



## THE LOUIS DE LA PARTE FLORIDA MENTAL HEALTH INSTITUTE



# Evaluation of Medicaid-Funded Out-of-Home Alternatives for FY 05-06

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# Evaluation of Medicaid-Funded Out-of-Home Alternatives for FY 05-06

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# Evaluation of Medicaid Funded Out-of-Home Alternatives for FY 05-06

## Executive Summary

Statewide Inpatient Psychiatric Programs (SIPP), Specialized Therapeutic Foster Care (STFC), and Therapeutic Group Care Services (TGC) provide out-of-home behavioral health treatment options for Florida's Medicaid population. These three programs are the most restrictive treatment options funded by Medicaid. This report addresses evaluation questions related to all three programs as well as systemic issues concerning out-of-home care treatment alternatives in Florida. The common themes and issues addressed include demographic and clinical descriptions of the youth, service use and costs pre- and post-discharge and the service trajectories of youth across the three residential programs. The report also includes a cost effectiveness study of STFC and TGC.

### Therapeutic Group Care Services

Therapeutic Group Care Services (TGC) are community-based psychiatric residential treatment services for youth with emotional and behavioral issues. Youth placed in a TGC must be diagnosed as having a psychiatric, emotional, or behavioral disorder, be a dependent child, and have serious functional impairment. Developed as a step-down from more restrictive residential treatment placements, TGC is designed to provide a high degree of structure, support, supervision, and clinical intervention in a home-like setting for up to 12 youth. The expected length of stay in such group homes is 12 months.

TGC services were initiated on October 1, 2002. Since that time, 31 provider agencies have served 727 youth in TGC facilities statewide. The majority of youth who received these services were male (66%) and Caucasian (51%). The average age of those served was 14.4 years of age at the time of the first admission to TGC. Mood and affective disorders (32.46%), attention deficit disorders (25.45%) and disruptive behavior disorders (12.65%) were the most common diagnostic categories for these youth.

To gain an understanding of service-use patterns, a sample of youth was selected from all youth who received TGC from October 1, 2002 to December 20, 2005 and who had 12 months of continuous Medicaid eligibility both pre- and post-admission to TGC. The youth in the 12-month sample were similar with regard to age, race, gender, diagnoses, and AHCA Area of origin.

A sample of youth was selected from all youth ( $n = 727$ ) who had 12 months of Medicaid eligibility before and after their initial TGC stay ( $n = 142$ ). These youth are referred to as the 12-month sample. For youth in TGC overall, the average cost of all mental health services decreased significantly between the pre- and post- period ( $\chi^2 = 3.9$ ;  $p = .05$ ). There was one group of services whose

changes, pre to post, were not in the expected direction. These are services for which both the average cost and the penetration rate<sup>1</sup> decreased. This suggests that fewer youth were using fewer services in that category. Services in this group included General Hospital Psychiatric Inpatient, Community Mental Health Services, Targeted Case Management and Outpatient Services. Community Mental Health ( $\chi^2 = 17.5, p < .0001$ ), Targeted Case Management ( $\chi^2 = 5.6, p < .05$ ) and Outpatient Services ( $\chi^2 = 15.3, p < .0001$ ) services decreased significantly. While decreases can be viewed positively in the case of General Hospital Psychiatric Inpatient, decreases in the other service categories suggests that some youth are not moving into less restrictive levels of care.

Eighty-one percent of youth in the TGC 12-month sample had pharmacy claims before, during and after placement. Of these, the most common prescriptions in both the pre- and post- periods were Atypical Antipsychotics, Mood Stabilizers and SSRI Antidepressants. Overall, pharmacy costs for this group increased in the period after discharge, although not significantly. Costs increased significantly for Atypical Antipsychotics. In the period before admission to TGC, youth had prescriptions in an average of 3.43 psychotropic medication categories. At discharge, youth had prescriptions in 2.8 categories.

Data for the 12-month sample of youth were reviewed for Juvenile Justice (JJ) and Florida Department of Law Enforcement (FDLE) contacts pre- and post-admission to TGC. The majority of youth (74%) had never had a JJ contact or only had JJ contacts in the pre-period. Thirteen percent had contacts in both the pre- and post- periods or had contacts only in the post period. The decrease in the number of youth with JJ contacts was significant. There was also a significant decrease in the number of youth with FDLE contacts across the pre- and post-time periods. Sixty-six percent of youth had no FDLE contacts in either time period and 13% had such contacts only in the pre-period. Eleven percent of youth had FDLE contacts in the post period only, and 11% had FDLE contacts in both the pre- and post- periods.

### **Specialized Therapeutic Foster Care**

Specialized Therapeutic Foster Care (STFC) services are intensive treatment services provided to youth with emotional and behavioral issues in a licensed therapeutic foster home. Youth receiving STFC services have been victims of child abuse and/or neglect or have committed an act of juvenile delinquency. Following review and approval by multidisciplinary teams, youth are placed in an STFC home. Youth served in STFC have demonstrated serious emotional disturbances that, if not for STFC, would require treatment in a psychiatric hospital, crisis stabilization unit, or residential treatment program. The purpose of STFC is to provide both long-term and crisis support in a structured home-like setting, with the goal of working with a child or youth towards reunification with the family of origin or a foster family. Within STFC there are two levels of services that differ in the intensity of supervision in the home, treatment parent training requirements, and caseload to staff ratios. There are also short-term crisis intervention placements available for up to 30 days.

From fiscal year 2000 through 2005, 1543 children were served by 114 STFC provider agencies in Florida. Approximately half of these youth were served in Level 1 (less intensive) homes, a third in Level 2 (more intensive) homes, and the remaining youth were served in both. The typical profile of youth served in STFC was male (57%), Caucasian (50%), and 12 years old at the time of first admission to STFC. No significant differences were found on these variables by STFC level. For youth in the 12-month STFC cohort, the average length of stay increased from 96.6 days in FY 01-02 to 208 days in FY 03-04. The same pattern was observed in both Levels I and II, when analyzed separately.

Findings indicate that youth served in STFC experienced a wide range of mental health problems. The most common diagnostic categories were Attention Deficit Disorders (27%), Mood and Affective Disorders (25%), and Anxiety and Stress Disorders (17%). Prevalence differences were detected by STFC level, with Level II youth more likely to have Mood and Affective Disorders and Level I youth more likely to have Adjustment Disorders and Attention Deficit Disorders.

At admission, 79% of youth had psychotropic medication prescriptions. Atypical antipsychotic medications and stimulants were the most commonly prescribed medications in the 12-month period prior to STFC admission. Overall, the percentage of prescriptions declined (to 76%) during the post-discharge period, as did the average cost per user per eligible month. Notably, for youth in Level II, overall medication use increased between the pre- (79.6%) and post-periods (80.3%), unlike the overall and Level I samples. Total pharmacy costs also increased 15% when costs in the post period, \$804,750, were compared to pre pharmacy costs of \$679,137. Increased use of atypical antipsychotic medications and mood stabilizers likely contributed to increasing costs.

For the 12-month cohort as a whole ( $n = 389$ ), which represents both Level I and Level II, there was an increase in the average total mental health costs between the pre- and post- periods, but this increase was not significant. There were some services for which both the penetration rate and the average cost decreased significantly, suggesting that fewer youth used the service at a lower average cost. This group includes Day Treatment, Community Mental Health, and Outpatient Mental Health services, all of which are community services (see Table 28) below. In the case of SIPP, the number of youth using the service and the average cost rose significantly ( $\chi^2 = 7.1$ ;  $p = <.01$ ), between the pre- and post- interval, suggesting movement towards this more restrictive treatment program. Targeted Case Management services was the only service in which the number of youth using the service in the post period increased, while the average cost decreased. This suggests that there is greater access, but youth are using this service for shorter periods of time.

Crisis intervention STFC services were provided to 528 youth by 53 provider agencies. The typical youth receiving these services was most likely to be male, Caucasian, and approximately 15 years old at the time of first admission. Diagnostic categorization of youth in Crisis STFC more closely resembled that of youth served in Level II STFC than Level I. The most common diagnoses for these youth were Mood & Affective Disorders (30%), Attention Deficit Disorders

(27%), Anxiety and Stress Disorders (14) and Adjustment Disorders (10%).

A cost-effectiveness comparison was performed of Specialized Therapeutic Foster Care (STFC) and Therapeutic Group Care Services (TGC). The relative treatment effects of STFC and TGC were examined, as well as characteristics of individuals prior to treatment. The principal finding was that children placed in STFC and TGC differ prior to entering treatment. Individuals with higher Medicaid behavioral health costs, more severe diagnoses, and placements in more restrictive treatment settings in the prior year were more likely to be placed in TGC. Using both propensity score matching and risk adjustment methods to establish comparison groups of children, analysis determined that risk adjustment methods differentiated best between the outcomes experienced by children. When prior-period differences between children placed into STFC and TGC were accounted for, no significant difference in outcomes was found to exist. As such, treatment setting was not found to affect outcomes for similar children.

### **Statewide Inpatient Psychiatric Program**

Statewide Inpatient Psychiatric Program (SIPP) services are provided in an intensive residential setting and often include crisis intervention, psychological evaluation, close monitoring by staff, medication management, and connections to community services post-discharge. These services are expected to be relatively short-term, i.e., six months or less, and are intended to stabilize the youth and connect the youth and youth's family with needed services in the community. Youth entering SIPPs must have a primary DSM IV diagnosis other than substance abuse, mental retardation, or autism. Qualified examiners must certify that youth with emotional and behavioral problems have been unresponsive to intensive outpatient services and/or that the children are considered a danger to themselves or others.

In 2005, three new SIPP providers were added to the service system. As a result, 59 additional beds were made available for youth in need of this intensive level of service. There are now a total of 415 SIPP beds in the State of Florida SIPPs. First Health employs Regional Care Coordinators whose role is to facilitate effective treatment planning and timely discharge of SIPP youth. Key ingredients related to their effectiveness are: communication skills, knowledge of the children's system, active involvement with SIPP staff, the quality of services, and utilization management. One remaining challenge is the standardization of authority of the Regional Care Coordinators to direct discharge decisions. It was found that the authority of the RCCs to influence First Health decisions regarding discharge of youth varies across the state.

The number of critical incidents reported by SIPPs increased from 2004 to 2005, especially in the area of aggressive behavior. There was an average of 6-7 critical incidents for each youth in a year. Only two SIPP providers realized a decrease in critical incidents over the year. However, reporting has undergone major changes in the types, format, and the operational definitions of incidents since 2004, and these changes could account for much of the new data being reported.

The children served by SIPPs in 2005 were 12-17 years old (83.9%), 52.2% were male, 57.8% were White, and 29.5% were African-American (29.5%). At the time of admission, most of the youth (43.7%) were under the legal custody of their parents or other relatives, and 34% were a dependent in physical custody of the state. Diagnostic characteristics of the children indicated that 35.2% of the youth had a primary diagnosis categorized as a mood/affective disorder, and 21.2% had a primary diagnosis categorized as an anxiety disorder. The most common type of anxiety disorder reported was Post-traumatic Stress Disorder. The lifetime pre-placement history of youth revealed high utilization of crisis stabilization (62.9%), followed by outpatient treatment (60.2%). The highest presenting problems at admission were physical aggression (67.9%) and oppositional defiance (54.6%). The most common physical health problem reported at admission was asthma (5.6%).

When examining service use, the services in which both the penetration rate and the average cost increased significantly included TGC ( $\chi^2 = 7.9; p < .01$ ), STFC ( $\chi^2 = 14.6, p < .0001$ ), and Other Mental Health Services ( $\chi^2 = 22.4, p < .0001$ ). More youth used these services at a high cost. Services for which the penetration rate and the average cost decreased significantly included community services such as Day Treatment ( $\chi^2 = 10.4, p < .001$ ) and Outpatient Services ( $\chi^2 = 7.1, p < .01$ ). Targeted Case Management showed virtually no change in penetration rate and a significant decrease in average cost ( $\chi^2 = 29.6, p < .0001$ ), indicating that the length of time youth receive this service is decreasing.

Youth outcomes were assessed by the provider at time of discharge and 60-days post-discharge from the SIPP and include scores from the Children's Global Assessment (C-GAS) and Child Behavior Checklists (CBCL), number of days in the community, and parent satisfaction. C-GAS scores showed improvement in behavior between admission and discharge. The CBCL also indicated improvement between admission and discharge, but scores remained in the borderline or clinical range indicating a need for further evaluation and treatment. Almost 70% of youth remained at their community placement for at least 60 days after discharge. This is a small decrease from 75% in 2004. Results from the provider customer satisfaction survey administered at discharge indicated positive feedback concerning satisfaction and appropriateness of the provider services.

A special SIPP recidivism study was conducted to describe the subpopulation of SIPP youth who experienced more than one episode of SIPP care within a six-month timeframe. This study sought to better understand the factors that differentiate these youth from youth who remained out of SIPP care for at least six months following discharge, as well as the family, agency, and system-level processes that lead to these early readmissions.

The qualitative data indicated that youth who were readmitted to SIPP facilities within six months of discharge differ from those who were not readmitted in several ways. Overall, stakeholders indicated that readmitted youth tend to have multiple challenges, including poor or nonexistent family support, more severe mental health and conduct problems, and histories of multiple failed placements and insufficient

mental health service receipt. These youth may be more likely to have lost hope and to have developed a negative outlook regarding their futures. In addition, stakeholders indicated that system-level service and medication delays following discharge heighten the risk of early readmission. The quantitative data indicate that readmitted youth do not differ significantly on demographic variables such as age, race, and gender, or on the type of primary diagnosis of the youth. This is consistent with stakeholder reports that other variables (e.g., family support, a history of unstable placements) appear to affect early readmission risk more than demographic variables.

In order to examine how youth move among the children's mental health, justice, and child welfare systems, models were developed with these administrative data to understand how youth movement through these three systems in calendar year 2004. In addition, 29 stakeholders knowledgeable about children's mental health were interviewed to obtain their observations and opinions regarding the trajectories of youth moving among these three systems. The modeling provided insight into where youth move, while the interviews supplied information about how and why youth move.

Four themes that facilitate and/or impede appropriate movement across levels of care emerged from the interviews. System coordination, funding, placement availability, and family support systems were seen as important in determining appropriateness of out-of-home placements. System-level factors that facilitate appropriate movement were attending multidisciplinary staffing team and other staffing meetings, appropriate completion of paperwork, and coordination of available beds with waiting lists. At the agency level, case manager involvement, use of therapeutic home visits and passes, and communication and teamwork were importance facilitators. In addition, family involvement, youth meeting criteria for placement, and youth completing treatment were considered facilitators at the youth and family level.

The modeling of system movement indicated that youth in SIPP, FDLE/JJ, TGC, STFC, and Community Mental Health placements or statuses generally had a stable arrangement, with 25-30% remaining in their setting after 30 weeks had elapsed. For those youth who did move between placements or statuses, about two-thirds moved to less restrictive placements or statuses. However, within the one-third who did move to more restrictive placements or statuses, two patterns emerged that warrant further exploration. In the first pattern, it appears that there is a group of youth who are cycling between residential or inpatient mental health placements and FDLE/JJ placements. The second pattern is a group of youth who are in Child Welfare but not receiving mental health services or living with their families of origin, but who are likely to move directly to SIPPs or general inpatient hospitals when they do access mental health services. Finally, differences in gender seem to affect movement. Females were more likely than males to move to more restrictive settings, especially to SIPPs, general inpatient hospitals and to have FDLE/JJ encounters. Males were more likely to move from receiving no mental health services or getting community services to being placed in a TGC. Males are also more likely to leave FDLE/JJ to go to a TGC, and to leave general inpatient hospitals to go to STFCs as compared to females.

## Discussion

The findings of the trajectory study and the SIPP recidivism study suggest that demographic variables such as age, race, and diagnosis play less of a role in differentiating youth who “bounce around the system” from other youth than system and process variables, such as how the youth’s transition to the next placement is conducted. For example, interviews with key stakeholders in positions responsible for SIPP discharge and subsequent placement enabled more in-depth analysis of the processes that lead to early readmission. These stakeholders indicated that there was a chain of events associated with discharge, transition, and placement into the next living situation and that numerous events could occur during that process to derail successful and lasting transition. Factors at the youth, family, agency, and system levels all have the potential to derail the transition and discharge process from any out-of-home treatment program. However, the most commonly-cited factors contributing to early readmission were 1) problems with the next placement, including unavailability of placement and placements at an inappropriate level of care, 2) insufficient discharge planning, including insufficient preparation of the youth and family for the transition, failure to ensure continuity of services following discharge, insufficient notice of discharge, and 3) family-level issues, such as lack of family involvement and lack of family follow-up with referrals. [Note: the involvement of caregivers, both biological and surrogate, in the post-discharge planning and placement was a consistent theme among those interviewed. References to families and parents throughout the report, therefore, should be broadly interpreted to include all caregivers].

## Policy and Practice Recommendations

These recommendations reflect suggestions of study participants during interviews, as well as a review and synthesis of the study findings developed by the study team. A cross-cutting theme is the need for greater emphasis on transitions at the youth, family/caregiver, provider, and system level.

### **Ensure that the youth is discharged to an appropriate placement:**

- Creating greater capacity at less restrictive levels of care (TGC & STFC) for youth discharged from SIPP and giving these youth priority in accessing discharge options
- Making it unacceptable for a youth to leave the highest level of care and go into a shelter
- Requiring the providers of the youth’s next placement to participate in the youth’s therapy and discharge planning

### **Facilitate the transition process for youth:**

- Arranging for foster and group home beds to be held for discharged SIPP youth (without financially penalizing the provider), so that youth can begin the transition process earlier, including weekend and day passes at their next placement

- Ensuring that pre-placement visits actually occur, giving all youth sufficient prior notification about transitions
- Finding ways for dependent youth who earn passes and time off to be able to use these rewards even if they have no family. Otherwise, these youth are not offered the same opportunities to experience time outside the program before transitioning to the next placement that community youth have, which may place dependent youth at risk for early readmission

#### **Prepare families and other caregivers to care for discharged youth:**

- Requiring monthly face-to-face family therapy sessions with the youth's parent/caregiver
- Asking parents to attend specialized parenting classes before youth are discharged to them (when indicated by the treatment plan)
- Making proactive efforts to improve family engagement through provision of family support and mentors
- Increasing family/caregiver supports and services post-discharge
- Streamlining the medication consent process to avoid disruption of medication management after discharge

#### **Take steps to improve the systems and agencies that serve youth in placement:**

- Improving communication among providers, child welfare lead agencies, the judiciary, DJJ, and the Substance Abuse Mental Health Office to ensure appropriate SIPP referrals and prevent cycling of youth in and out of out-of-home care
- Putting a limit on how many times youth can return to an out-of-home care option because multiple admissions likely indicates that this option is not working for this youth
- Considering another level of care between SIPP and either TGC or STFC
- Strengthening cross-District/cross-Area placement coordination for youth who are placed in programs outside of their community
- Ensuring that targeted case managers become actively involved earlier in the youth's stay, rather than just 30 days after admission and 30 days before discharge
- Improving communication between the placement provider and the provider that is going to offer the aftercare services
- Forming strong links with the school system because a positive school placement can be a strong support for a youth returning to the community
- Forming strong links with the Department of Juvenile Justice to provide focused attention and identify specialized treatment interventions for youth with a history or active involvement with the justice system

## Next Steps

The current emphasis in SIPP provider data reporting on critical incidents, length of stay, and outcome measures will be continued. The large variation among providers in the number of critical incidents per youth is a continued finding that needs further study and interpretation. A transition is planned that will expand the use of the SIPP Provider Monthly Report Database to Therapeutic Group Care programs. The Louis de la Parte Florida Mental Health Institute (FMHI) will continue to work with the Agency for Health Care Administration and the Department of Children and Families to make required changes to the database so that additional sites can be added in FY2006-07.

The findings of the cost effectiveness study of STFC and TGC point to a number of future methods. The first step will be to use a larger sample for the cost-effectiveness analysis. By removing the restriction that individuals must be Medicaid eligible a full 12 months before and after the treatment period, sample sizes could be increased considerably. Larger samples will enable more precise estimation of the treatment effects. Second, we propose that FMHI develop a risk adjustment model for behavioral health that could be used in evaluation research. Such a model would be useful to create comparison groups of children in STFC and TGC. Third, there were several results that suggested that STFC or TGC may be more effective for specific subgroups of children. The larger sample and improved risk models will be used to further examine this issue. Finally, this report found that children with higher costs and more severe diagnoses in the prior year tended to be placed into TGC. Additional research will consider the efficacy of this placement tendency.

Future directions suggested by findings from the trajectory study and the SIPP readmission study include a more in-depth examination of 1) the mental health services received by youth who experience early readmissions and/or recycling among placement options compared to those who do not, 2) the interaction of demographic and clinical variables in predicting these, and 3) the feasibility and implementation of suggested system changes to decrease recycling and early readmissions.

# Out-of-Home Care Study Overview

## Introduction

Statewide Inpatient Psychiatric Programs (SIPP), Specialized Therapeutic Foster Care (STFC), and Therapeutic Group Care Services (TGC) provide out-of-home behavioral health treatment options for Florida's Medicaid population. Since these are the most restrictive treatment options funded by Medicaid and similar evaluation questions have been raised about all three treatment alternatives, these evaluation projects were combined in FY 2005-06 so that systemic issues concerning out-of-home care can be addressed. The common themes and issues addressed include demographic and clinical descriptions of the youth, service use and costs pre- and post-discharge, and the service trajectories of youth across the three residential programs. The report also includes a cost effectiveness study of STFC and TGC, and a study of SIPP youth who are readmitted within six months of discharge.

## Sub-Study Overviews

The 2005-06 evaluation of the three Medicaid-funded out-of-home treatment alternatives includes four sub-studies which look at evaluation questions focused on the child and family, provider, and system levels. The first 3 sub-studies focus solely on one program (i.e., Therapeutic Group Care, Specialized Therapeutic Foster Care, and Statewide Inpatient Psychiatric Programs). The fourth sub-study uses both quantitative and qualitative methods to examine, describe and better understand the trajectories of youth across the children's mental health, justice, and child welfare systems.

### Sub-Study #1 Therapeutic Group Care Services

The first sub-study includes a description of the TGC program model, information about TGC providers, demographic and clinical characteristics of the youth served in TGC, and a pre-treatment/post-discharge comparison of youth. Data were analyzed from Medicaid claims data and other available sources, examining and the demographic, clinical, and service needs of youth admitted to TGC. The study reviewed overall post-discharge service patterns, medication utilization, and costs of behavioral health treatment compared to pre-admission public behavioral health utilization patterns and costs of enrollees.

### Sub-Study #2 Specialized Therapeutic Foster Care

This sub-study answers the same questions as the first sub-study regarding the program model, information about STFC providers, demographic and clinical characteristics of the youth served in STFC, and a twelve month pre-treatment/post-discharge comparison of youth. In addition, this sub-study examines the differences between youth served in two levels of STFC that differ in the intensity of supervision in the home, treatment parent training requirements, and smaller caseload to staff ratios. The study concludes with an examination of the cost-effectiveness of STFC relative to TGC.

### **Sub-Study #3 Statewide Inpatient Psychiatric Program**

The third sub-study provides information similar to the earlier sub-studies. In addition, it includes an analysis of administrative data collected from the SIPP Provider Monthly Report Database. These analyses include client demographic data, clinical information, and several outcome measures; the Child Behavior Checklist, Children's Global Assessment Scale, and 60-day follow-up information. The study also describes the evolving role of the Regional Care Coordinator (RCC), with a focus on the impact of RCCs on length of stay and the extent to which provider, child/family, and system variables facilitate or impede the RCCs' ability to affect length of stay.

The third sub-study concludes with a special focus on youth who were readmitted to a SIPP within six months after-discharge, including a description of the characteristics of these youth, as well as their service use between the initial discharge and readmission. The sub-study describes the processes and factors leading up to readmission, treatment trajectories, whether access to appropriate levels of care influences recidivism, how formal and informal supports were utilized after discharge, and whether there are any processes or services the child's family and case manager feel could have prevented the readmission.

### **Sub-Study #4 Trajectories of Residential Care**

The final sub-study examines trajectories of residential care, or how youth move through the mental health, child welfare and justice systems. Interviews with caregivers, parents, providers and other key stakeholders document the factors that facilitate or impede youth movement across different levels of care, to what extent the three Medicaid-funded out-of-home care programs are appropriately utilized, and whether or not home and community-based service alternatives are appropriately utilized. Interview data were augmented with data models using Medicaid mental health, HomeSafeNet (child welfare), Juvenile Justice and Florida Department of Law Enforcement data. The modeling provided insight into where youth move, while the interviews supplied information about how and why youth move.

The report concludes with a discussion section that synthesizes the findings across the sub-studies, offers a number of policy and practice recommendations at the system, provider, and youth/family levels, and provides a set of next steps for future studies.

## **Participant Protections**

All work described in this report involving human subjects has been reviewed and approved by the University of South Florida's Institutional Review Board. Permission to use Florida Department of Juvenile Justice, Florida Department of Law Enforcement and HomeSafeNet (child welfare) data were also obtained from the respective agencies.

# Evaluation of the Therapeutic Group Care Services for FY 2005-2006

## Background

**Therapeutic Group Care Services (TGC)** homes are community-based psychiatric residential treatment services for youth with emotional and behavioral issues. Youth placed in TGC must be diagnosed as having a psychiatric, emotional, or behavioral disorder, be a dependent child, and have serious functional impairment. Developed as a step-down from more restrictive residential treatment placements, TGC is designed to provide a high degree of structure, support, supervision, and clinical intervention in a home-like setting for up to 12 youth. The expected length of stay in such group homes is 12 months.

This study describes youth enrolled in TGC and investigates the service use, cost and outcomes of youth receiving these services.

## Research Questions

1. Who is providing services to youth in TGC?
2. Who are the youth being served by TGC?
3. What are the service use patterns, costs, and outcomes of TGC?
4. What are the cross system outcomes of care for youth in TGC?

## Summary of Findings

TGC services were initiated on October 1, 2002. Since that time, 31 provider agencies have served 727 youth in TGC programs statewide. The total cost of these services since the program's inception = \$28,758,640. Youth receiving these services were male (66%), Caucasian (51%), and on average 14.4 years of age at the time of their first admission to TGC. Mood and affective disorders (32.46%), attention deficit disorders (25.45%) and disruptive behavior disorders (12.65%) were the most common diagnostic categories identified for these youth.

To better understand service use patterns, a sample of youth was selected from all youth ( $n = 727$ ) who had 12 months of Medicaid eligibility before and after their initial TGC stay ( $n = 142$ ). These youth are referred to as the 12-month sample. For youth in TGC overall, the average cost of all mental health services decreased significantly between the pre- and post- period ( $X^2 = 3.9$ ;  $p = .05$ ). There was one group of services whose changes, pre to post, were not in the expected direction. These are services for which both the average cost and the penetration rate<sup>2</sup> decreased. This suggests that fewer youth were using fewer services in that category. Services in this group included General Hospital Psychiatric Inpatient, Community Mental Health Services, Targeted Case Management and Outpatient Services. Community Mental Health ( $X^2 = 17.5$ ,  $p < .0001$ ), Targeted Case Management ( $X^2 = 5.6$ ,  $p < .05$ ) and Outpatient Services ( $X^2 = 15.3$ ,  $p < .0001$ ) services decreased significantly. While decreases can be

viewed positively in the case of General Hospital Psychiatric Inpatient, decreases in the other service categories suggests that some youth are not moving into less restrictive levels of care.

Eighty one percent of youth in the TGC 12-month sample had pharmacy claims before, during and after placement. Of these, the most common prescriptions in both the pre- and post- periods were Atypical Antipsychotics, Mood Stabilizers and SSRI Antidepressants. Overall, pharmacy costs for this group increased in the period after discharge, although not significantly. Costs increased significantly for Atypical Antipsychotics. In the period before admission to TGC, youth had prescriptions for an average of 3.43 psychotropic medication categories. At discharge, youth had prescriptions in 2.8 categories.

Data for youth with any juvenile justice contacts were examined. The majority of youth (74%) had never had a JJ contact or only had JJ contacts in the pre-period. Thirteen percent had contacts in both the pre- and post- periods or had contacts only in the post period. The decrease in the number of youth with JJ contacts was significant. There was also a significant decrease in the number of youth with FDLE contacts across the pre- and post- time periods. Sixty-six percent of youth had no FDLE contacts in either time period and 13% had such contacts only in the pre- period. Eleven percent of youth had FDLE contacts in the post period only and 11% had FDLE contacts in both the pre- and post-periods.

## Who is providing services to youth in TGC?

### Methods

Eight interviews, representing 10 TGC programs, were conducted with TGC program directors or other knowledgeable staff in AHCA Areas 2 (Tallahassee), 3 (Gainesville), 7 (Orlando), 10 (Broward), and the Suncoast Region (Tampa Bay), comprised of AHCA areas 5 and 6. The interviews were completed in person, and ranged in length from one to two hours.

### Provider Characteristics and Experience

The Therapeutic Group Care providers included in this sample have a wide variety of experience in providing behavioral health services to their communities, ranging from a little over a year to more than 30 years of providing services. Most had provided behavioral health services for 5 years or more. A little more than half of the TGC agencies interviewed said they provided other behavioral health services, including therapy and outpatient services to youth in foster care, crisis units, deaf services, and SIPP.

Most of the TGC agencies had provided therapeutic group home services before the implementation of the Medicaid code for TGC. A few said that the nature of their services had changed, from transitional living or shelter care to TGC, while others said that their changes mostly included documentation and credentialing issues. Some TGC providers had to add new positions, such as behavior analyst. A few program directors stated that they liked the Medicaid

guidelines because they felt the guidelines provided structure that assisted in smooth operation of the TGC. One TGC said that when adopting the Medicaid TGC code they adapted a previous service and treatment modality for use with the new population.

Many of the agencies had a single TGC home, but three agencies had two homes, and one had four. They had a range of 6 to 12 licensed beds per home, with twelve being the most common arrangement.<sup>3</sup> Average length of stay ranged from 3 to 18 months, but most program directors estimated length of stay to be close to 12 months. Most of the TGC facilities interviewed did not serve special populations beyond the required designation that youth have moderate to severe emotional disturbances. One TGC did serve males age 13-17 with sexualized behavior problems, and another reported that many of their youth were in need of independent living services, creating an informal special population.

### **Treatment Models**

A variety of treatment models were used by the TGC providers in the sample. Some used no particular model, but rather a mix of techniques and orientations. Most identified a behavioral model, such as Cognitive Behavior Therapy or Behavioral Analysis with Positive Behavior Support as their treatment model, and many used token economies and skills development as avenues for treatment. However, all but one facility interviewed used a behavioral orientation in provision of services. One facility used a trauma-focused framework utilizing eclectic therapeutic techniques. Half of the facilities did not identify an evidence-based practice at the core of their treatment; three facilities identified Cognitive Behavior Therapy as their best practice, and one identified the Juvenile Welfare Board (JWB) standards as their best practice model. The JWB standards are a blend of best practices chosen to complement the JWB strategic plan for provision of services.

TGC providers are not able to serve youth whose primary diagnosis is a substance use issue. However, most assess for substance abuse issues at admission, and substance abuse services are often contracted in or referred out. A few facilities provide access to Alcoholics Anonymous or Narcotics Anonymous meetings for their youth, and a few offer on-site groups or specialized substance abuse counseling by staff.

### **Quality Improvement and Evaluation**

The Medicaid requirements call for all TGC providers to establish and maintain quality improvement programs. All of the TGC program directors interviewed indicated they had functioning quality improvement programs, which collected and monitored a variety of indicators. Common indicators included risk management issues, monthly progress notes, outcome data, and seclusion and restraint use. In addition, programs reported tracking treatment planning, youth outings, medical and pharmacy issues, critical incidents, admissions and discharges, and chart compliance. Data were also collected with regards to staff. Staff training was almost universally reported as being monitored,

and some programs also specifically tracked staff incidents, staff turnover, and staff boundaries with youth. In terms of child characteristics, diagnosis, problem behaviors, critical incidents, and behavioral progress were common indicators monitored by programs. In addition, one facility reported they tracked educational progress through report card review.

Most facilities also performed some types of satisfaction surveys. Youth and families were most often formally surveyed, at least yearly. Some facilities monitored satisfaction as frequently as quarterly. Staff satisfaction did not seem to be monitored at the program level, but several program directors reported they assumed this function happened at the human resource level of the parent organization. Community feedback on satisfaction with programs and services generally happened in an informal manner; one facility reported sharing yearly reports with community partners, and one facility asked referral sources to complete a Likert-type satisfaction survey periodically. Community satisfaction seemed to be interactive and ongoing, but not well documented.

Findings and conclusions from these quality improvement programs were used in a variety of ways and at many levels. Quality improvement programs provide information that is used to affect treatment planning for youth, to educate staff about how to work with youth, evaluate and improve program policies, train and retain staff, and consider program changes. At least one quality improvement program provides information for corporate level changes and subsequent quality improvement initiatives. At least one TGC uses their information to monitor the characteristics of the population they serve and to monitor how youth move within the mental health system according to levels of restrictiveness.

### **Staff Characteristics**

Staff composition at the TGC providers surveyed varied, and was often related to the number of homes and licensed beds the facility had. Smaller TGC providers often had staff members covering multiple roles, such as program director and clinical services coordinator, clinical services coordinator and therapist, clinical services coordinator and behavior analyst, or therapist and behavior analyst. TGC providers also varied in the positions that were staff versus contracted, and this was often related to whether the TGC was part of a larger array of behavioral health services the agency was providing. For example, some TGC providers shared property and resources with SIPPs, Crisis Stabilization Units, or other behavioral health services, and so were able to use psychiatrists, nurses, and other staff that were primarily housed in these other facilities. However, a general picture of staffing at TGC can be presented.

Most TGC providers have a program director, who often works as the clinical services coordinator. In addition, there are one or two primary clinicians or therapists, 8-14 full-time direct care staff, a nurse, and a house or shift supervisor. Larger TGC providers may have additional therapists, direct care staff, nurses, and specialized therapists for recreation or trauma. One TGC had a behavior analyst on staff. However, behavior analyst services were usually contracted, along with psychiatrist, additional direct care staff, and occasionally nursing services.

The role of the clinical services coordinator (CSC) in TGC providers varied, and was often related to the variety of positions this person was expected to cover. However, most CSC positions were expected to supervise all clinical treatment and training that occurred in the program. Some also participated in treatment planning and provision of therapy. Most supervised the therapists on staff, but usually had no other supervisory role. Per Medicaid requirements, CSCs were required to have a master's degree and to be licensed. Specialized training beyond that required for maintenance of licensure and general training topics required of all staff at the facility was not reported as being required.

The behavior analyst position was often filled by the clinical services coordinator, or was a contracted position. Behavior analysts' role were often described as supportive of clinical treatment, and their responsibilities sometimes included being a treatment team member or providing training for direct care staff in specialized interventions beyond the development of the behavior plan. About half of the behavior analyst positions were filled by a Certified Behavior Analyst. Behavior analysts in the TGC providers surveyed had no supervisory role. TGC providers generally require a master's level education for behavior analysts for new hires, although some hire bachelor's level staff who are working towards certification in behavior analysis.

Two main roles were identified for primary clinicians through the interviews. In some agencies the main role of the primary clinicians was to provide clinical services such as therapy and treatment planning, case management and advocacy. Other TGC providers expected their primary clinicians to function as "parents," providing services and support to youth in the same variety and depth as a parent would. These clinicians were expected to work with schools, community groups, and other people the youth interacted with, to attend school plays or music performances, provide transportation to community events, and mentor the youth. None of the TGC providers interviewed expected their primary clinicians to provide supervision for other staff. Primary clinicians with master's level education and licensure were preferred, but facilities also employed clinicians with less education who were working towards licensure.

Direct care staff are expected to provide daily care to youth in TGCs, and their role is often described as that of a parent or older sibling. They are expected to mentor the youth, implement the youth's behavior plan, and hold house meetings and, in some agencies, topical groups. About half of the program directors said direct care staff are expected to be treatment team members. They often participate in sports or other recreational activities with youth, provide transportation to community events, and sometimes go to school events in support of youth. Direct care staff are generally required to have a high school diploma and participate in pre-service and in-service training, but do not provide supervision for other staff members.

## Service Planning and Implementation

Admission procedures are generally consistent across the TGCs interviewed. After receiving a referral packet for a potential placement, the packet is reviewed. The program director, therapist, psychiatrist, or clinical service coordinator may all look over the packet to decide if the youth will be a good fit with the facility. Many TGCs interview the youth and family, if available, and the youth is often invited to visit the TGC prior to admission.

Once admitted, assessment begins immediately. A nursing assessment often occurs within the first 24 hours, with a suicide risk and substance abuse assessment as part of the procedure. The initial treatment plan is developed within the first three to seven days, with the master treatment plan finalized by anywhere from 14 to 45 days after admission. A psychological assessment is usually completed within the first seven days. Behavior plans are typically completed within 30 to 45 days. Treatment planning includes a wide variety of people. The most commonly involved persons include the youth, family, mental health and / or community based care case managers, the program director, and primary clinician or therapist. A nurse, direct care staff, clinical services coordinator, psychiatrist, and school personnel may also attend. More rarely, DJJ staff, behavior analysts, house supervisors, or recreational therapists may assist in treatment planning.

Treatment plans are reviewed formally every month, and are often discussed weekly. Treatment plans are often changed for a variety of reasons. Goals are often ended when completed, such as adjusting to the new placement or improving school grades. Sometimes the direction or intensity of goals are changed in response to changes in behavior. If youth suggest a new goal, this is often added to the treatment plan. The development of new behaviors such as stealing or enuresis, or the identification of existing behaviors such as cutting or other self-harm, will also cause a change in treatment plans. More globally, changes in the family's legal status or youth's involvement in the juvenile justice system may cause plan changes.

Discharge planning, at least provisionally, begins at admission. Some facilities have discharge specialists or community facilitators who assist in discharge planning issues. Discharge plans are often reviewed monthly as part of general plan monitoring. Sometimes discharge planning does not begin in earnest until the youth has made significant progress towards completing treatment goals, so that the youth sets the pace of discharge planning. TGCs often try to work with the new placements, either family, foster care, or other facility, to ease transition and address separation, loss, and grief issues. Many TGCs increase the number of therapeutic home passes as discharge nears, and several work on parenting skills and relationship issues in family therapy. One TGC often accompanies youth who are being discharged on their visit to the new facility, and holds discharge parties in the group home so that all youth can address the departing youth's discharge. If the youth is moving to independent living, they are taught how to set up medical and dental appointments, how to get and maintain a job, how to use public transportation, and other daily living skills.

These independent living skills are usually the focus of discharge planning for older youths 15 or older. Older youths are also provided with vocational, educational, or GED information, and the discharge location often affects how discharge planning is done. For youth returning to family settings, family therapy, interpersonal skills, and other important issues may be focused upon. For youth in the dependency system, there are other discharge requirements. Often, the availability of a placement type, not age, dictates how discharge planning is done.

### **System of Care (SOC) Principles**

The Medicaid guidelines call for the inclusion of many system of care principles in the provision of care within TGCs. Interviews with TGC program directors included several questions designed to discover what efforts TGCs are making to include SOC principles in service provision. These questions focused on family involvement, individualized services, cultural competence, and community connections.

Many of the TGCs interviewed required families to participate in the treatment and care of their children. Families were required to participate in family therapy, to attend meetings and participate in the treatment team, and to allow and support therapeutic home passes. Other TGCs, while not requiring participation, encouraged family participation and maintained regular phone contact with family members. Visits and contacts with siblings, especially those in the dependency system, were facilitated as much as possible, and family involvement in group home holiday, birthday, and other celebrations was encouraged. One group home sent a case manager to do a home visit over the weekend while the youth was on therapeutic home pass. At least one TGC tracked parent participation. In terms of youth involvement, youth were always considered part of the treatment team, and encouraged to participate in team meetings. In addition, youth generally had access to clinical team members whenever they desired it.

