excluding the cost of the program itself*. This also included all costs between the youth's discharge from the program up until the evaluation period. Because Denver had only one youth in this category, the analysis was not disaggregated.

Looking at these 21 youth with the longest post-discharge time, we see that, like the short-term group, the post-intervention costs were more than the pre-intervention costs. If Post-program System Costs were less than Pre-Program System Costs this would signify that quantitative costs had been averted. The negative figure in Table 26 below indicates that no costs have been averted for the aggregated group with the longest periods post-discharge, yet the difference between Pre- and Post-program Costs is only about 31%. If 90% of the youth had committed a new crime, as one might suppose given the high-risk nature of the group, the costs would have been much higher.

Table 26. Costs Averted - Youth > 18mos Post-discharge – Total Cohort (N = 21)

Costs	$
Pre –Program Costs	$436,750
Post-program Costs	$570,782
Costs Averted	- $ 134,032

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

Again, looking only at costs averted for the entire cohort masks the fact that there were still considerable costs averted for almost one-half of the youth. Table 26 shows that at 18 months post-discharge, more than $300,000 in costs were averted for 10 youth; that amount would be sufficient to pay for a group of 40 youth to participate in a community-based program at an average rate of $7500 per youth.

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Table 27. Cost Averted/Not Averted for Youth > 18mos Post-discharge – Total Cohort (N = 21)

	N	$
Costs Averted	10	$308,845
No Costs Averted	11	-$442,878
Total	21	-$134,032

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

What Are the Savings Yielded from the Program and How Is This Affected by Program Completion?

Savings are calculated by comparing the actual program costs with the system costs that were accrued by youth after they were admitted to the program. If Post-program System Costs are lower than Program Costs, than a savings has been realized.

Program Costs in Denver are $8,000 per youth; Sterling has estimated their costs to be about $6,500 per youth. Total Program Costs for the 82 youth in the cost study were $591,500.

The sum of all costs for youth from the date of enrollment into the programs until the evaluation period was $1,175,688, considerably more than the $591,500 in Program Costs. Table 28 shows that there were no apparent savings when the total cohort was compared by Program Costs and Post-program System Costs.

Table 28. Comparison of Program Cost and Post-program System Costs – Total Cohort

Costs	$
Program Cost (N= 82)	$591.500
Post-program System Costs (N=82)	$1,175,688
Savings	-$584,288

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

The picture is different, however, if only those youth who completed the intervention are considered.

Program Completers: Looking at the 35 youth who were identified by their programs as having completed their program, we see that their Post-program Costs were $203,258. Twenty-two of these youth were in the

Denver MST Program; 13 were in the Sterling Pilot Program. The program costs for these youth are displayed in Table 29, and amounted to $260,500.

Therefore, as of the evaluation time period, the Post-program System Costs were less than the Program Cost, resulting in a Savings of $57,242.

Table 29. Comparison of Program Cost and Post-program Costs – Program Completers

Costs	$
Program Cost (N= 35)	$260,500
Post-Program System Costs (N=35)	$203,258
Savings	$ 57,242.

Source: Integrated Colorado Online Network (ICON); Colorado Trails, Documentation of Cost Events

It is important to note that 49% of the youth who had completed the program were more than 12 months post-discharge. While there certainly could be more costs as the youth move further from discharge, it is also likely that program completers will have fewer costs post-discharge than those youth who did not complete the program.

Are Other High Cost Events (e.g., teen child birth, heavy drug use, school failure), Averted During the Intervention and Follow-up Period, and How Much Would It Have Cost Had They Occurred at Expected Frequencies?

It is important and necessary to consider the potential lifetime social costs of the above events in a study such as this. It is estimated that the lifetime social costs associated with a "typical career criminal" are over $1 million; of a heavy drug user, approximately $500,000; and of a high school dropout more than $300,000 (Cohen, M., 1996). All 82 youth in this cost study are at high risk for any of these negative circumstances given their age of onset, histories and mental health issues.

There were, however, some encouraging results that represented costs averted. Seven youth received their GEDs during enrollment or after discharge. Because they are no longer at risk for being dropouts, this represents potentially $3 million in cost savings to society.

There were, however, some encouraging results that represented costs averted. Seven youth received their GEDs during enrollment or after discharge. Because they are no longer at risk for being dropouts, this represents potentially $3 million in cost savings to society.