TGCs varied in how they tried to individualize services. Some program directors talked about efforts to tailor services through the assessment process, asking youth and their families about their likes and dislikes, favorite activities, motivators, and rewards. This information was then used by the treatment team to develop individualized treatment plan goals, behavior systems, recreational activities, and to offer specialized services focusing on the youth's special needs, such as trauma or sexual abuse therapy, and occupation or speech therapy within the school setting. Two TGCs also shared that they trained direct care staff to respond to youth in inappropriate behavior situations that worked best for that youth. None of the program directors said specifically that they used youth strengths in treatment planning and goal development. One TGC also holds discharge parties for youth leaving the facility.

Program directors' responses also varied in how they tried to provide culturally competent services. Several programs provided diversity training for staff and tried to hire diverse staff. The other common factor was providing youth with access to religious services and opportunities of their choice. However, beyond

that, most programs did not identify specific culturally competent efforts. A few TGCs were more innovative, however. Holidays, birthdays, and monthly themes such as Black History Month were celebrated, and some TGCs held special groups on cultural competence topics. One TGC has a large bulletin board near the front entrance that is updated regularly with cultural topics.

One of the goals of TGCs is to help youth integrate into their communities and public schools. Several facilities provide opportunities for daily outings to community locations, such as the YMCA, sporting events, and other community events. Some TGCs have contracts with community partners, such as the YMCA, or local businesses who may hire youth looking for jobs. In addition, youth are assisted in independent living tasks, such as using public transportation, to help them feel comfortable in their communities. Many TGCs encourage youth to volunteer in their communities. A few TGCs have recreation therapists, or activity persons who function as bridges to the community. One TGC shared that they try to hire direct care staff with existing community connections to facilitate community connection opportunities for youth.

### **The Medicaid Guidelines and Service Provision**

Program directors were asked to review the list of required services for youth in TGCs, and to identify those services on the list that they believed were most effective for the youth in their group homes. Many program directors said that all of the services were important and found it difficult to identify one service that worked best. They felt that different services worked with different youth based on their individual needs. However, several program directors did identify individual, group, and family therapy as their most effective service. Less often mentioned, but still important, were social rehabilitation, grief counseling, and trauma groups. One program director felt that coordination of care was most important, because it allowed for all of the other services to work together to find the right mix for each youth.

Program directors were also asked what things they felt it was important for AHCA to know to improve the services TGCs provide to youth in Florida. Several of their comments were knowledge-based statements, while others were recommendations for changes to service provision. Program directors felt that TGC needs to be structured like regular home environments and that youth needed to be provided with home-like experiences as much as possible. One provider also felt that the surrounding community needed a better understanding of the role, function, abilities and population served by the group home to better enable youth to succeed in their placement. Independent living, family therapy, and discharge after care were all identified as essential services for youth in TGCs. In terms of recommendations, the following is a list concerns expressed by program directors about TGCs' success as a placement option for Florida's youth.

- Smooth transitions between facilities within and across districts to reduce complications, aid in appropriate placement, help youth with appropriate levels of services;

- Adequate capacity for crisis assessments and post- assessment supports, whether the youth is returning home after the assessment or being sent to a higher level of care;
- Provide support to the suitability assessment process to ensure that placement decisions are based on behavioral needs and are appropriate for behavior severity, rather than just the availability of a bed;
- Length of stay is sometimes increased because youth have reached maximum medical benefit, but a more appropriate placement cannot be located;
- Increase number of TGC licensed beds in the state;
- Consider the introduction of another level of care between SIPP and TGC that provides more structure for youth than TGCs can currently offer;
- Consider dropping the requirement for behavior analyst services for all youth, as not all youth are in need of specialized behavior programs;
- Educational tutoring services are a high priority, and funding for these services are difficult to find;
- A need exists for TGC settings for youth with Developmental Disabilities;
- Youth sometimes return to TGC settings or those of a more restrictive level because TGC stays are too short to allow staff to distinguish between behaviors caused by multiple medications issues and versus behavior issues related to the underlying behavioral health disorders.

## Who are the youth being served in TGC?

### Methods

Descriptive analyses were conducted for all youth enrolled in services between 10/1/02, when TGC became a Medicaid service under the Community Behavioral Health Services Coverage and Limitations Handbook (Agency for Health Care Administration, 2004), and 12/20/05 ( $n = 727$ )<sup>4</sup>. Analyses included demographic and diagnostic characteristics, and geographic distribution of services for all youth enrolled between 10/1/02 and 12/20/05. This group is referred to as the 'All TGC Cohort'.

A subset of youth in the descriptive study was selected to assess service use, outcomes and costs. This cohort of youth were served in TGC and had 12 months of Medicaid eligibility before and after their stay in TGC ( $n = 190$ ).

### Procedure

This section of the evaluation describes the impact of TGC treatment on post-discharge treatment and cost patterns for enrollees by comparing the pre-treatment patterns of care and costs for youth statewide for 12 months preceding treatment with the patterns of mental health care and costs for the same youth during a period of 12 months post-discharge from treatment. Data were analyzed from Medicaid claims to examine the demographic and characteristics and service use of youth admitted to TGC. The study looks at overall post service patterns and costs of behavioral health treatment compared to pre-admission public behavioral health utilization patterns and costs of enrollees. The comparison study looks at a period of 12 months prior to treatment and 12 months post-discharge.

Service utilization and costs were analyzed for each individual for 12 months pre-treatment and post-discharge, providing information about the average length of stay per user, typical service utilization patterns for both pre-treatment and post-discharge treatment intervals, average total cost per user within each study interval, and average rate of readmission within the study intervals. In addition, the statewide records of Baker Act initiations, Department of Juvenile Justice encounter data, Florida Department of Law Enforcement encounter data and HomeSafeNet (child welfare) placement data were analyzed.

These analyses address the question of whether receipt of TGC treatment appears to make a difference in overall service patterns and costs of mental health treatment by comparing the public behavioral health utilization patterns and costs of enrollees in the 12 months prior to treatment with 12 months of post-discharge.

Medicaid claims data were augmented with face-to-face interviews conducted with the program manager or clinical director of each site to better understand site-specific factors affecting treatment planning and service provision. The interview protocol was developed to understand program operations, staffing patterns, and treatment and service planning in TGC programs.

### Demographics: Gender, Race and Age

Youth served in TGC were likely to be male (66%,  $n = 480$ ), and Caucasian (51%,  $n = 369$ ) and they averaged 14.4 years of age at the time they were first admitted to TGC.

The highest percentages of youth in the 12-month cohort were served in AHCA Areas 6 (Tampa Bay), 4 (Jacksonville), and 7 (Orlando). See Table 2.

**Table 1**  
**Characteristics of Youth Receiving TGC**  
**(All TGC Cohort,  $n = 727$ )**

	n	%
Gender		
Male	480	66.0%
Female	247	33.9%
Race		
White	369	50.8%
Black	225	30.9%
American Indian	3	0.4%
Hispanic	34	4.7%
Other	96	13.2%
Age		
Mean	14.4	
SD	2.2	
Median	14.7	

**Table 2**  
**AHCA Area of Residence**  
**for Youth in TGC**

AHCA Area	n	%
Area 1 (Pensacola)	52	7.2%
Area 2 (Tallahassee)	32	4.4%
Area 3 (Gainesville)	40	5.5%
Area 4 (Jacksonville)	99	13.6%
Area 5 (Pinellas-Pasco)	89	12.2%
Area 6 (Tampa Bay)	102	14.0%
Area 7 (Orlando)	92	12.7%
Area 8 (Fort Myers)	23	3.2%
Area 9 (Palm Beach)	72	9.9%
Area 10 (Broward)	70	9.6%
Area 11 (Miami-Dade)	56	7.7%
Total	727	—

## Mental Health Diagnoses

The youth who received TGC services had a wide range of mental health diagnoses. The primary mental health diagnoses were organized into diagnostic categories by a team of researchers at FMHI, who collaborated to develop a common categorization of diagnoses for use in studies of children's behavioral health programs. Diagnostic categories used for the youth are shown below in Table 3 and include: Adjustment Disorders; Attention Deficit Disorders; Mood & Affective Disorders; Disruptive Behavior Disorders; Neurotic, Personality, and Other Non-Psychotic Disorders; Schizophrenia and Psychoses; Childhood Emotional Disturbances; and Anxiety and Stress Disorders (see Appendix 1 for additional information on the diagnostic categories.)

For the group of youth who received TGC, mood and affective disorders (32.46%,  $n = 236$ ), attention deficit disorders (25.45%,  $n = 185$ ) and disruptive behavior disorders (12.65%,  $n = 92$ ) were the most common diagnostic categories (Table 3).

**Table 3**  
**Descriptive Cohort Diagnostic Categories at Admission**

Diagnostic Category	All TGC	
	n	%
Mood & Affective Disorders	236	32.5%
Attention Deficit Disorders	185	25.5%
Disruptive Behavior Disorders	92	12.7%
Anxiety and Stress Disorders	87	11.9%
Schizophrenia and Psychoses	31	4.3%
Adjustment Disorders	20	2.8%
Childhood Emotional Disturbances	12	1.7%
Drug & alcohol use or abuse	5	0.7%
Neurotic, Personality, & Other Non-Psychotic Disorders	3	0.4%
Other MH diagnoses	56	7.7%
Total	727	--

## What are the service use patterns, costs and outcomes of TGC?

### Methods

To understand service use patterns, a sample of youth was selected from all youth who received TGC from 10/1/02 to 12/20/05. The sample was selected according to the following criteria: (1) that the youth have at least 12 full months of Medicaid eligibility before and after their first TGC service episode and that the episode of care was longer than seven days<sup>5</sup> ( $n = 190$ ). For the service and cost analyses, 142 youth were included in the final sample. The remaining youth were excluded because the Prepaid Mental Health Plan's capitation causes an underestimation of pre- and post- services and pharmacy costs for comparisons.

## Demographics: Gender, Race and Age

The youth in the twelve-month sample, like the descriptive sample, were more likely to be male (65%,  $n = 123$ ), Caucasian (56%,  $n = 106$ ) and were 14.2 years of age at admission. (see Table 4). No significant differences were detected between the descriptive (All TGC Cohort) and the 12-month pre-post cohorts.

**Table 4**  
**Characteristics of Youth Receiving TGC**  
**(12-Month Pre-Post Cohort,  $n = 190$ )**

	n	%
Gender		
Male	123	64.7%
Female	67	35.3%
Race		
White	106	55.8%
Black	53	27.9%
American Indian	2	1.1%
Hispanic	8	4.2%
Other	21	11.1%
Age		
Mean	14.2	
SD	2.3	
Median	14.3	

## Mental Health Diagnoses

Similar to the descriptive sample, the three most common diagnostic categories for the 12-month sample were Mood and Affective Disorders (38%,  $n = 73$ ), Attention Deficit Disorders (19%,  $n = 37$ ) and Disruptive Behavior Disorders (12%,  $n = 22$ ). (see Table 5.)

**Table 5**  
**Diagnosis at Admission – 12-Month Cohort**

Diagnostic Category	12-month cohort	
	n	%
Mood & Affective Disorders	73	38.4%
Attention Deficit Disorders	37	19.5%
Disruptive Behavior Disorders	22	11.6%
Anxiety and Stress Disorders	18	9.5%
Schizophrenia and Psychoses	11	6.3%
Childhood Emotional Disturbances	4	2.1%
Neurotic, Personality, and Other Non-Psychotic Disorders	2	1.1%
Adjustment Disorders	2	1.1%
Drug & alcohol use or abuse	1	0.5%
Other MH diagnoses	19	10.0%
Total	190	

### Length of Stay

The average length of stay during a youth's first TGC admission was calculated for this sample of youth. The average number of days these youth spent in a TGC during their first treatment was five months (151 days, SD =128). The lengths of stay ranged from a minimum of 7 days to a maximum of 555 days, and the median length of stay was 114.5 days.

### Mental Health Services and Costs

To describe the service utilization and costs of those youth receiving TGC interventions, Medicaid service claims were categorized as (1) General Hospital – Psychiatric Inpatient, (2) Statewide Inpatient Psychiatric Program (SIPP), (3) Therapeutic Group Care, (4) Specialized Therapeutic Foster Care, (5) Behavioral Health Overlay Services (BHOS), (6) Day Treatment, (7) Community Based Mental Health, (8) School Based Mental Health, (9) Targeted Case Management, (10) Emergency Mental Health, (11) Outpatient Mental Health, and (12) Other Mental Health Services (see Appendix 2 for descriptions of the service categories).

Table 6 shows all Medicaid-billed Fee-For-Services and costs for youth who received any TGC intervention in FY2002–2005, and who had 12 months of Medicaid eligibility prior to and after discharge from their first TGC episode. These analyses included average per user per eligible month (PUPEM) costs, compared across three time intervals. PUPEM calculations are based on the total number of months that users of the services were eligible for Medicaid services, as indicated in the denominator. The numerator includes the total amounts that were billed for in each service category. The PUPEM rates provide an estimate of program costs for all users of a particular service category, including both high users and low users. They do not precisely reflect the actual cost of any particular service, but provide the average cost for all TGC program participants who used a given service.

Of the 142 youth in the 12-month sample<sup>6</sup>, 99% (141) used some type of Medicaid-funded mental health treatment service during the 12 months prior to their first TGC admission. In the 12 months following their TGC discharge, 98.6% used some type of Medicaid Fee-for-service funded mental health services. The total cost for Medicaid Fee-for-service funded mental health services in the 12-month period prior to their first TGC admission was \$5,575,447 and the total cost for the 12-month period post-discharge was \$4,797,700.

### Service Use

For youth in TGC, the average cost of all mental health services decreased significantly between the pre- and post- period ( $X^2 = 3.9$ ;  $p = .05$ ). There was one group of services whose changes, pre to post, were not in the expected direction. These are services for which both the average cost and the penetration rate<sup>7</sup> decreased. This suggests that fewer youth were using fewer services in that category. Services in this group included General Hospital Psychiatric Inpatient, Community Mental Health Services, Targeted Case Management and Outpatient Services. Community Mental Health ( $X^2 = 17.5$ ,  $p < .0001$ ), Targeted Case Management ( $X^2 = 5.6$ ,  $p < .05$ ) and Outpatient Services ( $X^2 = 15.3$ ,  $p < .0001$ )

**Table 6**  
**Service Use Before and After TGC Services**  
**(Excludes Areas 1 and 6, n = 142)**

Type of Services	Pre				During			Post				Kruskal Wallis Test X <sup>a</sup>	p <sup>b</sup>
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM	Total Costs		
General Hospital –Psychiatric Inpatient	37	26%	874	\$387,859	12	948	\$136,495	20	14%	768	\$184,314	0.0808	0.7876
SIPP	58	41%	5271	\$3,668,940	0			31	22%	6111	\$2,273,370	2.1434	0.1432
TGCC <sup>c</sup>	0	0%		\$0	142	2331	\$3,972,112	40	28%	2003	\$961,342		
STFC	23	16%	1407	\$388,252	0			28	20%	2107	\$708,003	4.9055	0.0268
BHOS	20	14%	230	\$55,308	1	16	\$197	19	13%	380	\$86,720	1.4051	0.2359
Day Treatment	9	6%	219	\$23,699	15	154	\$27,730	19	13%	152	\$34,731	2.1082	0.1465
Community-Based													
MH Care	92	65%	443	\$488,632	17	23	\$4,650	56	40%	152	\$102,318	17.5419	<.0001
School-Based Care	22	16%	12	\$3,281	26	12	\$3,700	26	18%	16	\$4,979	0.0154	0.9012
Targeted Case													
Management	116	82%	243	\$337,703	113	168	\$228,266	111	78%	206	\$274,247	5.5908	0.0181
Emergency MH													
Services	62	44%	8	\$6,092	52	7	\$4,267	55	39%	9	\$5,630	0.5237	0.4693
Outpatient Services	137	97%	129	\$212,213	124	53	\$78,866	133	94%	88	\$140,496	15.3471	<.0001
Other Mental Health	8	6%	36	\$3,468	12	28	\$3,993	34	24%	53	\$21,550	0.0023	0.9615
All Mental Health	141	99%	3297	\$5,575,447	142	2622	\$4,460,276	140	99%	2856	\$4,797,700	3.9989	0.0455

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis.

<sup>b</sup> The Kuskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in TGC were not included.

<sup>c</sup> Because of the sample selection, i.e., first admission to TGC, there are no pre-TGC costs.

services decreased significantly. While decreases can be viewed positively in the case of General Hospital Psychiatric Inpatient, decreases in the other service categories suggests that some youth are not moving into less restrictive levels of care.

### Pharmacy Use and Cost

Individual prescriptions are not reported in these analyses. Rather, psychotropic medications are reported according by category of medication. These categories were developed according to the symptoms they are intended to effect. Youth may have multiple prescriptions within a single category, e.g., if dosage were being changed or a youth with ADHD was being switched from Concerta to Strattera. The percentages reported in Table 7 show the number of youth with at least one prescription in that category.

Eighty one percent of youth in the TGC 12-month sample (n = 114) had pharmacy claims before, during and after placement. Of these, the most common prescriptions in both the pre- and post- periods were Atypical Antipsychotics, Mood Stabilizers and SSRI Antidepressants. Overall, pharmacy costs for this group increased in the period after discharge, although not significantly, from an average of \$209 per user per eligible month to \$221. The only type of drug for which costs increased significantly were Atypical Antipsychotics, which increased from an average cost of \$156 in the pre- period to \$201 in the post period (X<sup>2</sup> = 4.9, p < .05).

**Table 7**  
**Pharmacy Utilization and Costs**  
**(Excludes AHCA Areas 1 and 6, *n* = 142)**

Drug Categories	Pre-TGC			During TGC			Post TGC			Kruskal Wallis Test $\chi^2$	P value <sup>a</sup>
	N	Average Cost PUEM	Total Costs	N	Average Cost PUEM	Total Costs	N	Average Cost PUEM	Total Costs		
Stimulants	51	44	\$27,193	36	36	\$15,518	37	41	\$18,324	0.463	0.4962
Alpha Agonists (others)	23	13	\$3,648	27	8	\$2,538	25	11	\$3,257	0.2453	0.6204
Antidepressants (SSRI)	56	34	\$22,893	44	18	\$9,351	40	35	\$16,732	0.3579	0.5497
Tricyclic Antidepressants	11	6	\$764	8	4	\$423	7	8	\$687	1.4949	0.2215
Newer Antidepressants	43	26	\$13,580	30	30	\$10,767	22	23	\$6,087	0.0589	0.8083
Standard Antipsychotic Medications	14	17	\$2,872	3	40	\$1,451	7	6	\$539	0.2738	0.6008
Atypical Antipsychotic Medications	83	156	\$155,542	76	131	\$119,849	81	201	\$195,505	4.9361	0.0263
Anxiolytics	25	4	\$1,289	14	3	\$518	19	4	\$1,008	0.0237	0.8776
Mood Stabilizers	69	70	\$57,849	65	57	\$44,739	66	63	\$49,835	0.087	0.7681
Other Mental Health	16	3	\$608	5	3	\$171	8	2	\$182	1.5007	0.2206
<b>Total Mental Health Pharmacy</b>	<b>114</b>	<b>209</b>	<b>\$286,238</b>	<b>111</b>	<b>154</b>	<b>\$205,325</b>	<b>110</b>	<b>221</b>	<b>\$292,156</b>	<b>0.0505</b>	<b>0.8221</b>

<sup>a</sup> The Kuskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in TGC were not included.

The number of prescriptions categories a youth was prescribed were analyzed. On average, in the period before admission to TGC, youth had prescriptions in 3.43 psychotropic medication categories ( $M = 3$ ,  $SD = 1.8$ ). At discharge, youth had prescriptions in fewer categories on average ( $X = 2.8$ ;  $M = 3$ ;  $SD = 1.4$ ). Only 15% ( $n = 21$ ) had prescriptions in a single category at discharge. Fifty-three percent were taking between two and four medications at discharge ( $n = 75$ ).

**Table 8**  
**Number of Categories of Psychotropic Medication Use**

MH pharmacy category	Pre-TGC		During TGC		Post TGC	
	N	%	N	%	N	%
1 category	14	9.9%	23	16.2%	21	14.8%
2 categories	27	19.0%	29	20.4%	29	20.4%
3 categories	24	16.9%	27	19.0%	27	19.0%
4 categories	24	16.9%	20	14.1%	19	13.4%
5 categories	8	5.6%	7	4.9%	10	7.0%
6 categories	6	4.2%	4	2.8%	3	2.1%
7 categories	9	6.3%	1	0.7%		0.0%
8 categories	2	1.4%		0.0%	1	0.7%
<b>total</b>	<b>114</b>		<b>111</b>	<b>78.2%</b>	<b>110</b>	<b>77.5%</b>

## What are the cross system outcomes of care for youth in TGC?

### Baker Act Initiations

The total number of Baker Act initiations and the total number of youth with Baker Act initiations was examined for the 12-month sample ( $n = 190$ ). For all youth in the sample, there was a significant decrease in the number of youth with Baker Act initiations ( $\chi^2 = 7.74, p < .0054$ ). The total number of initiations also decreased, although not significantly (pre 167 vs. post 96). Youth with Baker Act initiations were similar to the 12-month pre-post cohort in terms of race and gender, and were likely to be White (56% in pre, 47% in post), and male (60% in pre and post).

**Table 9**  
Baker Act Initiations 12 Months Prior to, During, & 12 Months After TGC  
( $n = 190$ )

Pre-TGC			During TGC			Post-TGC		
Initiations	$n^a$	%	Initiations	$n$	%	Initiations	$n$	%
167	81	42.6	0	0	0	96	55	28.9

<sup>a</sup> The number of youth with Baker Act initiations significantly decreased  $\chi^2 = 7.74, p < .0054$ .

A second set of analyses was conducted to unduplicate the number of youth. That is, youth could only appear once in the pre-period and once in the post period, regardless of the number of Baker Acts they had had. As is seen in Table 10 below, 44% of youth ( $n = 84$ ) had never had Baker Acts in either the pre- or post- period. Twenty-seven percent ( $n = 51$ ) had Baker Act in the pre-period exclusively and only 16% ( $n = 30$ ) had initiations in both the pre- and post-period. There were 13% ( $n = 25$ ) that had Baker Acts in the post period only.

**Table 10**  
Youth with Baker Act Initiations – Unduplicated Sample

# of TGC youths		Post	
		Baker Act	No Baker Act
Pre	Baker Act	30 (16%)	51 (27%)
	No Baker Act	25 (13%)	84 (44%)

### Department of Juvenile Justice Contacts

Records from the Department of Juvenile Justice (DJJ) were examined to assess encounters with DJJ. For this analysis, only crimes that were considered felonies or misdemeanors were included. The offenses had to be classified according to severity as 'life', 'first degree', 'second degree', or 'third degree'. None of the youth in this sample had a capital degree offense. For the group as a whole, there was no significant change in the number of youth with Juvenile Justice contacts or in the total number of contacts between the pre- and post- periods.

**Table 11**  
**TGC Youths with DJJ Contacts Pre- and Post- Periods**

# of youths		Post	
		DJJ	No DJJ
Pre	DJJ	58	132
	No DJJ	49	141

Further, the relatively minor crimes fell in the post period from 73 to a total of 30 misdemeanors. Conversely, the number of felony charges increased from 29 in the pre-period to 49 in the post-period.

**Table 12**  
**Offense Charges: Number of DJJ Encounters**

	Pre-TGC	During	Post
Felonies	29	14	49
Misdemeanors	73	30	50
Total Charges	102	44	99

### FDLE Contacts

An FDLE contact was defined by selecting the arrest record reported for any individual youth on a specific date. If the same juvenile had several arrest records on the same date, these would be considered a single FDLE contact. If that juvenile was referred for one or more arrest records on another date during the year it would be counted as another FDLE contact.

Like the DJJ encounter data, there was no significant change in either the number of FDLE contacts between the pre- and post- periods or in the number of youth with FDLE contacts across the two time periods. Sixty-six percent ( $n = 125$ ) had no FDLE contacts in either time period and 13% ( $n = 24$ ) had contacts only in the pre- period. Eleven percent of youth had FDLE contacts in the post period only ( $n = 20$ ) and 11% had FDLE contacts in both the pre- and post- periods ( $n = 21$ ).

**Table 13**  
**FDLE Cases 12 Months Prior to, During, & 12 Months After TGC**  
*(n = 190)*

Events	Pre-TGC		During TGC			Post-TGC		
	<i>n</i>	%	Events	<i>n</i>	%	Events	<i>n</i>	%
82	45	23.7	29	20	10.5	83	41	21.6

## Child Welfare Placements

Among the 190 youth in the study sample, 145 (76%) were under the supervision of Child Welfare and Community Based Care in the 12 months after their first TGC stay. In the table below, the first placement after discharge is reported.

**Table 14**  
**Post Discharge Placements**

Child Welfare placements	Frequency	Percent
<b>Family or relative care</b>		
Adoptive Home	2	1.4%
Approved Non-Relative Caregiver	1	0.7%
Approved Relative Caregiver	2	1.4%
SUB-TOTAL	5	3.0%
<b>Community Child Welfare Placements</b>		
Foster Home Non-Relative	13	8.9%
Group Home more than 12 Youth	17	11.7%
Group Home up to 12 Youth	29	20.0%
Medical Foster Home Non-Relative	1	0.8%
Shelter Facility more than 12 Youth	2	1.4%
Supervised Practice Independent Living	1	0.7%
SUB-TOTAL	63	43.4%
<b>Mental Health Placements</b>		
Mental Health Facility more than 12 Youth	6	4.1%
Mental Health Facility up to 12 Youth	4	2.8%
Residential Treatment more than 12 Youth	34	23.5%
Residential Treatment up to 12 Youth	18	12.4%
Therapeutic Foster Home Non-Relative	9	6.2%
SUB-TOTAL	71	48.9%
<b>Medical Placements</b>		
Hospital	1	0.7%
<b>Runaway</b>		
Runaway	4	2.8%
Runaway Shelter more than 12 Youth	1	0.7%

# Evaluation of the Specialized Therapeutic Foster Care for FY 2005-2006

## Background

Specialized Therapeutic Foster Care (STFC) services are intensive treatment services provided to youth with emotional and behavioral issues in a licensed therapeutic foster home. Youth receiving STFC services have been a victim of child abuse and/or neglect or have committed an act of juvenile delinquency. Following review and approval by multidisciplinary teams, youth are placed in an STFC home. Youth served in STFC have demonstrated serious emotional disturbances that if not for STFC, would require treatment in a psychiatric hospital, crisis stabilization unit, or residential treatment program. The purpose of STFC is to provide both long-term and crisis support in a structured, home-like setting with the goal of working with a child or youth toward reunification with the family of origin or a foster family. Within STFC, there are two levels of services that differ in the intensity of supervision in the home, treatment parent training requirements, and smaller caseload to staff ratios. There are also short-term crisis intervention placements available for up to 30 days.

## Research Questions

1. Who are the youth being served by STFC and are there differences between youth being served in Levels I, II and Crisis Intervention STFC?
2. What are the service use patterns, costs and outcomes of STFC?
3. What are the outcomes of care for these youth?

## Summary of Findings

From fiscal year 2000 through 2005, 1,543 children were served by 114 STFC provider agencies. Approximately half of these youth were served in Level 1 (less intensive) homes, a third in Level 2 (more intensive) homes, and the remaining youth were served in both. The typical profile of youth served in STFC was male (57%), Caucasian (50%) and 12 years old at the first admission to STFC. No significant differences were found on these variables by level of care. Youth in the 12-month STFC cohort were most heavily represented in AHCA areas 6 (15%), 11 (13%), 4 (12%) and 9 (10%). For this cohort, the average length of stay increased from 96.6 days in FY 01-02 to 208 days in FY 03-04. The same pattern was observed in both Levels I and II when analyzed separately.

Findings indicate that youth served in STFC experienced a wide range of mental health problems. The most common diagnostic categories were Attention Deficit Disorders (27%), Mood and Affective Disorders (25%) and Anxiety and Stress Disorders (17%). Prevalence differences were detected by STFC level, with Level II youth more likely to have Mood and Affective Disorders and Level I youth more likely to have Adjustment Disorders and Attention Deficit Disorders.

At admission, 79% of youth had psychotropic medication prescriptions. Atypical antipsychotic medications and stimulants were the most commonly

prescribed medications in the 12-month period prior to STFC admission. Overall, the percentage of prescriptions declined (to 76%) during the post-discharge period, as did the average cost per user per eligible month. Notably, for youth in Level II, overall medication use increased between the pre- (79.6%) and post- periods (80.3%), unlike the overall and Level I samples. Total pharmacy costs also increased 15% when costs in the post period, \$804,750, were compared to pre pharmacy costs of \$679,137. Increased use of atypical antipsychotic medications and mood stabilizers likely contributed to increasing costs.

## Service Use

In terms of service use, for the group as a whole the average cost of all mental health services increased significantly between the pre- and post- interval. Whether examined for the group as a whole, or by Level of STFC, youth served in STFC had lower penetration rates and lower average costs in most community based services, and consistently for Community Based Mental Health services, Day Treatment and Outpatient Services. This combination of significantly higher average total costs, and significantly lower community mental health costs, suggests that youth served in STFC are moving towards higher levels of restrictiveness in the period following discharge.

Crisis intervention STFC services were provided to 528 youth by 53 provider agencies. Youth receiving these services were most heavily represented in AHCA Areas 11 (32%), 4 (20%), 3 (11%), and 2 (10%). The typical youth receiving these services was most likely to be male, Caucasian, and approximately 15 years old at the time of first admission. Diagnostic categorization of youth in Crisis STFC more closely resembled that of youth served in Level II STFC than Level I. The most common diagnoses for these youth were Mood & Affective Disorders (30%), Attention Deficit Disorders (27%), Anxiety and Stress Disorders (14) and Adjustment Disorders (10%).

## Who are the youth being served by STFC and are there differences between youth being served in Levels I, II and Crisis Intervention STFC?

### Methods

To develop descriptions of STFC service recipients and services, Medicaid claims and eligibility data from the five fiscal years commencing July 2000 and ending June 2005 were obtained from AHCA. Demographic characteristics and diagnoses for all children and youth receiving STFC were examined to provide a general overview of children and youth served in STFC. To determine the level of care, children and youth were assigned to a level of care category based on the percentage of time spent in that level. Children and youth were assigned to a level of care if they spent 70% or more of their total days in STFC in either Level I (less intensive) or Level II (more intensive). Children and youth who spent less than 70% in either level were assigned to the 'Both' category. Data for all children and youth served in all five fiscal years are reported in the text and tables as 'All STFC'.

## STFC Level I and II

During the study period (FY0001~FY0405), a total of 1,534 children and youth received STFC services statewide (Table 15). About half of the youth (53%,  $n = 812$ ) were categorized as Level I and about a third (33%,  $n = 501$ ) were classed in Level II. Fourteen percent of children and youth ( $n = 221$ ) were assigned to the Both category because they spent less than 70% of their time in either level.

**Table 15**  
**Number and Percentage of Children Receiving STFC by Level**  
**(All STFC Cohort)**

Level of care	Number of Children	Percent of Children
Level I	812	52.9%
Level II	501	32.7%
Both	221	14.4%
All STFC	1,534	—

## Area of residence

The highest percentages of children and youth in the 12-month cohort were served in AHCA Areas 6 (15%,  $n=224$ ), 11 (Miami-Dade, 13%,  $n = 194$ ), 4 (Jacksonville, 12%,  $n = 187$ ) and 9 (Palm Beach, 10%,  $n = 160$ ). There are also differences in how the multidisciplinary teams allocate their resources among Levels I and II, with some Areas, such as Area 1 (Pensacola) relying almost exclusively on Level I and others in which the allocations are more evenly divided between Levels I and II, such as Area 3 (Gainesville).

**Table 16**  
**AHCA Area of Residence for Children in STFC**  
**(N = 1,534)**

AHCA Area	Level of STFC							
	Level I		Level II		Both		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Area 1	88	94.6%	2	2.25%	3	3.2%	93	6.1%
Area 2	116	79.5%	22	15.1%	8	5.5%	146	9.5%
Area 3	36	28.4%	63	49.6%	28	22.1%	127	8.3%
Area 4	116	62.0%	39	20.9%	32	17.1%	187	12.2%
Area 5	30	83.3%	4	11.1%	2	5.6%	36	2.4%
Area 6	154	68.8%	40	17.9%	30	13.4%	224	14.6%
Area 7	76	50.0%	56	36.8%	20	13.2%	152	9.9%
Area 8	45	48.9%	37	40.2%	10	10.9%	92	6.0%
Area 9	60	37.5%	89	55.6%	11	6.9%	160	10.4%
Area 10	45	36.6%	57	46.3%	21	17.1%	123	8.1%
Area 11	46	23.7%	92	47.4%	56	28.9%	194	12.7%
Total	812	—	501	—	221	—	1534	

### Demographics: Gender, Race and Age

Children and youth served in STFC were most likely to be male (57%,  $n = 874$ ), and Caucasian (50%,  $n = 762$ ) and averaged 12 years of age at the time they were first admitted to STFC. While gender patterns were consistent across levels of care, the percentage of youth in the ‘Other’ racial/ethnic groups<sup>8</sup> served in the Level II and in Both categories was greater than the percentage served in Level I, although there were no significant differences by gender, race/ethnicity, or age between levels (Table 17).

**Table 17**  
**Characteristics of Children Receiving STFC (All STFC Cohort)**

	Level I (n = 812)		Level II (n = 501)		Both (n = 221)		All Levels (N = 1534)	
	n	%	n	%	n	%	n	%
Gender								
Male	472	58.1%	275	54.9%	127	57.5%	874	57.0%
Female	340	41.9%	226	45.1%	94	42.5%	660	43.0%
Race								
White	411	50.6%	245	48.9%	106	48.0%	762	49.7%
Black	280	34.5%	160	31.9%	57	25.8%	497	32.4%
Other	121	14.9%	96	19.2%	58	26.2%	275	17.9%
Age								
Mean	11.7		12.3		11.7		11.9	
SD	3.5		3.2		3.2		3.4	
Median	11.9		12.8		11.6		12.3	

### Mental Health Diagnoses

Youth who received STFC services had a wide range of mental health diagnoses. The primary mental health diagnoses were organized into diagnostic categories by a team of researchers at FMHI, who collaborated to develop a common categorization of diagnoses for use in studies of children’s behavioral health programs. Diagnostic categories used for the youth are shown in Table 18 and include: Adjustment Disorders; Attention Deficit Disorders; Mood & Affective Disorders; Disruptive Behavior Disorders; Neurotic, Personality, and Other Non-Psychotic Disorders; Schizophrenia and Psychoses; Childhood Emotional Disturbances; and Anxiety and Stress Disorders (see Appendix 1 for the list of included diagnoses).

For the overall group of children and youth who received STFC statewide, Attention Deficit Disorders (27%,  $n = 421$ ), Mood and Affective Disorders (25%,  $n = 381$ ) and Anxiety and Stress Disorders (17%,  $n = 259$ ) were the most common diagnostic categories. There were differences in the prevalence of disorders by STFC level, with youth in Level II being more likely to have Mood and Affective Disorders ( $\chi^2 = 18.6, p < .0001$ ), whereas youth in Level I more likely have Adjustment Disorders ( $\chi^2 = 7.4, p < 0.01$ ) and Attention Deficit Disorders ( $\chi^2 = 4.9, p < 0.03$ ) (Table 18).

**Table 18**  
**Initial Axis I Diagnoses of STFC Recipients**

Diagnostic Category	Level I		Level II		Both		All STFC	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Organic Psychotic Disorders	2	0.3%	4	0.8%			6	0.4%
Drug & Alcohol Use or Abuse	1	0.1%					1	0.1%
Schizophrenia and Psychoses	23	2.8%	20	3.9%	5	2.3%	48	3.1%
Mood & Affective Disorders	163	20.1%	153	30.5%	65	29.4%	381	24.8%
Anxiety and Stress Disorders	134	16.5%	90	17.9%	35	15.8%	259	16.9%
Adjustment Disorders	92	11.3%	34	6.8%	19	8.6%	145	9.5%
Disruptive Behavior Disorders	89	10.9%	43	8.6%	19	8.6%	151	9.8%
Attention Deficit Disorders	240	29.6%	120	23.9%	61	27.6%	421	27.4%
Neurotic, Personality, and Other Non-Psychotic Disorders	4	0.5%	4	0.8%			8	0.5%
Childhood Emotional Disturbances	16	1.9%	8	1.6%	3	1.4%	27	1.8%
Development Delays and Autism	1	0.1%	2	0.4%			3	0.2%
Other MH Diagnoses	47	5.8%	23	4.6%	14	6.3%	84	5.5%
Total	812	—	501	—	221	—	1534	—

### Crisis Intervention STFC

In the five fiscal years (FY0001~FY0405) included in the present report, there were 53 provider agencies that served youth in crisis intervention STFC services statewide, for a total of 528 children. To develop descriptions of Crisis Intervention service recipients, Medicaid claims data<sup>9</sup> from the five fiscal years commencing July 2000 and ending June 2005 were obtained from AHCA. The demographic characteristics and diagnoses for all children and youth receiving crisis intervention were examined to provide a general overview of children and youth served in Crisis Intervention STFC.

### Area of Residence

The patterns of use for Crisis Intervention differed somewhat from those observed statewide. The AHCA Areas most likely to use Crisis STFC is quite similar to the use of Levels I and II. The Areas most likely to use Crisis STFC include Area 11 (Miami-Dade, 32%, *n* = 168), Area 4 (Jacksonville, 20%, *n* = 107), Area 3 (Gainesville, 11%, *n* = 59), and Area 2 (Tallahassee, 10%, *n* = 55).

**Table 19**  
**AHCA Area of Residence for Children in Crisis Intervention**  
**(N = 528)**

AHCA Area	Total	
	<i>n</i>	%
Area 1	9	1.7%
Area 2	55	10.4%
Area 3	59	11.2%
Area 4	107	20.3%
Area 5	3	0.6%
Area 6	36	6.8%
Area 7	38	7.2%
Area 8	2	0.4%
Area 9	31	5.9%
Area 10	20	3.8%
Area 11	168	31.8%
Total	528	—

### Demographics: Gender, Race and Age

Similar to youth served in Levels I and II, children and youth served in Crisis STFC were most likely to be male (57%,  $n = 299$ ), but the ethnic composition of the children and youth was more evenly divided across groups. Children and youth in Crisis STFC were most likely to be Caucasian (41%,  $n = 216$ ), but the proportion of Black / African American children and youth (36%,  $n = 189$ ) and children and youth identified in ‘Other’ racial and ethnic groups (23%,  $n = 123$ ) was also substantial. At the time of admission, however, youth served in Crisis STFC were markedly older with an average age of 15.2 years (median = 15.2 years,  $SD = 4$ ) in contrast to youth in Levels I and II who averaged 12 years of age at the time they were first admitted to STFC.

### Mental Health Diagnoses

Like youth served in Levels I and II, children and youth who received Crisis STFC services had a wide range of mental health diagnoses. The percent of youth in each diagnostic category is shown in Table 20. Diagnostic categorization of youth in Crisis STFC more closely resembles youth served in LII STFC than those in Level I. The most commonly reported diagnoses include Mood & Affective Disorders (30%,  $n = 158$ ), Attention Deficit Disorders (27%,  $n = 141$ ), Anxiety and Stress Disorders (14%,  $n = 74$ ) and Adjustment Disorders (10%,  $n = 55$ ). There were no reports on the Primary Axis I of Neurotic, Personality, and Other Non-Psychotic Disorders, Childhood Emotional Disturbances, Substance Abuse Disorders, or Developmental Delays or Mental Retardation (see Appendix 1 for additional information on the diagnostic categories).

**Table 20**  
**Characteristics of Children**  
**Receiving Crisis Intervention**

	All Levels (N = 528)	
	n	%
Gender		
Male	299	56.6%
Female	229	43.4%
Race		
White	216	40.9%
Black	189	35.8%
Other	123	23.3%
Age		
Mean	15.2	
SD	4.1	
Median	15.2	

**Table 21**  
**Crisis Intervention STFC – Axis I**  
**Diagnoses at Admission**

Diagnostic Category	Crisis (N = 528)	
	n	%
Mood & Affective Disorders	158	29.9%
Attention Deficit Disorders	141	26.7%
Anxiety and Stress Disorders	74	14.0%
Adjustment Disorders	55	10.4%
Disruptive Behavior Disorders	44	8.3%
Schizophrenia and Psychoses	18	3.4%
Childhood Emotional Disturbances	4	0.8%
Other MH diagnoses	34	6.4%
Total	528	-

## What are the services used, costs and outcomes of STFC?

### Methods

This sub-study is a pre-treatment/post-discharge comparison of youth in STFC. Data were analyzed from Medicaid claims data, Baker Act initiations, Department of Juvenile Justice (DJJ) contacts, and Florida Department of Law Enforcement (FDLE) contacts and child welfare placement data from HomeSafeNet. The study reviewed overall post discharge service patterns and costs of behavioral health treatment compared to pre-admission in the twelve months prior to treatment and twelve months post-discharge.

To gain a clearer understanding of service use patterns, a sample of children and youth was selected from all youth who received Levels I and II STFC in fiscal years 2000–2005. This sample included all youth who were Medicaid eligible 12 months prior to their first STFC admission and extended 12 months after discharge. A total of 871 children and youth statewide met this criterion. To facilitate analysis by levels of care, children and youth in the ‘Both’ category, or who spend less than 70% of their time among Level I and II, were also excluded, leaving a final sample of 507 youth (Table 22).

**Table 22**  
Number and Percentage of Children Receiving Level I and Level II STFC (12-Month Cohort)

	<i>n</i>	%
Level I	331	65.3%
Level II	176	34.7%
All STFC	507	—

### Area of residence

The 12-month cohort differed somewhat from the All STFC descriptive sample described in Table 23. For the 12-month cohort, the Area with the highest percentage of children and youth served was Area 6 (Tampa, 16%, *n* = 81) (see Table 23). The second and third ranked Areas were the same as the All STFC cohort with AHCA Areas 11 (Miami-Dade, 13%, *n* = 65), 4 (Jacksonville, 13%, *n* = 64) and Area 9 (Palm Beach, 13%, *n* = 64) with the higher percentages of children and youth served. The allocation of resources among Levels I and II were similar to the All STFC cohort, with some Areas choosing to allocate the majority of resources to Level I and some choosing a more even division.

**Table 23**  
AHCA Area of Residence for Children in STFC (12-Month Cohort)

AHCA Area	Level of STFC					
	Level I		Level II		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Area 1	36	97.3%	1	2.7%	37	7.3%
Area 2	30	85.7%	5	14.3%	35	6.9%
Area 3	14	42.4%	19	57.6%	33	6.5%
Area 4	49	76.6%	15	23.4%	64	12.6%
Area 5	12	92.3%	1	7.7%	13	2.6%
Area 6	68	83.9%	13	16.1%	81	15.9%
Area 7	32	59.3%	22	40.7%	54	10.7%
Area 8	16	64.0%	9	36.0%	25	4.9%
Area 9	31	48.4%	33	51.6%	64	12.6%
Area 10	21	58.3%	15	41.7%	36	7.1%
Area 11	22	33.9%	43	66.2%	65	12.8%
Total	331	—	176	—	507	—

## Demographics: Gender, Race and Age

Similar to the all STFC cohort, the children and youth in the 12-month sample were more likely to be male (57%,  $n = 289$ ) and Caucasian (47%,  $n = 239$ ). Among the 12-month pre-post study sample, there were no significant differences in gender, race, or age between levels (Table 24).

**Table 24**  
**Characteristics of Children Receiving STFC (12-Month Cohort)**

	Level I (n = 331)		Level II (n = 176)		Total (n = 507)	
	n	%	n	%	n	%
Gender						
Male	192	58.0%	97	55.1%	289	57.0%
Female	139	41.9%	79	44.9%	218	43.0%
Race						
White	158	47.7%	81	46.0%	239	47.1%
Black	116	35.1%	65	36.9%	181	35.7%
Other	57	17.2%	30	17.1%	87	17.2%
Age						
Mean		11.8		12.5		12.0
SD		3.4		3.3		3.4
Median		11.9		13.0		12.4

## Mental Health Diagnoses

The three most common diagnostic categories were the same for the 12-month sample as for the overall STFC sample, i.e. Attention Deficit Disorders (27%,  $n = 137$ ), Mood and Affective Disorders (26%,  $n = 130$ ), and Anxiety and Stress Disorders (17%,  $n = 84$ ). These patterns were fairly consistent across levels. There were differences between youth served in Level I and Level II. Although the patterns of diagnoses by level were similar, youth in Level II were more likely to have Mood Disorders where youth in Level I were slightly more likely to have Attention Deficit Disorders ( $\chi^2 = 6.4$ ,  $p < 0.02$ ) (Table 25).

**Table 25**  
**Diagnostic Category at Start of STFC (12-Month Cohort)**

	Level I		Level II		All STFC	
	n	%	n	%	N	%
Attention Deficit Disorders	95	28.7%	42	23.9%	137	27.0%
Mood & Affective Disorders	73	22.1%	57	32.4%	130	25.6%
Anxiety and Stress Disorders	53	16.0%	31	17.6%	84	16.6%
Drug & Alcohol Use or Abuse	1	0.3%	0	0.0%	1	0.2%
Disruptive Behavior Disorders	38	11.5%	11	6.3%	49	9.7%
Adjustment Disorders	31	9.4%	14	7.9%	45	8.9%
Schizophrenia and Psychoses	10	2.7%	10	5.7%	19	3.7%
Childhood Emotional Disturbances	6	1.8%	1	0.6%	7	1.4%
Neurotic, Personality, and Other Non-Psychotic Disorders	2	0.6%	0	0.0%	2	0.4%
Development Delays and Autism	0	0.0%	0	0.0%	0	0.0%
Other MH Diagnoses	22	6.9%	10	5.7%	33	6.5%
Total	331		176		507	

## Length of Stay

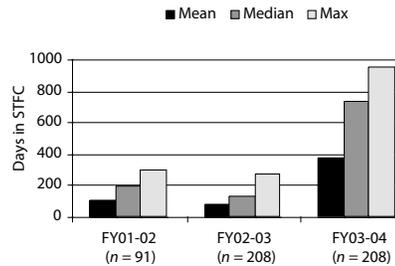
Table 26 below displays the average length of stay for youth in the 12-month cohort. The average length of stay for youth overall was 215 days, or 7.2 months. Given the large standard deviation (192.5 days), there is wide variability in how long children and youth stay in STFC services. This pattern was also evident when the two STFC levels were analyzed separately.

**Table 26**  
Length of Stay for STFC Children and Youth (N = 507)

	N	Mean	Std Dev	Max	Min	Median
Level I	331	234.1	194	946	7	184
Level II	176	179.4	185.1	849	7	90
Total	507	215	192.5	946	7	154

The amount of time children and youth spend in STFC also appears to be increasing (see Figure 1). For the 12-month cohort overall, length of stay increased from an average of 96.6 days in FY 01-02 to an average of 208 days in FY 03-04. The same pattern was observed in both Levels I and II when they were analyzed separately.

**Figure 1**  
STFC All Levels



**Table 27**  
Length of Stay by Fiscal Year for STFC Sample

	Fiscal Year	N	Mean	Std Dev	Max	Min	Median
Level I	0102	65	102.9	79.5	364	7	86
	0203	129	221	173.4	728	7	183
	0304	137	308.7	214.6	946	7	289
Level II	0102	26	80.8	64.4	295	7	59.5
	0203	79	150.5	149.9	623	7	76
	0304	71	247.6	223.4	849	7	179
Total	0102	91	96.6	75.8	364	7	70
	0203	208	194.2	168	728	7	132
	0304	208	287.8	219	946	7	254

## Mental Health Services and Costs

Tables 2.14, 2.15, and 2.16 show all Medicaid-billed services and costs for children or youth who were not in AHCA Areas 1 and 6 who had received any STFC intervention in fiscal years 2000–2004, and who had 12 months of Medicaid eligibility prior to and after discharge from STFC. These analyses include average per user per eligible month (PUPEM) costs, compared across three time intervals. Youth were not included in these analyses if their length of stay for the first STFC stay was less than seven days or did not have a valid mental health diagnosis for all their claims ( $n = 12$ ). Finally, there were four youth who had simultaneous claims for STFC and Therapeutic Group Care (TGC) and seven youth with simultaneous claims for STFC and SIPP. The TGC and SIPP claims for these youth were also excluded from the analyses.

PUPEM calculations are based on the total number of months that users of the services were eligible for Medicaid services, as indicated in the denominator. The numerator includes the total amounts that were billed for in each service category. The PUPEM rates provide an estimate of program costs for all users of a particular service category, including both high users and low users. They do not precisely reflect the actual cost of any particular service, but provide the average cost for all STFC program participants who used a given service. The service categories are described in Appendix 2.

**Table 28**  
**Number of Youth Receiving Services and Total Costs by Service Category**  
**at 12-Month Intervals Pre- and Post-STFC, All AHCA Areas (Except 1 and 6,  $n = 389$ )**

Type of Services (Total $n = 389$ )	Pre				During			Post				Kruskal Wallis Test $\chi^2$ <sup>a</sup>	P Value
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM	Total Costs		
General Hospital –Psychiatric Inpatient	109	28%	894	\$1,169,293	51	950	\$581,649	61	16%	740	\$541,377	0.2519	0.6157
SIPP	60	15%	4683	\$3,371,940	0	0	\$0	84	22%	5812	\$5,858,490	7.0559	0.0079
TGC	10	3%	1996	\$239,463	0	0	\$0	32	8%	2309	\$886,627	0.0177	0.8942
STFC <sup>b</sup>	0	0%	0	\$0	389	1776	\$8,290,424	112	29%	1583	\$2,127,565		
BHOS	62	16%	333	\$247,705	1	16	\$196	34	9%	304	\$124,045	0.0494	0.8242
Day Treatment	53	14%	250	\$158,803	24	150	\$43,299	36	9%	122	\$52,805	10.2527	0.0014
Emergency MH Svs	183	47%	99	\$218,051	112	30	\$39,971	149	38%	95	\$169,183	0.0012	0.9725
Targeted Case Mgmt	313	81%	265	\$996,265	321	238	\$916,332	317	82%	224	\$851,813	6.7162	0.0096
School-based Care	39	10%	12	\$5,403	39	11	\$5,346	50	13%	14	\$8,290	0.4825	0.4873
Outpatient Services	382	98%	132	\$607,103	34	68	\$284,228	37	97%	97	\$441,065	31.1104	<.0001
Other MH	13	3%	32	\$4,934	15	22	\$3,942	95	2%	86	\$98,185	1.7762	0.1826
All Mental Health	387	100%	1702	\$7,902,222	389	2194	10,204,103	386	99%	2496	\$11,563,461	2.1999	0.138

<sup>a</sup> Kruskal Wallis Test  $\chi^2$  is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included

<sup>b</sup> Because of the sample selection, i.e., first admission to STFC, there are no pre-STFC costs.

## Service Use

For the 12-month cohort as a whole ( $n = 389$ ) which represents both Level I and Level II, there was an increase in the average total mental health costs between the pre- and post- periods, but this increase was not significant. There were some services for which both the penetration rate and the average cost decreased significantly, suggesting that fewer youth used the service at a lower average cost. This group includes Day Treatment, Community Mental Health, and Outpatient Mental Health services, all of which are community services (see Table 28) below. In the case of SIPP, the number of youth using the service and the average cost rose significantly ( $X^2 = 7.1; p < .01$ ), between the pre- and post-interval, more restrictive movement. Targeted Case Management services was the only service in which the number of youth using the service in the post period increased, while the average cost decreased. This suggests that there is greater access, but youth are using this service for shorter periods of time.

For youth in Level I STFC ( $n = 227$ ), the average cost of all mental health services increased from the pre- to post- interval, although not significantly. Similar to STFC overall, the use of community based services decreased significantly for Day Treatment ( $X^2 = 7.4, p < .01$ ), Community-based Mental Health ( $X^2 = 9.4, p < .01$ ) and Outpatient Services ( $X^2 = 23.4, p < .0001$ ). The average cost of SIPP use increased significantly from the pre- to post- interval ( $X^2 = 5.7, p < .05$ ), which the penetration rate decreased, meaning that fewer youth spent longer periods in SIPP. For Targeted Case Management, the average cost decreased significantly in the post period ( $X^2 = 7.3, p < .01$ ) while the penetration rate remained virtually the same, meaning youth were receiving TCM for shorter periods.

For youth served in Level II STFC, the average cost of total mental health costs increased between the pre- and post- periods ( $X^2 = 4.8, p < .05$ ). As was true for all youth and those served in Level I, there were significant decreases in the penetration rate and the average cost of community based services including Day Treatment ( $X^2 = 3.7, p = .05$ ), Community-based Mental Health ( $X^2 = 4.6, p < .05$ ), and Outpatient Services ( $X^2 = 9.6, p < .01$ ).

**Table 29**  
**Number of Youth Receiving Services and Total Costs by Service Category**  
**at 12-Month Intervals Pre- and Post-STFC, STFC Level I (All AHCA Areas Except 1 and 6, n = 227)**

Type of Services (Total n = 277)	Pre				During			Post			Kruskal Wallis Test X <sup>2</sup> <sup>a</sup>	P Value	
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM			Total Costs
General Hospital –Psychiatric Inpatient	45	20%	805	\$434,763	18	794	\$171,434	27	12%	627	\$203,264	1.007	0.3172
SIPP	23	10%	3797	\$1,048,080	0	0	\$0	28	12%	5627	\$1,890,570	5.736	0.0166
TGC	4	2%	1779	\$85,383	0	0	\$0	14	6%	2057	\$345,547	0.0113	0.9154
STFC <sup>b</sup>	0	0%	0	\$0	22	1659	\$4,517,833	62	27%	1694	\$1,260,527		
BHOS	40	18%	350	\$168,005	1	16	\$196	23	10%	269	\$74,113	0.8479	0.3571
Day Treatment	27	12%	231	\$74,816	8	185	\$17,730	16	7%	107	\$20,585	7.4337	0.0064
Emergency MH Svs	95	42%	79	\$89,811	47	30	\$17,184	73	32%	89	\$77,619	0.7803	0.3771
Targeted Case Mgmt	180	79%	278	\$600,716	18	218	\$476,701	17	79%	220	\$472,545	7.268	0.007
Community-based MH	158	70%	258	\$489,886	61	39	\$28,736	12	55%	159	\$236,066	9.4321	0.0021
School-based Care	26	12%	14	\$4,330	20	13	\$3,068	27	12%	14	\$4,543	0.0114	0.915
Outpatient Services	225	99%	120	\$323,604	20	64	\$154,714	22	97%	87	\$230,510	23.3714	<.0001
Other MH	6	3%	35	\$2,498	7	27	\$2,255	52	23%	83	\$51,725	0.7129	0.3985
All MH Services	226	100%	1225	\$3,321,893	227	1986	5,389,852	225	99%	1803	\$4,867,614	0.0003	0.9867

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included.

<sup>b</sup> Because of the sample selection, i.e., first admission to STFC, there are no pre-STFC costs.

**Table 30**  
**Number of Youth Receiving Services and Total Costs by Service Category**  
**at 12-Month Intervals Pre- and Post-STFC, STFC Level II (All AHCA Other Areas Except 1 and 6, n = 162)**

Type of Services (Total n = 162)	Pre				During			Post			Kruskal Wallis Test X <sup>2</sup> <sup>a</sup>	P Value	
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM			Total Costs
General Hospital –Psychiatric Inpatient	64	40%	986	\$734,530	33	1036	\$410,214	34	21%	829	\$338,112	0.0282	0.8666
SIPP	37	23%	5234	\$2,323,860	0	0	\$0	56	35%	5905	\$3,967,920	1.3406	
TGC	6	4%	2140	\$154,080	0	0	\$0	18	11%	2505	\$541,080	0.0712	
STFC <sup>b</sup>	0	0%	0	\$0	162	1941	\$3,772,591	50	31%	1445	\$867,037		
BHOS	22	14%	302	\$79,699	0	0	\$0	11	7%	378	\$49,932	1.0632	
Day Treatment	26	16%	269	\$83,986	16	133	\$25,569	20	12%	134	\$32,220	3.7171	0.0539
Emergency MH Svs	88	54%	121	\$128,240	65	29	\$22,786	76	47%	100	\$91,564	0.2854	0.5932
Targeted Case Mgmt	133	82%	248	\$395,549	139	264	\$439,631	138	85%	229	\$379,268	0.9586	0.3275
Community-based Care	110	68%	298	\$393,377	42	20	\$9,980	67	41%	209	\$167,951	4.6312	0.0314
School-based Care	13	8%	7	\$1,073	19	10	\$2,279	23	14%	14	\$3,746	1.2911	0.2559
Outpatient Services	157	97%	150	\$283,499	145	74	\$129,514	156	96%	112	\$210,556	9.4581	0.0021
Other MH	7	4%	29	\$2,436	8	18	\$1,687	43	27%	90	\$46,460	0.8271	0.3631
All MH Services	161	99%	2371	\$4,580,329	162	2485	\$4,814,251	161	99%	3466	\$6,695,847	4.7658	0.029

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included.

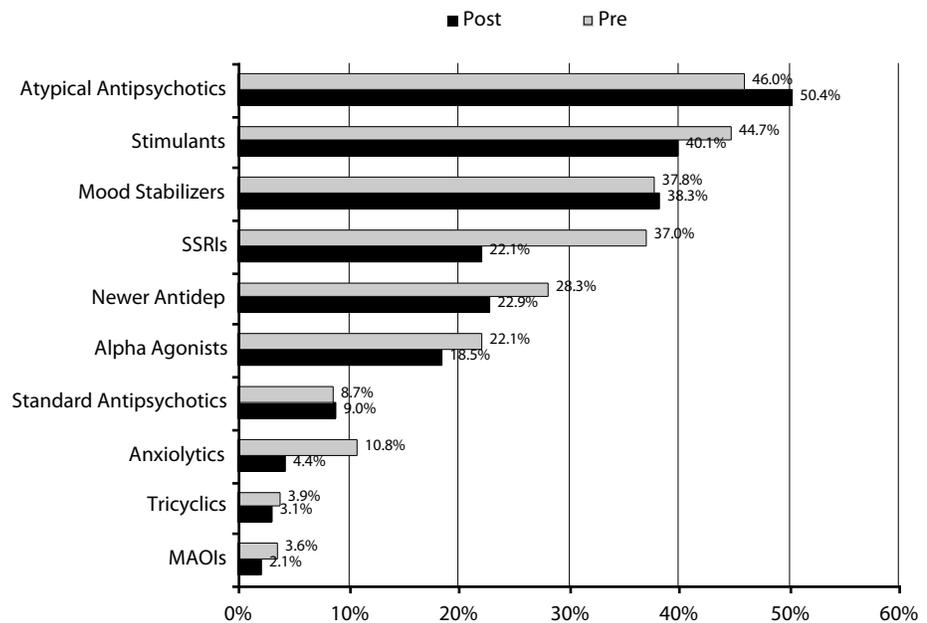
<sup>b</sup> Because of the sample selection, i.e., first admission to STFC, there are no pre-STFC costs.

## Pharmacy Use and Cost

Pharmacy costs for the full 12-month sample, as well as by level, were examined. At admission, 309 (79%) youth had psychotropic medication prescriptions. The number of youth with psychotropic medications declined to 297 in the post-discharge period (76%), as did the average cost per user per eligible month. However, while the number of youth with psychotropic medications decreased, the average cost and the total cost of medications increased between the pre- and post- periods. Total pharmacy costs increased 15% when costs in the post period, \$804,750, were compared to pre pharmacy costs of \$679,137. The increased use of atypical antipsychotics and mood stabilizers likely contributed to increasing costs.

Atypical Antipsychotic Medications and Stimulants were the most commonly prescribed medications in the 12-month period prior to STFC admission. The percentage of youth with psychotropic prescriptions decreased in all categories except for standard antipsychotics, atypical antipsychotics, and mood stabilizers. Antipsychotic use increased significantly.

**Figure 2**  
Pharmacy use, all STFC



In the 12 months after discharge, youth in Level I had more psychotropic medications than youth in Level II. Eighty-two percent were prescribed medications in two or more categories and 74% had medications in three or more categories. In Level II, 83% of youth were prescribed medications in two or more categories and 66% were prescribed medications in three or more categories.

**Table 31**  
**Number of Youth with Psychotropic Medications (Excludes Areas 1 and 6)**

	# of categories	Pre-STFC		During-STFC		Post-STFC	
		N	%	N	%	N	%
Level I	1	32	16.2%	39	20.9%	36	18.5%
	2	36	18.2%	35	18.8%	31	15.9%
	3	38	19.2%	53	28.5%	55	28.2%
	4	44	22.2%	38	20.4%	40	20.5%
	5	26	13.1%	15	8.1%	23	11.8%
	6	12	6.1%	5	2.7%	6	3.1%
	7	4	2.0%	1	0.5%	1	0.5%
	8	5	2.5%	-	-	3	1.5%
	10	1	0.5%	-	-	-	-
	Subtotal		198	-	186	-	195
Level II	1	19	13.4%	11	8.7%	25	17.1%
	2	18	12.7%	25	19.7%	25	17.1%
	3	30	21.1%	36	28.4%	34	23.3%
	4	32	22.5%	28	22.1%	29	19.9%
	5	19	13.4%	16	12.6%	23	15.8%
	6	17	11.9%	9	7.1%	7	4.8%
	7	5	3.5%	1	0.8%	2	1.4%
	8	2	1.4%	1	0.8%	1	0.7%
	Subtotal		142	-	127	-	146
Total		340	-	313	-	341	-

For youth in Level I, like the overall sample, the number of youth with psychotropic prescriptions decreased between the pre- and post- period. Also similar to the overall sample, atypical antipsychotics and stimulants were the most commonly prescribed medications. Medication use in all categories decreased, with the exception of atypical antipsychotics.

**Table 32**  
**Pharmacy Use, 12-Month Pre-Post Cohort (Excludes Areas 1 and 6)**

Type of Services (Total n = 389)	Pre				During			Post				Kruskal Wallis Test X <sup>2</sup> <sup>a</sup>	P Value
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM	Total Costs		
Stimulants	174	45%	43	\$89,023	156	44	\$82,537	156	40%	49	\$91,662	2.7026	0.1002
Alpha Agonists	86	22%	7	\$7,143	75	8	\$7,424	72	19%	6	\$5,484	0.085	0.7706
SSRI Antidepressants	144	37%	28	\$48,479	101	24	\$29,343	86	22%	32	\$32,665	1.4901	0.2222
Tricyclic Antidep	15	4%	6	\$1,068	10	9	\$1,043	12	3%	11	\$1,518	0.1929	0.6605
Newer Antidep	110	28%	28	\$36,977	78	39	\$36,057	89	23%	29	\$30,646	0.0412	0.8391
Standard Antipsychotics	34	9%	14	\$5,902	16	3	\$583	35	9%	4	\$1,542	7.7874	0.0053
Atypical Antipsychotics	179	46%	118	\$253,444	171	117	\$239,631	196	50%	145	\$340,736	6.8919	0.0087
Anxiolytics	42	11%	6	\$2,885	22	2	\$517	17	4%	12	\$2,403	0.5423	0.4615
Mood Stabilizers	147	38%	55	\$96,182	128	48	\$73,518	149	38%	63	\$112,863	2.3827	0.1227
MAOI	14	4%	3	\$486	5	2	\$119	8	2%	4	\$428	3.6522	0.056
All Pharm Services	309	79%	146	\$541,588	291	135	\$470,772	297	76%	174	\$619,947	0.8321	0.3617

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included.

**Table 33**  
**Number of Youth Receiving Services and Total Costs by Service Category**  
**at 12-Month Intervals Pre- and Post-STFC, STFC Level I (All AHCA Areas Excluding Areas 1 and 6, n = 227)**

Type of Services (Total n = 227)	Pre				During			Post				Kruskal Wallis Test X <sup>2</sup> <sup>a</sup>	P Value
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM	Total Costs		
Stimulants	110	49%	44	\$58,454	99	45	\$53,056	101	45%	50	\$60,378	2.0641	0.1508
Alpha Agonists (other)	53	23%	7	\$4,465	43	9	\$4,892	42	19%	6	\$3,197	0.038	0.8455
SSRI Antidepressants	74	33%	27	\$24,310	47	24	\$13,696	45	20%	34	\$18,505	3.5023	0.0613
Tricyclic Antidep	8	4%	4	\$424	6	11	\$769	8	4%	10	\$953	0.2757	0.5995
Newer Antidep	65	29%	25	\$19,401	44	41	\$21,669	56	25%	30	\$19,957	1.3258	0.2496
Standard Antipsychotics	18	8%	7	\$1,587	7	2	\$151	17	8%	3	\$678	7.3246	0.0068
Atypical Antipsychotics	93	41%	122	\$136,554	91	96	\$104,665	102	45%	134	\$163,617	2.2773	0.1313
Anxiolytics	25	11%	5	\$1,591	13	1	\$198	9	4%	18	\$1,988	0.1101	0.74
Mood Stabilizers	79	35%	53	\$50,336	61	47	\$34,714	75	33%	63	\$57,054	1.619	0.2032
MAOI	7	3%	2	\$207	2	1	\$28	4	2%	5	\$216	3.5714	0.0588
All Pharm Services	180	79%	138	\$297,329	169	115	\$233,838	167	74%	163	\$326,543	0.2782	0.5979

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included.

**Table 34**  
**Number of Youth Receiving Pharmacy Services and Total Costs by Service Category**  
**at 12-Month Intervals Pre- and Post-STFC, STFC Level II**  
**(All AHCA Areas Excluding Areas 1 and 6, n = 162)**

STFC Level II Type of Service (Total n = 162)	Pre				During			Post				Kruskal Wallis Test X <sup>2</sup> <sup>a</sup>	P Value
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM	Total Costs		
Stimulants	64	40%	40	\$30,569	57	43	\$29,481	55	34%	47	\$31,284	0.4691	0.4934
Alpha Agonists (other)	33	20%	7	\$2,678	32	7	\$2,532	30	19%	6	\$2,287	0.0345	0.8526
SSRI Antidepressants	70	43%	29	\$24,168	54	24	\$15,647	41	25%	29	\$14,161	0.0142	0.9052
Tricyclic Antidep	7	4%	8	\$644	4	6	\$273	4	3%	12	\$565	0.1429	0.7055
Newer Antidep	45	28%	33	\$17,576	34	35	\$14,388	33	20%	27	\$10,689	0.7654	0.3816
Standard Antipsychotics	16	10%	22	\$4,315	9	4	\$432	18	11%	4	\$864	2.2012	0.1379
Atypical Antipsychotics	86	53%	113	\$116,890	80	141	\$134,966	94	58%	157	\$177,119	5.1378	0.0234
Anxiolytics	17	10%	6	\$1,294	9	3	\$319	8	5%	4	\$415	0.7636	0.3822
Mood Stabilizers	68	42%	56	\$45,846	67	48	\$38,803	74	46%	63	\$55,809	0.6771	0.4106
MAOI	7	4%	3	\$279	3	3	\$91	4	3%	4	\$212	0.8929	0.3447
All Pharm Services	129	80%	158	\$244,259	122	162	\$236,932	130	80%	188	\$293,405	1.2469	0.2642

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included.

For youth in Level II, overall medication use increased between the pre- (79.6%, n = 129) and post- periods (80.3%, n = 130), unlike the overall and Level I samples. The most commonly prescribed medications were similar to the overall and Level I samples with Atypical Antipsychotics and Stimulants being the most often prescribed. Prescriptions in most categories decreased between the pre- and post- periods, with the exception of Standard Antipsychotics, Atypical Antipsychotics and Mood Stabilizers.

## What are the cross system outcomes of care for youth in STFC?

### Baker Act Initiations

The number of initiations and number of all youth statewide with Baker Act initiations for fiscal years 2000–2004 were examined. For youth in the Level I sample ( $n = 331$ ), there was a significant decrease in the number of youth with Baker Act initiations ( $\chi^2 = 13.3, p < .001$ ). Likewise, for youth in the All STFC sample ( $n = 507$ ), the chi-square test showed a significant decrease in the total number of youth with Baker Act initiations ( $\chi^2 = 15.3, p < .0001$ ). There was a slight significant difference between youth served in Levels I and II in post STFC periods ( $\chi^2 = 6.1, p < .02$ ).

**Table 35**  
**Baker Act Initiations 12 Months Prior to, During, & 12 Months After STFC**  
**(N = 261)**

	Pre-STFC			During STFC			Post-STFC			X <sup>2</sup>	p-value
	Initiations	n	%	Initiations	n	%	Initiations	N	%		
Level 1	200	105	31.7	109	53	16	116	64	19.3	13.3	0.0003
Level 2	144	66	37.5	134	61	34.7	130	51	29.0	2.9	0.0897
Total	344	171	—	243	114	—	246	115	—	15.3	<0.0001

When examining an unduplicated sample of youth<sup>10</sup>, 81% of those in Level 1 either never had a Baker Act (60%,  $n = 198$ ) or only had a Baker Act prior to STFC admission 21% ( $n = 69$ ). Eleven percent ( $n = 36$ ) had Baker Acts both before and after STFC, and 8% ( $n = 28$ ) in the post STFC period only.

For individual youth in Level II, 71% never had a Baker Act (48%,  $n = 85$ ) or had a Baker Act in the pre-STFC period only (23%,  $n = 40$ ). Fifteen percent ( $n = 26$ ) had Baker Acts both pre and post and 14% ( $n = 25$ ) had Baker Acts in the post period only.

**Table 36**  
**Number of Children with Baker Act initiations on Pre-Post Level I STFC**

		Post STFC Level I		
		BA	No BA	total
Pre-STFC Level I	BA	36	69	105
	No BA	28	198	226
	total	64	267	331

**Table 37**  
**Number of Children with Baker Act initiations on Pre-Post Level II STFC**

		Post STFC Level II		
		BA	No BA	total
Pre-STFC Level II	BA	26	40	66
	No BA	25	85	110
	total	51	124	176

## Department of Juvenile Justice Contacts

Department of Juvenile Justice data were obtained for 2000-2004. A DJJ contact was determined by selecting the offense reported for any individual youth on a specific date. If the same juvenile had been referred for several offenses on the same date, they were counted as a single DJJ contact. If that juvenile was referred for one or more offenses on another date during the year it would be counted as another DJJ contact. If a youth had multiple referrals on a single date, the most serious offense was counted. Only referrals classified as felony and misdemeanors were included. Likewise, the degree of the offense had to be 'Capital<sup>11</sup>', 'Life', 'First', 'Second' or 'Third'. Offenses that were missing Category or Degree information were excluded from the analysis.

For the overall sample, there were no significant decreases in either the number of youth with DJJ contacts or in the total number of DJJ initiations. There were no significant differences between youth served in Level I and II in the pre- and post- STFC periods. However, there were differences in the severity of charges, though they were not significant. For youth in Level I STFC, the nature of the criminal allegations was more severe, with the number of felony charges increasing and the number of misdemeanors decreasing between the pre- and post- periods. For youth in Level II, the opposite trend was observed, with the number of misdemeanors increasing and the number of felonies decreasing.

**Table 38**  
DJJ Contacts 12 Months Prior to, During, & 12 Months After STFC  
(N = 507)

	Pre-STFC			During STFC			Post-STFC		
	Initiations	n	%	Initiations	n	%	Initiations	N	%
Level 1	112	65	19.6	53	36	10.9	110	54	16.3
Level 2	80	44	13.3	69	33	10.0	82	46	13.9
Total	192	109	—	122	69	—	192	100	—

**Table 39**  
Offense Category and Degree by Level of STFC

Category		Pre-STFC	During STFC	Post-STFC
Level I	Felony	39	23	53
	Misd.	71	30	57
Level II	Felony	37	24	30
	Misd.	41	45	50
Total		188	122	190

Analyses were conducted with the unduplicated sample of youth served in STFC. In these analyses, the number of youth with DJJ initiations decreased from the pre- period to the post- period for both Level I ( $\chi^2 = 8.46, p < .01$ ) and Level II ( $\chi^2 = 9.35, p < .01$ ). The number of children and youth with DJJ contacts either in the pre- or post- period was 177 persons.

For youth in Level I STFC, more than three quarters never had a DJJ contact (71%,  $n = 234$ ), or had a Baker Act in the pre- period only (13%,  $n = 43$ ). Seven percent ( $n = 22$ ) of youth had DJJ contacts in both the pre- and post- periods and 10% ( $n = 32$ ) had DJJ contacts only after discharge (see Table 40).

For youth in Level II STFC, there were fewer youth that had never had a DJJ contact than was true for Level I (61% v. 71%) and 11% ( $n = 20$ ) had such contacts in the pre- period only. Fourteen percent ( $n = 24$ ) had DJJ contacts both pre- and post-STFC and 13% had DJJ contacts in the post period only.

**Table 40**  
**Number of Children with DJJ Contacts**  
**on Pre-Post Level I STFC**

		Post STFC Level I		
		DJJ	No DJJ	Total
Pre-STFC Level I	DJJ	22	43	65
	No DJJ	32	234	266
	total	54	277	331

**Table 41**  
**Number of Children with DJJ contacts**  
**on Pre-Post Level II STFC**

		Post STFC Level II		
		DJJ	No DJJ	Total
Pre-STFC Level II	DJJ	24	20	44
	No DJJ	22	110	132
	total	46	130	176

### FDLE Contacts

FDLE Contacts for youth in STFC during fiscal years 2000–2004 were also examined. FDLE contacts were determined by selecting the arrest record reported for any individual youth on a specific date. If the same juvenile had several arrest records on the same date, these would be counted as one FDLE contact. If that juvenile had one or more arrest records on another date during the year it would be counted as another FDLE contact. As was true of DJJ contacts, for the sample as a whole, there were no significant differences in either the number of youth with FDLE initiations nor the total number of FDLE initiations. There were no significant differences between youth served in Level I and II in pre- and post-STFC periods. For the full sample, the number of children and youth with FDLE contacts was 141 ( $n = 28\%$ ). Children with FDLE initiations were similar to the 12-month pre-post cohort in terms of race and gender. The most common diagnoses were also similar, with mood and affective disorders (30%,  $n = 42$ ) being the most common.

Youth with FDLE contacts were included in an analysis to investigate whether there were changes in arrest rates over time for youth in STFC. For the entire sample, there was no change among youth in Level I and there was a slight increase for youth in Level II.

**Table 42**  
**FDLE Initiations 12 Months Prior to, During, & 12 Months After STFC**  
**(N = 507)**

	Pre-STFC			During STFC			Post-STFC		
	Initiations	n	%	Initiations	n	%	Initiations	N	%
Level 1	76	48	14.5	37	29	8.8	85	47	14.2
Level 2	52	28	15.9	46	26	14.8	55	36	20.5
Total	128	76	—	83	55	—	140	83	—

Relatively few youth had FDLE contacts. Analyses show that 78% (n = 259) of youth in Level I had never had an FDLE contact and 8% (n = 25) had had arrests in the pre- period only. Seven percent of youth (n = 23) had had arrests in both periods and 7% (n = 24) had contacts only in the post period). There were no significant differences (see Table 43).

**Table 43**  
**Level I Children with FDLE Contacts**

		Post STFC Level I		
		FDLE	No FDLE	Total
Pre-STFC Level I	FDLE	23	25	48
	No FDLE	24	259	283
	total	47	284	331

More youth in Level II had FDLE contacts than those in Level I, but 69% (n = 122) had never had a contact and 10% (n = 18) had contacts in the pre- period only. Six percent (n = 10) had arrest both pre and post, while 15% (n = 26) had arrests in the post period only. There were no significant differences (see Table 44).

**Table 44**  
**Level II STFC Children with FDLE Contacts**

		Post STFC Level II		
		DJJ	No DJJ	Total
Pre-STFC Level II	FDLE	10	18	28
	No FDLE	26	122	148
	total	36	140	176

### Child Welfare Placements

HomeSafeNet data were reviewed to ascertain post-discharge placements for dependent youth in STFC. Matches were found for 443 youth from the full sample of 507 (87%). Youth discharged from STFC were most likely to be placed in some treatment setting (59%, n = 261), most often in a therapeutic foster home. The next largest group were placed in a shelter, foster care, or group home arrangements (32%, n = 143). A handful of youth were placed in DJJ facilities (n = 7), were on runaway status, or in a runaway shelter (n = 14).

**Table 45**  
**Child Welfare Placements after Discharge from STFC**

<b>Child Welfare Placement</b>	<b>Frequency</b>	<b>Percent</b>
Family and Relative Placements	16	3.6%
Adoptive Home	7	1.6%
Approved Non-Relative Caregiver	2	0.5%
Approved Relative Caregiver	7	1.6%
<b>Surrogate Placements</b>	<b>143</b>	<b>32.2%</b>
Developmental Services Foster Home Non-Relative	1	0.23%
Developmental Services Group Home up to 12 Children	1	0.2%
Family Shelter Home Non-Relative	3	0.7%
Foster Home Non-Relative	113	25.5%
Foster Home Relative	3	0.7%
Group Home more than 12 Children	13	2.9%
Group Home up to 12 Children	3	0.7%
Shelter Facility more than 12 Children	1	0.2%
Shelter Facility up to 12 Children	5	1.1%
<b>Medical Placements</b>	<b>2</b>	<b>0.45%</b>
Hospital	1	0.2%
Medical Foster Home Non-Relative	1	0.2%
<b>Treatment Placements</b>	<b>261</b>	<b>58.9%</b>
Mental Health Facility more than 12 Children	11	2.5%
Mental Health Facility up to 12 Children	1	0.2%
Residential Treatment more than 12 Children	14	3.2%
Therapeutic Foster Home Non-Relative	232	52.4%
Therapeutic Foster Home Relative	3	0.7%
<b>DJJ Placements</b>	<b>7</b>	<b>1.6%</b>
DJJ Detention Center more than 12 Children	6	1.4%
DJJ Facility more than 12 Children	1	0.2%
Sub-total		
<b>Runaways</b>	<b>14</b>	<b>2.9%</b>
Runaway	13	2.9%
Runaway Shelter more than 12 Children	1	0.2%
<b>Total</b>	<b>443</b>	

# Comparing the Effectiveness of Specialized Therapeutic Foster Care and Therapeutic Group Care

## Background

This section of the Out-of-Home Care evaluation was designed to perform a cost-effectiveness comparison of Specialized Therapeutic Foster Care (STFC) and Therapeutic Group Care (TGC). The relative treatment effects of STFC and TGC were examined, as well as characteristics of individuals prior to treatment. We used the continuous enrollment sample employed in the sub studies examining costs and treatment patterns for each mode of care. Both the pre- and post-treatment periods were comprised of 12-month periods. As described in sub-study 1, data from FY 2000-2001 through FY 2004-2005 were used.

The underlying principal in most cost-effectiveness studies is that similar people receive different treatments that also have different costs. As such, it is important to examine outcomes to determine whether the additional cost is warranted. If individuals have better outcomes, and those outcomes can be quantified, a cost-effectiveness analysis can be performed to determine whether the marginal benefit outweighs the marginal cost.

For this study outcomes are measured by Medicaid behavioral health care costs, Baker Act initiations, DJJ initiations, and FDLE initiations. Physical health care costs, while part of the analysis, are not considered to be an outcome of STFC or TGC care.

## Research Questions

Descriptive and regression analyses were conducted using Medicaid fee-for-service claims data, Baker Act initiations, Department of Juvenile Justice data (DJJ), and Florida Department of Law Enforcement (FDLE) from FY 2000-2001 through FY 2004-2005 for children in TGC and STFC. This sub study sought to answer the following questions:

1. What are the changes in Medicaid behavioral health costs, Baker Act initiations, DJJ events, and FDLE events between pre- and post-treatment periods? Do such changes differ for children placed into STFC and TGC?
2. Are children placed into STFC and TGC similar? Do children placed into STFC and TGC have different cost, diagnoses, and treatment patterns in the prior period?
3. If such characteristics differ, what statistical techniques will enable creation of appropriate comparison groups?
4. What are the changes in Medicaid costs, Baker Act initiations, DJJ events, and FDLE events between the pre- and post-treatment periods for comparable groups of children? Do such changes differ for children placed into STFC and TGC?
5. If treatment effects can be appropriately measured, is STFC or TGC more cost-effective?