Likewise, at the time of the evaluation, 53 youth had not received new filings since their admission to the program. If we assume that for even one third of these youth, a moderate estimate, a career as a criminal has been averted, that is 18 youth and over $18 million dollars saved.

What Are The Implications of Cost Analyses for Program Planning?

The Career Costs for some youth are extraordinary. Out-of-home placements, whether in foster care, detention, jail, or hospital, are extremely costly. Since these are high-risk youth, as targeted by the enabling legislation, we expect that some will not respond to the program interventions and will continue their delinquent careers. These youth will incur increasing costs that are not directly comparable to costs incurred early in a

delinquency career when diversion efforts play a larger role. Average costs will, as was mentioned earlier, inherently be higher in the post-period, then, because the placements are more expensive. It would be expected, however, that these higher cost placements would be incurred by fewer youth than would have been the case without the program. In fact, it would be reasonable to assume that up to 100% of these high-risk youth could have further penetrated the system when only 40% have done so thus far following the pilot program interventions.

Further, it is important to look beyond simple comparisons of pre- and post-intervention costs, because these can be skewed by just a few youth with high system utilization. More instructive is consideration of cost savings for program completers and potential costs that are averted by youth who achieve program goals such as avoiding recidivism or finishing school. Too often the gains made by youth are not considered in a cost analysis that focuses only on expenses.

In tight economic times, prevention and diversion programs are often cut. This cost analysis demonstrates that programs that prevent youth from continuing along a career of high cost service utilization can avert higher costs in the long term. Any program that prevents high-cost criminal justice and hospitalization costs from escalating is valuable from a cost perspective.

IV. SUMMARY AND CONCLUSIONS

This report presented the evaluation findings from two years of program implementation for the Community Based Pilot Programs in Sterling and Denver. The evaluation questions focused on program implementation and fidelity to the legislative requirements, youth and family outcomes, and costs averted or avoided.

Program Implementation and Fidelity to the Legislative Requirements

The Sterling Pilot Program and the Denver MST Program both demonstrated important areas of fidelity to the legislative requirements and intent, including:

- Overall, youth who enrolled in the programs met the eligibility requirements set forth in the legislation;
- Program models had low client to staff ratio of one Intensive Case Manger/Clinician to four to six youth;
- Programs provided services targeting the reduction of delinquent behavior and involvement in the criminal justice system, substance use, and the improvement of youths' educational and vocational performance; and
- Programs prioritized and obtained the collaborative involvement of community stakeholders.

The two pilot programs differ substantially from one another in key characteristics, including geography, program model, services provided, and youth characteristics. The MST program is an intensive, non-office-based intervention, with 90% of their services provided in the family context. The Sterling Pilot Program's primary service modality is an office-based group approach, including group therapy, which accounts for about 85% of services. The average length of enrollment for youth who complete the Denver MST, at about 4½ months, is less than half that of the Sterling Pilot Program, which averages of over 10 months. The programs also dif-

fer substantially in the rates at which youth were judged to have completed the program, with the Denver MST demonstrating an 82% completion rate and the Sterling Pilot Program a 33% rate.

Youth admitted to the Sterling Pilot Program are, on average, older, more white, more likely to be Court Directed and referred to the program by Probation, and less likely to be insured by Medicaid than the Denver MST youth. Moreover, the Sterling admission cohort, with only six more youth than Denver, experienced 2.5 times as many Juvenile Justice events prior to their admission to the program.

Both programs made excellent use of ongoing feedback provided by youth, caregivers, the interim program evaluation, and other resources.

During the second year of program implementation, Sterling worked specifically to increase parent involvement and develop strategies to assist youth in their transition from services. As a result, a formal Transitional Program, a seven-week Multi-Family Parenting Group and Motivational Interviewing were added. In addition, both primary program staff have obtained Certified Alcohol Counselor training, further integrating their substance abuse treatment program.

Despite these improvements, family therapy comprises less than one percent of the services provided by the Sterling Pilot and almost all of the services are provided on the grounds of the community mental health center in Sterling rather than in the larger community. While pilot program staff have determined that their current approach and model best reflects the cultural, economic, and service needs of the community it serves, interviews with caregivers reflect their continuing preference for more family involvement. Even so, the intention of the legislation and the RFP, which is supported in the literature (U.S. DHHS, 2001), was to provide evidence-based services, the majority of which cites the provision of services within the youth's natural community, building on family, peer, and community strengths.