## Summary of Findings

The principal finding is that children placed into STFC and TGC care differ prior to entering treatment. Individuals with higher Medicaid behavioral health costs, more severe diagnoses, and placements in more restrictive treatment settings in the prior year are more likely to be placed in TGC. Given the importance of diagnoses and prior period treatment in determining placement, a simple pre-post comparison is inappropriate for this analysis, as is a standard case-mix adjuster based on demographics. We used both propensity score matching (PSM) and risk adjustment methods to establish comparison groups of children placed into STFC and TGC. Statistical analysis determined that risk adjustment methods differentiated best between the outcomes experienced by children. Once prior-period differences between children placed into STFC and TGC were accounted for, no significant difference in outcomes was found. As such, treatment setting does not affect outcomes for similar children (see Appendix 4 for full discussion of each of the models).

## Conclusion

While the original goal of this study was to perform a cost-effectiveness analysis, we were unable to identify outcome differences between STFC and TGC. Since there are no statistically significant differences in relative treatment effects, no explicit conclusions regarding cost-effectiveness can be made. However, the magnitude of the difference of the costs (ranging from \$109 to \$297 per-member per-month) might be considered clinically and economically important if they were precisely estimated. As such, we focus on the methodological contributions of the analysis and refrain from drawing conclusions about cost-effectiveness.

There are several potential limitations to this analysis. First, the use of the continuous sample may be problematic. While its use was driven by the availability of data, there are important drawbacks. By definition, people had to be Medicaid eligible for 12 months before and 12 months after treatment. By excluding people just entering the system or those who leave the system, we remove important groups from the analysis. The reduction in sample size may also be important to the analysis presented in this paper. As discussed earlier, propensity score matching studies typically use more groups than feasible in this paper. In addition, the use of equal sample sizes would reduce the subjectivity in deciding where to divide groups. Prior period SIPP use was much higher among TGC children. Some of this effect may be an artifact of the data because SIPPs did not exist until 2002. As such, children in our sample who were placed into STFC prior to 2002 could not have been in a SIPP in the prior period.

Second, while the risk models predict post-treatment outcomes better than propensity scores, the models are estimated using small samples which can lead to unstable coefficients. It can also be problematic to apply the model to the same sample used to estimate the model coefficients.

Despite the limitations there are several important results. First, there were important differences between children in STFC and TGC care. Important

differences existed in prior period costs, diagnoses, and treatment. There was also a substantial difference in prior period cost between children in TGC and STFC.

Alternative methods for accounting for pre-treatment differences in individual characteristics based on propensity score matching and risk adjustment models were utilized. While there are limitations, the results in this study suggest that risk models may be a useful tool to create comparison groups in evaluation research. Typical case-mix adjusters based on demographics and eligibility would not have captured the differences between STFC and TGC children to the same degree as the methods utilized in this study.

### **Next Steps and Future Research**

First, a larger sample for the cost-effectiveness analysis would be more valuable. By removing the restriction that individuals be Medicaid eligible a full 12 months before and after the treatment period, sample sizes could be increased considerably. Larger samples will enable more precise estimation of the treatment effects.

Second, the effort in developing a risk adjustment model that can be used with non-equivalent treatment groups will continue. It has been proposed that FMHI develop a risk adjustment model for behavioral health that could be used in evaluation research. Such a model may be useful to create comparison groups of children in STFC and TGC. Alternately, additional work that builds on the models developed in this report could be performed.

Third, there were several results that suggested that STFC or TGC may be more effective for specific subgroups of children. The larger sample and improved risk models will be used to further examine this issue. This study shows children with higher costs and more severe diagnoses in the prior year tended to be placed into TGC. Additional research will consider the efficacy of this placement tendency.

# Evaluation of the State Inpatient Psychiatric Program for FY 2005-2006

## Background

Statewide Inpatient Psychiatric Program (SIPP) services are provided in an intensive residential setting and often include crisis intervention, psychological evaluation, close monitoring by staff, medication management, and connections to community services post-discharge. These services are expected to be relatively short-term, i.e., six months or less, and are intended to stabilize the youth and connect the youth and youth's family with needed services in the community. Youth entering SIPPs must have a primary DSM-IV diagnosis other than substance abuse, mental retardation, or autism and qualified examiners must certify that their emotional and behavioral problems have been unresponsive to intensive outpatient services and/or that the child is considered a danger to themselves or others.

## Research Questions

1. Who is providing SIPP services statewide and what is the role of the RCC?
2. Who are the youth being served by SIPP?
3. What are the service use patterns and costs for SIPP?
4. What are the cross system outcomes of care for youth in SIPP?
5. What are the factors related to length of stay, discharge, and youth who are readmitted to SIPPs within six months?

## Summary of Findings

In 2005, three new SIPP providers added to the service system which makes an additional 59 beds available for youth in need of this intensive level of service. There are now a total of 415 SIPP beds in the State of Florida SIPPs.

The number of critical incidents increased from 2004 to 2005, especially in the area of aggressive behavior as reported by the SIPPs. There was an average of 6-7 critical incidents for each youth in a year. Only two SIPP providers realized a decrease in critical incidents over the year, while the remaining providers saw a rise in critical incidents. Statewide, the rate of yearly critical incidents increased from 13.1 to 23.4 incidents per bed. However, reporting has undergone major changes in the types, format and the operational definitions of incidents since 2004 and could account for much of the new data being reported. Caution should be taken in interpreting these data because of the improvements made in the data reporting system in 2005.

The role of the Regional Care Coordinators focused mainly on five key components of their involvement with the SIPP, including: communication, knowledge, involvement, the quality of services, and utilization management. The perception of the importance of the role of the RCC has greatly improved. Respondents noted the RCC's experience and expertise is of great value. There were

16 of 29 (55%) respondents who noted an increase in respect for the RCCs and improved teamwork over the past year. One of the remaining challenges, however, is the standardization of authority of the RCC to direct discharge decisions.

The demographic information shows that most of the children being served are age 12-17 (83.9%), White (57.8%), African-American (29.5%), with a slightly higher proportion of males (52.2%). The legal status of the youth at admission shows that most of them (43.7%) are under the custody of their parents, and 34% are a dependent in physical custody of the state. Diagnostic characteristics of the children shows the majority of youth (35.2%) have a primary diagnosis that is categorized as a mood/affective disorder, and 21.2% have a primary diagnosis categorized as an anxiety disorder. The most common type of anxiety disorder reported is Post-traumatic Stress Disorder. The placement history of youth admitted in 2005 shows a high utilization of crisis stabilization (62.9%), followed by outpatient treatment (60.2%). Among the presenting problems at admission, the highest were physical aggression (67.9%) and oppositional defiance (54.6%). The most common physical health problem reported at admission was asthma (5.6%).

The total cost for Medicaid fee-for-services funded mental health services in the 12-month period prior to their first SIPP admission was \$11,799,658 and the total cost for the 12-month period post-discharge was \$17,008,949. Among the twelve mental health service types, general hospital-psychiatric inpatient decreased most dramatically. In the 12 months pre-admission, 286 youths used general psychiatric hospital services, and during the 12 months post-admission, only 143 youths used MH inpatient services. On the other hand, the cost of three services increased: SIPP services (which didn't exist in the pre-admission period), specialized therapeutic foster care (STFC) and therapeutic group care services (TGC). These three services cost \$8,762,450 more than the pre-admission period. General psychiatric inpatient, emergency, day treatment, community based care, targeted case management and outpatient mental health services decreased by a combined total of \$3,667,783.

Services in which both the penetration rate and the average cost increased significantly included TGC ( $X^2 = 7.9$ ;  $p < .01$ ), STFC ( $X^2 = 14.6$ ,  $p < .0001$ ), and Other Mental Health Services ( $X^2 = 22.4$ ,  $p < .0001$ ). More youth used these service at a high cost. Services for which the penetration rate and the average cost decreased significantly included community services such as Day Treatment ( $X^2 = 10.4$ ,  $p < .001$ ).and Outpatient Services ( $X^2 = 7.1$ ,  $p < .01$ ). Targeted Case Management showed virtually no change in penetration rate and a decrease in average cost ( $X^2 = 29.6$ ,  $p < .0001$ ), indicating that the length of time youth receive this service is decreasing. Taken together, higher penetration rates in TGC and STFC and lower rates of community services suggest that youth discharged from SIPPs are stepping down into out-of-home care treatment options at lower levels of restrictiveness.

Youth outcome measures are assessed by the provider at discharge and 60-days post discharge from the SIPP and include scores from the C-GAS, CBCL, number of days in the community, and parent satisfaction. The C-GAS showed an improvement in behavior between admission and discharge. The CBCL also

indicated an improvement between admission and discharge, but remained in the borderline or clinical range in need of further evaluation and treatment. There were 68.8% of youth that remained at their community placement for at least 60 days after discharge. This was a decrease from 74.9% in 2004. Results from the provider customer satisfaction survey administered at discharge indicated positive feedback concerning satisfaction and appropriateness of the provider services. Most parents or caregivers (33.6%) noted they lived within 21 to 50 miles of the provider, while 6% lived more than 200 miles away.

The qualitative data indicate that youth who were readmitted to SIPP facilities within six months of discharge differ from those who were not readmitted in several ways. Overall, stakeholders indicated that readmitted youth tended to have multiple challenges, including poor or nonexistent family support, more severe mental health and conduct problems, and histories of multiple failed placements and insufficient mental health service receipt. Possibly due to these challenges, these youth may be more likely to have lost hope and to have developed a negative outlook regarding their futures. The confluence of these challenges hinders the ability to find appropriate community placements for them, which may contribute to early readmission following SIPP discharge. In addition, stakeholders indicated that system-level service and medication delays following discharge heighten the risk of early readmission. The quantitative data indicate that readmitted youth do not differ significantly on demographic variables such as age, race, and gender, or on the type of primary diagnosis of the youth. This is consistent with stakeholder reports that other variables (e.g., family support, a history of unstable placements) appear to affect early readmission risk more than demographic variables.

## Who is providing SIPP services statewide and what is the role of the RCC?

There are 17 SIPP providers statewide with a total of 415 beds. Table 46 shows the SIPP providers by district and number of beds at each facility. There was an increase of 59 new beds in 2005 from three new providers, including Devereaux Foundation in Leon County, Lifestream and Ten Broeck-Ocala both serving districts 3 and 13.

**Table 46**  
**Number of Beds at SIPP Providers for 2005 & 2004**

Provider	District	2005	2004	Ch.
Alternative Family Care	10	17	17	0
Citrus Health Network 1 (CATS)	10	28	28	0
Citrus Health Network 2 (RITS)	11	16	16	0
Daniel Memorial	4	23	23	0
David Lawrence	8	17	17	0
Devereux Foundation (Leon County)	2	24	New	+24
Devereux Foundation (Orange County) (o(Tallahassee)	7	24	24	0
Jackson Memorial Hospital	11	20	20	0
Lakeview Center	1	16	16	0
Lifestream	3 & 13	12	New	+12
Manatee Palms Youth Center	Suncoast	47	47	0
PEMHS, Inc.	Suncoast	29	29	0
Sandy Pines	9	51	51	0
Tampa Bay Academy	Suncoast	22	22	0
Ten Broeck (Jacksonville)	4	18	18	0
Ten Broeck (Ocala)	3 & 13	23	New	+23
University Behavioral Center	7	28	28	0
Statewide		415	356	+59

## Critical Incidents

Within in the SIPP provider facilities, the number of critical incidents has been an area of concern. The information on critical incidents was analyzed to assess the levels of occurrences among each type of incident. Critical incidents reported include suicidal; homicidal and aggressive behaviors; seclusions and restraints; runaways; and injuries and their cause among both clients and staff. Since the SIPP initiative in 2004 to reduce the number and seriousness of restraints and seclusions, this information has been analyzed for changes and trends, including comparisons with previously reported results. Key questions framing these analyses were:

- Have the number/rate of critical incidents changed in 2005?
- Do differences exist between providers?

Table 47 shows the total number of critical incidents and the percent of change for each compared to the previous year. The total number of episodes for all children is represented for 2005 and 2004. This number includes a

duplication of children if the child has more than one episode in a year, and includes a duplication of episodes for each child that has had multiple episodes of critical incidents. In 2005, there is a dramatic increase in most types of incidents reported, even when controlling for the additional three providers. The total number of critical incidents increased by 117% in 2005 compared to 2004 (11,976 compared to 5,510, respectively). The most striking increase among the types of incidents emerged among the aggressive behaviors, which increased 171% from 2,042 episodes in 2004 to 5,541 in 2005. Caution should be taken in interpreting these data because of the improvements made in the data reporting system in 2005.

**Table 47**  
**Critical Incidents by Type for 2005 and 2004**

Type of Incident	# of Episodes 2005	# of Episodes 2004
Aggressive Behavior	5541	2042
Homicidal Behavior	35	11
Suicidal Behavior	200	149
Self-Injury	342	650
Restraints	4367	1440
Seclusion	555	384
Runaway/AWOL	168	94
Injuries to Children	398	491
Injuries to Staff	94	57
Medication Errors	113	96
Grievances Filed	139	65
Staff Misconduct	14	25
AMA Discharge	10	6
Total number of critical incidents	11,976	5,510

A positive result among the critical incidents in 2005 compared to 2004 has been the reduction in the number of reported self-injuries among children, which decreased by ninety percent.

Table 48 indicates that by individual provider, only two of the fifteen available comparisons resulted in a decrease in the rate of critical incidents from 2004 to 2005. This table also indicates the extreme range of reporting between the providers with some increasing dramatically and others reporting very little change or decreasing slightly.

**Table 48**  
**Number of All Critical Incidents by Provider**

Provider	2005	Rate <sup>1</sup>	2004	Rate <sup>1</sup>
Alternate Family Care	903	53.1	1,015	59.7
Citrus (1) CATS	829	29.6	277	9.9
Citrus (2) RITS	496	31.0	132	8.3
Daniel Memorial	408	17.7	399	17.3
David Lawrence Center	173	10.2	106	6.2
Devereux Foundation (Leon Cty)	744	41.3	NA	-
Devereux Foundation (Orange Cty)	877	36.5	230	9.6
Jackson Memorial Hospital	455	26.8	165	8.3
Lakeview Center	232	14.5	199	12.4
Lifestream	No Reports		NA	
Manatee Palms Youth Center	529	11.3	632	13.4
PEMHS, Inc.	602	30.1	278	9.6
Sandy Pines	1,025	20.1	232	4.5
Tampa Bay Academy	1,594	72.5	1,185	53.9
Ten Broeck (Jacksonville)	764	42.4	128	7.1
Ten Broeck (Ocala)	784	28.0	95	3.4
University Behavioral Center	1,357	48.5	408	14.6
<b>Total Incidents Statewide</b>	<b>11,772</b>	<b>23.4</b>	<b>5,481</b>	<b>13.1</b>

<sup>1</sup> Rate: Rate of critical incidents is calculated for each provider based on the number of beds at that facility.

The Regional Care Coordinators are an integral part of working with the SIPP providers to facilitate discharge planning and communication. A qualitative analysis was conducted through phone interviews to gather the perceptions of key stakeholders working with RCCs.

## Methods

This analysis used a mixed-method approach, including analysis of length of stay data from the SIPP Provider Monthly Report Database, and qualitative data collection and ethnographic analysis of intensive, audio-taped, semi-structured interviews with five interviewee groups. The SIPP Provider Monthly Report Database contains data from 15 SIPPs in Florida, submitted by SIPP staff to this central database. Data are recorded and sorted by calendar year.

A total of 29 interviews were completed: 6 Children’s Mental Health Specialists, 6 SIPP employees who are involved in discharge planning, 6 Targeted Case Managers (TCMs), 5 Single Point of Access personnel (SPOAs), and 6 Regional Care Coordinators (RCCs). Interviewees were identified in five AHCA areas that were not included in the previous year’s data collection for inclusion in this sub-study. These areas are Areas 2 (Tallahassee), 3 (Gainesville), 7 (Orlando), 10 (Broward), and the Suncoast Region (Tampa Bay), comprised of AHCA areas 5 and 6. SIPPs in these areas were asked to provide the name of the person involved in discharge planning so that they could be interviewed. This SIPP person was then asked to identify TCMs with whom they worked so that

evaluation staff could contact them for interviews. SPOAs from each district were identified for interviews, and RCCs were identified through First Health's area listing. Evaluation staff obtained Institutional Review Board (IRB) approval and participant consent prior to the interviews.

Data were collected during audio-taped telephone interviews. Descriptive, semi-structured, open-ended questions were asked. All interviews focused on clients who had been placed in SIPPs since January 2005. Interviews were transcribed verbatim. Transcribed interviews were then entered into the computer program QSR NVivo for coding and coordination of data analysis and reporting of results.

The purpose of the interviews was to gather perceptions regarding the role of the RCC and their impact on the length of stay. The structured interview protocol included several questions related to the role of the RCC and their ability to influence length of stay.

The data analysis for this section of the sub-study consisted of coding and analysis of the interviews with Children's Mental Health Specialists, Regional Care Coordinators, Single Point of Access personnel, Targeted Case Managers, and SIPP discharge planners.

Findings regarding perceptions about the RCC role can be organized around five themes: communication, knowledge, involvement, quality services, and utilization management. This section will illustrate the complexity and interrelationships of the five identified themes related to the RCC role. Direct quotes are used throughout to illustrate the interviewees' perceptions.

## Communication

Communication is a theme found during interviews with all five provider groups. The RCC is perceived as a liaison between the SIPP provider and many other entities, including First Health, the community, the family, the case manager, the treatment team, and the agencies working with a family. The RCCs are noted for exceptional communication skills through direct contact, team meetings, email, and phone contacts. They help coordinate and monitor treatment not only through record reviews, but also through on-site contact with youth. RCCs also provide clinical recommendations, feedback regarding treatment, and help encourage communication by providing needed contacts to those working with youth.

## Knowledge

According to the interviewees, both clinical and system knowledge is crucial to the role of the Regional Care Coordinator. Respondents indicated that the clinical knowledge of the RCCs help guide youths' treatment through goal determination, review and revision; maintaining active treatment; and/or recommending a specific type of therapy. The RCCs "offer insight and input into other treatment options that are available," noted one Discharge Planner. The RCC takes an active role in the on-site SIPP treatment team and can share ideas and clinical expertise without overtaking the team process.

## Involvement

Regional Care Coordinators are closely involved with the treatment of youth at the SIPP, with most of the RCCs physically located at the SIPP site. There were 16 respondents who noted an increase in respect for the RCCs and improved teamwork over the past year. While some RCCs initially had difficulty integrating with the SIPP, all of the respondents that shared additional comments concerning the role of the RCC indicated they were very happy with their RCC.

Teamwork was the most prevalent theme throughout the comments concerning the RCC role and impact. The respondents noted that RCCs regularly attend treatment team meetings to help create treatment plans, providing guidance, and offering clinical recommendations. In most cases, the RCC is seen as part of the team, rather than an outsider. Having a good relationship with the treatment team is the most recognized method of influencing the treatment process and discharge planning. The RCC “helps the treatment team really focus in on their justification for the child remaining in SIPP.”

The RCC is involved in discharge planning by keeping everyone aware of treatment goals and length of stay issues on a regular basis. Some RCCs generate specialized reports to maintain updated information on the number of youth and the amount of time youth spend in SIPP. This information is used to keep the treatment team aware of upcoming discharge dates and plans. Some RCCs also maintain close contact with community providers and agencies to aid in placement and use of community services after discharge. RCCs help ensure that proper discharge planning is progressing as needed. One Children’s Mental Health Specialist said, “They interface with the external system to make sure that we are aware of what is going on with the kid in the SIPP and also to kind of push us and say, look this kid is getting closer to discharge, you need to start figuring this out.”

## Quality Services

Another theme noted in the interviews was the RCCs’ role in ensuring that youth in the SIPP were receiving the absolute best level of care. Once the treatment plan is written, the RCC closely monitors the goals and treatment through record reviews, daily involvement at the SIPP, and team meetings. In essence, they “push for active treatment.” A Children’s Mental Health Specialist described the RCC role as “to advocate for the best possible services and services that are appropriate to the specific presenting problem of the child.”

## Utilization Management

Finally, the RCC is perceived as the “money person.” Indeed, RCCs monitor the goals and treatment of the youth not only to ensure the best treatment, but also to determine discharge timing and placement along with the community services needed for the child’s success. While there are many youth receiving necessary services in the SIPP placement, there are many others needing such a placement. Respondents noted that RCCs report back to First Health concerning

maximum benefit for a placement. One Discharge Planner stated the RCC role was to “help with a very objective clinical perspective, [the RCC] wants it to be as short as it needs to be and also as long as it needs to be.”

### Perceptions about the Regional Care Coordinator Role

In addition to examination of the common themes about the RCC role, perceptions from the interviews were arranged by the role of the person being interviewed. Table 49 summarizes the perceptions about the RCC role.

**Table 49**  
**Perceptions by Role about the Functions of the Regional Care Coordinator**

Role	Perceptions of RCC Role
Children’s Mental Health Specialist	Review whether youth are appropriate for SIPP; monitor the progress through record reviews; Interface with the external system.
SIPP Discharge Planner	Oversight for First Health; audit the files to evaluate the quality of care; offer an objective clinical perspective.
Targeted Case Manager	Monitor the care the youth receives; ensure proper placement; review treatment plans.
Single Point of Access	Sit on the treatment teams; discharge planning; monitor the quality of treatment; link between First Health and agency providers.
Regional Care Coordinator	Push for active treatment; participate in treatment planning; Discharge planning; facilitate as a collaborator in the community with services.

### Perceptions of the Children’s Mental Health Specialists

All six of the Children’s Mental Health Specialists in the targeted AHCA areas were interviewed concerning the RCC role and impact on length of stay and treatment process. There was one interviewee who was not familiar with the role of the RCC. The remaining interviewees had a comprehensive understanding of the RCC role and included the functions of the RCC to be coordination of all parties, ensuring youth get the services they need, involvement in the treatment team, discharge planning, clinical expertise, and efforts to reduce the length of stay. The most frequently mentioned functions of the RCC were proper placement of youth, monitoring of youth in treatment, and interfacing with the external system. These three functions were each noted by three interviewees. As one interviewee stated, “...to make sure that they are aggressively addressing the admitting problem by providing these super enhanced services and that is what they do with the SIPPs, they also monitor the progress of the kids on a more intensely kind of day to day basis and then they interface with the external system to make sure that we are aware of what is going on.”

### Perceptions of the SIPP Discharge Planners

All of the Discharge Planners indicated that one of the roles of the RCC was to monitor the SIPP for First Health; they saw the RCC function as more of an auditing and monitoring function reporting back to First Health. In addition to monitoring, they see the RCCs as very involved in many aspects of care, including

monitoring youth progress, offering suggestions, and providing follow up. Even though the Discharge Planners primarily see the RCCs in a monitoring role, they still view them as part of the team at the SIPP. One Discharge Planner stated, “I think they are an advocate for the client’s length of stay, they monitor the treatment quality, they are like an auditing body and they audit the files to see if the quality of care is there.”

### **Perceptions of Targeted Case Managers**

Of all the groups of respondents, the Targeted Case Managers reportedly had the least contact with the RCCs. One TCM noted that for their job responsibilities more contact happens with the SPOA than with the RCC. Four of the six Targeted Case Managers who were interviewed indicated that one of the roles of the RCC was to monitor the progress of youth while in treatment, including record review. Three respondents noted admissions and proper placement of clients as part of the RCC role.

### **Perceptions of the Single Point of Access Staff**

For the five SPOAs interviewed, the most commonly indicated RCC functions included participation in treatment team meetings, discharge prompting and planning, and acting as a link between First Health and the agency providers. One SPOA described the RCC role as “I think that function is to provide oversight and utilization management to the providers to make sure basically that First Health is getting their money’s worth and that the kids are getting the treatment that they should be getting and that the therapy that is going on is effective and appropriate.”

### **Perceptions of the Regional Care Coordinators**

The Regional Care Coordinators, when asked to describe their role, identified two predominant functions. Five of the six RCCs indicated the task of ensuring the most appropriate and best level of care for youth in SIPP. All six respondents listed participation in treatment teams as part of their role. Other functions noted by the RCCs were discharge prompting and planning, coordinating or liaison role, monitoring the progress of the client, and interfacing with the external system. One Regional Care Coordinator stated, “I sit in on a lot of the kids coming into SIPP so I have a lot of information that I am able to give the treatment team about these children and then as far as discharge planning, we actively try to pull all the players in the community together to participate in the discharge planning and just keep information regarding the progress and readiness for discharge. We make sure that the targeted case managers, Substance Abuse Mental Health, CBC workers, all are informed and actively involved in the treatment while the child is in SIPP.”

## Who are the youth being served by SIPP?

### Methods

All of the information presented in this section has been taken from the SIPP Provider Monthly Report Database (SPMRD). Initiated in 2002 by FMHI, each of the SIPP providers enters client and programmatic level information into a database which are sent to FMHI on a monthly basis. Among the client-based information gathered includes demographics, treatment history, presenting problems, diagnostics, prescription medication use, critical incidents, family involvement, and discharge reason and placement. Outcome measures involve pre- and post- tests of the Child Behavior Check List (Achenbach & Rescorla, 2001) and the Children's Global Assessment Scale (Shaffer et al., 1983) measures, with a 60-days after discharge collection point which includes the number of days a child has remained in the community since discharge and satisfaction surveys for both the parent and child. Programmatic information collected includes critical incidents such as staff misconducts, medication errors, restraints, seclusions and injuries to both staff and children.

The study questions guiding the analyses in the section are:

- What are the characteristics of youth at admission, including demographical information?
- What are the most prevalent DSM-IV diagnoses, presenting problems and placement histories of the admitted youth in 2005?
- What are the utilization patterns of psychotropic medication use while in treatment?
- How do the outcome measures change between admission, discharge and 60-days after discharge?

### Demographics: Gender, Race and Age

During calendar year 2005, there were 623 admission events and 553 discharges. Table 50 presents the gender, race/ethnicity and age distributions observed during 2005. These have remained remarkably similar each year. Males continue to be a slightly higher proportion of enrollees, in part because of the SIPP specialty programs and the involvement of children from the Department of Children and Families (DCF) and Juvenile Justice (DJJ).

**Table 50**  
**Gender, Race and Age for Youth in SIPP**

	N	Percent
<b>Gender</b>		
Male	325	52.2%
Female	298	47.8%
<b>Race/Ethnicity</b>		
White	359	57.8%
African-American	184	29.5%
Hispanic	53	8.5%
Asian	2	0.3%
Other	25	4.0%
<b>Age</b>		
4 – 7	2	0.03%
8 – 11	94	15.8%
12 – 17	500	83.9%
<b>Average Age</b>	13.8	

## Legal Status

The legal status of the children admitted to SIPP in 2005 is presented in Table 51. Similar to previous reports (2002 – 2004), the most frequently reported status has been for those admitted under custody of parents and relatives (43.7%) followed by dependent and in physical custody (34.0%).

**Table 51**  
**Legal Status at Admission**

Legal Status	N	%
Under Custody of Parents	272	43.7%
Dependent, in physical custody	211	34.0%
Dependent, not in physical custody	47	7.7%
Other Family Program	29	4.7%
Delinquent & Dependent, in custody	26	4.2%
Delinquent & Dependent, not in custody	15	2.4%
Delinquent, In physical custody	12	1.9%
Delinquent, not in custody	8	1.3%
CINS, not in custody	1	0.2%

## Mental Health Diagnoses

The most common Axis I and II diagnoses observed in 2005 were again predominately characterized by a DSM-IV category of Mood or Affective symptoms such as depression or bipolar disorder. As indicated in Table 52, the rank order of classifications has not changed dramatically since the previous year. The most change occurred among the Anxiety Disorders, which increased by 5.4% compared to 2004. The most common type of anxiety disorder reported continues to be Post-traumatic Stress Disorder.

**Table 52**  
**Percent of Children Admitted with Primary DSM-IV Axis I & II for 2005 & 2004**

Mental Health Disorders	N	2005 %	2004 %	% Ch.
Mood / Affective disorders	218	35.2	33.1	2.1
Anxiety disorders	131	21.2	15.8	5.4
Disruptive Behavior disorders	106	17.0	14.9	2.1
Attention deficit disorders	44	6.8	9.2	-2.4
Schizophrenia & Psychoses	42	6.7	10.0	-3.3
Neurotic disorders, Personality disorders, non-psychotic	38	5.9	7.5	-1.6
Mental Retardation	36	5.8	6.4	-1.4
Developmental Delays and Autism	6	1.0	0.6	0.4
Adjustment disorders	5	0.9	0.6	0.3
Drug & alcohol use or abuse disorders	3	0.5	1.9	-1.4
Childhood emotional disturbances	0	0.0	0.0	0.0
Organic psychotic disorders	0	0.0	0.0	0.0

The reported placement histories of each child admitted in 2005 compared to 2004 is presented in Table 53. Again, the percentages of each category rank similarly to those from 2004 with crisis stabilization and outpatient treatment being the most common prior placements.

**Table 53**  
**Placement History of Children Admitted 2005 & 2004**

Placement History	N	% 2005	% 2004
Crisis Stabilization	392	62.9%	67.5%
Outpatient Treatment	375	60.2%	57.5%
Community-based Case Management	239	38.4%	40.0%
Residential Treatment 1 2 3 4	234	37.6%	38.9%
Inpatient Hospitalization	221	35.5%	34.2%
Specialized Therapeutic Foster Care	141	22.6%	20.4%
In-Home and On-Site Services	99	15.9%	19.4%
Residential Case Management	72	11.6%	9.0%
Drug & Alcohol Treatment	20	3.2%	2.2%
Day Treatment	19	3.0%	5.8%
Crisis Intervention Program	12	1.9%	1.5%
Prevention/Intervention - Day	7	1.1%	1.1%
Supported Living/Housing	5	0.8%	1.3%
Supported Employment	0	0.0%	0.2%
Other Placements	72	11.6%	na

Providers were requested to indicate the types of presenting problems for each child admitted. In 2005, a total of 3056 problems were reported from among the 623 admissions, an average of 4.9 problems reported per child. Table 54 presents the total number of responses by problem type and the percentage of that type among all the admitted children for 2005 and 2004. As indicated, the most frequent presenting problem reported in 2005 and 2004 was Physical Aggression, followed by Oppositional-Defiance.

**Table 54**  
**Presenting Problems of Children Admitted 2005 & 2004**

<b>Major Presenting Problems</b>	<b>2005 YTD %<sup>1</sup></b>	<b>2004 YTD %<sup>1</sup></b>	<b>Other Presenting Problems</b>	<b>2005 YTD %<sup>1</sup></b>	<b>2004 YTD %<sup>1</sup></b>
Physical Aggression	67.9%	66.2%	Extreme Noncompliance	50.6%	44.7%
Oppositional-Defiance	54.6%	59.3%	Peer Interactions	42.2%	34.2%
Depression	43.1%	39.3%	Runaway	32.8%	15.0%
ADHD	36.3%	42.1%	Extreme Verbal Abuse	29.5%	8.6%
Self-destructive	35.2%	17.2%	Multiple Acute Hospitalizations	27.6%	31.0%
PTSD	30.4%	5.4%	Property damage/Fire setting	26.0%	22.6%
Suicidal	26.0%	26.7%	School Attendance	20.3%	21.7%
Drug Use or Addiction	18.3%	13.6%	Cruelty to animals	9.8%	8.2%
Sexual Victim	15.2%	22.4%	Strange Behaviors	9.2%	9.7%
Sexually Abusive	8.3%	29.2%	Medical/Physical	3.2%	6.4%
Anxiety Disorder	5.1%	7.9%			
Delusional Ideations	3.1%	7.5%			
Eating Disorder	2.7%	2.6%			

<sup>1</sup> The percent of children reported with a listed presenting problem was determined by dividing the total number of reported presenting problems by the number of admissions over the reporting period (*n* = 623 in 2005 and *n* = 535 in 2004) to provide a rate or percentage of each presenting problem reported per year.

### Diagnosed Physical Health Problems

In 2005, twenty-six percent (*n* = 165) of all children who enrolled in a SIPP program (*n* = 623) had a DSM Axis III diagnosis indicating some type of physical condition potentially related to their mental health diagnosis. Fifty-one conditions were reported, of these, the most common was Asthma (*n* = 32), occurring among more than five percent (5.6%) of all children enrolled in 2005. Also among the more prevalent diagnoses reported were Obesity (*n* = 22), Enuresis (*n* = 10), Allergies (*n* = 9), Prenatal drug exposure or Fetal Alcohol Syndrome (*n* = 8), Diabetes and seizures (*n* = 13) and five with a hearing loss.

### What are the services used and costs of SIPP?

#### Methods

Data were analyzed from Medicaid claims data, Baker Act initiations, Department of Juvenile Justice (DJJ) contacts, and Florida Department of Law Enforcement (FDLE) contacts and child welfare placement data from HomeSafeNet. The study reviewed overall post discharge service patterns and costs of behavioral health treatment compared to pre-admission in the twelve months prior to treatment and twelve months post-discharge.

Mental health services were grouped into the following categories: General Hospital Psychiatric Inpatient Treatment, SIPP Treatment, Day Treatment, Specialized Therapeutic Foster Care, Community-Based Care, School-Based Care, Targeted Case Management, Emergency Mental Health Care, Outpatient

Services, Therapeutic Group Home, and Other Mental Health (see Appendix 2 for a description of Service Categories). Table 56 also presents the total costs of all services in each category, as well as a per-user-per-eligible month cost rate for services. Per-user-per-eligible month (PUPEM) cost is calculated by dividing the total cost of a person's services by the number of months they were enrolled in Medicaid and averaging across all users of the service. This rate is useful to estimate what a particular service is likely to cost across all users of a specific service within a given program, but it does not represent an actual service cost rate.

### Mental Health Services and Costs

#### Service Use

As shown on Table 55, for the 650 youth in the sample, 99% ( $n = 646$ ) used some type of Medicaid funded mental health service during the 12 months prior to their first SIPP admission. The percentage of youth receiving any mental health service in the 12 months following discharge from the first SIPP stay remained about the same (97%). During the 12 months prior to the first SIPP admission, the most commonly used services were outpatient services, 98% of youth used this service, followed by Targeted Case Management (82%). These same patterns were apparent in the post-discharge interval, with 94% of the youth receiving Outpatient Services and 83% receiving Targeted Case Management.

**Table 55**  
**Youth Receiving Services and Total Costs by Service Category at 12-Months Pre- and Post-SIPP**  
**(N = 650, AHCA Areas Except 1 & 6)**

Type of Services (Total n = 650)	Pre				During			Post				Kruskal Wallis Test X <sup>2</sup> <sup>a</sup>	P Value
	N	Pene- tration rate	Average Costs PUPEM	Total Costs	N	Avg. Costs PUPEM	Total Costs	N	Pene- tration rate	Average Costs PUPEM	Total Costs		
General Hospital –Psychiatric Inpatient	28	44%	\$1,242	\$4,261,807	17	\$847	\$120,287	143	22%	\$1249	\$2,143,284	1.6932	0.1932
SIPP <sup>b</sup>	0	0%			650	\$9,573	\$42,436,020	82	13%	\$3,715	\$3,655,080	n/a	n/a
TGC	7	1%	\$666	\$55,966				94	14%	\$2540	\$2,864,634	7.9771	0.0047
STFC	122	19%	\$1606	\$2,350,832				173	27%	\$2240	\$4,649,534	14.6558	0.0001
BHOS	74	11%	\$291	\$258,835	2	\$69	\$325	40	6%	\$223	\$107,172	3.1204	0.0773
Day Treatment	116	18%	\$263	\$366,262				89	14%	\$173	\$184,724	10.3974	0.0013
Emergency MH Svs	376	58%	\$11	\$48,327	46	\$7	\$1,643	281	43%	\$10	\$33,172	0.4928	0.4827
Targeted Case Mgmt	533	82%	\$335	\$2,142,857	397	\$123	\$249,571	537	83%	\$275	\$1,771,259	29.6389	<.0001
Community-based MH	420	65%	\$228	\$1,147,136	6	\$122	\$5,332	336	52%	\$201	\$810,452	1.0778	0.2992
School-based Care	65	10%	\$14	\$11,279	7	\$22	\$370	91	14%	\$16	\$16,997	0.0073	0.9321
Outpatient Services	640	98%	\$150	\$1,149,505	106	\$40	\$24,139	614	94%	\$89	\$656,883	7.0785	0.0078
Other MH	42	6%	\$13	\$6,852				148	23%	\$65	\$115,758	22.4146	<.0001
All MH Services	640	99%	\$1522	\$11,799,658				633	97%	\$2239	\$17,008,949	14.1331	0.0002

<sup>a</sup> Kruskal Wallis Test X<sup>2</sup> is non-parametric technique analogous to ANOVA used in the PUPEM cost and service analysis. The Kruskal-Wallis tests were conducted on differences in average cost between the pre and post periods. Costs during the time that the youth was enrolled in STFC were not included.

<sup>b</sup> Because of the sample selection, i.e., first admission to SIPP, there are no pre-SIPP costs.

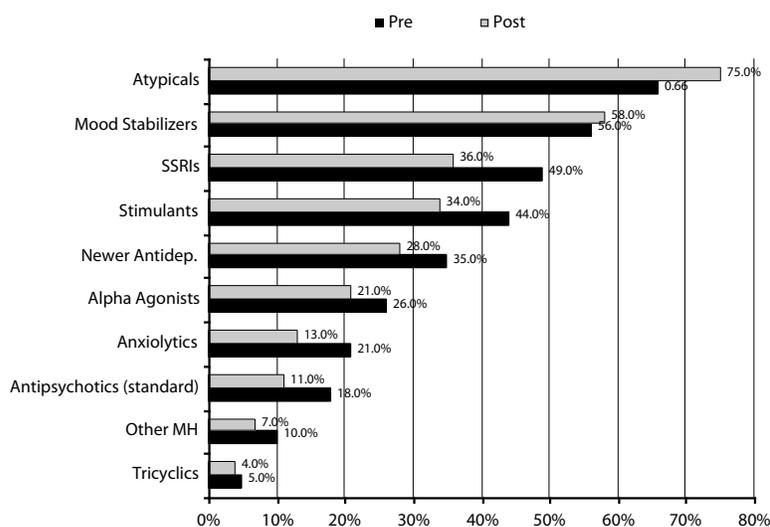
Services in which both the penetration rate and the average cost increased significantly included TGC ( $X^2 = 7.9$ ;  $p < .01$ ), STFC ( $X^2 = 14.6$ ,  $p < .0001$ ), and Other Mental Health Services ( $X^2 = 22.4$ ,  $p < .0001$ ). More youth used these service at a high cost. Services for which the penetration rate and the average cost decreased significantly included community services such as Day Treatment ( $X^2 = 10.4$ ,  $p < .001$ ).and Outpatient Services ( $X^2 = 7.1$ ,  $p < .01$ ). Targeted Case Management showed virtually no change in penetration rate and a decrease in average cost ( $X^2 = 29.6$ ,  $p < .0001$ ), indicating that the length of time youth receive this service is decreasing.

The analysis also examined the continuity of the Targeted Case Managers pre- and post-SIPP. Based on the providers' identification number, 539 individuals provided TCM services in the pre-12 months, and 486 provided TCM services in the post-12 post months, and 243 providers overlapped between the pre- and post-SIPP periods.

### Pharmacy Use and Costs

A few changes were made this year in the pharmacy study. Instead of using only the drugs' brand names, the corresponding generic names were used as well. For the detailed drug information, please see Appendix 3. Overall, medication utilization increased from pre-admission to post-discharge SIPP stay. Average Per-User-Per-Eligible-Month (PUPEM) mental health pharmacy costs were calculated for the youth who had at least one drug prescribed within each category (see Table 56). Atypical Antipsychotic Medications account for more than half of the mental health pharmacy costs in both the pre-admission (54%) and post-discharge periods (60%). More than 65% of the youths in our sample used this type of drug at pre-admission and post-discharge (74%) of the SIPP stay.

**Figure 3**  
**Percentage of youth receiving medications at 12-months pre- and post-SIPP (N = 650)**



**Table 56**  
**Costs by Type of Drug Category at 12-Months Pre- and Post-SIPP**

Drug Types (Total n = 650)	Pre-SIPP			Post-SIPP			Kruskal Wallis Test X <sup>2</sup>	P Value
	N	Average Costs PUPEM	Total Costs	N	Average Costs PUPEM	Total Costs		
Stimulants	283	\$43	\$144,962	218	\$56	\$145,567	12.0298	0.0005
Alpha Agonists (other)	168	\$10	\$19,704	138	\$8	\$14,053	0.0018	0.9663
SSRI Antidepressants	319	\$34	\$129,048	235	\$33	\$92,616	0.5989	0.439
Tricyclic Antidep	35	\$5	\$2,262	26	\$5	\$1,405	1.1647	0.2805
Newer Antidep	228	\$27	\$73,963	184	\$37	\$81,150	4.3617	0.0368
Standard Antipsychotics	119	\$13	\$19,128	70	\$9	\$7,845	2.011	0.1562
Atypical Antipsychotics	428	\$161	\$824,833	486	\$192	\$1,121,454	8.392	0.0038
Anxiolytics	139	\$11	\$17,894	83	\$5	\$4961	11.9258	0.0006
Mood Stabilizers	364	\$65	\$283,896	375	\$87	\$391,661	9.3616	0.0022
Other MH	62	\$4	\$2,735	45	\$4	\$2,310	1.0646	0.3022
All Pharm Services	549	\$230	\$1,518,425	581	\$267	\$1,863,022	5.3875	0.0203

Using the 10 mental health pharmacological categories above, the utilization of multiple drugs pre- and post-SIPP stay was examined. Of the 650 children in our sample, 549 (84%) use at least one category of medication. As shown in Table 57, 48% of all youth used four or more categories of mental health medications in the 12 months pre-admission, as compared with 36% of the youth in the 12 months post-discharge.

**Table 57**  
**Multiple Mental Health Pharmacy Utilization**

MH Pharmacy Category	pre-SIPP		post-SIPP	
	# of SIPP Youth	%	# of SIPP Youth	%
0 medications	101	16%	69	11%
1 category	45	7%	70	11%
2 categories	67	10%	120	18%
3 categories	122	19%	161	25%
4 categories	117	18%	132	20%
5 categories	104	16%	63	10%
6 categories	54	8%	23	4%
7 categories	32	5%	10	2%
8 categories	8	1%	2	0.31%
Total # youth	650		650	

## What are the cross system outcomes of care for youth in SIPP?

### Baker Act Initiations

The number of Baker Act initiations provides an additional point of comparison between the pre-SIPP admission and post-discharge intervals. The number of youth with Baker Act initiations significantly decreased ( $\chi^2 = 52.7078$ ,  $p < .0001$ ) in the twelve months following discharge from SIPP.

**Table 58**  
**Number of Children with Baker Act Initiations on Pre-Post SIPP**  
( $N = 792$ )

# of SIPP youths		Baker Act	
		Yes	No
Period	Pre-12 months	436	356
	Post-12 months	292	500

( $\chi^2 = 52.7078$ ,  $p < .0001$ )

Data were also analyzed by time frames within the pre- and post- periods. During the first 6-month interval prior to SIPP admission, spanning the time period of 6 months prior to SIPP admission until SIPP admission, involuntary commitment proceedings were initiated for 345 out of 792 youth (43.6%) (see Tables 3.14 and 3.15). These 345 youth had a total of 717 Baker Act initiations during this same period. For the second 6-month interval prior to SIPP (which spans the time period from 12 months prior to SIPP admission until 7 months prior to admission), involuntary commitment proceedings were initiated for 228 out of 792 youth (28.8%). This group of youth accumulated 436 Baker Act initiations in the year prior to admission. As would be expected, the number of youth with Baker Act initiations increases nearer the time of SIPP admission. The frequency of initiations also tends to increase. This supports one of the major tenets of a system of care wherein youth should only be admitted to a SIPP when their behavior is severe enough to warrant this highly restrictive level of care.

During the first 6 months following discharge from a SIPP, the number of youth with Baker Act initiations declined compared to pre-SIPP intervals. The number of youth with Baker Act initiations 6 months post-SIPP was 208 out of 792 youth (26.3%). This is a 39% decrease in the number of youth with Baker Act initiations from 6 months pre-SIPP admission to 6 months post-SIPP discharge. Only 21.2% of SIPP youth had Baker Act exams during the second 6 months post-SIPP. There were 389 Baker Act exams in the first 6 months post-SIPP and 312 in the second 6 months post-SIPP. Similar to the pattern across the first 6 months pre- and post-SIPP, the number of Baker Act initiations decreased from pre-SIPP admission to post-SIPP discharge.

**Table 59**  
**Number and Percentage of SIPP Youth with Baker Act Exams**  
**at Two 6-Month Intervals Pre- and Post-SIPP**  
**(N= 792)**

Group of SIPP youth	First 6 months	Second 6 months <sup>2</sup>	Entire 12-month period
Pre-SIPP Admission: Participants with a Baker Act exam	345 (43.6%) <sup>1</sup>	228 (28.8%)	436 <sup>3</sup>
Post-SIPP Discharge: Participants with a Baker Act exam	208 (26.3%)	168 (21.2%)	292
Total number of youths with a Baker Act exam during 12-months pre-admission/post-discharge			515

<sup>1</sup> Percentages were calculated using 792 as the denominator.

<sup>2</sup> Data for the second 6-month interval were calculated from the end of the first 6-month interval to the end of the second 6-month interval.

<sup>3</sup> Percentages were not calculated across timeframes since subjects may be included in counts for each 6-month interval. That is, a subject may have had a Baker Act exam in the first 6 months post-SIPP and in the second 6 months post-SIPP.

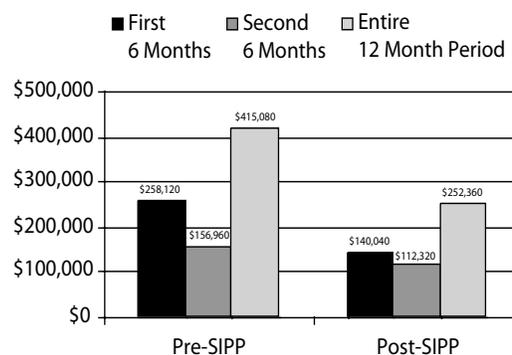
**Table 60**  
**Number of Baker Act Exams for Sample of SIPP Youth**  
**at Two 6-Month Intervals Pre- and Post-SIPP**  
**(N = 792)**

Group of SIPP youth	First 6 months	Second 6 months <sup>2</sup>	Entire 12-month period
Pre-SIPP Admission: Number of Baker Act exams	717	436	1153
Post-SIPP Discharge: Number of Baker Act exams	389	312	701
Total number Baker Act exams during 12-months pre-admission/post-discharge			1854

<sup>1</sup> Data for the second 6-month interval were calculated from the end of the first 6-month interval to the end of the second 6-month interval.

In order to estimate the costs incurred as a result of Baker Act examinations, a cost of \$360 per Baker Act exam was assumed. This rate is the current per-unit Crisis Stabilization Unit rate. While the actual costs of a Baker Act examination may be higher or lower than this estimate, what is interesting is the trend in costs from pre- to post-SIPP. Costs associated with Baker Act exams decrease after SIPP treatment ( $\chi^2 = 52.7078, p < 0.0001$ ), as fewer youth are receiving exams. Overall, the estimated costs of Baker Act exams in the 12 months preceding SIPP treatment are about twice the estimated costs of Baker Act exams in the 12 months following initial discharge from a SIPP.

**Figure 4**  
**Estimated costs for Baker Act examinations pre- and post-SIPP.**



## Department of Juvenile Justice Contacts

Department of Juvenile Justice (DJJ) contacts are determined by selecting the offense reported for any individual youth on a specific date. If the same juvenile was referred for several offenses on the same date, these would be counted together as one DJJ contact. If that juvenile was referred for one or more offenses on another date during the year, it was counted as another DJJ contact. The DJJ events shown in Table 61 and 3.17 are all possible offenses found in the DJJ administrative data for these 792 SIPP youths and are not necessarily criminal correctional events. These data should be interpreted as DJJ contacts or encounters. The DJJ administrative data ended on 1/05/05. Since 19% of the sample was discharged after 1/05/04, the number of offenses for the second 6 months for these youth may not be complete.

The number of youth with Juvenile Justice contacts decreased significantly between the pre- and post- SIPP periods ( $\chi^2 = 12.9013, p = .0003$ ).

**Table 61**  
**Number of Youth with DJJ Events Pre- and Post-SIPP**  
(N = 792)

# of SIPP youths		DJJ	
		Yes	No
Period	Pre-12 months	308	484
	Post-12 months	240	552

( $\chi^2 = 12.9013, p = .0003$ )

**Table 62**  
**Number and Percentage of SIPP Youth with DJJ Offenses at Pre- and Post-SIPP**  
(N = 792)

Group of SIPP youth	First 6 months	Second 6 months <sup>2</sup>	Entire 12-month period
Pre-SIPP Admission: Participants with a DJJ event	240 (30.3%) <sup>1</sup>	185 (23.4%)	308 <sup>3</sup>
Post-SIPP Discharge: Participants with a DJJ event	165 (20.8%)	168 (19.0%)	241
Total number of youths with a DJJ event during 12-months pre-admission/post-discharge			377

1 The total number of youth in the sample is 792. Percentages were calculated using 792 as the denominator.

2 Data for the second 6-month interval were calculated from the end of the first 6-month interval to the end of the second 6-month interval.

3 A subject may be included in counts for each 6-month interval. That is, a subject may have had a DJJ event in the first 6-months and in the second 6-months, but is not duplicated in the count for the entire 12-month period.

## FDLE Contacts

Contact with the Florida Department of Law Enforcement (FDLE) is determined by selecting the arrest record reported for any individual youth on a specific date. If the same juvenile was referred for several arrest records on the same date, these would be counted together as one FDLE contact. If that juvenile was referred for one or more arrest records on another date during the year, it was counted as another FDLE contact. As shown in Tables 3.18 and 3.19, there is a decrease in the number of youth with a FLDE contact post-SIPP as compared to pre-SIPP admission.

**Table 63**  
**Number of Youth with FDLE Encounters Pre- and Post-SIPP**  
**(N = 792)**

# of SIPP youths		FDLE	
		Yes	No
Period	Pre-12 months	229	484
	Post-12 months	191	552

( $\chi^2 = 4.6786, p = 0.0305$ )

**Table 64**  
**Number and Percentage of SIPP Youth with FDLE Arrests at Two 6-Month Intervals Pre- and Post-SIPP**  
**(N = 792)**

Group of SIPP youth	First 6 months	Second 6 months <sup>2</sup>	Entire 12-month period
Pre-SIPP Admission: Participants with a FDLE event	159 (20.1%) <sup>1</sup>	136 (17.2%)	229 <sup>3</sup> (28.9%)
Post-SIPP Discharge: Participants with a FDLE event	117 (14.7%)	121 (15.2%)	191 (24.1%)
Total number of youths with a FDLE event during 12-months pre-admission/post-discharge			401

Note: The FDLE data ended in Feb 2005, so the post 12-months information is complete.

1 The total number of youth in the sample is 792. Percentages were calculated using 792 as the denominator.

2 Data for the second 6-month interval were calculated from the end of the first 6-month interval to the end of the second 6-month interval.

3 A subject may be included in counts for each 6-month interval. That is, a subject may have had an FDLE arrest in the first 6-months and in the second 6-months, but is not duplicated in the count for the entire 12-month period.

## Limitations

The analysis is limited to children who were continuously enrolled in Medicaid for 12 months before and after their first SIPP admission. This criterion may result in many children in the sample who are either in the child welfare system or are SSI-eligible due to serious emotional disturbance.

## What are the outcomes of care for youth in SIPP?

### Methods

The Child Behavior Checklist, Children's Global Assessment Scale and 60-day follow up information are collected from each provider to assess outcomes. Available scores from the youth discharged in 2005 were analyzed using a matched pair group means test of significance to assess the degree of change. At 60-days post discharge, providers have been requested to determine the community status of each discharged child and report if they are still in their placement, in another program, or at another location. Results of this important information are reported statewide and include the overall response rates and a comparison with the 2004 results.

### Children's Global Assessment Scale (C-GAS)

The current evaluation plan of the SIPP includes the Children's Global Assessment Scale (Shaffer et al., 1983), a psychometric scale used for assessing childhood functioning and behavior. The C-GAS is an overall measure with a rating scale of 0-100, with higher scores representing higher levels of overall functioning. Table 65 presents the group mean scores at each administration for all of the children discharged during 2005. The scores from fifty-nine (59) children at 60-days post discharge represented only a 38 percent (38%) response rate among the 156 children that had been discharged for 60 days, and were not included in this analysis.

**Table 65**  
**Children's Global Assessment Scale (C-GAS)**  
**by Administration Among 2005 Discharges**

Descriptives	Admission (n=503)	Discharge (n=494)	Ch.
Mean	37.78	46.56	8.78
Median	40.0	48.0	8.0
Mode	40.0	48.0	8.0
Low Score	25	34	9.0
High Score	60	60	0.0

Between admission and discharge, the group mean scores improved from 37.78 to 46.56, a difference of 8.78 points (+23.2%), indicating an overall improvement in the children's behavior. Admission and discharge scores were tested to determine if the changes were statistically significant with a matched pair sample t-test procedure. The results lead to the conclusion that the discharged children had significantly improved their overall level of functioning while in the SIPP program ( $t = -17.20, p < .001$ ).

### Child Behavior Checklist (CBCL)

The Child Behavior Checklist (Achenbach & Rescorla, 2001) has been used extensively as a measure of children’s overall problem behaviors and symptoms. It includes several syndrome or problem scales for assessing behaviors, this analysis examines the Internalizing, Externalizing and Total Problems Syndromes. The CBCL is administered at admission by their SIPP if they do not have a recent score. At discharge, children receive a post test rating by their SIPP clinician. The third and final administration is at two months after discharge where a parent, or caregiver or other person familiar with the child is requested to complete the form. However, post discharge scores have been difficult to obtain as indicated by the low response rates, and have not been included in the analyses.

Table 66 presents the admission and discharge CBCL T scores for all of the SIPP children discharged in 2004 with complete records for analysis. The CBCL instrument consists of a checklist of behaviors comprising the Internalizing, Externalizing and Total Problems subgroups. According to the authors, the Internalizing syndrome scale consists of problems mainly within the self, while the Externalizing scale comprises problems involving others (op. Cit. Achenbach & Rescorla, 2001). The Total Problems score is a combination of the internalizing and externalizing syndrome scales as well along with several additional items. Higher scores represent more indicators of the numbers of problem behaviors

Scores greater than 63 are considered to be in the clinical range and in need of further evaluation and treatment. Score ranging from 60-63 are in the borderline range.

**Table 66**  
**CBCL Scores by Problem Syndromes by Administration and Paired Samples T-Test**

Descriptives	Admission (n = 245)			Discharge (n = 327)		
	Internalizing	Externalizing	Total	Internalizing	Externalizing	Total
Mean	67.13	76.28	73.82	60.22	67.70	65.02
Median	68	77	74	60	67	65
Mode	71	80	75	58	69	66
SD	9.45	8.99	7.90	8.85	7.90	8.09
Low Score	40	30	30	33	40	35
High Score	92	98	91	97	96	89

The results of the analysis of the pre and post groups’ mean scores of the three CBCL Problem Syndrome scales presented in Table 66 leads to the conclusion that the discharged children had significantly improved their overall level of functioning while in the SIPP program; Internalizing ( $t = 8.50, p < .000$ ); Externalizing ( $t = 10.60, p < .000$ ) and Total Problems ( $t = 11.88, p < .003$ ). However, on average, youth remained in the borderline or clinical ranges on all subscales.

## Number of Days in the Community at 60-Days Post Discharge

Providers have been collecting the total number of days each discharged child has remained within his community or discharge placement at 60-days post discharge. Reports of over 60 days are also included in this analysis. Table 67 indicates that at 60-days after discharge, 68.8% ( $n = 86$ ) had been in placement for at least 60 days, with an average of 53.7 days per child discharged. This was slightly less than the 74.9% reported in 2004.

**Table 67**  
**Number of Days in the Community at 60-Days Post Discharge**

# Days	N (=125)	Percent <sup>1</sup>
Less than 60 days	39	31.2%
60 days	72	57.6%
More than 60 days	14	11.2%
Average # Days	53.7	
Low # Days	0	
High # Days	105	

<sup>1</sup> Percentages have been calculated as the number of children in their community placement at 60-days or later past their discharge date.

## Parent Satisfaction

AHCA has requested that providers administer a customer satisfaction survey for both parents and discharged children regarding their experience with SIPP. These surveys are administered at discharge and again at 60-days after discharge. The follow up surveys are administered primarily through the mail or by way of a child's caseworker or other adult who may know the child best. Because of the low response rates among all the surveys, only the parent satisfaction survey at discharge (46% response rate) will be reported in this analysis.

The Parent/Caregiver Satisfaction Surveys at discharge is a short, two-page questionnaire with eight (8) questions relating to their child's experience at SIPP. Each completed survey is collected by the provider who enters the information into the SIPP database. The following is a summary of the items and responses to each for 2005 and compared to the same item responses for the previous year 2004.

1. How satisfied were they with the pre-admission process of placing their child into this SIPP program? Among the 246 parents responding, 91.8% reported they were either "Very Satisfied" or "Satisfied" (compared to 88.4% the previous year).
2. Once your child was approved for admission, how satisfied were you with the process of getting them into this SIPP program? Of the 242 responses, 92.8% reported they were either "Very Satisfied" or "Satisfied" (compared to 92.3% the previous year).
3. The third item asked the parent to estimate how far they lived from the SIPP provider. At the extremes, 25.2% lived within twenty miles (23.4% in 2004), conversely 6.0% lived over 200 miles away (10.2% in 2004). Most parents (33.6%) indicated that they lived between 21 and 50 miles away (compared to 30.2% in 2004).

4. How would they rate the quality of services their child received during his or her stay? Of 253 responses, 89.7% of the respondents reported they felt the services were either “Excellent” or “Good” (compared to 89.6% in 2004).
5. How satisfied were they with the progress their child has made since admission? 84.9% were either “Very Satisfied” or “Satisfied” (compared to 87.5% in 2004).
6. How would they rate the appropriateness of the treatment their child received, 88.5% reported “Very Appropriate” or “Appropriate” (compared to 91.1% in 2004).
7. Were they satisfied with their child’s current quality of life, 82.6% indicated that they either “Very Satisfied” or “Satisfied” (compared to 84.4% in 2004).
8. The last question asked the parents if the services their child received helped the parent deal more effectively with the child’s problems, 85.2% responded as either “Strongly Agree” or “Agree” (compared to 89.0% in 2004).

## **What are the factors related to length of stay, discharge, and youth who are readmitted to SIPPs within six months?**

### **Methods**

The length of stay for all youth discharged during 2005 was analyzed. This includes an analysis in relation to the Regional Care Coordinator (RCC) position initiated in Spring of 2004. The data were also analyzed for changes and trends during 2005 as compared to the same data from 2004. Key questions to be addressed were:

- Has the length of stay changed in 2005 compared to 2004?
- Has the length of stay changed since the RCC positions were fully staffed?
- Is there a relationship between length of stay and reported outcome measures?

### **Length of Stay**

Length of stay was determined as the number of months between admission and discharge. This question was answered in part by analysis of data from the SIPP Provider Monthly Report Database. As shown in Table 68, average length of stay has been reduced since the inception of the RCC position. For 2005, the first full year that RCCs were employed in Florida, the average length of stay among the discharged children and youth was calculated at 6.75 months. Among the totals, the minimum stay was one week; the longest was over 25 months, with a median of 6.0 months and mode of 4.9 months.

**Table 68**  
**Average Length of Stay (Months) by Provider for 2005 & 2004**

Provider	2005	2004	Ch.
Alternative Family Care	11.2	8.4	2.8
Citrus Health Network 1 (CATS)	9.1	12.8	- 3.7
Citrus Health Network 2 (RITS)	8.5	10.2	- 1.7
Daniel Memorial	4.9	7.5	- 2.6
David Lawrence	6.9	5.7	- 1.2
Devereux Foundation	6.3	8.2	- 1.9
Devereux Foundation (Tallahassee)	1.6	4.3	- 2.7
Jackson Memorial Hospital	6.8	6.1	0.7
Lakeview Center	3.6	4.6	- 1.0
Lifestream	NA	NA	—
Manatee Palms Youth Center	7.6	10.0	- 2.4
PEMHS, Inc.	5.4	5.7	- 0.3
Sandy Pines	6.6	7.6	- 1.0
Tampa Bay Academy	9.8	10.0	- 0.2
Ten Broeck (Jacksonville)	5.5	7.7	- 2.2
Ten Broeck (Ocala)	3.9	NA	—
University Behavioral Center	8.3	8.8	- 0.5
Statewide	6.75	7.94	-1.19

## Discharges

Table 69 presents the reasons for discharge for all of the children discharged in 2005 and compared with 2004. As indicated, the majority for 2004 and 2005 were discharged because they completed their treatment episode (77.2% and 73.4% respectively). Transfers were again the second most frequently occurring reason for discharge, increasing slightly in 2005. Among the “other reasons” reported during 2005 were a change in funding source ( $N = 8$ ), arrested ( $N = 27$ ), and aged-out ( $N = 7$ ).

**Table 69**  
**Reasons for Discharge Statewide 2005 and 2004**

Placement	N	2005 %	2004 %	Ch.
Completed Treatment Episode	409	73.4	77.2	- 3.8
Transferred to another Treatment Facility	42	7.5	6.0	1.5
Left AMA	10	2.7	3.8	- 1.1
Eloped/Runaway	11	2.0	2.1	- 0.1
Discharged to Acute Medical Facility	8	1.4	0.9	0.5
Released to Parents	10	1.8	0.2	1.6
Released to Courts	2	0.4	2.6	- 2.2
Noncompliance with Treatment or Policies	4	0.7	0.9	- 0.2

One of the key questions was to assess if there is a relationship between length of stay and the reported outcome measures. Correlational analyses were performed between each discharged child's length of stay and the difference in their pre- and post- measured C-GAS and CBCL scores. For the C-GAS, despite an average improvement of approximately eight points per child between admission and discharge, the Pearson's correlation statistic was not significant at the .05 level, which can be interpreted as the children's C-GAS score was not statistically related to their length of stay. For the CBCL, again despite an average improvement in scores, the difference did not result in a statistically significant improvement as indicated by the Pearson's correlation procedure.

### Discharge Placement

The most frequently occurring placement among the list in Table 70 has been to the child's parents or other family, during the year with 190 children returning to their biological or adoptive parents after discharge. An additional 43 returned to a relative of their family. A therapeutic foster or group home continues to be the more frequently reported placements each of the past four years, accounting for 24.8% of the discharges in 2005. Other placements reported that did not fit into one of the categories listed include: arrested ( $n = 27$ ), change in funding source ( $n = 8$ ), aged-out ( $n = 7$ ), eloped ( $n = 4$ ), parents removed the child ( $n = 2$ ), moved ( $n = 2$ ) and SIPP to SIPP transfer ( $n = 2$ ).

**Table 70**  
**Discharge Placement by Type and Percent of All Discharges for 2005 & 2004**

Placement	N	2005 (%)	2004 (%)	Ch.
With Biological / Adoptive Parents	190	38.7%	36.7%	- 2.0
Therapeutic Group Home	86	17.5%	13.6%	3.9
With Other Relatives	43	8.8%	7.9%	- 0.9
Therapeutic Foster Home	36	7.3%	8.8%	- 1.5
Group Home	36	7.3%	6.3%	1.0
Residential Group Home	33	6.7%	6.8%	- 0.1
Therapeutic Group Care	27	5.5%	8.6%	- 3.1
Delinquency Commitment Program	15	3.1%	2.3%	0.8
Foster Home	11	2.2%	3.9%	- 1.7
Inpatient Hospitalization	11	2.2%	1.1%	1.1
Supported Housing / Living	2	0.4%	0.2%	0.2
Room Board w/Supervision 1 2 3 4	1	0.2%	0.2%	0.0
Wilderness Commitment Program	0	0.0%	0.2%	- 0.2

### RCC Impact on Length of Stay

Since one of the goals of the RCC position was to reduce the time a youth stayed in a SIPP placement, length of stay (LOS) was computed for 2004 and 2005. In a review of the statewide SIPP providers, 13 of the 15 facilities showed a decrease in length of stay from 2004 to 2005. The statewide average length of stay decreased from 7.94 months in 2004 to 6.75 months in 2005.

These findings about length of stay are re-enforced and amplified by data from the qualitative interviews. According to interviewees, the RCCs play a positive role in reducing SIPP length of stay through their partnerships with treatment teams and the contribution of their clinical expertise, keeping a focus on active and effective treatment and discharge planning, and the facilitation of discharge services. Table 71 shows the perceptions of the RCC’s influence on the client length of stay by role.

**Table 71**  
**Perceptions by Role about the Regional Care Coordinator Influence on Client Length of Stay**

Role	Perceptions on RCC’s Influence on Client Length of Stay
Children’s Mental Health Specialist	Discharge planning; offering clinical expertise
SIPP Discharge Planner	Help determine medical necessity for continued stay
Targeted Case Manager	Have a good partnership with the treatment team
Single Point of Access	Discharge planning; help facilitate discharge placements; ensure effective treatment throughout the stay
Regional Care Coordinator	Pull the treatment team together; active treatment; monthly reports; keep everybody informed

Nine respondents attributed an effect on the length of stay to good communication by the Regional Care Coordinators, through keeping everyone up to date and informed, including the case managers in the community. Some of the effective forms of communication utilized by the RCCs included presentations, monthly reports on every child in care, and involvement in the treatment team, level of care and discharge planning and multidisciplinary team meetings. One of the RCC respondents reflected the communication as “helping insure that everybody is communicating while these kids are in SIPP, all the involved parties, everybody is communicating. I think that helps us influence length of stay because then it becomes fresh in everyone’s mind that the child isn’t just away somewhere in an institution forever, but actually working on goals and objectives and stabilizing behaviors and will need to be stepped down or placed at some point.”

The RCCs’ system knowledge helps the SIPP team clarify and resolve length of stay issues, by providing alternatives for placement and/or community involvement for a youth upon discharge.

The Children’s Mental Health Specialists believe that the RCCs’ role in discharge planning is to reduce length of stay. Four of the six interviewees stated this as a way that RCCs influence length of stay. Regarding factors that reduced the RCCs’ ability to reduce length of stay, one stated there was a lack of bed availability, and another stated, “I think the SIPP provider might be a barrier to reducing lengths of stay, it would come from the SIPP provider more than anybody else and I know some kids there, their discharge would be reset, reset, and reset. That has been a barrier to the RCC to reducing length of stay.” On the other hand, one interviewee questioned the RCCs’ ability to impact length of stay: “RCCs’ just echo whatever the SIPP recommendation is.”

Four of the six Discharge Planners indicated that RCCs influence length of stay “by reminding us that their length of stay may no longer meet medical necessity and this client is probably not going to be continued to be authorized by Medicaid.” When asked about the RCCs’ role in the treatment process, five out of six Discharge Planners indicated that clinical advice was an important factor. The RCC “offers insight and input into other treatment options that are available,” stated one Discharge Planner. They offer perspective and knowledge to the treatment team to help develop goals and encourage discharge planning.

Three of the six Targeted Case Manager interviewees indicated that being part of the treatment team was how RCCs can influence client length of stay. One Targeted Case Manager had a recommendation: “I think if they had more of an open dialogue with all parties involved, get an understanding of what the client’s needs are and actually try to understand the kid’s needs, I think they are looking at it from a business or corporate standpoint, not a needs standpoint.”

The SPOAs indicated that length of stay could be impacted by the RCC in three ways: ensuring quality services, involvement in discharge planning, and remaining involved and proactive. Each of these functions was noted by two interviewees. RCCs help “ensure effective treatment throughout,” “help facilitate discharge placements,” and have “constant involvement in care.”

Five of the six RCCs listed involvement in the treatment team as one of the ways they influence client length of stay. One RCC stated, “The influence I do have is sometimes on the treatment team itself. I say, you know we really need to start moving and looking for discharge placement because I feel that she is going to get a deferral because she is doing well, she has reached her goals and in that type of atmosphere I can persuade the treatment team to set a discharge date.” Three RCCs also indicated that pushing for active treatment along with involvement with the treatment team was effective. “I think we influence length of stay by communicating and by insisting on active treatment and I think that in my mind, that is the best thing I can do for the kids, there are treatment teams every 30 days on each kid and my goal is at those 30 day reviews, that the goals are really looked at in terms of are they working, if not, let’s try something different, if they are working and they met these goals, then developing more goals and that type of thing, so it just doesn’t get to be a rubber stamp kind of thing. I really insist on active treatment and pulling the treatment team together.”

### **Challenges and Opportunities of the RCC Role**

The two most often noted challenges for RCCs to affect length of stay were lack of appropriate step-down placements, and disagreement with the SIPP provider concerning treatment or discharge. Of the 29 respondents, nine stated that if there were more step-down placements for youth exiting SIPPs, there would be more options available to encourage discharge placement more readily. “Many kids get held because there are no placements,” stated one RCC. Secondly, eight of the 29 respondents noted that disagreements with the SIPP provider on the treatment or discharge are a challenge for the RCC. As one respondent noted: “The RCC may feel a child is ready to go, but the psychiatrist may feel the child needs to stay.”

When asked what advice they would give their colleagues to overcome these challenges, many offered advice that could be summarized as maintaining or improving communication (14 responses), and working as a team (13 responses). One Targeted Case Manager stated, “Definitely building relationships, building rapport with the RCCs is always helpful, making sure that everybody is hearing what the other person is saying, making time to be heard and keeping communication open at all times.”

### **Recommendations**

There were only a few respondents who were not well acquainted with the RCC and their role. For the most part, respondents were able to communicate their perceptions of the RCC role after having direct contact with RCCs through their functions in their jobs. Given the turnover that often exists, one recommendation is to develop mechanisms so that new staff in these key system roles are provided with information regarding the role and functions of the Regional Care Coordinators.

RCCs need to maintain good communication with both the treatment teams and staff in the SIPP, and with external system providers, including Targeted Case Managers, community agencies, and the family. Open communication not only keeps everyone aware of the status of the youth, but also encourages active treatment and preparing for discharge or step-down placement.

Regional Care Coordinators and other respondents noted the struggle of having some authority over funding and discharge decisions, but noted that different SIPP provider agencies weighed the RCCs’ opinions differently in the final decision. RCCs and other respondents noted that more influence was garnered at the treatment team level through the development and monitoring of goals, and continual prompting for discharge consideration. Some respondents thought RCCs should have more authority over the discharge decision, and some felt they were already too close to the SIPP and should have a more distanced relationship. A standardized authorization policy should be implemented among all SIPP to ensure consistent discharge authority for the RCC, as authorized by First Health.

Respondents noted a great need for appropriate step-down placements for those youth exiting SIPP. As a Targeted Case Manager explained, “It would be easier if there was an abundance of beds, that is the main problem, you have to wait until somebody gets discharged and you are sitting on your hands while the kid is sitting in a shelter status, Baker Acted every other day or something.” Additional Specialized Therapeutic Foster Care and Therapeutic Group Care availability is recommended.

### **Recidivism**

The Recidivism study focuses on youth who were readmitted to a SIPP within six months after discharge. It includes a description of the demographic and clinical characteristics of these youth and the factors that differentiate these youth from youth who remained out of SIPP care for at least six months following discharge. In addition, the study identifies family, agency, and system-

level processes that lead to early readmissions and provides recommendations for reducing these readmissions.

This subpopulation includes SIPP consumers who experienced more than one episode of SIPP care within a six month timeframe. These consumers are of particular interest and concern due to the highly restrictive and expensive nature of SIPP care compared to other mental health services for children and youth. Therefore, this study sought to better understand the factors that differentiate these youth from youth who remained out of SIPP care for at least six months following discharge. In addition, the study sought to identify the family, agency, and system-level processes that lead to these early readmissions, with the expectation that a comprehensive examination of the phenomenon would be the first step in developing effective interventions to reduce it.

The specific research questions answered by this study are:

- What were the demographic and clinical characteristics of youth who were readmitted to a SIPP facility within six months of discharge?
- In what ways do these youth differ (e.g., age, diagnoses, dependency status) from youth who were not readmitted to a SIPP within six months of discharge?
- What family, agency, and system-level factors led to readmission within six months of discharge?
- What system-level changes are recommended to decrease early SIPP readmissions?

## **Methods**

Due to the complexity of these research questions, a mixed-method analytic approach was employed to answer them. Specifically, data were drawn from four sources (two administrative datasets, medical record reviews, and semi-structured interviews with key stakeholders) and both quantitative and qualitative analytic techniques were utilized. Quantitative data were utilized to describe the demographic and clinical profile of readmitted youth, while qualitative data addressed the why and how questions of the study (e.g., why are some youth readmitted relatively shortly after discharge, how might system change improve the likelihood of sustained success in the community?).

## **Data Sources**

Data from multiple sources informed the Readmission Study. Because each data source had limitations, no single source was appropriate for answering all research questions. However, utilizing multiple data sources in a mixed-method design enabled the analyses to answer a wider range of research questions, address them in more depth, and yield integrated findings. The four data sources used in the Readmission Study were:

- 1) **Medicaid Claims Data.** Medicaid claims data from 2002-2005 were used to examine the predictive value of demographic variables and child welfare involvement on the likelihood of early SIPP readmission. An advantage of using this dataset was the ability to quantitatively compare youth who experienced early SIPP readmission to those who did not. However, these data were collected for a

purpose other than this study and were therefore constrained by the parameters of the intended study (e.g., participants were required to have had 12 months of continuous Medicaid eligibility before and after admission to be included in the sample). Nonetheless, they were used to inform research questions for which other data sources alone could not provide the complete picture.

- 2) **First Health Administrative Data.** Administrative data were provided by First Health Behavioral Services of Florida, Inc. These data were used to examine readmission characteristics of the 47 youth within the State of Florida who were readmitted to a SIPP in 2005 within six months of discharge. The data were collected by First Health's Behavioral Health Manager from clinical summary reports generated by Regional Care Coordinators (RCC). These reports were generated by RCCs and submitted to First Health for all youth who were readmitted to a SIPP within six months of discharge. Permission was granted by the Behavioral Health Manager for the FMHI evaluation team to utilize data from these summary reports.
- 3) **Medical Record Reviews.** Medical record reviews of 20 SIPP readmitted youth served during 2005 were conducted to capture demographic and clinical information about these youth. These records were drawn from a sample of the 47 youth readmitted to SIPPs during 2005. A project-adapted protocol was used to abstract information from these medical records regarding youth diagnoses, medications, treatment planning, mental health service receipt, and living arrangements before and after SIPP discharge.
- 4) **Stakeholder Interviews.** Interviews with 20 key stakeholders were conducted to obtain their perspectives on the frequency, causes, and responses to early SIPP readmission. The stakeholders included Single Point of Access Providers (SPOA), Targeted Case Managers, Regional Care Coordinators, Child Mental Health Specialists, and Discharge Planners. Stakeholders in these positions were selected because each plays a pivotal role in facilitating discharge and transition from SIPP care. Specifically, SPOAs are behavioral health resource experts for the Community Based Care lead agencies who assist in coordinating suitability assessments, SIPP placements, and mental health services following transition from SIPP care; Targeted Case Managers are responsible for coordinating and linking the family to all necessary mental health services following discharge; Regional Care Coordinators guide clinical decisions and are responsible for reducing the length of stay in SIPP care; Children's Mental Health Specialists work for the Substance Abuse Mental Health Office and provide expertise on mental health issues for SIPP youth during care and transition from care; and Discharge Planners ensure that all necessary services have been provided at the SIPP to facilitate a smooth transition from SIPP care.

Interview data were collected using a project-adapted protocol. Questions about SIPP readmissions were included as part of a larger interview protocol addressing youth movement across three types of out-of-home care placements. The interviews were conducted by telephone at times selected for the convenience of the respondents. The complete interview protocol took approximately an hour to administer, with the readmission questions accounting for 15 minutes of that time. Permission was granted by all respondents for the interviews to be recorded on audiotape. The audiotapes were transcribed and coded according to six content areas. Responses coded to each content area were then reviewed separately for the purpose of examining trends across all respondents.

## **Definition of Readmission**

To answer the research questions fully, it is first necessary to define what is meant by a readmission. When a youth is admitted into SIPP care, the date he or she enters the facility is registered as the admission date. If the youth receives continuous care without spending any nights outside of the facility (other than planned overnights with caregivers), the date of discharge is typically registered as the day the youth has completed SIPP care and leaves the facility to reside elsewhere. The Length of Stay (LOS) is the time between the admission date and the discharge date. However, determining the discharge date can become more complicated if the youth is removed from SIPP care through Baker Act procedures or through encounters with law enforcement, receives overnight medical care in another facility, or is transferred from one SIPP to another.

In the first two examples, the SIPP facility may register the departure as a discharge, even though the departure is temporary and not reflective of completion of treatment plan goals. When the youth returns, the re-entry into care may be registered as a new admission. In the case of a youth being transferred to another SIPP facility, the departure is again not reflective of successful achievement of treatment goals, and may in fact reflect failure to make clinical progress at the prior SIPP. In 2005 there were 48 approved transfers of youth from one SIPP facility to another. However, these youth are not the focus of the Readmission Study, nor are youth who were administratively discharged from care for reasons that were clearly understood at the time of discharge to be temporary.

In the current study, a departure from SIPP care is considered a discharge only when 1) the youth had completed SIPP treatment and was discharged upon the recommendation of the treatment team following a required suitability assessment or 2) the youth was withdrawn from SIPP care prematurely against medical advice by his or her parents. In each of these scenarios, the youth was discharged from SIPP care with the expectation that the discharge will be permanent. Therefore, an early readmission of these youth would be considered unplanned, unexpected, and therefore of clinical and research interest.

Although it was not possible to ensure that all readmitted youth reported in this study were “true” readmissions, efforts were made to exclude transferred, Baker Acted, and arrested youth from the analyses. Specifically, in the Medicaid claims dataset, only SIPP readmissions that occurred 30 days after discharge were counted as readmissions. This specification was an attempt to separate SIPP transfers and temporary departures from the readmissions of interest. No such specification was required when using the First Health dataset, since transfers, Baker Acts, and other temporary departures from SIPP care were excluded from the dataset provided to the FMHI evaluation team by First Health.

## **Findings**

Data used in this study were drawn from four sources: two administrative datasets, medical record reviews, and qualitative interviews with key stakeholders. Quantitative findings indicated that demographic variables, such as age, gender, and race, are less influential in differentiating these youth from non-readmitted

youth than system and process variables. Medical records reviews for a sample of readmitted youth indicated that prior to the last readmission, they had typically experienced multiple types of service provision including medication management (100%), inpatient hospitalization (70%), care at residential treatment facilities (55%), outpatient counseling (65%), and in-home counseling (25%). They also had multiple psychiatric problems: 75% had received three or more Axis I diagnoses during the most recent readmission and 80% had been prescribed three or more psychiatric medications during that admission.

Based on data from First Health, in 2005, the most common reasons for youth to be readmitted to SIPP facilities were risk of suicide or other self harm, aggression toward others, and running away. The factors most commonly-cited by stakeholders as contributing to early readmission were 1) problems with the next placement, including unavailability of placement and placements at an inappropriate level of care, 2) insufficient discharge planning, including insufficient preparation of the youth and family for the transition and failure to ensure continuity of services following discharge, and 3) family-level issues, such as lack of family involvement and lack of family follow-up with referrals. Stakeholder suggestions for reducing early readmissions addressed ways to ensure that youth are discharged to appropriate placements, facilitate the transition process for youth, and prepare families to care for discharged youth. In addition, they suggested that the systems serving SIPP youth communicate better with each other to prevent youth from cycling in and out of SIPP care.

**Demographics: Gender, Race and Age**

This research question was answered using Medicaid claims data, First Health administrative data, and data from the medical record reviews. Three data sources were included because each contributes unique pieces to the puzzle that the others sources alone cannot provide. However, it is important to remember that these data sources differ with regard to the type of data collected, the timeframe, and the sampling procedure. Therefore, the findings contain some discrepancies, which will be noted as they arise.

Medicaid claims data for 792 youth served in SIPP facilities during Fiscal Year 2002-2005 were used to quantify the demographic and clinical characteristics of youth who were readmitted to a SIPP facility within six months of discharge. During this time period, 54 youth were identified who had been readmitted to a SIPP within six months of discharge. This number represents 6.82% of all youth admitted to SIPP facilities during that time period. During the second six month period following discharge, this percentage nearly doubles (12.12%), suggesting a potential vulnerability during the first year after transitioning out of SIPP care. Demographic and clinical characteristics of this subpopulation are presented in Table 72.