Since the legislative and the RFP requirements were modeled after those of a Multisystemic Therapy Team Model, it follows that the UCH MST demonstrates fidelity with all of the requirements. Since it's inception, the UCH MST has enhanced the traditional model with a half-time Spanish-speaking Family Resource Coordinator (FRC) position. In addition to taking on some data collection responsibilities, the FRC has case management responsibilities, including assisting families with meeting their basic needs by providing, food, clothing, public assistance, housing and other resources. The position also provides advocacy, determines eligibility and facilitates enrollment into community and government programs (e.g., TANF, SSI) as well as manages complaints and provides support during crises.

In the second year of the program, follow-up telephone contacts by therapists with family members were implemented. The Denver MST has also implemented a Diversion Log on which clinicians record their specific interventions that have resulted in diversions from inpatient hospitalizations or out of home placement. Both of these efforts demonstrate the UCH team's ongoing priority to monitor and improve outcomes.

Outcomes Achieved by Youth after Enrollment in the Community Based Pilot Programs

Evaluation Design. These youth in particular, owing to their involvement in justice, serious emotional disturbance, and high rate of substance use, are at considerable risk for escalation in mental health problems and delinquent behavior. Therefore, these analyses are predicated on the assumption that the best predictor of youths' future high-risk behavior is their past high risk behavior and that youth prior to intervention, can serve as their own comparison following intervention. In almost all cases, events that occurred during youths' enrollment in the program, i.e., after admission and before discharge, are pooled with events that occurred after discharge. The exceptions are several of the cost comparisons, which control for the amount of time the youth has been discharged from the program.

Several types of data were collected and pooled to measure changes documented for youth after their admission to the Pilot Programs:

- Clinician generated mental health assessment data from the Colorado Client Assessment Record (CCAR);
- Youth and caregiver self-report questionnaires;
- Electronic databases maintained by the state: Colorado Trails and the Integrated Colorado On-Line Network;
- Service utilization data from direct services providers;
- Qualitative interviews with youth and caregivers focused on program helpfulness and recommendations for program improvement; and
- Cost estimates for monitized services or events (e.g., probation, court filings, inpatient psychiatric hospitalization days, residential treatment center days)

Data were collected at specific times, i.e., admission, discharge, and six-months after discharge and in the aggregate (e.g., when accessing electronic databases).

Findings were reported for outcomes in the following domains:

- Juvenile Justice;
- Mental Health;
- Substance Use;
- School Enrollment;
- Perceptions of Caregivers and Youth; and
- Costs Averted/Saved.

At the time of the evaluation, August 2003, youth represented different periods of time past discharge from the programs, and some were still enrolled. This is important because the time that has passed since the youth was discharged represents the amount of time he or she is "at risk" for committing delinquent acts or becoming involved with other systems. Table 27 shows the percentage of youth in each site by their time period post- discharge. As a result of their different start-up times, 42% of the Sterling youth were more than 18 months post- discharge at the time of the evaluation, while only 1 youth (3%) in Denver had been discharged for that time period. Since this indicates that, overall, the Sterling youth had been "at risk" for a considerably

longer time than the Denver youth, this factor was incorporated into the cost analyses and is important to keep in mind when reviewing all the results.

Table 30. Number and Percent of Youth by Time Period Post Discharge for The Sterling Pilot Program and The Denver MST Program.

Time Period Post Discharge	Sterling Pilot Program (N=48) %	Denver MST (N=40) %
Still Enrolled	17%	15%
6 Mos. post discharge or less	14%	25%
6 Mos. or longer and less than 12 Mos.	10%	32%
12 Mos. or longer and less than 18 Mos.	17%	25%
18 Mos. or longer	42%	3%
Total	100%	100%

Source: Program Evaluation Records

Juvenile/Criminal Justice Domain

In order to set the context for the findings in this area, information about the age of onset of antisocial behavior, a risk factor that has been cited as predictive of continued involvement in and escalated severity of delinquent and criminal, is presented.

Age of Onset for Antisocial Behavior. In Sterling, 30% of the youth began demonstrating antisocial behaviors by age 11 and an additional 27% between ages 12 to 13. In Denver, an alarming 30% of youth began demonstrating anti-social behavior by age 9, with an additional 17 % starting between ages 9 to 11, and 25% starting between ages 12 to 13

Youth enrolled in both pilot programs began demonstrating anti-social behaviors at an early age, indicating that more than half of the combined cohort was at very high risk of continued delinquency, including the increased severity of crimes committed.