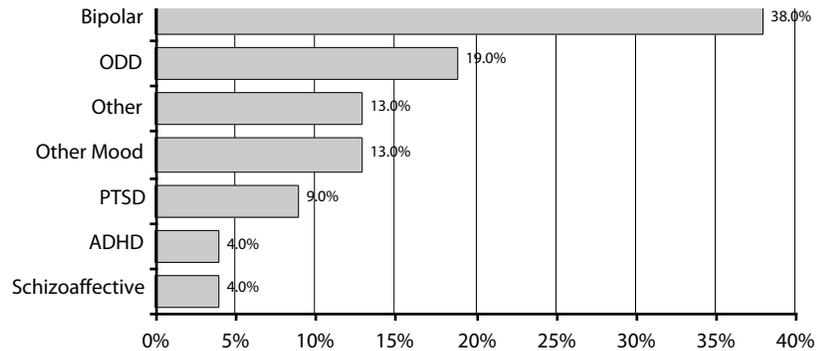
**Table 72**  
**Demographic and Clinical Characteristics of Readmitted Youth**

<b>Average age at first admission</b>	<b>13.38 years (2.4 SD)</b>
Gender	46% female (n = 25)
Ethnicity	46% White (n = 25)
Primary diagnosis at first admission	Mood disorders 44%
Disruptive Behavior Disorders	13%
Other disorders	43%

## Mental Health Diagnoses

Administrative data provided by First Health enabled examination of the primary diagnoses of all readmitted youth served during 2005. The findings are presented in Figure 5.

**Figure 5**  
**Primary Diagnoses of Readmitted Youth**



Consistent with the Medicaid claims data, the First Health data ( $n=47$ ) indicate that mood disorders were the most common primary diagnoses of readmitted youth served in 2005. However, analysis of the First Health data found a significant majority of readmitted females (66%) compared to males, which is notably different from the 46% of females found using Medicaid claims data. This discrepancy is an area for further investigation and clarification for future analyses. The First Health data also indicate a majority of dependent youth (64%) compared to community youth that were readmitted in 2005, which is consistent with the medical records sample (68%) and stakeholder perceptions that dependent youth are readmitted to SIPP's more frequently than community youth.

Medical records reviews indicated that prior to the last readmission, these youth ( $n = 20$ ) had typically experienced multiple types of service provision including medication management (100%), inpatient hospitalization (70%), care at residential treatment facilities (55%), outpatient counseling (65%), and in-home counseling (25%). The youth in this sample appeared to have multiple psychiatric problems: 75% had received three or more Axis I diagnoses during the most recent readmission and 80% had been prescribed three or more psychiatric medications during that admission. During the most recent admission, 45% of youth received a significantly different primary diagnosis than they had had at the previous admission. For the purpose of these analyses, significance was determined by the similarity of symptoms (e.g., a change from Depressive disorder NOS to Mood disorder NOS was not considered significant, but a change from Post-traumatic Stress Disorder to Bipolar disorder was). These high numbers of diagnoses, multiple medications, and changes in diagnoses suggest that recidivist youth express varied and severe symptomatology that professionals may have difficulty assessing and diagnosing accurately.

How do these youth differ (e.g., age, diagnoses, dependency status) from youth who were not readmitted to a SIPP within six months of discharge?

To answer this question, relevant qualitative data obtained through the stakeholder interviews were examined. Most stakeholders (86%) agreed that early readmission to SIPP did occur on occasion but was not a common phenomenon. When asked to describe how readmitted youth differed from youth who were not readmitted, 91% of respondents identified youth or family characteristics and 38% identified larger system characteristics.

### Youth and Family Factors

Of the stakeholders who identified child or family characteristics, 58% cited severity of mental health symptoms and diagnoses as contributing to readmission risk (see Figure 6).

Stakeholder comments included, “The readmitted youth have more chronic and persistent symptoms of mental illness”;

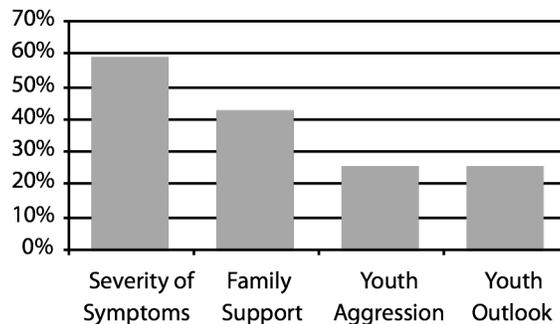
“[After discharge] the behaviors could start up again.” Examples of challenging symptoms included self-mutilation and symptoms of bipolar disorder. Lack of family support was cited by 42% of stakeholders, who discussed frustration with caregivers who do not participate in the child’s treatment and singled out dependent children as being particularly vulnerable in this regard. Youth aggression was cited by 26% of stakeholders and exemplified by the one stakeholder’s summary that “...they are acting out more in the community, they are fighting, they are running away...they are really, really angry and they are hard to manage.”

Twenty six percent of stakeholders cited youth lack of hope and poor attitude, particularly for those who had been in the mental health or dependency systems for several years. Stakeholder comments included, “They have less sense of hope that this will be a final stage, sometimes they think they are going to go from program to program, so they accept this is their lot in life”; “A lot of our kids just lack long-term vision...you hear them say ‘...there’s no place for me, nobody wants me’”; “They become kind of institutionalized and sometimes the SIPP is a better home...and they kind of bond with the workers”; “I think they are kind of hopeless ...and it is all about immediate gratification and who cares about anything else.” Some stakeholders also indicated that the hopeless feelings that may contribute to readmissions are more common in older youth, who may have had multiple failed placements and failed mental health services.

### System Factors

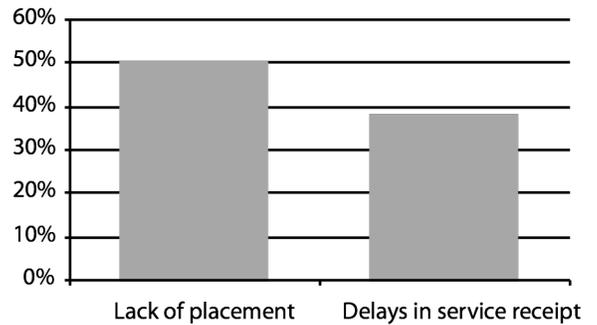
Of the 38% of stakeholders who indicated contributing system factors, 50% cited lack of appropriate placements following SIPP placement due to specialized needs of youth, youth having “burned bridges” in previous placements, or poor

**Figure 6**  
Youth and family factors<sup>12</sup>



discharge planning (see Figure 7). Delays in services receipt, particularly problems obtaining appropriate medications following discharge, were cited by 38% of stakeholders. One stakeholder commented, “We have had unsuccessful discharges [because] medications were not able to be obtained by the guardian after discharge because Medicaid would not authorize them. It is difficult from a SIPP standpoint...we go through all of the Medicaid-friendly drugs first, but sometimes they don’t work and we have to go through a non-preferred formulary and then the child gets ready for discharge and there is no guarantee that those drugs would then be approved.”

**Figure 7**  
System-level factors contributing to early readmission.



When asked to think about a youth who was readmitted to a SIPP in the past year and asked whether the second SIPP admission was the most appropriate placement, 67% agreed that it was, although several clarified that it was the most appropriate available placement. As one stakeholder commented, “We have no other places for them, that is the problem.” Stakeholders cited sexual acting out, borderline traits, and self-mutilation as behaviors that made alternative placements to SIPP difficult to find. Another noted that the SIPP readmission was the most appropriate placement at that time, even though early services might have prevented the readmission: “[By] the time they are getting readmitted, they have already gotten to the point where it is going to be difficult to stabilize them any other way. It is not that it is the best option but...they have already escalated to that level and it is not a point where you could go back and recommend resources, it is a crisis point.”

Thirty nine percent of stakeholders indicated that the Department of Juvenile Justice would have been the appropriate placement for some of the youth they have seen readmitted to SIPP facilities. This view is consistent with stakeholder perceptions that youth aggression is a contributing factor to SIPP readmissions. A few stakeholders also noted that youth with cognitive deficits tend to be readmitted to SIPP’s inappropriately. This may be due in part to lack of available developmental services. One stakeholder noted, “We have had kids on the emergency waiting list [for developmental services] for up to five years...a SIPP placement is the best alternative.” However, another commented that “[These youth] just don’t have the cognitive ability to benefit, they may score within the range to scrape in, but...they are concrete thinkers and they are just not going to benefit from that type of thing.”

In addition to these qualitative interviews, administrative data were used to quantify differences between youth who were readmitted to SIPP facilities within six months of discharge and those who were not. Specifically, analyses

of Medicaid claims data enabled comparisons of age, gender, race, primary diagnoses, and child welfare involvement. To preserve statistical power, the race variable was dichotomized into White or Non-White and the primary diagnosis variable was dummy coded into Mood Disorder, Disruptive Behavior Disorder, or Other. No significant differences were found on any of these variables between youth with early SIPP readmissions and those without.

In summary, the qualitative data indicate that youth who are readmitted to SIPP facilities within six months of discharge differ from those who are not readmitted in several ways. Overall, stakeholders indicated that readmitted youth tend to have multiple challenges, including poor or nonexistent family support, more severe mental health and conduct problems, and histories of multiple failed placements and insufficient mental health service receipt. Possibly due to these challenges, these youth may be more likely to have lost hope and to have developed a negative outlook regarding their futures. The confluence of these challenges hinders the ability to find appropriate community placements for them, which may contribute to early readmission following SIPP discharge. In addition, stakeholders indicated that system-level service and medication delays following discharge heighten the risk of early readmission. The quantitative data indicate that readmitted youth do not differ significantly on demographic variables such as age, race, and gender, or on the type of primary diagnosis of the youth. This is consistent with stakeholder reports that other variables (e.g., family support, a history of unstable placements) appear to affect early readmission risk more than demographic variables.

### **What family, agency, and system-level factors lead to readmission to SIPP facilities within six months of discharge?**

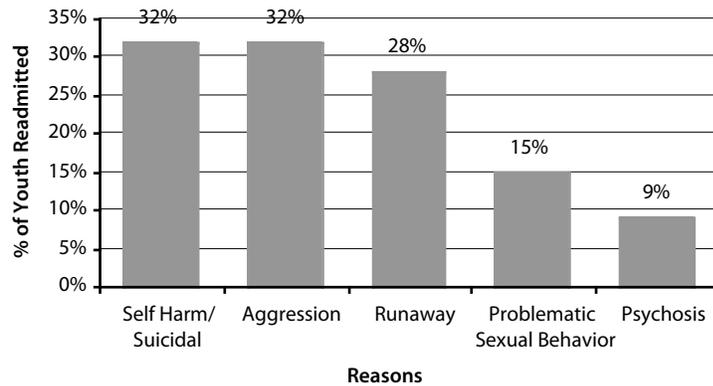
To answer this question, both administrative and qualitative data were examined. Administrative data from First Health provided insight into the reasons for early readmission from the behavioral health system's perspective. Specifically, these data provided the reason or reasons cited by the Regional Care Coordinators for every SIPP readmission (47 in total) during 2005. The majority of reasons fell into one of five categories:

- Self harm or suicidal behaviors, including self mutilation and suicide threats
- Aggression toward others
- Running away from the placement immediately prior to the SIPP admission
- Problematic sexual behaviors, including prostitution, sexual aggression, and sexual activity with multiple partners
- Psychological decompensation / psychosis

Figure 8 presents the percentage of youth who were readmitted to SIPP for each of the five reasons during 2005. Because most youth were readmitted for more than one reason (e.g., the youth engaged in both defiance toward authority figures and risky behaviors), the sum of the bar percentages is over 100. Self harm and aggression toward others were the two most commonly cited reasons for early readmission. These behaviors frequently appeared together, suggesting a

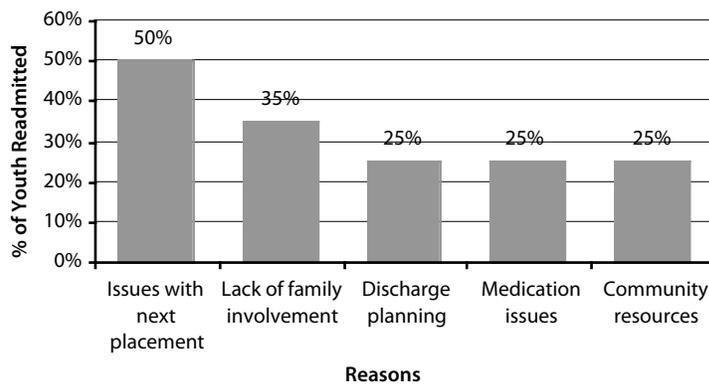
sizable proportion of severely distressed readmitted youth who manifested both self-directed and other-directed aggressive behaviors. Less often cited reasons for readmission included defiance toward authority figures, failure to progress in the current placement, destruction of property, and drug use.

**Figure 8**  
**Reasons for readmission.**



In addition to the First Health administrative data, stakeholder interview data were analyzed to answer the research question. When asked to identify the factors that lead to early readmission, stakeholders noted several contributing youth, family, agency, and system-level factors. The most common responses are presented in Figure 9.

**Figure 9**  
**Factors contributing to early readmission**



The most commonly cited factor associated with early SIPP readmission was problems with the placement immediately following SIPP discharge. One stakeholder noted, “I think definitely the environment they went to. If it was not structured and nurturing and the appropriate services were not completed, then I think that definitely plays a major factor in the patient’s willingness to accept responsibility and move forward.” Placement concerns also overlapped with problems that stakeholder identified in the discharge planning process: “Lack of appropriate placement...and also lack of appropriate discharge planning...not having that placement identified early enough in a timely manner greatly hinders

a successful discharge placement. We are basically throwing the kids out the door [and saying to them] ‘Here is where you are going to stay and goodbye.’” Another commented, “I would say the number one factor is discharge planning and maybe the inappropriate step down, [perhaps] it wasn’t necessarily the level of care they needed. Maybe that level wasn’t available.”

Insufficient family involvement was cited by 35% of stakeholders as a contributing factor in early readmissions. Some stakeholders noted the negative impact of caregiver lack of involvement in therapy and visitation, while others noted the reluctance of guardians to take youth back into their homes following SIPP care: “One of the other factors that we have had in terms of kids going back in, at least with dependent kids, [is] they have somebody that says, ‘I don’t want to see you anymore and you are leaving,’ and somebody else says, ‘I can’t take you anymore, get out of here.’”

Twenty five percent of the stakeholders identified the lack of existing community resources as a factor contributing to early SIPP readmission. Lack of intensive in-home services and “poor outpatient services in the community” were singled out as areas of need. Other stakeholders mentioned the need for more group homes and specialized foster homes for youth to be placed in following SIPP discharge. The issues of medication availability and compliance were also cited. One stakeholder summed up the various areas of need by stating, “I would have to say it would be the lack of aftercare services, lack of medication compliance, certainly services not being as intensive as they need to be...you can’t go from having group 2-3 times a day and therapy 2-3 times a week to once a week...I would imagine those would be things that would really impact the child’s ability to be stable long-term.”

When questioned about the relationship between efforts to reduce SIPP length of stay and early SIPP readmissions, stakeholder responses were mixed. The majority indicated that the two were unrelated, while a significant minority believed that youth were being discharged from SIPPs before they were therapeutically ready (one described it as putting a bandage over the problems). Approximately a quarter of the stakeholders gave qualified responses, such as “sometimes,” “it depends on the youth,” or “yes and no,” suggesting variability in stakeholder perceptions of this issue.

In summary, the First Health data indicated that in 2005, the most common reasons for youth to be readmitted to SIPP facilities were risk of suicide or other self harm, aggression toward others, and running away. Stakeholders indicated that these behaviors could be reduced if certain processes associated with the transition process were changed. Specifically, stakeholders noted that the transition between SIPP care and the next placement plays a pivotal role in determining whether the next placement will be successful and lasting. The importance of the discharge planning process and securing an appropriate next placement for the youth as early in the SIPP stay as possible were highlighted. Stakeholders mentioned that preparing the youth for the transition and involving the family contribute to successful transition out of SIPP care. They also noted

that immediately linking the youth and family to community resources is an important factor in preventing early SIPP readmissions, but acknowledged variability across communities with regard to the quality and availability of these resources.

### **Recommendations**

Stakeholders were asked for their suggestions for system changes to reduce the number of youth who are readmitted to SIPP within six months of discharge. Their recommendations are presented below. It is important to note that these are stakeholder recommendations based on their job experiences and perceptions of system strengths and limitations.

#### **Ensure that the youth is discharged to an appropriate placement. Specifically, stakeholders recommended:**

- Creating more placement options for discharged youth and giving SIPP priority in selecting discharge options
- Ensuring that youth never leave the highest level of care and go into a shelter
- Requiring the providers of the youth's next placement to participate in the youth's therapy and discharge planning

#### **Facilitate the transition process for youth by:**

- Arranging for foster and group home beds to be held for discharged SIPP youth (without financially penalizing the provider), so that youth can begin the transition process earlier, including weekend and day passes at their next placement
- Ensuring that pre-placement visits actually occur, giving all youth sufficient prior notification about transitions
- Finding ways for dependent youth who earn passes and time off to be able to use these rewards even if they have no family. Otherwise, these youth are not offered the same opportunities to experience time outside the SIPP before transitioning to the next placement that community youth have, which may place dependent youth at risk for early SIPP readmission

#### **Prepare families to care for discharged youth by:**

- Requiring monthly on-site face-to-face family therapy sessions with the guardian (this stakeholder noted that therapy over the phone is not sufficient)
- Requiring parents to attend specialized parenting classes before youth are discharged to them
- Taking steps to improve family involvement through provision of family support and mentors
- Developing a position for someone to be the SIPP aftercare specialist to ensure that the family follows up on referrals
- Streamlining the medication consent process to avoid disruption of medication management after discharge.

## **Take steps to improve the systems and agencies that serve SIPP youth.**

### **Specifically, stakeholders recommended:**

- Improving communication among SIPPs, DJJ, and the Substance Abuse Mental Health Office to ensure appropriate SIPP referrals and prevent cycling of youth in and out of SIPP care
- Putting a limit on how many times youth can return to SIPP care (the stakeholder suggested three was a reasonable number). Any more than that and it should be clear that SIPP care is not working for the youth.
- Allowing targeted case managers to be involved and active earlier in the youth's SIPP stay, rather than just 30 days after admission and 30 days before discharge
- Improving communication between the SIPP and the provider that is going to offer the aftercare services
- Forming strong links with the school system because the right school placement can really support a youth returning to the community

While a few of these recommendations are worded more strongly than the FMHI research team would have worded them, the team is nonetheless in complete agreement with the stakeholders' proposed areas for intervention and their suggestions for implementing change in these areas.

### **Conclusions / Implications**

The Readmission Study sought to describe the subpopulation of SIPP consumers who are readmitted to SIPP facilities within six months of discharge. The findings of the study suggest that demographic variables, such as age, gender, and race, play less of a role in differentiating these youth from non-readmitted youth than system and process variables, such as how the youth's transition to the next placement is conducted. Interviews with key stakeholders in positions responsible for SIPP discharge and subsequent placement enabled more in-depth analysis of the processes that lead to early readmission. These stakeholders indicated that there was a chain of events associated with SIPP discharge, transition, and placement into the next living situation and that numerous things could happen during that process to derail successful and lasting transition. Factors at the youth, family, agency, and system levels all have the potential to derail the transition process. However, the most commonly-cited factors contributing to early readmission were 1) problems with the next placement, including unavailability of placement and placements at an inappropriate level of care, 2) insufficient discharge planning, including insufficient preparation of the youth and family for the transition and failure to ensure continuity of services following discharge, and 3) family-level issues, such as lack of family involvement and lack of family follow-up with referrals.

Stakeholder suggestions for reducing early readmissions addressed ways to ensure that youth are discharged to appropriate placements, facilitate the transition process for youth, and prepare families to care for discharged youth. In addition, they suggested that the systems serving SIPP youth communicate better with each other to prevent youth from cycling in and out of SIPP care.

Their suggestions for improvements were consistent with their perspectives on the factors contributing to early readmission and provide direction for system-level changes aimed at reducing early SIPP readmissions. Other future directions suggested by findings from the Readmission Study include a more in-depth examination of 1) the mental health services received by youth who experience early SIPP readmissions compared to those who do not, 2) the interaction of demographic and clinical variables in predicting early SIPP readmission, and 3) the feasibility and implementation of suggested system changes to decrease early readmissions.

# Trajectories of Residential Care

## Background

Previous analyses of Statewide Inpatient Psychiatric Programs (SIPP) and Specialized Therapeutic Foster Care (STFC) have been conducted separately, and Therapeutic Group Care (TGC) has not been examined before. This report integrated analyses across all three out-of-home alternatives in order to look at trajectories of residential care and the degree of complexity and integration of the system of care.

Original analyses of administrative data, as well as information from interviews with children's mental health professionals, provide insight into how youth move within the children's mental health, justice, and child welfare systems from both a system and provider perspective.

## Research Questions

1. How do youth move within the children's mental health system and across other systems that serve youth, such as child welfare and juvenile justice?
2. What are the factors that facilitate or impede appropriate movement across different levels of care?
3. To what extent are the three Medicaid-funded out-of-home programs (SIPP, STFC, TGC) used appropriately within the framework of an array of community supports and services?

## Summary of Findings

In order to examine how youth move among the children's mental health, justice, and child welfare systems, models were developed using administrative data from calendar year 2004, and 29 children's mental health professionals were interviewed about their observations and opinions regarding youth moving among these three systems. The modeling provided insight into where youth move, while the interviews supplied information about how and why youth move.

Information from the interviews seems to suggest that there are factors that facilitate and impede appropriate movement across levels of care, and that four themes can be identified as important consideration when determining the appropriateness of out-of-home placements within the context of community supports and services. System-level factors that facilitate appropriate movement are attending staffing meetings, appropriate completion of paperwork, and coordination of available beds with waiting lists. At the agency level, case manager involvement, use of therapeutic home visits and passes, and communication and teamwork are importance facilitators. In addition, family involvement, youth meeting criteria for placement, and youth completing treatment were all considered facilitators at the youth and family level. System coordination, funding, placement availability, and family support systems were the identified themes from the interviews that were seen as important in determining appropriateness of out-of-home placements.

Modeling of youth movement among the mental health, justice and child welfare systems indicated that youth in SIPP, FDLE/JJ, TGC, STFC, and Community Mental Health placements or statuses generally experience this as a stable arrangement week in and week out, with 25-30% remaining in their setting after 30 weeks have elapsed. For those youth who do move between placements or statuses, about two-thirds move to less restrictive placements or statuses. However, within the one-third that do move to more restrictive placements or statuses, two patterns have emerged that warrant further exploration. In the first pattern it appears that there is a group of youth who are cycling between residential or inpatient mental health placements and FDLE/JJ placements. The second pattern is a group of youth who are in Child Welfare but not receiving mental health services or living with their families of origin and are not receiving mental health services, but who are likely to move directly to SIPPs or general inpatient hospitals when they do access mental health services. Finally, differences in gender seem to affect movement. Females are more likely than males to move to more restrictive settings, especially to SIPPs, general inpatient hospitals and to have FDLE/JJ encounters. Males are more likely to move from receiving no mental health services or getting community services to being placed in a TGC. Males are also more likely to leave FDLE/JJ to go to a TGC, and to leave general inpatient hospitals to go to STFCs as compared to females.

## **How do youth move within the children's mental health system and across other systems that serve youth, such as child welfare and juvenile justice?**

### **Methods**

Two approaches were used to try to understand movement of youth involved in the children's mental health system. The first approach used existing datasets to model youth who were served in SIPP, TGC and STFC in calendar year 2004. These datasets provided large amounts of information to look at patterns of service utilization by youth served in SIPP, TGC, and STFC. The second approach was informed by in-depth interviews with stakeholders knowledgeable about children's mental health services. These respondents provided their perspectives on factors that facilitate or impede appropriate movement of youth through the three programs highlighted in this study.

### **Placements**

Movement of youth through the mental health, child welfare, and juvenile justice systems was modeled. These analyses looked at eight possible locations or statuses in which youth could be found: 1.) Statewide Inpatient Psychiatric Programs (SIPP), 2.) General Hospital Psychiatric Inpatient, 3.) FDLE or Juvenile Justice arrest encounters or JJ placements (both detention and correctional), 4.) Therapeutic Group Care (TGC) placements, 5.) Specialized Therapeutic Foster Care placements (STFC), 6.) Community Mental Health Services, 7.) Non-therapeutic child welfare placements, and 8.) No Mental Health Services. These locations represent five placements and three statuses.

The five placements include SIPP, Inpatient, FDLE/JJ, TGC, and STFC.

The three statuses include Community Mental Health, Non-therapeutic Child Welfare, and No Mental Health Services. The Community Mental Health status includes youth who are living with a biological or surrogate caregiver and are receiving mental health services. The Non-therapeutic Child Welfare status refers to youth living with surrogate caregivers and not receiving mental health services. The No Mental Health Services category refers to youth living in the community, who are Medicaid eligible, and who are not receiving mental health services.

Using the Medicaid Fee-for-Service claim files, youth were selected who had claims for SIPP, TGC, or STFC services during the calendar year 2004. A total of 1,522 youths were identified from the database. Demographic and diagnostic characteristics of these youth included in these analyses can be found in Appendix 5. The location, based upon claim information, of each of the 1522 youth was recorded at the beginning of 2004 in daily segments through the end of the year. Thus, 365 time-series observations were made for each of the 1522 youth. With the possibility of eight places for each day, over a total of 365 days, for 1522 youth, a vast amount of data were available to investigate how youth move and to examine the complexity of the system of care. Markov matrices were used to show the probabilities of youth moving from one place to another.

### **Understanding Markov Models**

Markov models work by taking a series of ‘pictures’, or observations, of where youth are in the system. Each time the ‘picture’ is taken, a note is made about where a youth was when the ‘picture’ was last taken, and where the youth is now in the current ‘picture’. Rows show where youth were and columns show where the youth are. Each cell shows the probability of the youth moving from the row location to the column location. If the note shows that youth are in the same place they were at the last ‘picture’, the ‘picture’ hasn’t changed. For some youth the ‘picture’ changes, while for others it remains the same (see Table 73).

The number “0.95918” shows the probability of a youth “moving from” a SIPP to a SIPP, or actually “still seem to be in” a SIPP, which indicates lack of movement. That is, 96% of youth that are in SIPP placements now were found there the week before. This cell is on the diagonal in the matrix; the diagonal shows the probabilities that youth will be found in the same location they had been located in at the prior observation.

**Table 73**  
**One Week Transition Probability Matrix**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.95918							
Inpatient SA/MH								
FDLE/JJ								
TGC								
STFC								
Community MH								
Child welfare, no MH								
Community, no MH								

The matrix can also show the probabilities that youth in a SIPP (or any row of interest) came from all other possible locations (see Table 74). Thus, one can see from the table excerpt that after the “picture” is taken youth in SIPP are most likely to have been in the SIPP (.95918) the prior week. The next most likely occurrence is that youth in FDLE or JJ (.01624), followed by those in STFC (.00515) were in a SIPP the previous week. All rows in the matrix can be read in this manner.

**Table 74**  
**One Week Transition Probability Matrix**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.95918	0.001332	0.016241	0.00362	0.00515	0.00504	0.002078	0.00737

Because the locations in the matrix are ranked from more restrictive placements on the left to less restrictive placements as one moves to the right, higher probabilities to the right of the diagonal are less restrictive than those to the left of the diagonal (see Table 75). The matrix also provides a picture of the overall movement of youth. Since less restrictive placements lie to the right and above the diagonal of the matrix, these cells can be summed. The sum of these cells indicates that the majority (almost two-thirds) of youth are moving to less restrictive placements or statuses, whereas only one-third are moving to more restrictive placements or statuses.

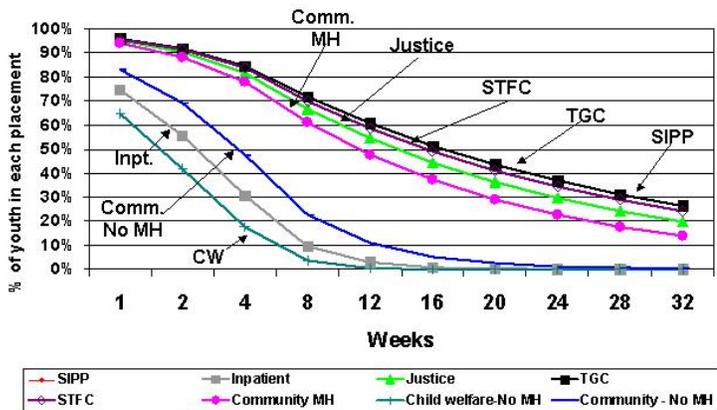
**Table 75**  
**One Week Transition Probability Matrix**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.95918	0.001332	0.016241	0.00362	0.00515	0.00504	0.002078	0.00737
Inpatient SA/MH	0.01493	0.745754	0.06966	0.04447	0.0191	0.03975	0.024675	0.04166
FDLE/JJ	0.01534	0.01034	0.95065	0.01429	0.008	0.00087	0.000131	0.0004
TGC	0.00126	0.004987	0.012904	0.95927	0.00078	0.01746	0.00114	0.0022
STFC	0.00246	0.008205	0.018052	0.00392	0.95664	0.00456	0.001589	0.00457
Community MH	0.00702	0.010042	0.002842	0.03506	0.00425	0.9401	0.000279	0.00052
Child welfare, no MH	0.01461	0.018179	0.005139	0.01403	0.00323	0.00089	0.646758	0.29716
Community, no MH	0.01217	0.013342	0.003261	0.00973	0.00332	0.00184	0.125232	0.83111

**Findings<sup>13</sup>**

As noted earlier, in general, movement is toward less restrictive placements (64%) and for most youth placements are relatively stable. Looking at the stability of all placements and statuses at a one-week interval shows that SIPP (96%), FDLE/JJ (95%), TGC (96%), STFC (96%), and Community Mental Health Services (94%) are the most stable locations to be in from one week to the next. Consistent with findings from other sub-studies of this report concerning length of stay for the three program models, lengths of stay range from an average of five months in TGC to 7.5 months in STFC, although there is a substantial proportion of youth who stay longer. The Markov transition probabilities (Figure 10) show that at six months, nearly 40% are still in their original placements, and at eight months, nearly 30% remain.

**Figure 10**  
**Stability of placements**



While most youth (64%) move to less restrictive placements, there are some groups of youth whose patterns of movement bear closer inspection. Two general patterns of movement have been identified. For each placement or status, Table 76 shows the most likely movements as labeled with a “1,” with “2” indicating the next most likely movements, and so on. Only the two most likely movements are highlighted in the table, although there are 7 possible movements for each location or status.

For the first pattern (see the upper left corner of Table 76), it appears that there is a group of youth who are cycling between residential or inpatient mental health placements and FDLE or JJ placements. FDLE or JJ placements are the first or second most likely placement for youth whose original placement was SIPP, General Hospital Inpatient Psychiatric, TGC or STFC. For those who were in FDLE or JJ placements when the first ‘picture’ was taken, they were most likely found in a SIPP, TGC or General Hospital Inpatient Psychiatric setting, respectively, when the next ‘picture’ was taken a week later. To get an idea of how significant a problem this potentially is, the actual number of youth moving from SIPP and General Hospital Inpatient care to FDLE or JJ placements can be calculated. Six youth (8.6%) in SIPP and General Hospital Inpatient settings are found in FDLE or JJ placements a week after discharge. This translates to 312 youth each year.

**Table 76**  
**One Week Transition Probability Matrix**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP			1					2
Inpatient SA/MH			1	2				
FDLE/JJ	1			2				
TGC			2			1		
STFC		2	1					
Community MH		2		1				
Child welfare, no MH		2						1
Community, no MH		2					1	

The second pattern is a group of youth in either the ‘Child Welfare’ or ‘No Mental Health’ status seen in the lower right corner of Table 76 whose movement is of concern. These are youth who are living with surrogate caregivers, e.g., foster homes, or with their families of origin, but who, despite Medicaid eligibility, are not receiving services. These two locations of youth are cycling first between their families and the dependency system, as indicated by the ‘1s’ in these rows. If they do get mental health services, they are most likely to go to the most restrictive placements, e.g., SIPP and General Hospital Inpatient. Although the percentage of youth receiving no mental health services moving from the community into SIPP and General Hospital Inpatient care is only 2.5% each week, that percentage

translates to 6 youth. Thus, each week, 6 youth in Florida move directly from the community with no services into two of the most restrictive levels of mental health treatment. Again, this means 312 youth in the community receiving no mental health services a year fail to access community mental health services before moving to the most restrictive levels of out-of-home care.

In order to determine whether youth characteristics influenced how youth moved, odds ratios were calculated (see Table 77)<sup>14</sup>. No significant differences were detected by diagnosis. However, differences were detected by gender. Females (see cells labeled (F) in Table 77) were two times more likely than males have been in a SIPP placement prior to an STFC placement, and 5 times more likely to have been in TGC prior to SIPP. Females were more likely than males to move towards more restrictive placements in general. This pattern is especially strong for females who are in child welfare but not receiving mental health services, as well as females receiving mental health services in the community and those in both STFC and TGC. Males (see cells labeled (M) in Table 77) were twice as likely as females to have been in inpatient hospitals prior to STFC and in FDLE/JJ prior to TGC. For those males moving toward more restrictive settings, they were twice as likely as females to be in TGC after having received Community Mental Health services or to have been receiving no mental health services. Findings from the current study provide no information as to why females are more likely than males to move to more restrictive settings than males, nor do the findings explain why when males do move to more restrictive settings, they tend to go to TGC.

**Table 77**  
**Odds Ratios: Female vs. Male**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP					(F) 2.10			
Inpatient SA/MH					(M) 0.51			
FDLE/JJ				(M) 0.46		(F) 3.12	(F) 2.10	(F) 2.60
TGC	(F) 5.00	(F) 4.08	(F) 2.42		(F) 3.39		(F) 2.07	
STFC	(F) 2.72							
Community MH			(F) 2.95	(M) 0.41				
Child welfare, no MH	(F) 2.08		(F) 2.32	(M) 0.59				(F) 2.98
Community, no MH				(M) 0.49				

## What are the factors that facilitate or impede appropriate movement across different levels of care?

This analysis comes from the Regional Care Coordinator sub-study already reported on earlier in this report. To review, the RCC sub-study consisted of qualitative data collection and ethnographic analysis of intensive, audio-taped, semi-structured interviews with five interviewee groups. A total of 29 interviews were completed: six Department of Children and Families’ Children’s Mental Health Specialists (CMH), six SIPP employees who are involved in discharge planning, six Targeted Case Managers (TCMs), five Single Point of Access personnel (SPOAs), and six Regional Care Coordinators (RCCs).

Interviewees were identified in six AHCA areas, Areas 2, 3, 5, 6, 7, and 10. SIPPs in these districts were asked to provide the name of the person involved in discharge planning so that they could be interviewed. This SIPP person was then asked to identify TCMs with whom they worked so evaluation staff could contact them for interviews. SPOAs from each district were identified for interviews, and RCCs were identified through First Health’s district listing. Direct quotes are used throughout to illustrate the interviewees’ perceptions.

Data were collected through telephone interviews. Descriptive, semi-structured, open-ended questions were asked of all participants. All interviews focused on youth who had been placed in SIPPs since January 2005. Interviews were transcribed verbatim. Transcribed interviews were then entered into the computer program QSR NVivo for coding and coordination for data analysis.

The purpose of the interviews was to gain the perspectives of the respondents concerning the appropriate placement of youth into Specialized Therapeutic Foster Care (STFC), Therapeutic Group Care services (TGC), and Statewide Inpatient Psychiatric Programs (SIPP). The semi-structured interview protocol included questions related to the factors that impact these placements at the system, agency, and youth/family level. The most predominant factors of the analysis of the interviews are presented by level (see Table 78), in order to portray any contrasts or comparisons.

**Table 78**  
**Summary of Factors that Facilitate and Impede Appropriate Movement Across Different Levels of Care**

	System	Agency	Child/Family
Facilitate	<ul style="list-style-type: none"> <li>• Staffings,</li> <li>• Completed paperwork,</li> <li>• Coordination of available beds/wait list</li> </ul>	<ul style="list-style-type: none"> <li>• Case Manager involvement;</li> <li>• Home visits and passes for transition</li> <li>• Communication and teamwork</li> </ul>	<ul style="list-style-type: none"> <li>• Caregiver or family involvement,</li> <li>• Child met criteria for placement,</li> <li>• Child completed treatment</li> </ul>
Impede	<ul style="list-style-type: none"> <li>• Lack of funding;</li> <li>• Coordination with Juvenile Justice and Judiciary;</li> <li>• Time to complete paperwork and process;</li> <li>• Gaps in levels of care</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of placement availability-especially STFC &amp; TGC;</li> <li>• Waiting for placement;</li> <li>• Lack of TCM involvement;</li> <li>• Hasty discharge planning</li> </ul>	<ul style="list-style-type: none"> <li>• Child’s reputation with providers,</li> <li>• Lack of family involvement;</li> <li>• Family financial or emotional instability;</li> <li>• Lack of participation in family therapy</li> </ul>

## System Level Factors

Respondents in the five different provider groups were asked to name factors that may make placing youth in out-of-home care placements difficult or easy. Among the system level factors, interviewees noted that the meetings that they attend to discuss placements help keep them informed and able to make decisions about the placement. Staffings, or Multidisciplinary Team meetings, are held regularly to discuss initial placement and/or a movement to another placement. Of the 29 respondents, 15 indicated these meetings are an important part of determining out-of-home placements. Good communication and participation by all parties involved with the placement of the child is vital. One SPOA noted, “We are all equally involved at the point at which we review the case but thereafter everybody’s function and interest in maintaining or setting up that placement becomes different.” While many agencies do participate in these meetings, many interviewees noted that there is not much participation by the Department of Juvenile Justice. In addition, 11 interviewees noted that interaction with the judicial system was a factor that impedes the smooth placement of youth serviced by out-of-home care.

The process and time it takes to complete paperwork needed to staff a youth was often mentioned as both a support and a hindrance. The paperwork for these staffing meetings must be completed prior to the meeting. The application must be completed by the family or case worker and youth history gathered from many sources. Ten interviewees mentioned that if the paperwork was complete and timely, that helped facilitate the process. However, 11 interviewees noted that there is “a lot of paperwork involved.” One CMH Specialist stated, “...we could stand some improvement on just the amount of time it takes to get one [packet] done.”

Funding was another system level factor that was commonly identified as impeding out-of-home placements most often. There were two aspects of funding that were mentioned: funding for ‘community’ youth, i.e., those who do not have Medicaid (9 responses), and funding for additional beds (16 responses). One TCM notes, “Funding is more of an issue if a client needs residential but they don’t have Medicaid and so they are going to need to seek private funding or private paying for a residential program, but I have had no obstacles with clients who have Medicaid.” The respondents who noted additional funding for more beds specifically noted STFC and TGC and funding for the transition time between placements. One RCC stated the need for “funding for the therapeutic foster parents and more of them.”

## Agency Level Factors

The topic of greatest concern among respondents in regards to movement of youth in out-of-home placements was bed availability. Of the 29 respondents, 27 mentioned that as a leading factor that makes placements difficult. The main concern is that since SIPP are running more smoothly in terms of timely discharges, there is a lack of available step-down placements. Respondents noted the need for more therapeutic group homes and specialized therapeutic foster

care. There is a bottleneck at the top when youth are being discharged from SIPP and have no place to go. One RCC noted, “I think there seems to be an adequate number of SIPP beds available but when kids are ready for discharge from SIPP, there are no openings in the group homes because there are kids in the group home that are ready for discharge and there are no openings in therapeutic foster care, so it seems to back up from the bottom end and then that backs it up in the high end.” Many youth are either held at the SIPP beyond the time that they were scheduled for discharge, and begin to decompensate, or are discharged with no placement or sent to shelters. One TCM stated, “I have had six of my last seven kids leave a SIPP with a recommended step down to a TGH and end up going directly to shelters from our highest level of care to the lowest level of care. It is not because of any failure of any individual person or agency, it is because there are literally just not enough beds at certain levels.”

The coordination of youth transitioning in and out of placements is critical. Each district manages coordination with varying degrees of success using wait lists, team meetings, case management, and discharge planning. One discharge planner stated, “...what we try to do is we try to pass along to our district who the discharges are that are coming up and try to fit them in moving the waiting list along a little bit quicker.”

When a placement cannot be made within the home district of the youth, sometimes an out of district placement is made. One discharge planner stated, “You say no to a child that is not appropriate, that child goes out of district and there goes your bed with it, I still can’t figure that out.” Another discharge planner said, “...we do a lot of work with them and then we are not able to keep them in our communities for the continuity of care and so they are moved elsewhere and of course, to them it is like they have gone to another planet.”

### **Youth and Family Level Factors**

Family or caregiver involvement was noted by 18 of the respondents when asked what can help make out-of-home placements go smoothly. In addition, 12 respondents felt that not having family involvement impedes the process. In all, family involvement in the child’s life is very important, not only for the well being of the child, but in the process of treatment. Respondents noted that families who have the ability to complete the paperwork or navigate the system, participate in family therapy, are financially stable, and have the willingness to accept the child back in the home, are all positive factors.

A child’s reputation, however, can sometimes have a negative impact on successfully finding an appropriate placement. If a child has been in several placements, the providers are often aware of the child’s behaviors and history and may refuse the placement. Fourteen respondents found this to be a limiting factor in out-of-home placements. This can either happen when a provider has already worked with a child and won’t take them back or a foster or group home feels the child’s behaviors or diagnosis are too extreme. One SPOA said, “...it is almost like it is a curse that they have this history because people look at the history, they don’t want them, so it becomes very, very difficult for us.”

In addition to those youth who have a “reputation” among providers in the residential or foster care system, interviewees noted that the type of youth that are hardest to place in out-of-home care are those with low IQ who do not qualify for Agency for Persons with Disabilities<sup>15</sup> (17 responses), those with sexualized behaviors (16 responses), and older youth in their teenage years (14 responses). While there are some specialized placement facilities in Florida, respondents still found it difficult to find adequate placements for these youth.

### **To what extent are the three Medicaid-funded out-of-home programs (SIPP, STFC, TGC) used appropriately within the framework of an array of community supports and services?**

Respondents were also asked to provide insights into the appropriate movement of youth within the Children’s Mental Health System. These insights can be organized around four themes, including (a) system coordination, (b) funding, (c) placement availability, and (d) family support systems. These themes are described below, along with perceptions of appropriate use of out-of-home placements. This section will illustrate the complexity and interrelationships of the four identified themes related to the appropriate movement across different levels of care.

#### **System Coordination**

System coordination is one theme found during interviews with all five stakeholder groups. The coordination of preparing a youth for an out-of-home placement involves many professionals and the family. The paperwork and documentation that must be completed by a family member, or a caseworker for dependent youth, is lengthy and time consuming. The multidisciplinary team that reviews the child’s case works well because of prior planning, good communication, and involvement of many agency participants. While some system partners participate in the process regularly, other systems could be involved more, such as schools and DJJ.

The coordination and processing time to place a youth out-of-home is mostly dependent on the availability of beds. The respondents considered communication and teamwork among the agencies and providers as a positive factor. There is a great deal of last minute coordination that is required because of waiting for a placement and juggling to fill beds as soon as they become available. There are many individual situations that can complicate the timing of movement and communication and coordination is the key for many providers.

#### **Funding**

Factors concerning funding include creating more placement options, especially for step-down placements, additional funding for community youth who do not have Medicaid, and funding for transitions. Based on the responses of the five interview groups, there is a great need for additional beds in therapeutic foster care and group homes. While youth are being discharged from the most intensive treatment facilities, there are few options for less intensive treatment

placements. Youth are sometimes faced with moving out of their district or being placed in a shelter without appropriate supports. Another factor is that the dependent and Medicaid-eligible youth have an easier time being placed in SIPP, while a community child's family may not have the insurance or money to afford such a placement. In addition, if a community child's placement is funded by SAMH or another agency, that funding may be decreased or run out. Lastly, there is a need for funding while a child is being transitioned from one placement to another. For example, a foster care family could have the opportunity to become more involved in the treatment and history of a child they will foster given additional funding. One RCC stated, "...when our CBC came on board over a year ago, they altered the fee structure that foster care providers had been used to and they drastically cut therapeutic foster care payments and they had a difficult time and I think they are still feeling effects of that in terms of providers just walking away from that system altogether."

### **Placement Availability**

The theme of availability of placements weaves through every level of the system. Placement factors include the coordination of the wait lists, bed availability, timely and appropriate placements, adequate notice of discharges to enable thorough planning, and gaps in levels of care. Respondents felt that the tracking reports used to maintain a list of who is in care and what beds are available are invaluable. Unfortunately, there is consistently a waiting list in most districts, generally more for step-down placements than SIPPs. Additional beds are needed at the less-restrictive levels such as therapeutic foster care and specialized therapeutic group care. Youth should be placed in an appropriate setting based on their clinical needs, not availability and funding issues. Additional step-down beds would also improve the discharge planning process with the ability to plan for a placement that is available when youth are ready to transition. There were ten respondents who also noted the need for a level of care between the highly restrictive SIPP placement and STGC and STFC. One TCM stated, "...probably 70% of the kids that we deal with coming out of a SIPP are not ready for the TGH level, there is a gap and this is what it comes down to. You can't blame the state, you can't blame financial reimbursement alone, you can't blame that there is just not enough beds or just not enough people that do it, the problem is this major gap. You have a whole entire step in between a SIPP and a TGH, just because somebody is psychiatrically stabilized at a SIPP and ready for discharge does not mean that they are behaviorally stabilized to reside at a TGH level, so there are steps that are missing, they don't exist and ultimately I believe that is the biggest systemic problem."

### **Family and Caregiver Support Systems**

Respondents noted that a strong support system is an important factor when youth are transitioning from out-of-home placement. Eighteen respondents stated that family involvement was an important factor in helping a placement go more smoothly. A family who is involved in the child's life by participating in the treatment process and counseling plays an important role. Strong family support

is characterized as family members who have the ability to navigate the system of care for the best interests the child, and willingness to accept the child home after treatment. Transitional visits and passes often help the child ease into a new living environment or transition back into the home. Twelve respondents noted the importance of transitional visits to potential placements. One Children’s Mental Health Specialist said, “...if a family is involved, they will go to the treatment team and they can let them know what will happen after they are discharged, what services can be put in place, that helps a lot, the parents are well aware and follow through with everything that is asked of them to prepare the child for going home and our facilities will do home passes and when the child goes home for the weekend and stays over and that helps a lot.”

In addition to biological or foster family involvement, the case manager also plays an important role in the child’s support system, especially for dependent youth. Often, the case manager is the dependent child’s only link to the community. Sixteen respondents stated that having a case manager involved was an important factor in the out-of-home placement process. They help not only with the admission process, but also with step-down placements and linking the child to community services.

However, there were also ten respondents who said the case manager could do a better job. Respondents expressed that case managers are overwhelmed with the amount of work they have, which also leads to high turnover. Respondents noted that case managers have more time to work with the youth in the SIPP prior to discharge, but not all of the case managers get involved more than 30 days from discharge. One discharge planner stated, “...certain TCM agencies that we work with are a little bit more able to get involved in the child’s case earlier rather than later and it just seems to be availability of staff and for some agencies this seems to be an issue.”

### **Appropriate and Timely Placements**

The three Medicaid-funded out-of-home programs struggle to provide proper and timely placement for youth who need intensive services. The system has created a bottleneck with youth leaving SIPPs and not enough placements at a less intensive treatment level. Some youth are either discharged to shelter, a placement that does not match their clinical needs, or an out of district placement. The perception of stakeholders is that those youth who have an appropriate step-down placement have much better outcomes. One TCM stated, “Kids that come out of the SIPP and go into a group home and make it back to the community almost never come back to the SIPP program. Kids who come out of the SIPP and go back straight into the community often have a high recidivism rate back into the SIPP bed.”

There is also a gap between the placement levels. The SIPP provides a highly restrictive environment that addresses the youth’s psychiatric needs; sometimes discharges are made to a much less restrictive environment that is not suited to treat the behavioral issues the youth continue to exhibit after leaving the SIPP program.

## Implications and Recommendations

The Markov models findings that youth leaving SIPP, TGC, and STFC are not highly likely to be found receiving community mental health services a week after discharge is supported by data from the administrative analyses reported in Sub-studies 1-3 of this report. These findings are also echoed in the reports of stakeholders concerning the limited number of less restrictive placements available. They are also supported by the reports, in some areas, that TCMs are only involved for the 30 days prior to discharge from a SIPP stay. Understanding that there many workforce issues amongst TCM agencies in some areas, every effort should be made to have TCMs assigned to youth in SIPP and actively involved in planning through their stay. This will ensure that community based aftercare services for youth leaving residential care are in place prior to discharge. This involvement would also enhance family or caregiver's abilities to support the youth when transitioning back to the community.

There is a group of youth in residential and inpatient care that seem to move in and out of correctional locations, unlike their counterparts in community locations. Policies and procedures surrounding reporting behavioral incidents to law enforcement agencies should be reviewed to insure that youth in residential locations are not being unnecessarily involved in the correctional system.

There is a second group of youth living in the community, who are more likely to access SIPP and inpatient psychiatric hospitals than youth in residential locations without passing through increasingly restrictive levels of care. Since all youth in this sample were admitted to SIPP, TGC or STFC at some point in calendar year 2004, this suggests that the youth are not being prevented from 'blowing out' through ongoing monitoring, necessitating a return to restrictive levels of care, or may reflect the inadequate numbers and types of placements appropriate to their needs. Findings from interviews with TGC providers suggest that crisis assessment centers may need to increase their capacity to meet the mental health needs of this group of youth.

The role of the TCM was widely identified as a critical element in the successful discharge and transition of youth ( $n = 16$ ). In two AHCA areas, there were respondents who noted that there was inadequate availability of TCM services. These data are supported by findings from the analyses of administrative claims data in only 78% of youth discharged from TGC, 82% of youth discharged from STFC, and 83% of youth discharged from SIPP received TCM services in the 12-months post-discharge<sup>16</sup>. Targeted case managers were reported by some respondents, across AHCA areas, to have a high turnover rate ( $n = 3$ ) and overwhelming caseloads ( $n = 2$ ) which limit their availability and ability to participate in discharge placement ( $n = 2$ ). Additional resources to expand availability improve efficiency, accountability, and knowledge will help provide coordination of the system throughout the process of out-of-home placements.

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## Appendix 1: ICD-9 Mental Disorders

Organic psychotic disorders (290, 293-294)	
290	Senile and presenile organic psychoses
293	Transient organic psychotic conditions
294	Other chronic organic psychotic conditions
Drug & alcohol use or abuse (291, 2902)	
291	Alcoholic psychoses
292	Drug-induced psychoses
303	Alcohol dependence
304	Drug dependence
305	Nondependent abuse of drugs or alcohol
Schizophrenia & psychoses (295, 297-299)	
295	Schizophrenia
297	Paranoid state
298	Other nonorganic psychoses
Mood / Affective disorders (296, 300.4, 301.13, 311)	
296	Depression (includes Dysthymic d/o - 300.4)
296	Bipolar (includes Cyclothymic d/o - 301.13)
311	Depressive disorder not elsewhere classified
293.83	Mood d/o due to a medical condition
Anxiety disorders (308)	
Panic disorders (300.01, 300.21, 300.22)	
Phobias & OCD (300.29, 300.23, 300.29, 300.3)	
PTSD (309.81)	
Anxiety & stress disorders (308.3, 300.02, 293.89, 300.00)	
Acute reaction to stress (308)	
Adjustment disorders (309)	
Adjustment disorders (309.0, 309.24, 309.28, 309.3, 309.4, 309.9)	
Disruptive behavior disorders (312, 313.81)	
312	Disturbance of conduct not elsewhere classified (Conduct d/o)
312.34	Intermittent explosive disorder
312.30	Impulse control disorder
313.81	Oppositional defiant disorder
Attention deficit disorders (314)	
314	Hyperkinetic syndrome of childhood
Neurotic disorders, personality disorders & other non-psychotic disorders (300-302,306, 307, 310, 316)	
300	Neurotic disorders
301	Personality disorders
302	Sexual deviation
306	Physiologic disorders due to mental factors
307	Special symptoms or syndromes, not elsewhere classified (includes tics, eating & elimination disorders)
310	Nonpsychotic mental disorder due to organic brain damage
316	Psychological factors associated with diseases classified elsewhere
Mental retardation (317-319)	
317	Mild mental retardation
318	Other mental retardation
319	Unspecified mental retardation
Childhood emotional disturbances (except 313.81)	
313	Other emotional disturbances
Developmental delays and autism (299, 315)	
299	Pervasive developmental disorders (includes Autism, Rett's & Asperger's)
Learning disorders (315.00, 315.1, 315.2, 315.9)	
Motor and communication disorders (all other 315s)	

## Appendix 2: Service Category Definitions

### 1. General Hospital – Psychiatric Inpatient

Units and costs for hospital-based services included inpatient days, ancillary inpatient services (e.g., evaluation, management, observation, follow-up consultations, and therapy), hospital-based outpatient services, and laboratory services for mental health services.

### 2. SIPP

A state-wide inpatient psychiatric program to provide specialized psychiatric diagnostic, treatment, and aftercare services to high risk Medicaid beneficiaries under the age 18.

### 3. Specialized Therapeutic Group Care

Specialized therapeutic group care included non-hospital based 24-hour care in a group home for qualified individuals.

### 3. Specialized Therapeutic Foster Care

Specialized therapeutic foster care included non-hospital based 24-hour care in a foster family setting for qualified individuals.

### 4. School based services

School based mental health services such as: individual social work services, group psychological services, treatment of speech, language, voice, communication and or auditory, group certified behavioral analyst services.

### 5. Day treatment

Intense services (partial hospitalization) as defined by the Florida CMH manual.

### 6. Community based care

Includes intensive therapeutic on-site services and home and community-based rehabilitative services.

### 7. Targeted case management (TCM)

General (traditional) and intensive (surrogate family member) management as defined by the Florida Targeted Case Management manual, section 1-2.

### 8. Emergency care

Acute mental health care received in the emergency room.

### 9. Outpatient mental health services

General mental health procedure codes (services) that occurred in the doctor's office.

### 10. Behavioral Health Overlay Services (BHOS)

Those services billed by the Department of Juvenile Justice and DCF Community Based Care and Child Welfare providers to meet the needs for youth in their care.

### 11. Other Mental Health Services

Any services that either have mental health diagnosis- or mental health problem-related pathology, laboratory, electric shock therapy or other mental health criterion other than procedures above.

## Appendix 3: Generic Drug Names

PSRDC / SIPP The following drug names are all generic names

### Stimulants

amphet asp/amphet/d-amphet  
amphetamine  
dexethylphenidate  
methylphenidate  
methamphetamine  
pemoline  
dextroamphetamine  
hydroxyamphetamine ophthalmic  
methylenedioxyamphetamine  
methylenedioxymethamphetamine

### Alpha agonists

apraclonidine ophthalmic  
clonidine  
guanfacine

### SSRI\* antidepressants

citalopram  
escitalopram oxalate  
fluoxetine  
fluvoxamine  
paroxetine  
sertraline

### Tricyclic antidepressants

amitriptyline  
amoxapine  
clomipramine  
desipramine  
doxepin  
imipramine  
maprotiline  
nortriptyline  
protriptyline  
trimipramine

### Newer antidepressants

trazodone  
bupropion  
mirtazapine  
nefazodone  
venlafaxine

### Typical antipsychotics

chlorpromazine  
codeine-promethazine  
codeine/phenylephrine/  
promethazine  
dextromethorphan-promethazine  
droperidol  
fluphenazine  
haloperidol  
loxapine  
promethazine  
mesoridazine  
molindone  
perphenazine  
phenylephrine-promethazine  
pimozide  
prednisolone  
promethazine  
thioridazine  
thiothixene  
trifluoperazine

### Atypical antipsychotics

aripiprazole  
clozapine  
olanzapine  
quetiapine  
risperidone  
ziprasidone

### Anti-anxiety

alprazolam  
benzodiazepine  
buspirone  
chlordiazepoxide  
chlorthalidone  
clorazepate  
diazepam  
estazolam  
flurazepam  
halazepam  
hydroxyzine  
lorazepam  
mecamylamine  
meprobamate  
meprobamate/pentaerythritol  
chloral  
oxazepam  
triazolam

### Mood stabilizers

carbamazepine  
clonazepam  
divalproex sodium  
gabapentin  
lamotrigine  
lithium  
oxcarbazepine  
topiramate  
valproic acid  
valproate sodium

### MAOI inhibitors

isocarboxazid  
phenelzine  
tranylcypromine

### Other mental health drugs

benztropine  
methamphetamine

## Appendix 4: Cost Study

### Methods

We use the continuous enrollment sample employed in the substudies examining costs and treatment patterns for each mode of care. Creation of the sample is carefully described in other sections of this report. To summarize, Medicaid fee-for-service claims data, Baker Act initiation data, Department of Juvenile Justice data (DJJ), and Florida Department of Law Enforcement data (FDLE) from FY 2000-2001 through FY 2004-2005 were used for a sample of children in STFC or TGC. All individuals were required to have 12 months of continuous Medicaid eligibility prior to entering STFC or TGC. Throughout this paper, the time in the TGC or STFC is referred to as the treatment period. The pre-treatment period is the 12 months prior to the treatment period, while the post-treatment period is the 12 months after treatment. Because of the emphasis on Medicaid behavioral health care costs throughout the analysis, individuals from Areas 1 and 6 are excluded.

### Procedures

#### Changes across time

In these analyses, the outcomes used to evaluate the effectiveness of STFC and TGC are Medicaid behavioral health care costs, Baker Act initiations, DJJ initiations, and FDLE initiations. Physical health care costs, while part of the analysis, are not considered to be an outcome of STFC or TGC care. We begin by examining changes in the outcome variables between the pre- and post-treatment periods. Such data have been presented in other sections of this study and are therefore only summarized here.

After review of the descriptive data, analyses are conducted to determine whether children in STFC and TGC have similar costs, diagnoses, and treatment in the pre-treatment period. If children in both modes of care have similar diagnoses and similar treatment patterns prior to entering STFC or TGC, pre-post changes may be used to compare the effects of treatment. However, if children in the two groups are different, examining pre-post changes in outcomes may bias conclusions unless prior period differences are appropriately accounted for.

As noted by Foster (2003), comparing individuals receiving different treatment is difficult and potentially misleading when individuals are not randomly assigned to treatment groups. When individuals are assigned to treatment groups based on their characteristics it is difficult to determine whether outcomes are due to the program or due to the individual characteristics. While studies using randomized assignment are optimal when attempting to study program effects, this study is based on existing programs and administrative data.

The average pre-treatment characteristics of the two groups are compared. As we discuss in the results section below, there are many pre-treatment characteristics that differ between children in STFC and TGC. To account for these differences, one potential solution is to divide the sample based on

the characteristics that differ across modes of care. However, there are thirteen treatment variables from the prior period (SIPP, TGC, STFC, target case management, etc), twelve diagnostic categories, age, race, and gender that may differ across children. Thus, it is not feasible to divide the sample into numerous groups due to the small sample size. Alternatively, standard case-mix adjustment could be used to create comparison groups. Case mix adjustment is typically based on demographics, eligibility, and location. Children in STFC and TGC differ on age, but also differ on diagnoses and prior period treatment. Thus, standard case-mix adjustment will not create comparable groups of children.

Summary measures are developed and utilized that distinguish between TGC and STFC children. Two types of analyses are conducted to obtain summary measures, one based on propensity score matching and a second based on risk adjustment methods.

### **Propensity score matching**

Propensity score matching (PSM) has been used for many years to account for non-random differences between groups of people (Rosenbaum & Rubin, 1983). It is a statistical technique that allows researchers to account for differences in individual characteristics known prior to assignment to a treatment group. The propensity score is the probability that an individual is placed into a given treatment mode, with the probability computed from a logit model where treatment placement is a function of observed characteristics:

$$STFC_i = X_i \cdot \beta + u_i \quad (1)$$

where STFC denotes the child is placed into specialized therapeutic foster care during the treatment period,  $i$  denotes individuals,  $t$  the pre-treatment period, and  $u_i$  the error term. While STFC was selected as the dependent variable for the regression, the conclusions would be the same if TGC was selected as the dependent variable. The right-hand variables ( $X$ ) are measured in the pre-treatment period and include age, race, gender, Medicaid behavioral health costs, Baker Act initiations, DJJ initiations, FDLE initiations, and vectors of treatment and diagnostic variables. Eleven diagnostic categories are included: organic psychotic disorders, drug and alcohol use/abuse, schizophrenia and psychoses, mood and affective disorders, anxiety and stress disorders, adjustment disorders, disruptive behavior disorders, attention deficit disorders, neurotic, personality, and other non-psychotic disorders, childhood emotional disturbances, development delays and autism, and other mental health diagnoses. Thirteen treatment categories are included: general hospital-psychiatric inpatient, day treatment, STFC, community-based case, school-based care, targeted case management, emergency mental health services, outpatient services, other mental health, TGC, BHOS, and SIPP. Diagnoses are mutually exclusive with a hierarchy imposed, while prior period treatment is not mutually exclusive.

A stepwise approach is used such that only variables with p-values less than .2 remain in the final model because they have the greatest explanatory weight in explaining placement. All demographic variables (age, race, gender) are included in the model regardless of significance.

The logit results are used to compute the probability that each individual is placed into STFC. We divide the sample into three groups based on the probability of STFC placement. In this way, we are able to compare the relative treatment effects for individuals with a similar probability of STFC placement; some of whom were in STFC while others were in TGC.

$$\text{Relative\_effect} = [\text{Post} - \text{Pre}]_{\text{TGC}} - [\text{Post-Pre}]_{\text{stfc}} \quad (2)$$

where the relative effect is computed for each outcome variable for each of the three groups. A positive relative effect would indicate that STFC was relatively more effective, while a negative relative effect would indicate that TGC were more effective. A total relative treatment effect is computed for each outcome by taking a weighted average of the difference between the TGC and STFC treatment effects for the three groups. The three observations are weighted by the proportion of people in each group

Typically, PSM analysis sorts the sample into five equally sized groups based on the estimated probabilities. However, dividing the sample into five equally sized groups would lead to small numbers of TGC observations for two of the five groups. For example, dividing the sample into groups of 106 children would result in only 11 and one TGC children in the higher STFC probability categories. Assessing treatment effects based on so few observations would be problematic. However, it should be noted that dividing the sample into unequal groups is somewhat arbitrary.

### **Risk adjustment**

The second measure is based on the risk adjustment literature. Health based risk adjustment is commonly used by public sector payers to compensate managed care plans. The State of Florida is implementing risk adjusted payments as part of Medicaid Reform. Several states (e.g., Maryland, Colorado, Minnesota, and Oregon) already use risk adjustment to pay managed care plans participating in the Medicaid program. The Centers for Medicare & Medicaid Services (CMS) uses risk adjusted rates to pay managed care plans participating in the Medicare Advantage program). Plans enrolling beneficiaries with end stage renal disease (ESRD) are being paid under a risk model specifically designed for ESRD beneficiaries (Levy, Robst, & Ingber, in press). In addition, plans participating in the Medicare prescription drug program are paid risk adjusted capitation rates (Robst, Levy, & Ingber, 2005). Risk adjustment methods have also been used to profile physicians (Thomas, Grazier, & Ward, 2004), for case management (Hu & Root, 2005), and for underwriting premiums (Hu & Lesneski, 2004).

While risk adjustment refers to several different concepts, for the purposes of this paper “risk adjustment ...describes a way of accounting for differences in health status among various study populations” (Greenwald, 2000, p. 1). While there are many available risk adjustment models used to measure health status (e.g., Kronick, Gilmer, Dreyfus, & Lee, 2000; Pope et. al., 2004), none are really appropriate for this analysis. First, our focus is on mental health care for children with diagnosed mental health needs, not overall general health care for the population. Second, most risk models are designed to be payment models

and thus exclude information deemed inappropriate for payment systems (e.g., race and utilization). Thus risk adjustment models are developed specific to this analysis.

The risk model is estimated by ordinary least squares regression where the dependent variable denotes Medicaid behavioral health costs, and the right hand variables include demographics (gender, race, and age), diagnoses, and pre-period treatment. The STFC and TGC samples are pooled when estimating the regression.

Two different risk adjustment models are estimated. The first uses pre-treatment period Medicaid behavioral health costs as the dependent variable. A model using costs and individual characteristics from the same period of time is typically referred to as a concurrent model.

$$\text{Medicaid\_cost}_{it} = X_{it} \cdot \beta + u_{it} \quad (3)$$

where  $i$  denotes individuals,  $t$  the pre-treatment period,  $X$  the demographics, diagnoses, and prior period treatment. The normally distributed error term with mean 0 is denoted by  $u_{it}$ . A stepwise approach is used such that only variables with  $p$ -values less than .2 remain in the final model. All demographic variables (age, race, gender) are included in the model regardless of significance. Once the risk model is estimated, risk scores are computed by predicting expenditures for each individual based on the coefficients and individual characteristics:

$$\text{Risk score}_{it} = X_{it} \cdot \beta \quad (4)$$

standardized to a sample mean of 1.0. Higher risk scores imply the presence of more conditions and characteristics related to higher costs. As such, higher risk scores denote poorer health. This model provides a measure of health prior to treatment group assignment and allows for a simple test of whether health status differs between individuals assigned to STFC and TGC.

Individuals are sorted into three groups based on their risk score. Changes between the pre- and post-treatment periods are examined by comparing individuals with similar risk scores. A total relative treatment effect is computed for each outcome by taking a weighted average of the difference between the TGC and STFC treatment effects for the three groups.

The second model uses Medicaid costs from the post-treatment period and individual characteristics from the pre-treatment period. This type of model is typically referred to as a prospective model. The model predicts costs in a future period based on characteristics in a prior period. It is worth noting that post-treatment diagnoses and utilization are not accounted for in the model since they might be a function of treatment.

$$\text{Medicaid\_cost}_{i,t+1} = X_{it} \cdot \beta + u_{it} \quad (5)$$

where  $t+1$  denotes the post-treatment period. Once again a stepwise approach is utilized requiring  $p$ -values less than .2 to remain in the final model, with the demographic variables (age, race, gender) retained regardless of significance. The risk score is equal to the predicted value from the regression:

$$\text{Risk score}_{i,t+1} = X_{it} \cdot \beta \quad (6)$$

standardized to a mean of 1.0.

The prospective risk scores are used differently than the concurrent risk scores. The treatment group comparison is done in three steps. First, average costs in the post-treatment period are computed for each treatment group. Second, the average prospective risk score is computed for each treatment group. Third, the average costs are divided by the average risk score to compute adjusted costs. The adjusted costs account for pre-treatment health differences between the two treatment groups. As such, the adjusted costs represent estimated expenditures for STFC and TGC if both treated children with risk scores of 1.0.

### Statistical significance

While the differences computed in these analyses may be deemed to be clinically or economically important, these are statistical estimates subject to limitations. In particular, it is important to determine whether these estimates are statistically different from each other. In other words, are the treatment effects of TGC statistically significantly different than the treatment effects of STFC? Simple regressions are estimated to answer the question of whether post-treatment outcomes differ for STFC and TGC once we account for pre-treatment differences. This analysis is slightly different from the computation of relative effects where pre-post comparisons are performed for children with similar propensity scores or risk scores. In this test, regressions are estimated with each of the four outcomes as dependent variables. The independent variables include a categorical variable denoting TGC care and when appropriate the concurrent or prospective risk score:

$$\text{Outcome}_{i,t+1} = \text{TGC}_i \cdot \alpha + \text{Risk score}_i \cdot \delta + \epsilon_i \quad (7)$$

In essence, these regressions use the risk scores to control for prior period differences between children in STFC and TGC.

PSM is basically a weighting mechanism with the weights computed by taking the inverse of the predicted probability that an individual is placed into the treatment type that he or she is actually placed into. As such, additional regressions are estimated that weight each observation by the inverse of the propensity scores to determine whether outcomes differ by treatment mode.

## Results

### Means

A simple comparison of outcomes, diagnoses, and treatment is presented in Table A4-1. These results represent a summary from other portions of this report. Medicaid costs are represented as per-user per-month (PUPM).

**Table A4-1**  
**Descriptive Analysis - Selected Variable Means**

Variable	TGC		STFC	
	Pre-period	Post-period	Pre-period	Post-period
Medicaid costs (PUPM)	\$3,297	\$2,856	\$1,702	\$2,496
Pct. with Baker Act Initiations	42.6%	28.9%	33.7%	22.7%
Pct. with DJJ Initiations	32.1%	29.5%	22.1%	22.5%
Pct. with FDLE Initiations	23.7%	21.6%	15.0%	16.4%
Demographics				
Male	64.74%		57.00%	
White	55.79%		47.14%	
Black	27.89%		35.70%	
Age (mean)	14.2		12.0	
Diagnoses				
Mood and Affective Disorders	38.42%		25.64%	
Disruptive Behavioral Disorders	11.58%		9.66%	
Attention Deficit Disorders	19.47%		27.02%	
Anxiety and Stress Disorders	9.47%		16.57%	
Treatment Use				
SIPP	40.85%		15.42%	
STFC	16.20%		0.00%	
TGC	0.00%		2.57%	

Medicaid behavioral health costs increase between the pre- and post-treatment periods for STFC enrollees. Average costs in the pre-treatment period were \$1,702, while they were \$2,496 in the post-treatment year. On the other hand, costs fell for the TGC enrollees; from \$3,297 in the pre-treatment period to \$2,856 post-treatment.

Baker Act initiations fell for both groups. Thirty-three percent of STFC enrollees were Baker Acted in the pre-treatment period compared to 23% post-treatment, a 30% decline in the number of people with Baker Act initiations. Forty three percent of TGC enrollees were Baker Acted in the pre-treatment period and 29% were Baker Acted post-treatment, a 32% decline in the number of people with Baker Act initiations.

The rate of DJJ and FDLE encounters changed little between the pre- and post-treatment periods for both STGC and TGC enrollees. Among STFC enrollees, 112 people had DJJ initiations in the pre-treatment period while 114 had DJJ initiations post-treatment. Seventy-six STFC enrollees had FDLE initiations in the pre-treatment period compared to 83 post-treatment. Small changes are also seen for TGC enrollees. Sixty-one TGC enrollees had DJJ initiations in the pre-treatment period compared to 56 post-treatment.

Overall, the changes in Baker Act, DJJ, and FDLE initiations are similar for TGC and STFC enrollees. The change in Medicaid costs suggests the TGC are more effective, at least in terms of requiring future mental health care. This conclusion however would be premature.

For such a comparison to be unbiased the two groups of children must be similar prior to treatment. Otherwise differences in outcomes may be due to differences in the people, not the programs. We compared characteristics of children in the pre-treatment period. It is clear that children sent to STFC and TGC are considerably different in the prior period. Medicaid costs, Baker Act initiations, DJJ initiations, and FDLE initiations are all higher for TGC children. TGC children are more likely to be diagnosed with Mood and Affective Disorders (e.g., bipolar), but less likely to be diagnosed with Attention Deficit Disorders or Anxiety and Stress Disorders. Perhaps the most notable disparity is SIPP stays during the prior period. More than 40% of TGC children had a SIPP stay in the prior period compared to 15% of STFC children.

Given the important differences between individuals placed in STFC and TGC, it is clear that placement into a mode of care is not random. Children with more serious mental health care needs tend to be placed into group home care. As such the analysis needs to incorporate statistical techniques to account for the non-random nature of placement. The following section contains the results for propensity score matching.

## Propensity score matching

The first step in PSM is to estimate a logit equation to predict placement into TGC or STFC. The coefficients are reported in Table A4-2 for a model that predicts STFC placement.

**Table A4-2**  
**Logit Results**  
 (Dependent variable: 1 if in STFC, 0 if TGC)

Variable	Coefficient	Standard error	p-value
Intercept	1.1489**	.4134	.0055
Demographics			
Male	-0.4941**	.2465	.0450
White	0.2874	.3083	.3512
Black	0.5796*	.3248	.0744
Age			
0 - 6	14.321	413.5	.9724
7 -10	1.6290**	.4228	.0001
11-14	0.6554**	.2517	.0092
Medicaid cost	-.00001**	.000006	.0235
Diagnoses			
Anxiety and Stress Disorders	.0.8032**	.3500	.0217
Adjustment Disorders	2.1925**	1.040	.0350
FDLE Initiation	-0.2999**	.1231	.0149
Treatment			
General Hospital – Psychiatric Inpatient	0.4598*	.2668	.0848
Day treatment	1.2800**	.4264	.0027
Community Based Care	-0.5349*	.2731	.0502
School-Based Care	-0.8397**	.3366	.0126
SIPP	-0.6889	.4363	.1144

\* p <.05, \*\* p < .10

The model performed well with 80 percent of individuals predicted correctly. In other words, 80 percent of children are predicted to be in their actual treatment group based on their demographic and diagnostic characteristics. Relative to the omitted age group (greater than 14) younger individuals were more likely to be placed in STFC. Individuals who were more costly prior to the treatment period were more likely to go to TGC. Anxiety and Stress Disorders and Adjustment Disorders increase the likelihood of STFC placement, while FDLE initiations increase the likelihood of TGC placement. Having a psychiatric inpatient stay or day treatment in the pre-period increases the likelihood of STFC, while community-based care and school-based care increase the likelihood of TGC placement.

The logit results are used to compute the probability that each individual is placed into STFC. The sample is sorted into three groups based on the probability of STFC placement. Relative treatment effects are computed for individuals with a similar probability of STFC placement, some of whom were actually in STFC

while others were in TGC. These results are in Tables A4-3a, b, and c.

**Table A4-3a**  
**Lower Probability of STFC Placement**  
**(Estimated Probability le .6)**

Variable	In TGC (N = 70)			In STFC (N = 56)			Relative effect (TGC-STFC)
	Pre	Post	% Change	Pre	Post	% Change	
Medicaid cost (PMPM)	\$4,744	\$2,363	-50.19%	\$4,309	\$2,059	-52.22%	2.03%
Baker Act Initiations	35.71%	22.85%	-36.01%	26.79%	30.35%	13.29%	-49.3%
DJJ Initiations	31.42%	35.71%	13.65%	39.29%	37.50%	-4.56%	18.21%
FDLE Initiations	22.85%	27.14%	18.77%	28.57%	28.57%	0%	18.77%

**Table A4-3b**  
**Medium Probability of STFC Placement**  
**(.6 > Estimated Probability le .75)**

Variable	In TGC (N = 36)			In STFC (N = 78)			Relative effect (TGC-STFC)
	Pre	Post	% Change	Pre	Post	% Change	
Medicaid cost (PMPM)	\$2,170	\$2,868	32.17%	\$1,762	\$2,701	53.29%	-21.12%
Baker Act Initiations	36.11%	22.22%	-38.46%	42.31%	20.51%	-51.52%	13.06%
DJJ Initiations	38.89%	19.44%	-50.01%	33.33%	28.21%	-15.36%	-34.65%
FDLE Initiations	22.22%	11.11%	-50.00%	19.23%	21.79%	13.31%	-63.31%

**Table A4-3c**  
**Highest Probability of STFC Placement**  
**(Estimated Probability > .75)**

Variable	In TGC (N = 36)			In STFC (N = 253)			Relative effect (TGC-STFC)
	Pre	Post	% Change	Pre	Post	% Change	
Medicaid cost (PMPM)	\$1,519	\$3,641	139.7%	\$1,079	\$2,504	132.1%	7.6%
Baker Act Initiations	41.67%	44.44%	6.65%	33.99%	23.71%	-30.24%	36.89%
DJJ Initiations	30.560%	36.11%	18.16%	14.22%	16.02%	12.66%	5.5%
FDLE Initiations	25.00%	25.00%	0%	7.91%	9.88%	24.91%	-24.91%

The results highlight another problem with looking at simple changes across time. In general, the results indicate the most expensive individuals prior to treatment tend to be less expensive post-treatment regardless of treatment mode (e.g., the low STFC probability group), while those least expensive in the pre-period become more expensive (e.g., the high STFC probability group). This is a classic regression to the mean problem. Individuals who are very expensive in the pre-period are likely to have SIPP stays. Some will also have SIPP stays in the post-period, but some will not. As a result, average costs decline for the high cost group. On the other hand, some of people who are least expensive in the pre-

treatment period will have SIPP stays in the post-treatment period. As such, the average costs for these individuals are almost certain to increase.

This issue is important because most of the low cost people are in STFC while most of the expensive people are in TGC. The changes in costs are unlikely to represent program effects. If children with SIPP stays in the pre-treatment period had been assigned to STFC, the same pattern would likely occur. Thus, it is crucial to examine individuals as we have done above, by placing them into groups of relatively similar, comparable people.

Propensity score analysis arrives at a total relative treatment effect by averaging group differences in treatment effects. For example, among those least likely to be in foster care there was a 50.19% pre-post decline in Medicaid expenditures among those in TGC and a 52.22% pre-post decline among those in STFC. Thus the relative effect is equal to the difference-in-differences between TGC and STFC effects, which is 1.03 percentage points. The relative effects are computed for each of the three groups (low, medium, and high). The total relative treatment effect is computed by taking a weighted average of the group relative effects, with the weight equal to the proportion of people in each group (23.8% in the low group, 21.5% in the medium group, and 54.6% in the high group). When examining costs, we report differences in dollars and percentages. Dollar changes should be interpreted cautiously since average costs are higher in the pre-period for TGC children, even when comparing to STFC children with similar probabilities of STFC placement. The average relative treatment effects are reported in Table A4-4.

**Table A4-4**  
**Treatment Effects**

Outcome in Post-period	Average Treatment Effect for TGC Relative to STFC Care
Medicaid Costs (% change)	0.08%
Medicaid Costs (\$ change)	\$297
Baker Act Initiations	11.22%
DJJ Initiations	-0.13%
FDLE Initiations	-22.78%

The PSM results differ considerably from the simple pre-post comparisons. The relative effects of TGC and STFC care are virtually identical for Medicaid costs (in %) and DJJ initiations. Individuals receiving STFC care appear to see a greater decline in Baker Act initiations, while those receiving TGC care have a greater decline in FDLE initiations. Medicaid costs (in \$) increase for TGC children relative to STFC children. The different results for Medicaid costs are due to the high probability group. While the percentage change in costs is similar, the absolute cost difference is much greater for TGC (\$2,122 for TGC versus \$1,425 for STFC). Again this suggests that dollar changes should be considered with caution.

## Risk Adjustment

We developed a concurrent risk adjustment model to better account for prior period health as a determinant of placement. As is typical in developing risk adjustment models, initial estimation produced models with negative coefficients. We excluded variables with negative coefficients since it is counterintuitive that a disease would lower costs. We also excluded the race variables since the estimated cost differences were trivial. The final coefficients from the stepwise regression are reported in Table A4-5.

**Table A4-5**  
**OLS Regression Results Concurrent Risk Adjustment Model**  
**(Dependent variable: Medicaid behavioral health costs in pre-treatment period)**

Variable	Coefficient	Standard error	p-value
Intercept	-144	293	.6238
Demographics			
Male	303**	123	.0144
Age, 6-10	154	296	.6022
Age, 11-14	434	277	.1177
Age > 14	300	286	.2939
Diagnoses			
Anxiety Disorders	399**	196	.0427
Attention Disorders	561**	172	.0012
Mood and Affective Disorders	716**	163	<.0001
Other mental health disorders	790**	253	.0018
Treatment			
General Hospital – Psychiatric Inpatient	752**	134	<.0001
STFC	1012**	288	.0005
TGC	534	354	.1323
SIPP	4622**	149	<.0001
R-squared	.7017		
N	527		

\* p <.05, \*\* p <.10

The results indicate that boys are more expensive than girls in this sample. While the coefficients on the age variables are substantial, none approach standard levels of significance. Diagnoses of anxiety disorders, attention disorders, mood and affective disorders, and other mental health disorders are associated with higher Medicaid costs. Treatment mode in the prior period is the most important determinant of pre-period costs. SIPP stays add \$4,622 to Medicaid per-member per-month (PMPM) costs, while general hospital–psychiatric inpatient and STFC (in the prior period) are also associated with higher Medicaid costs. The r-square of .7 is substantial for a cross-sectional model, but is primarily due to the predictive power of SIPP stays.