Juvenile Justice Involvement. The number of youth for whom charges were filed and adjudicated, the delinquent crimes and their severity, and the resulting sentences in which youth were involved prior to and after their admission to the pilot program were documented. *Please note that the "after" admission period includes during enrollment and after discharge.*

- The youth enrolled in the Sterling Pilot program evidenced a substantially higher rate of criminal justice involvement overall than the Denver MST youth, about 33% higher pre-admission and 40% higher after admission to the pilot program.

Filings and Adjudications

- Both sites demonstrated a one-third reduction in the number of youth with delinquent filings after admission to the program.

- The number of youth with adjudications was about 50% lower in both sites after admission to the program.
- The number of adjudicated crimes (there can be more than one crime per adjudication) was substantially lower after program admission for Sterling Pilot Youth (about 23%) and slightly lower for Denver MST Youth (7%).
- The proportion of violent crimes (crimes against persons) increased in both sites, 29% in Sterling and 31% in Denver.

Both sites demonstrated substantial reductions in the number of youth for whom charges were filed and who were adjudicated. It is difficult to interpret changes in the severity of adjudicated crimes, owing to the discretion used by the court in determining findings, but it does appear that for the youth who continued to commit crimes, there is an increase in violent crime.

Sentences

- The number of youth with new probation sentences stayed the same in Sterling and was reduced slightly (by 9%) in Denver.
- The number of youth with ISP sentences stayed the same in Sterling; Denver continued to have no ISP sentences after youth were admitted to the program.
- The number of youth with detention sentences decreased in Sterling from 6 to 2, and rose from 1 to 3 in Denver after admission to the pilot programs.
- Three youth from each site were committed to the Division of Youth Corrections subsequent to admission to the programs.

Probation Revocations

- The number of youth with revocations stayed the same in Sterling after program enrollment. The number rose dramatically in Denver after enrollment because there were no youth with revocations prior to admission.

Division of Youth Corrections, Department of Corrections Facility Days

- Both sites demonstrated post-admission reductions in detention days, 12% in Sterling and almost 50% in Denver.
- Both sites experienced substantial post-admission increases in the number of commitment days, 34% in Sterling and, since Denver had no pre-admission commitments, 750 new days.
- One youth, who was also one of the committed youth, was sentenced to the Department of Corrections for one year.

Detention days are of special interest because the actual number youth days documented in the Colorado Trails Database is over 1800 days when summed across both sites pre and post-pilot program admission, compared to less than 600 days when the days to which youth were sentenced were summed in the same manner. Youth can be detained for reasons other than for sentencing, including time youth are held prior to

adjudication and before charges are dismissed. It may also include time when youth are in the custody of child welfare, but it is not deemed safe for them to return to the community. This is a significant amount of time in DYC facilities, 1200 days over and above sentencing, which will convert to dollars expended. Therefore, It is important to look beyond sentencing, when evaluating DYC facility use.

Division of Youth Corrections and Department of Corrections (DOC) commitment days are of critical importance not only for the severity of the sentence as an indicator of the severity of crimes committed, but also for the sheer number of days involved for so few youth. In the post-program admission time period, 1650 commitment days and 365 DOC days were documented for only six youth across both sites. As was shown in the cost section of the report, this small number of youth can have an enormous impact on program outcomes when examined in the aggregate and mask the improvements of other youth.

Youth Who Entered the Programs While on Probation

We also looked at the relatively few youth who entered the program while on probation, 13 on regular probation and 5 on Intensive Supervision Probation (ISP) in Sterling, and 11 on regular probation in Denver.

- In Denver, 4 of the 11 youth had a new filing, adjudication, and probation revocation.
- In Sterling, 7 of the 13 on regular probation, had a new filing and adjudication, but only 1 had a revocation.
- In Sterling, 7 of the 13 on regular probation had a new filing and adjudication.
- Three of the five youth on ISP had new filings, adjudications, and revocations. One additional youth showed a filing that apparently did not result in an adjudication or revocation, possibly because of his or her enrollment in the program.

Mental Health Problems, Symptom Severity and Functioning, Including Inpatient and Residential Services

Changes in mental health symptoms and functioning were captured primarily with the Colorado Client Assessment Instrument (CCAR). We also looked at changes in the utilization of residential days, including Residential Treatment Center (RTC), Residential Child Care Facility (RCCF), and Group Home days.