This model is used to generate predicted expenditures for each individual based on prior period characteristics and treatment. The predicted expenditures are converted to a risk score by standardizing to a sample mean of 1.0. The average risk scores for children in TGC and STFC and reported in Table A4-6.

**Table A4-6**  
**Average Risk Scores for TGC and STFC Treatment Groups**

	Average Risk Score
Total sample	1.00
TGC	1.50
STFC	0.82

The substantial difference in risk scores provides further evidence that children are not randomly assigned to STFC or TGC. Placement depends on several factors including diagnosis and prior year treatment. Thus, assignment is not primarily based on demographic factors such as age. Overall, those requiring greater mental health care are placed into TGC. Once again, we compare the pre- and post-treatment period experiences of youth served by STFC and TGC. In this case we sort the sample based on concurrent risk scores.

**Table A4-7a**  
**Lower Risk Scores (Risk ≤ .6)**

Variable	In TGC (N = 38)			In STFC (N = 188)			Relative effect (TGC-STFC)
	Pre	Post	% Change	Pre	Post	% Change	
Medicaid cost (PMPM)	\$674	\$2,699	300.45%	\$654	\$2,017	208.41%	92.04%
Baker Act Initiations	31.58%	34.21%	8.33%	23.94%	19.68%	-17.79%	26.12%
DJJ Initiations	36.84%	36.84%	0.00%	17.02%	17.55%	3.11%	-3.11%
FDLE Initiations	28.94%	28.94%	0.00%	10.64%	12.77%	20.02%	-20.02%

**Table A4-7b**  
**Medium Risk Scores (.6 > Risk ≤ 1.1)**

Variable	In TGC (N = 34)			In STFC (N = 140)			Relative effect (TGC-STFC)
	Pre	Post	% Change	Pre	Post	% Change	
Medicaid cost (PMPM)	\$1,395	\$2,067	48.17%	\$1,434	\$3,045	112.34%	-64.17%
Baker Act Initiations	41.17%	26.47%	-35.71%	49.29%	24.29%	-50.72%	15.01%
DJJ Initiations	32.35%	14.71%	-54.53%	24.29%	21.43%	-11.77%	-42.76%
FDLE Initiations	29.41%	11.76%	-60.01%	15.00%	11.43%	-23.80%	-36.21

**Table A4-7c**  
**Highest Risk Scores (Risk > 1.1)**

Variable	In TGC (N = 70)			In STFC (N = 59)			Relative effect (TGC-STFC)
	Pre	Post	% Change	Pre	Post	% Change	
Medicaid cost (PMPM)	\$5,597	\$3,242	-42.08%	\$5,559	\$2,608	-53.09%	11.01%
Baker Act Initiations	38.57%	25.71%	-33.34%	33.89%	37.29%	10.03%	-43.37%
DJJ Initiations	31.42%	37.14%	18.20%	30.50%	35.59%	16.69%	1.51%
FDLE Initiations	17.14%	24.29%	41.72%	16.94%	30.51%	80.11%	-38.39%

Since a concurrent risk model is estimated using Medicaid expenditures as the dependent variable, sorting by risk scores is approximate to sorting by Medicaid expenditures. Overall, there are some notable changes between the pre- and post-treatment periods. For example, in the middle risk category Medicaid expenditures increased more for STFC children than TGC children. However, among those with the lowest risk scores, the increase was much greater for individuals in TGC. Such results suggest, but are certainly not conclusive evidence, that certain individuals may be better served by a particular mode of care. Future work needs to examine the question of whether specific care is more effective for certain children.

Again we compute a weighted average relative effect across the three groups.

**Table A4-8**  
**Treatment Effects**

Outcome in Post-period	Average Treatment Effect for TGC Relative to STFC Care
Medicaid Costs (% change)	20.89%
Medicaid Costs (\$ change)	\$119.30
Baker Act Initiations	5.52%
DJJ Initiations	-15.02%
FDLE Initiations	-29.82%

TGC children have greater reductions in DJJ and FDLE initiations, while STFC children have slightly greater declines in Baker Act initiations. Medicaid costs (in both \$ and %) increase more for TGC children than STFC children when accounting for risk scores.

While a concurrent risk model provides valuable information on pre-treatment health, it is also important to determine what future costs are expected to be given pre-treatment characteristics. In this way we can compare actual post-treatment costs with predicted post-treatment costs to determine whether STFC or TGC children have costs that are higher or lower than expected. A prospective risk adjustment model can be used for such purposes.

### **Prospective Risk Adjustment**

A prospective risk model was estimated using post-treatment costs as the dependent variable. Once again, initial estimation produced models with negative coefficients which were excluded from the final specification. The final coefficients from the stepwise regression are reported in Table A4-9.

**Table A4-9**  
**OLS Regression Results Prospective Risk Model**  
**(Dependent Variable: Medicaid Behavioral Health Costs in Post-treatment Period)**

Pre-period variables	Coefficient	Standard error	p-value
Intercept	363	430	.3983
Demographics			
Male	101	255	.6900
White	349	341	.3063
Black	302	348	.3859
Age, 6-10	65	587	.9123
Age, 11-14	849**	383	.0269
Age>14	863**	286	.0027
Medicaid costs	.0115**	.0044	.0099
Diagnoses			
Attention Disorders	481	295	.1037
Schizophrenia and Psychoses	1018	643	.1137
Disruptive Behavioral Disorders	777*	419	.0646
Baker Act Initiations	421**	111	.0002
Treatment			
General Hospital – Psychiatric Inpatient	463	334	.1665
Day treatment	1459**	383	.0002
STFC	1225**	602	.0427
Emergency Mental Health Services	451	283	.1124
R-squared	.1274		
N	527		

\* p <.05, \*\* p < .10

There are several notable differences between the concurrent and prospective risk model results. Older children have much higher post-treatment costs than younger children, while the gender difference is no longer significant in the prospective model. Medicaid costs in the pre-treatment period are associated with higher post-treatment costs. Only diagnosis of disruptive behavioral disorders is significantly related to post-treatment costs. Prior period day treatment and STFC both are associated with higher post-treatment costs, as are Baker Act initiations.

As is typical the r-square with a prospective model is lower than a concurrent model. Many factors associated with costs change between the pre- and post-periods but are not accounted for in this model. Accounting for such changes would be inappropriate since they may result from the mode of care.

Once again, the predicted values are generated for each individual and divided by the mean expenditures for the sample (\$2,579) to standardize the mean to 1.0. The difference between STFC and TGC average prospective risk scores is much smaller than the concurrent risk scores. The average prospective risk score is 1.06 for youth in TGC and 0.97 for those in STFC. Table A4-10 reports the average monthly expenditures post-treatment, the average risk scores, and adjusted

expenditures.

**Table A4-10**  
**Risk Adjusted Differences in Post-treatment Medicaid Costs**

	TGC	STFC	Difference
Medicaid costs (PMPM)	\$2,815	\$2,479	\$336
Prospective risk score	1.064	0.977	0.087
Adjusted Medicaid costs	\$2,646	\$2,537	\$109

The raw difference in post-treatment Medicaid costs is \$336. The per-member per-month (PMPM) Medicaid costs are divided by the prospective risk scores to compute adjusted costs. The adjusted costs are the expected cost if STFC and TGC treated individuals with risk scores of 1.0. Two-thirds of the raw difference can be explained by the prospective risk scores. In other words, much of the difference between STFC and TGC children in post-treatment costs was expected due to the differences in pre-period diagnoses and utilization. A Medicaid cost difference of \$109 is left unexplained by differences in health.

**Are Estimated Differences Important?**

While \$109, \$199, or \$297 in PMPM costs may be deemed important, it must be remembered that these are statistical estimates subject to limitations. We ran several regression specifications to examine whether the outcomes for STFC and TGC are statistically different. Regressions are estimated to examine outcome differences without any adjustments (Model 1), when weighting by the inverse of propensity scores (Model 2), controlling for concurrent risk scores (Model 3), and controlling for prospective risk scores (Model 4). The dependent variables denote post-treatment Medicaid costs (Table A4-11), Baker Act initiations (Table A4-12), DJJ initiations (Table A4-13), and FDLE initiations (Table A4-14).

**Table A4-11**  
**Regression results for Medicaid Costs**  
**(Dependent Variable: Medicaid Behavioral Health Costs in Post-treatment Period)**

	Coefficient	Standard error	p-value
<b>Model #1 No adjustment</b>			
Intercept	2479**	149	<.0001
TGC Treatment	336	287	.2426
R squared	.0026		
<b>Model #2 Weighting by inverse of propensity score</b>			
Intercept	2408**	157	<.0001
TGC Treatment	537**	262	.0410
R Squared	.0079		
<b>Model #3 Controlling for concurrent risk score</b>			
Intercept	2307**	187	<.0001
TGC Treatment	200	303	.5097

	Coefficient	Standard error	p-value
Concurrent risk score	217	139	.1202
R squared	.0074		
Model #4 Controlling for prospective risk score			
Intercept	-22	295	.9380
TGC Treatment	127	267	.6356
Prospective risk score	2568	266	<.0001
R squared	.1527		

\* p <.05, \*\* p <.10

**Table A4-12**  
**Logit Results for Baker Act Initiations**  
**(Dependent Variable: 1 if at least Baker Act Initiation in Post-treatment Period, 0 otherwise)**

Pre-period variables	Coefficient	Standard error	p-value
Model #1 No adjustment			
Intercept	-1.151**	.1190	<.0001
TGC Treatment	.2149	.2213	.3314
-2 Log likelihood	595.6		
Model #2 Weighting by inverse of propensity score			
Intercept	-1.145**	.1008	<.0001
TGC Treatment	.3335*	.1965	.0896
-2 Log likelihood	613.3		
Model #3 Controlling for concurrent risk score			
Intercept	-1.277**	.1506	<.0001
TGC Treatment	.1138	.2346	.6276
Concurrent risk score	.1535	.1059	.1473
-2 Log likelihood	592.4		
Model #4 Controlling for prospective risk score			
Intercept	-2.175**	.2677	<.0001
TGC Treatment	.1291	.2283	.5718
Prospective risk score	1.008**	.2258	<.0001
-2 Log likelihood	579.9		

\* p <.05, \*\* p <.10

**Table A4-13**  
**Logit results for DJJ Initiations**  
**(Dependent Variable: 1 if at least DJJ Initiation in Post-treatment Period, 0 otherwise)**

Pre-period variables	Coefficient	Standard error	p-value
<b>Model #1 No adjustment</b>			
Intercept	-1.283**	.1233	<.0001
TGC Treatment	.5150**	.2185	.0184
-2 Log likelihood	582.3		
<b>Model #2 Weighting by inverse of propensity score</b>			
Intercept	-1.081**	.0992	<.0001
TGC Treatment	.4227**	.1922	.0279
-2 Log likelihood	632.9		
<b>Model #3 Controlling for concurrent risk score</b>			
Intercept	-1.570**	.1584	<.0001
TGC Treatment	.2581	.2346	.2712
Concurrent risk score	.3307**	.1046	.0016
-2 Log likelihood	569.7		
<b>Model #4 Controlling for prospective risk score</b>			
Intercept	-1.097**	.2554	<.0001
TGC Treatment	.5056**	.2208	.0220
Prospective risk score	-.1880	.2332	.4202
-2 Log likelihood	578.8		

\* p <.05, \*\* p < .10

**Table A4-14**  
**Logit Results for FDLE Initiations**  
**(Dependent Variable: 1 if at least FDLE Initiation in Post-treatment Period, 0 otherwise)**

Pre-period variables	Coefficient	Standard error	p-value
<b>Model #1 No adjustment</b>			
Intercept	-1.736**	.1424	<.0001
TGC Treatment	.5009**	.2462	.0419
-2 Log likelihood	478.5		
<b>Model #2 Weighting by inverse of propensity score</b>			
Intercept	-1.553**	.1136	<.0001
TGC Treatment	.4625**	.2152	.0316
-2 Log likelihood	536.6		
<b>Model #3 Controlling for concurrent risk score</b>			
Intercept	-2.069**	.1850	<.0001
TGC Treatment	.1987	.2663	.4555
Concurrent risk score	.3708**	.1162	.0014
-2 Log likelihood	465.4		
<b>Model #4 Controlling for prospective risk score</b>			
Intercept	-1.834**	.2919	<.0001
TGC Treatment	.4570*	.2494	.0669
Prospective risk score	.1036	.2576	.6875
-2 Log likelihood	475.1		

\* p <.05, \*\* p <.10

Regressions that examine the unadjusted differences and weight by the inverse of the propensity score tend to produce significant differences between TGC and STFC outcomes. However, results are generally insignificant when controlling for concurrent or prospective risk scores.

We rely on the model that produces the best fit with the data. We use r-square for the cost regressions given the continuous dependent variable. There are numerous potential test statistics for logit regressions, including the log likelihood test, Akaike Information Criterion, Schwarz Criterion, and proportion predicted correctly. We report the log likelihood statistic, but similar conclusions are reached with other test statistics. For Medicaid costs and Baker Act Initiations, Model #4 (the prospective risk model) produced the best fit, while Model #3 (the concurrent risk model) produced the best fit for DJJ and FDLE Initiations. It is worth noting that the TGC coefficient is statistically insignificant for each of the “best fit” models. As such, we have no statistical support for claiming a difference in treatment effectiveness between TGC and STFC.

## Appendix 5 Markov Models

A Markov process model describes the flow of people or other items of interest between a finite number of states or conditions (Drachman, 1981). This technique, in the form of a Discrete-Time (DT), Discrete-Place (DP) Markov model, was selected to model movement of youth in Medicaid funded out-of-home treatment programs as they navigate the children's mental health system and encounter two other systems, law enforcement and child welfare. This model works by taking a series of 'pictures', or observations, of where youth are in the system. Each time the 'picture' is taken, a note is made about whether a youth is still in the 'state' (e.g., SIPP, STFC, no mental health services) he or she was in when the 'picture' was last taken, or whether the youth has moved on to another 'state'. The probabilities indicate the likelihood a youth moved to a given state when the 'picture' is taken. These probabilities, when reviewed across multiple service or placement types, provide insights into movement through the system.

### Sample

Using the Medicaid Fee-for-Service claim files, youth were selected who had claims for SIPP, TGC, or STFC services during the calendar year 2004. A total of 1,522 youths were identified from the database. This dataset is not one used in previous analyses in this report, so an overview of the youth included in this study is included.

The youth in this study were mostly male (60%) (see Table A5-1). Almost half of the sample was white, 28% were black, and almost 19% of the sample were coded as 'other' for race/ethnicity, as defined by AHCA<sup>17</sup>. The average age was a little over 12 years of age.

**Table A5-1**  
**Demographic Information**

	N	Percent
Gender		
Male	917	60.3
Female	605	39.8
Race/Ethnicity		
White	738	48.5
Black	429	28.2
American Indian	4	0.3
Hispanic	65	4.3
Others	286	18.8
Age (Yrs.)		
Mean	12.4	
SD	3.16	
Median	12.84	

Of youth who received SIPP, TGC or STFC in 2004, 51% (n=786) had SIPP placements, 51% (n = 780) had STFC placements and 17% (n=264) had TGC placements.<sup>18</sup> Table A5-2 shows the combinations of placements youth experienced in 2004. The table shows that about 80% of the youth were in only one type of placement during the year, but that 20% were in multiple levels of placement, and one percent experienced all three levels. Because the placement combinations reported in Table 8.3 are mutually exclusive, the total number of youth is 1522, the sample size.

**Table A5-2**  
**Youth Placement in SIPP, TGC and STFC in 2004**  
**(n = 1,522)**

	# of youths	%
SIPP only	523	34.4%
STFC only	609	40.0%
TGC only	98	6.4%
SIPP & STFC	126	8.3%
SIPP & TGC	121	7.9%
STFC & TGC	29	1.9%
SIPP, STFC & TGC	16	1.1%

Table A5-3 displays the category of primary diagnosis recorded for each youth upon admission to a SIPP, TGC, or STFC in 2004. Although many youth had multiple diagnoses, only the first diagnosis is reported in this table. Mood disorders was the most frequent diagnosis, followed by attention deficit disorders. Anxiety disorders and disruptive behavior disorders were also reported as the main mental health diagnosis for more than 10% of the youth.

**Table A5-3**  
**Diagnosis at Admission**

DSM-IV Primary Diagnosis	# of youths	%
Mood / Affective disorders	437	28.7%
Attention deficit disorders	381	25.0%
Anxiety disorders	236	15.5%
Disruptive behavior disorders	176	11.6%
Schizophrenia & psychoses	81	5.3%
Adjustment disorders	76	4.9%
Drug & alcohol use or abuse disorders	6	0.4%
Childhood emotional disturbances	18	1.2%
Neurotic, personality & non-psychotic disorders	2	0.1%
Developmental delays and autism	2	0.1%
Organic psychotic disorders	2	0.1%
Other Mental Health disorders	105	6.9%

## Procedures

To model youth movement, a relatively simple model was built to represent service categories or contacts with a system. Using four administrative datasets, Medicaid files, Child Welfare, DJJ, and FDLE, eight states were created and ordered in terms of restrictiveness of placement. These states were: 1.) SIPP, 2.) General Hospital Psychiatric Inpatient, 3.) FDLE or Juvenile Justice arrest encounter or JJ placement (including detention and correctional), 4.) Therapeutic Group Care (TGC) placement, 5.) Specialized Therapeutic Foster Care placements (STFC), 6.) Community Mental Health Services, 7.) Non-therapeutic child welfare placements, and 8.) No Mental Health Services. These locations represent five placements and three statuses. The five placements include SIPP, Inpatient, FDLE/JJ, TGC, and STFC. The three statuses include Community Mental Health, Non-therapeutic Child Welfare, and No Mental Health Services. The Community Mental Health status includes youth who are living with a biological or surrogate caregiver and are receiving mental health services. The Non-therapeutic Child Welfare status refers to youth living with surrogate caregivers and who are not receiving mental health services. The No Mental Health Services category refers to youth living in the community and who are not receiving mental health services.

The states are mutually exclusive, so that a youth can only be in one state on any given observation. This fulfills the Discrete-Place (DP) form of the model. Because youth may have multiple service claims on a single day, (e.g. STFC and Outpatient services) or may appear both in Medicaid and have an arrest event on the same day, a hierarchy of placement types was established. This rank order was 1.) SIPP, 2.) General Hospital Inpatient, 3.) FDLE/JJ, 4.) STGH, 5.) STFC, 6.) Community Mental Health, 7.) Child Welfare, and, 8.) Medicaid eligible, no mental health services. If youth had multiple claims on a single date, or appeared in more than one data set on a single date, this ranking determined the placement status ('state') for that date.

In a Discrete-Time (DT) Markov model, used in these analyses, decisions about how often the observations are undertaken effects interpretation about movement. For example, a time period of a day provides precise information about how children and youth move from one state to another, but provides less information about how the system will look for longer periods of time, such as a month or a year. In this model, if one were to look at movements in and out of SIPP using one day as the observation period, little information would be gained because SIPP placements are relatively long placements with an average length of stay of about six months. If one were to observe Baker Acts, on the other hand, one-day observations would be appropriate because many youth undergo a four hour observation, i.e., less than one day, and a one-day observation window would show where youth were after discharge. The use of a longer time period, such as a month, makes the model easier to interpret, but allows for the possibility of some short-term movements to be unobserved. For example, if a month was the time period between 'pictures', inpatient hospital stays (usually a little more than a week in length), and many FDLE or JJ encounters (sometimes

as short as one day), might be completely unobserved. For this report's analyses, seven days was chosen as the length of time between observations, in order to account for placements with relatively short stays and to gain a clearer understanding of movement.

However, before the time interval between observations was chosen, Markov matrices were built using both a single-day and a seven-day interval to test for the most appropriate model for use in these analyses. In order to understand how a matrix can be built, the construction of the single-day model is explained below.

The location, based upon claim information, of each of the 1522 youth was recorded at the beginning of 2004 in daily segments through the end of the year. Thus, 365 time-series observations were made for each of the 1522 youth. Transition probabilities for the intervals were calculated for each possible pair of locations as follows: The number of transitions from state X to state Y after one day elapsed were counted for all youth and divided by the number of transitions from state X to any state. The resulting number is the probability that a youth in state X at a given point in the time will be in location Y one day later. The results of the daily matrix can be found in Table A5-4.

**Table A5-4**  
**Daily Transition Probability Matrix**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.9937	0.00021	0.00319	0.00025	0.0003	0.00049	0.00074	0.00117
Inpatient SA/MH	0.00791	0.866	0.0374	0.00876	0.01988	0.02907	0.01111	0.01988
FDLE/JJ	0.00365	0.00195	0.9941	0.00008	0.00009	0.00005	0.00008	0.00005
TGC	0.00022	0.00156	0.00067	0.9908	0.00074	0.001	0.00126	0.00378
STFC	0.00012	0.00065	0.00018	0.00013	0.9942	0.00175	0.00238	0.00058
Community MH	0.00184	0.00265	0.00037	0.00057	0.00393	0.6935	0.1211	0.176
Child welfare, no MH	0.00146	0.00088	0.00033	0.00092	0.00731	0.1335	0.8555	0.0001
Community, no MH	0.00184	0.00147	0.00034	0.00155	0.00178	0.1401	0.00023	0.8527

Although both the daily and seven-day models were appropriate for the data, the seven-day model was a better approximation of the actual data, and was chosen for the analyses performed. Construction of the daily matrix assured that the time interval chosen was appropriate, and that observations occurred frequently enough to capture the majority of youth movement. When supported by the information contained in the daily matrix, the 7-day matrix allows for interpretations to be made about not only how youth move through the system, but also how long they stay in a given placement. Because it is possible that the start day of a time-segment could be atypical for some reason and may not be a representative day for use in the matrix (for example, a holiday), the matrix was created seven times based on the first seven days of the year, and then the probabilities were averaged over the seven matrixes. The average probability was chosen for the final probability, ensuring that chance did not influence matrix probabilities. The 7-day model was tested three times, with second week, fourth

week, and 30th week data, to see if the real numbers of youth in each placement was not significantly different from that of the 7-day model probabilities. Chi-square analyses did not yield a significant difference. The following section outlines the specifics of the model testing procedures and findings.

### Model Testing

From the data, it was found that  $O_1 = [325, 13, 192, 61, 358, 213, 123, 237]$ . If the model is an accurate description of youth movements, the transition probabilities of  $P_n$ , when applied to the initial numbers of youths  $O_1$ , should yield predicted frequencies that do not significantly vary with the real numbers of youths in each status at  $n$ th week.

**Table A5-5**  
**n-step Probability Transition Matrix (2nd Week, P<sup>2</sup>)**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.9244	0.0118	0.0381	0.0040	0.0047	0.0067	0.0082	0.0132
Inpatient SA/MH	0.0688	0.1130	0.2258	0.0000	0.1398	0.1683	0.0847	0.1525
FDLE/JJ	0.0432	0.0118	0.9367	0.0471	0.0022	0.0017	0.0014	0.0018
TGC	0.0043	0.0091	0.0103	0.9255	0.0114	0.0113	0.0121	0.0161
STFC	0.0022	0.0045	0.0031	0.0018	0.9414	0.0163	0.0247	0.0059
Community MH	0.0185	0.0135	0.0063	0.0067	0.0448	0.5439	0.1530	0.2133
Child welfare, no MH	0.0160	0.0077	0.0053	0.0087	0.0641	0.1899	0.6898	0.0186
Community, no MH	0.0237	0.0127	0.0006	0.0068	0.0217	0.2008	0.0159	0.7122

The expected SIPP numbers at the second week are:  $325 \cdot 0.9244 + 13 \cdot 0.0688 + 192 \cdot 0.0432 + 61 \cdot 0.0043 + 358 \cdot 0.0022 + 213 \cdot 0.0185 + 123 \cdot 0.0160 + 237 \cdot 0.0237 = 322$ . Therefore, if the model is accurate, we should expect to find 322 youths among the 325 youths in the SIPP at the second week in 2004. The actual number is 324. Using the same formula, the expected numbers and the real numbers are shown in table A5-6 below:

**Table A5-6**  
**Comparison of expected and actual (2nd week, P<sup>2</sup>)**

At 2nd week	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
expected numbers	322	14	201	64	365	199	135	247
actual numbers	324	21	194	65	360	210	121	227

A chi-square test of comparing the real and expected numbers shows no significant difference, ( $X^2 = 7.3071, p = 0.3976$ ), and it indicates the results predicted by the model are not significantly different to the real situation. Based on the model, if there are 325 youths in SIPP at one day, we can say 322 of them will be found in SIPP after one week. In order to check how many of those 325 youth have continuously stayed in the SIPP for the whole week, based on the daily matrix, we got the following numbers:

**Table A5-7**  
**Comparison of predictive power for daily versus weekly matrices**

# of Youth	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
by P <sup>2</sup> weekly matrix	322	14	201	64	365	199	135	247
8 power of the probability of daily matrix	309	4	183	57	332	11	35	66

For SIPP, FDLE/JJ, TGC and STFC, the numbers in these two sets are close, which means for the people who were in one of those placements or statuses, 7 days later (the 8th day), most of them will stay in the same status. On the other hand, for those youths who were in Community MH, Child Welfare, or No mental health services statuses, after 7 days, the status of most of them will change. For example, if there are 213 youths in the “Comm MH” status, only 11 of them will continuously keep this status for the whole 7 days. This procedure was repeated with fourth week and 30th week data, again with no significant differences discovered between predicted and actual numbers.

**Table A5-8**  
**n-step Probability Transition Matrix (4th Week, P<sup>4</sup>)**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.8568	0.0026	0.0716	0.0077	0.0101	0.0144	0.01321	0.0237
Inpatient SA/MH	0.0897	0.0215	0.2430	0.0527	0.1650	0.1609	0.0101	0.1662
FDLE/JJ	0.0812	0.0126	0.8817	0.0030	0.0063	0.0055	0.0039	0.0058
TGC	0.0097	0.0101	0.0217	0.8573	0.0241	0.0239	0.0226	0.0305
STFC	0.0054	0.0053	0.0073	0.0039	0.8894	0.0309	0.0432	0.0146
Community MH	0.0359	0.0132	0.0155	0.0134	0.0829	0.3709	0.1946	0.2735
Child welfare, no MH	0.0307	0.009	0.0125	0.0161	0.1147	0.2405	0.5076	0.0685
Community, no MH	0.0439	0.13620	0.0154	0.0134	0.0479	0.2580	0.0549	0.5529

The expected numbers and the real numbers are shown in the table below:

**Table A5-9**  
**Comparison of expected and actual (4th week, P<sup>4</sup>)**

At 2nd week	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
expected numbers	320	13	208	65	369	190	140	216
actual numbers	343	20	198	64	369	195	108	225

$\chi^2 = 12.9807, p = 0.0726$

**Table A5-10**  
**n-step Probability Transition Matrix (30 Weeks, P30)**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.4108	0.0074	0.2511	0.0363	0.0983	0.0663	0.0536	0.0761
Inpatient SA/MH	0.1822	0.0090	0.2069	0.0556	0.2398	0.1059	0.0891	0.1117
FDLE/JJ	0.2797	0.0094	0.4809	0.0251	0.0718	0.0452	0.0365	0.0512
TGC	0.0956	0.0097	0.1138	0.3353	0.1673	0.0952	0.0796	0.1036
STFC	0.0718	0.0078	0.0642	0.0314	0.5193	0.1059	0.1026	0.0972
Community MH	0.1420	0.0091	0.1041	0.0512	0.2779	0.1437	0.1190	0.1529
Child welfare, no MH	0.1320	0.0090	0.0975	0.0516	0.3028	0.1407	0.1198	0.1466
Community, no MH	0.1514	0.0092	0.1089	0.0519	0.2549	0.1464	0.1186	0.1587

The expected numbers and the real numbers are shown in the table below:

**Table A5-11**  
**Comparison of actual and expected (30 Weeks, P30)**

At 2nd week	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
expected numbers	303	10	267	79	402	158	134	165
actual numbers	298	14	266	73	409	155	124	183

$\chi^2 = 4.3236, p = 0.7418$

## Results

The matrix of one week transition probabilities is presented in Table A5-12. The largest probability in each row lies on the main diagonal and are highlighted in blue. These are the probabilities of being in the same placement one week later. These large probabilities, and review of the daily matrix reflect the fact that a youth is quite likely to remain in a given placement for more than one week.

### Stability

The 7-day Markov model shows that 95% of the youth in SIPP, TGC, and STFC will be found in that same type of placement 7 days later. This does not guarantee that they remained in the placement all 7 days, but rather that they were found there on day 1, and again on day 7. For those youth in SIPP who were not found in a SIPP placement 7 days later, they were most likely to be found in an FDLE/JJ placement. This statement is also true for youth in STFC. However, the youth in TGC were most likely to be receiving community mental health services after 7 days, and only after that placement option was exhausted were they most likely to be found in FDLE/JJ placements. Data from the daily Markov matrix show that 99% of the youth who were in the same type of placement (SIPP, TGC, and STFC) in the 7-day matrix remained in that placement; only a very few youth who moved out of the placement had returned within 7 days.

## **Movement**

When movement between out-of-home care placements is considered during a one-week timeframe, youth in SIPP are more likely to move to STFC than TGC; youth in TGC are more likely to move to SIPP as compared to STFC; and youth in STFC are more likely to move to TGC before moving to SIPP. Movements from SIPP and STFC seem to be in directions that are reasonable and potentially desirable. However, the higher probability that youth in TGC will move to SIPP instead of STFC is a potential concern. Youth in General Hospital Inpatient settings are most likely to be found in TGC after one week, followed by being back in the community and receiving no mental health services, and then to be in the community receiving community mental health services that are not Child Welfare-based.

The Markov model can also be used to look at how youth move from out-of-home mental health settings to other environments in which mental health services may be received. After one week, youth in SIPP are most likely to be found with an FDLE/JJ encounter. Less likely are youth in SIPP to be found receiving community mental health services, followed by receiving Child Welfare services. Youth in TGC are most likely to be receiving community mental health services, followed by an FDLE/JJ encounter and then receiving Child Welfare services. Youth in STFC were most likely to have an FDLE/JJ encounter after one week; these youth were next likely to be receiving community mental health services in the community and then to be receiving Child Welfare services.

For those Medicaid-eligible youth who are receiving no mental health services, they are most likely still not receiving services a week later. However, for those who are receiving services, Child Welfare is most likely the provider. The next most likely placements, with approximately equivalent probabilities, are SIPP and general inpatient hospitals. Looking in the other direction, youth who move into a situation receiving no mental health services are most likely to move there from a Child Welfare services setting. The next most likely placement prior to receiving no mental health services is general inpatient hospitals, followed by SIPP. These probabilities raise concerns that youth who receive no mental health services are moving to highly restrictive settings without being served in less restrictive settings, such as STFC or TGC, first, and conversely, that they are being returned to the community from inpatient and SIPP settings without any type of mental health service supports.

## **Summary**

Examination of the matrix reveals that most youth remained in their placements. However, for those that do move, they seem to be moving to less restrictive placements. Thus, the matrix shows a relatively steady state, with movement towards less restrictive placements.

**Table A5-12**  
**One Week Matrix of Hypothetical Transition Probabilities**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.95918	0.001332	0.0162	0.0036	0.0052	0.0050	0.0021	0.0074
Inpatient SA/MH	0.01493	0.745754	0.0697	0.0445	0.0191	0.0398	0.0247	0.0417
FDLE/JJ	0.01534	0.01034	0.9507	0.0143	0.0080	0.0009	0.0001	0.0004
TGC	0.00126	0.004987	0.0129	0.9593	0.0008	0.0175	0.0011	0.0022
STFC	0.00246	0.008205	0.0181	0.0039	0.9566	0.0046	0.0016	0.0046
Community MH	0.00702	0.010042	0.0028	0.0351	0.0043	0.9401	0.0003	0.0005
Child welfare, no MH	0.01461	0.018179	0.0051	0.0140	0.0032	0.0009	0.6468	0.2972
Community, no MH	0.01217	0.013342	0.0033	0.0097	0.0033	0.0018	0.1252	0.8311

### Staying in Place

In order to discover the probabilities that youth remained in their placements week in and week out over a longer period of time, an n-step cell transition probability matrix of 30 weeks (n=30) showed that SIPP, TGC, and STFC placements were relatively stable. 28.6% of youth in SIPP, 28.7% of youth in TGC, and 26.4% of youth in STFC placements stayed in that placement for the entire 30-week period. Other highly stable placements at 30 weeks was FDLE/JJ at 21.9% and community mental health services at 15.6%. Thus, at least a quarter of youth in out-of-home care placements remained in their placements for at least 30 weeks. One interesting finding is that SIPP placements, which are designed to be the shortest length of treatment for youth in out-of-home care placements, did not evidence the lowest probability of youth remaining in place; TGC placements did.

### Differences in Movement Based on Youth Characteristics

The model was also examined for gender differences and for differences in the presence of mood disorders. Odds ratios were calculated to investigate for differences in movement based on these characteristics. If these characteristics had no effect on movement, odds ratios (see Table A-5.13) should yield no difference between males and females or between the presence or absence of a mood disorder diagnosis. Two pairs of matrices (male vs. female, mood disorders vs. no mood disorders) were created. Then odds ratio were calculated based on the two sets of probabilities (male vs. female, mood disorders vs. no mood disorders (odds ratio= (probability of female/1-probability of female)/(probability of male/1-probability of male).

If the odds ratio equals 1, it means no difference between males and females. There are a few different patterns between females and males. For example: females have 2.10 times the probability of moving from SIPP to STFC than males. The cells highlighted in pink are those placement movements that favor females. Those in blue favor males. Those highlighted in yellow do not have gender differences.

**Table A5-13**  
**Odds Ratio: Female vs. Male**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	0.86	1.38	1.11	0.91	2.10	1.31	1.33	1.00
Inpatient SA/MH	0.88	0.67	1.55	1.42	0.51	1.42	1.43	1.15
FDLE/JJ	1.00	1.52	0.88	0.46	0.74	3.12	2.10	2.60
TGC	5.00	4.08	2.42	0.40	3.39	1.47	2.07	1.39
STFC	2.72	0.81	1.28	1.70	0.84	1.37	1.03	1.38
Community MH	1.01	1.51	2.95	0.41	0.91	1.23	0.75	0.85
Child welfare, no MH	2.08	1.69	2.32	0.59	0.88	0.98	0.98	2.98
Community, no MH	1.08	1.29	1.69	0.49	1.07	0.90	1.37	1.06

Pink – favors girls twice that of boys;  
blue = favors boys twice that of girls;  
yellow – no gender differences.

Effect size (ES) is a name given to a group of indices that measure the magnitude of a treatment effect. Unlike ‘p’ values, which are affected by the sample size, effect sizes are used to show how certain one can be that differences between groups can be found if they exist. Using the formula (Chinn, 2000):

$$\ln(\text{odds ratio})/1.81,$$

the absolute value of effect size ranges from 0 to 1. A zero means there is no possibility that the difference can be found. A one indicates 100% certainty that the difference will be found if it does exist. Although there is not a very clear threshold of effect size value regarded “good enough,” Cohen (1988) hesitantly defined effect size as “small,  $d=.2$ , medium,  $d=.5$ , and high,  $d=.8$ ”. The usefulness of effect sizes can be shown in how they complement odds ratios. The odds ratios displayed in Table A5-13 indicate that females are 2.1 times more likely to move from SIPPs to STFC than males. The effect sizes shown in Table A5-14 indicates that this is a real difference and that we have a 41% chance of finding this difference.

**Table A5-14**  
**Effect Sizes: Female vs. Male (One Week)**

Where they started	Where they are							
	SIPP	In-patient	FDLE or JJ	TGC	STFC	Comm. MH	CW, no MH	Comm. No MH
SIPP	-0.085	0.176	0.057	-0.053	0.410	0.150	0.159	0.001
Inpatient SA/MH	-0.069	-0.220	0.242	0.195	-0.374	0.193	0.197	0.078
FDLE/JJ	0.000	0.231	-0.072	-0.426	-0.166	0.629	0.409	0.527
TGC	0.889	0.777	0.488	-0.501	0.675	0.213	0.402	0.183
STFC	0.553	-0.113	0.138	0.294	-0.093	0.175	0.018	0.180
Community MH	0.004	0.228	0.597	-0.495	-0.051	0.115	-0.160	-0.088
Child welfare, no MH	0.405	0.290	0.464	-0.288	-0.073	-0.009	-0.013	0.603
Community, no MH	0.042	0.140	0.290	-0.399	0.039	-0.059	0.175	0.033

In summary, the Markov matrixes that examined potential differences in probabilities of movement based on gender and primary diagnosis revealed some differences with regard to both characteristics. Females were two times more likely than males to move from a SIPP placement to an STFC placement, and 5 times more likely to move from TGC to SIPP. Females were more likely than males to move towards more restrictive placements in general. Males were twice as likely as females to move from general inpatient hospitals to STFC and FDLE/JJ to TGC. Males were twice as likely as females to move from Community Mental Health or no mental health services to TGC.

The effect size calculations indicate large effects for females moving to more restrictive placements. Males showed a medium effect size for moving from other mental health services to TGC.

The Markov matrix on the odds ratio of placement transition for youth with a mood disorder as compared to those without a mood disorder show that for the most part, youth are more likely to remain in the same type of placement. The only exception is that youth with mood disorders in SIPP are a little more likely to move to TGC than they are to remain in a SIPP placement. However, the calculated effect sizes for this matrix all indicate small likelihoods that the difference will be discovered. Youth with mood disorders in STFC are 46% less likely to move into SIPP, supported by a medium effect size.

## Endnotes

- 1 The penetration rate is the number of youth who used the particular service category divided by the total number of youth who received TGC during the study window.
- 2 The penetration rate is the number of youth who used the particular service category divided by the total number of youth who received TGC during the study window.
- 3 [Twelve is the maximum allowed number of licensed beds according to Medicaid guidelines.]
- 4 Defining TGC for administrative data purposes: All analyses are based on procedure codes (CPT code): W1080 (before 10/16/2003) and H0019 (after 10/16/2003)
- 5 A gap of seven days was selected to account for data gaps in the administrative data set and normal absences for medical reasons, Baker Acts, arrests, etc.
- 6 "Sample" refers to TGC recipients who had 12-months pre- and post- Medicaid eligibility and excludes area 1 and 6.
- 7 The penetration rate is the number of youth who used the particular service category divided by the total number of youth who received TGC during the study window.
- 8 The 'Other' category includes children and youth considered multiracial, such as Latinos, who affiliate themselves by ethnicity rather than by race. Because of the structure of the administrative databases used in this report, ethnicity cannot be distinguished from racial categorization.
- 9 In the Medicaid claims data, Crisis Intervention is based on CPT code: "W1061" (before 10/16/2003) and "S5145HK" (after 10/16/2003).
- 10 Unduplicated refers to the fact that youth could only be included in these analyses once in the pre period and once in the post period, regardless of the number of Baker Acts they had.
- 11 No youth in the sample had a referral for a Capital offense.
- 12 Of the 19 stakeholders who responded to this question, 11 (58%) cited at least one youth or family-level factor. This figure illustrates the percentage of those 11 respondents who cited each factor.
- 13 The Markov matrix was examined in a variety of ways to examine the trajectory of youth in relation to the children's mental health system and to test for model fit. Results discussed in this section do not rely solely on the matrices presented here. For a full discussion and display of matrices, see Appendix 5.
- 14 See Appendix 5 for full discussion of odds ratio analyses.
- 15 Services for persons with developmental disabilities.
- 16 All youth in these three programs are eligible for TCM services prior to discharge.
- 17 Footnote: The 'other' category includes children and youth considered multiracial, such as Latinos, who affiliate themselves by ethnicity rather than by race. Because of the structure of the administrative databases used in this report, ethnicity cannot be distinguished from racial categorization.
- 18 Because a youth can be in more than one type of placement in the calendar year covered in the sample, these percentages add to more than 100%.



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