Risk Factors. First we looked at a set of behaviors, history and abuse factors that are known to increase youth's risk for severity of mental health problems, delinquency, substance abuse and school dropout[17]. This analysis compared rates for these risk factors for the Sterling Pilot Program, the Denver MST Program, and average statewide rates for youth with Serious Emotional Disturbance (SED) who were admitted to the public mental health system during FY 2002.

These analyses showed:

[17] Risk factors assessed include: Previous Suicide Attempt; Animal Cruelty; Trauma; Destroys Property/Fire Setting; Sexual Misconduct; Sexual Abuse; Victim of Physical Abuse; Victim of Victim of Neglect; Victim of Verbal Abuse; Family Mental Illness; Family Substance Abuse; and Violent Environment.

- The Denver MST youth had a trend toward higher rates than the Sterling Pilot youth and statewide averages for most risk factors. The differences between pilot sites for Family Mental Illness, Victim of Physical Abuse, Neglect, and Verbal Abuse were statistically significant, with Denver being higher.
- When compared to statewide rates for youth with serious emotional disturbance (SED), youth in both sites have higher rates in five areas, History of Suicide Attempts, Destroys Property/Sets Fires, Victim of Physical Abuse, Victim of Verbal Abuse, and Family History of Substance Abuse.
- Sterling youth showed a higher rate of Animal Cruelty, one of the more serious risk factors, than Denver or the statewide average and a trend for higher rates for Violent Environment than the Denver MST.

Overall, Denver youth demonstrate a relatively severe level of risk at admission to the pilot program, while Sterling youth, overall, are closer to the state averages.

CCAR Scales. The next set of analyses focused on twelve scales of the CCAR that have been determined to have good reliability and utility when determining individuals' most salient and distinguishing mental health symptoms and behaviors.[18] We also looked at Overall Problem Severity.

- When the Denver MST and Sterling Pilot Program admission scores on the key CCAR scales were compared, MST youth averaged statistically significant higher scores on each of the twelve scales. Thus, Sterling youth started the pilot program at a substantially lower level of severity with regard to mental health symptoms and problems.
- The Sterling Pilot Program showed improvement on ten of the twelve scales, although change reached statistical significance on only two: Overall Problem Severity, a single overall variable, and Aggressiveness/Dangerousness to Others.

The two domains that improved in Sterling are particularly relevant for this study. Overall Problem Severity may be reflected in other outcomes in the community and Dangerousness reflects public safety concerns. The improvement across the majority of the indicators reflects that the program was having an influence in the expected direction.

- Youth enrolled in the Denver MST demonstrated statistically significant improved scores on nine of the twelve CCAR scales and Overall Problem Severity.

Two of the non-significant areas, Thought, indicating confused thinking and sometimes psychosis, and Self-Care/Basic Needs, were not identified as problem areas at admission and remained unchanged in Denver. The need for security or behavior management was identified as a one of the more serious problems for this cohort and did show improvement, but not at a significant level. Denver's youth also demonstrated significant improvement in Overall Problem Severity, a single overall variable that is not included in the set of key variables.

[18] The twelve CCAR scales used include: Suicidalilty, Depression, Self-Care/Basic Needs, Thought, Aggressiveness/Dangerous to Others, Social/Disrespect, Legal, Substance Use, Manic, Attention, Family, and Behavioral Management/Security.

Although the vast majority of youth in both programs met the eligibility requirements for having a serious emotional disturbance (SED), the youth differed substantially in the severity of their symptoms and behaviors. This is yet another important way in which the sites differ from one another.

Utilization of Inpatient Psychiatric and Residential Services. Using the Colorado Trails data system and specific data requests to the Colorado Mental Health Institutes at Ft. Logan and Pueblo, we looked at inpatient psychiatric and residential services. Unfortunately, because of the lack of required releases, we were limited in our ability to collect accurate inpatient psychiatric service utilization from other than the Institutes and suggest, therefore, that the data cannot be used to interpret inpatient psychiatric hospital utilization. The data collected for residential services is considered reliable.

- In Sterling the number of post- admission RTC days fell to fewer than half of the pre-admission numbers. This finding holds for Other Residential Services as well.
- For the Denver cohort, there does not appear to be notable change from pre- to post-admission for either the number of youth who used these services or the number of episodes documented.

One could speculate that the Sterling youth, some being close to age 18 at the time of admission, aged out or transition from the Child Welfare System. This is supported by later findings demonstrating the shift in events and dollars from Child Welfare to Youth Corrections post- admission

School Enrollment and Completion

For these analyses, attention was focused on whether youth who were enrolled in school at the time of admission stayed in school and if youth who were not enrolled at admission later re-enrolled or eventually received their GED. This was based on discharge and follow-up data.

Sterling youth present a complex picture with regard to school enrollment

With regard to accomplishments:

- Thirteen youth stayed enrolled in school;
- Two youth who were not enrolled at admission were re-enrolled at discharge or follow-up; and
- Seven youth received their GEDs during their enrollment or after discharge from the pilot program.

With regard to ongoing challenges:

- Ten youth had either dropped out or been expelled at discharge or follow-up (2 of these were not in school at the time of admission, 1 was a new drop-out, and the school status at admission was not available for 7).

Given the relatively large number of youth who were not enrolled in school at the time of admission to the program, these results are encouraging. To the extent that the program intervention supported the re-enrollment of youth in school and the completion of GED requirements, these results will lead to considerable savings in societal cost.

The Denver MST Pilot youth present a much less complex picture.

With regard to accomplishments:

- Twenty-three youth stayed enrolled in school; and
- Three youth who were not enrolled at admission, were re-enrolled at discharge or follow-up.

With regard to ongoing challenges:

- Three youth had either dropped out or been expelled at discharge or follow-up (1 of these was not in school at the time of admission and the school status at admission was not available for 2).

The overwhelming majority of the youth admitted to the Denver MST Pilot Program were enrolled in school at the time of their admission to the program and stayed in school through discharge/follow-up. This is also a significant accomplishment since success in school (or not) is also considered a risk factor for later delinquency and high societal costs.

Perceptions of Caregivers and Youth

Interviews were conducted with caregivers and youth about six months after the youth was discharged from the pilot program. This stage of the data collection effort was particularly challenging due to several factors, including: youth were sometimes discharged from the programs without consent for follow-up; families refused follow-up contact; families moved and could not be located with available resources; and problems with interviewer staffing, particularly in Sterling. In addition, even when consent for follow-up was obtained, this population overall was very wary of allowing information to be released, most notably in Sterling. We did, however, conduct interviews with 21 youth and 27 caregivers across both sites, focusing our attention on:

- What did they hope the pilot program would achieve?
- How much help did they receive from other agencies before enrollment in the pilot programs?
- How helpful was the pilot program and what were the most helpful aspects of the pilot programs?
- What additional services are needed and what recommendations do caregivers and youth have?

Most families in both programs were either referred by probation or court-ordered, although some were referred by social services.

A compelling theme in Sterling was that youth often reported that their problems began well before their caregivers reported becoming aware of problems. This speaks to lost opportunities in terms of early intervention, with youth describing difficulties in school, depression, and sexual molestation. While the Denver youth and caregivers were more in sync with regard to the onset of problems, the youth also reported serious problems, such as stealing, selling drugs, and witnessing sexual activity, problems of which their parents may not have been aware.

While a few respondents reported receiving helpful services, usually from the schools or child welfare, prior to their involvement in the Pilot Programs, the majority assessed prior services as not being helpful at all. Exceptions were the Denver Diversion Program (i.e., Safe City) and Sterling Youth Services/Probation. Interestingly, both are mandatory criminal justice programs.

- Overall, most identified the Pilot Programs as being the most helpful services they had ever received.

Caregivers cited different aspects of the programs that were most appreciated.

In the Denver MST, caregivers were pleased/comfortable with the therapist, or impressed with the amount of time the MST therapist spent with the family. Caregivers also pointed out that in most cases everyone in the family, including siblings, were involved. They stated that the home-based aspect of the program made their own involvement easier. They were also pleased with the improved communication with their child.

In the Sterling Pilot Program, caregivers also mentioned improved communication with their child, and a reduction in their child's drug use and involvement with the police. Caregivers also noted improvements in their own accountability as parents.

Youth identified positives about the programs as well.

Denver MST youth found the encouragement and availability of the MST Therapist and Family Therapy as helpful and reported fewer problems with anger and with their families. One reported no longer being part of a gang.

Sterling Pilot Program youth mentioned individual and group counseling, structure, assistance with substance use, and GED classes as most helpful. They reported decreased substance use, better friends, better family relations, and being more able to stand up for themselves. Some were back in school or had received GEDs.

Of note, is that the caregivers and youth mention improvement in factors that decrease risk for delinquency and other poor outcomes as ones for which they received help, such as substance use, police involvement, school, gangs, communication, and peer relationships. Since these were open-ended questions, this provides evidence that these areas were in fact the primary focus of the interventions.

Recommendations for Program Improvement:

- In Denver, the most frequent recommendation by caregivers, and for some youth, was that treatment should be longer. Youth wanted more help with anger management and dealing with personal loss. They also mentioned help with finances, more therapy with families, and therapy that included animals.
- In Sterling, youth and caregivers mentioned the need for more anger management and counseling services and caregivers wanted more support services. While almost all of the caregivers of the youth who were discharged in the first year of the program would have liked more involvement with the program, few participated in regular family sessions. The cost of gas, the inability to attend sessions that interfered with work schedules and the perception that the program was primarily for youth and not parents kept parents from attending.
- As a result of changes that increased family involvement, caregivers were more involved in the second year of the program, with most participating in weekly family sessions. Caregivers reported, however, that they would have liked still more involvement and offered the following suggestions: later hours, more information on how to communicate with youth, and developing a parent support group.

Service Utilization Costs, Cost Savings and Costs Averted

This analysis is based on service utilization documented for 82 of the 90 youth enrolled in the two Pilot Program sites. The services (cost events) themselves are reported in prior sections of this report, but the costs of these services per youth, per program, per system and before and after the pilot program constitute the basis of the cost analysis.

The findings of the cost analysis can be broken down by system costs, youth related costs, and pilot program related costs:

System

- These 82 youth were very costly for Colorado systems, with their career costs (total cost pre and post admission to the program) as of August 2003 being $2,321,779.
- The Department of Human Services (Child Welfare, Youth Corrections, Mental Health) accounted for 66% of that total (career) cost.
- Relative total (career) cost expenditures differ pre and post pilot program intervention with, for example, an increase in Youth Corrections dollars post intervention and a decrease in Child Welfare dollars during the same time periods. These changes might be due to the aging of the youth and the penetration into systems rather than the impact of the program.

Youth

- Almost half of the youth studied (48%) were more than 12 months post discharge.
- Almost all the youth who were 18 months or more post discharge were in Sterling.
- Based on a distribution of costs related to service utilization, youth were rated as High Cost if their service utilization was over $50,000 for the time period; Medium Cost if their service utilization was between $10,000 and $50,000 and Low Cost if their service utilization costs less than $10,000 for the time period.
- Looking at career cost (all times period) we see that 16 of the 82 youth (20%) are responsible for $1,523,283 (66%) of the cost.

Pre- and Post-program Cost Outcomes

- The Programs had a positive cost impact (costs averted) for some youth, regardless of different cost profiles (High, Medium, or Low), prior to admission, i.e., some youth who had High costs prior to admission became Low cost subsequent to their discharge.
- Also among the group with 18 months post discharge were 10 youth who were Low Cost prior to the programs who remained low cost following the intervention.
- The Programs were able to demonstrate cost savings for those youth who completed the programs.
- Thirty-Five youth who completed the program were able to offset their program costs because their service utilization in the post program period was less than the cost of the program for them.
- Seven youth received their GED with a potential social cost savings of over $300,000 per youth.

- When service utilization for all youth is analyzed cumulatively, High Cost youth skew the results. When all youth are considered, the results do not show cost savings as a result of the pilot programs. This masks the large cost saving that occurred for the youth for whom the program was effective.
- Among the 21 youth with the longest period of time post discharge (18 months or more) almost half of them (10) did have lower costs in the post period than the pre program period (costs averted).

Recommendations

Based on the empirical findings presented in this report, the Division of Criminal Justice, Office of Research and Statistics makes the following recommendations for enhanced program implementation for the purpose of maximizing positive client outcomes.

1) **We recommend that the Children's Health and Rehabilitation Unit, Office of Child and Family Services, Colorado Department of Human Services provide ongoing technical assistance to ensure the full implementation of the objectives specified in C.R.S. 16-8-205.**

   - The Sterling Pilot Program demonstrated a 33% completion rate and 15% of the youth who were admitted to the program did not meet the criteria for serious mental disturbance (SED) as required. We also recommend that Sterling Pilot Program administrators and staff and representatives from the state oversight agency work together to address these issues.
   - Since the interim evaluation findings were reported one year ago, the **Sterling Pilot Program** has made efforts to increase the involvement of families in the youth's intervention. The program is to be commended for its response to recommendations presented last year, particularly for the development of the Multi-Family Parenting Program, which has provided direct services to nine families.

     However, family therapy still represented only 1% of overall services delivered in this model. The General Assembly intended that a substantial component of the pilot programs would be family-based; the General Assembly and the subsequent RFP drafters were responding to research that describes such an approach, along with home or non-agency based services as a best practice for reducing delinquency. For this reason, **we recommend that Sterling Pilot Program administrators and staff fully implement a family-based intervention rooted in outreach activities that include home or other non-agency-based services.**

     In particular, the Sterling Pilot Program staff and administrators need technical assistance with developing a response to the research findings that the program lacks sufficient family involvement. **We recommend that representatives from the state oversight agency:**

     - Meet with program staff to review the barriers to full family involvement identified in the research report.
     - Work with program staff to develop a strategic plan with measurable objectives and timelines that address the barriers and incorporate a plan to track the objectives with the evaluator.
     - Monitor the implementation of the strategic plan by conducting quarterly site visits, surveying parents, and documenting progress in this area.

We also recommend that Sterling Pilot Program administrators and staff:

- ♦ Work to further identify, understand, and overcome barriers to full implementation of a family-based intervention that includes non-agency based services, e.g., the economic downturn and the expensive and time-consuming travel time to family homes for staff or to the mental health center for families and issues that may be related to the rural culture.
- ♦ Work with the state program administrator to develop a strategic plan to fully implement a strong family-based intervention that includes non-agency centered services.

The program evaluation demonstrated that youth who completed their respective programs had improved cost outcomes. The Sterling Pilot Program demonstrated a 33% program completion rate. The Denver MST had a completion rate of 82%.

Therefore, **we also recommend that Sterling Pilot Program administrators and staff along with representatives from the state oversight agency work together to address this issue by:**

- ♦ Developing a strategic plan with measurable objectives and timelines that address program completion rates and incorporates a plan to track the objectives with the evaluator.

§ **Colorado Access/Access Behavioral Care** would benefit from assistance regarding their strategy for securing regular non-Medicaid referrals and the required matching funds and services. This will involve representatives from the **state oversight agency accomplishing the following:**

- ♦ Meeting with program staff to review program operations related to obtaining matching funds.
- ♦ Reviewing with staff the barriers to implementing a match-funding scenario and identifying alternative strategies.
- ♦ Developing a strategic plan with measurable objectives and timelines that can be tracked by the evaluator.

2) Representatives from the state oversight agency must document how matching funds and services are obtained and used in both sites.

3) We recommend that the state and these local agencies continue to build on the pilot programs' considerable strengths, including:

§ Extremely solid community-based collaborations;
§ Commitment to creative solutions to enormously challenging situations in the lives of the participants;
§ Strong focus on school enrollment and completion; and
§ Staff dedication, energy, resourcefulness, and expertise.

4) Program effectiveness would be enhanced by **developing strategies to increase the number of referrals of younger at-risk youth** who are less involved in the criminal/juvenile justice system but who would benefit from early interventions. Programs would benefit from applying their two years of experience to **identify the youth who succeed and target those who will benefit the most for enrollment**.

- § Specific attention should be paid to identifying youth who meet the criteria for serious emotional disturbance (SED); 15% of Sterling's and 8% of Denver's enrollees did not meet this criterion.

5) This program evaluation has demonstrated that the prediction of success is not straightforward and the collection of accurate data for these types of studies is challenging. We recommend:

   - § The evaluation place an emphasis on examining the complex relationships between youth and family characteristics and successful youth and cost outcomes.
   - § The evaluator continues to identify barriers to and develop strategies for collecting inpatient psychiatric hospitalization and follow-up data.

The sites are committed to continuing to improve and respond to recommendations. The general assembly can expect continued positive outcomes and resources devoted to these programs resulting in significant cost savings and immeasurable improvements in the quality of life for those that participate.

The general assembly is to be commended for incorporating program evaluation in the overall program design expectations. Without the comprehensive analysis presented here, the program outcomes would remain unclear.

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