TITLE IV-E WAIVER DEMONSTRATION PROJECT

KENTUCKY STRENGTHENING TIES AND EMPOWERING PARENTS (KSTEP)

FINAL EVALUATION REPORT

May 1, 2020

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1. EXECUTIVE SUMMARY

The purpose of Kentucky's title IV-E waiver demonstration project was to further the state's progress toward the Child and Family Services Review (CFSR) outcomes by reducing the need for out-of-home care (OOHC) placements and shortening the duration of necessary OOHC placements. These aims were addressed through the implementation of a new intensive in-home services program, Kentucky Strengthening Ties and Empowering Parents (KSTEP) and the expansion of an existing service, Sobriety Treatment And Recovery Teams (START). Both interventions utilized evidence-based practices (EBPs) and evidence-informed strategies. The focus of Kentucky's demonstration project was on the complex needs of families experiencing challenges with substance abuse in Kentucky's child welfare system. Overall, Kentucky sought to engage and assess all families giving them a voice and to empower them with ownership in services that impact their family and children.

Kentucky Strengthening Ties and Empowering Parents

Kentucky currently provides numerous programs and services aimed at strengthening families. There is a need, however, for more accessible interventions to keep children safely in their homes in cases of parental substance abuse. KSTEP is an evidence informed intervention that will stabilize and support families by providing intensive, strengths based, in-home services that will intervene with appropriate EBPs. KSTEP was implemented in four Kentucky counties on July 1, 2017.

Using the framework of the evidence-based model that is Solution-Based Casework (SBC), KSTEP emphasizes collaboration between families, The Department for Community Based Services (DCBS/department), and the provider community to achieve positive outcomes. The basic tenets of KSTEP include case coordination services, partnership with the family, rapid access, and provision of clinical services including substance misuse treatment. KSTEP facilitates family engagement and involvement in the assessment and case planning processes, which leads to the empowerment of families and a reduction in high risk behaviors.

2. INTRODUCTION AND OVERVIEW

2.1 Background and Context

At the time of the initial title IV-E waiver application in 2014, DCBS was providing numerous programs and services aimed at strengthening families. There was a need, however, for more accessible interventions to keep children safely in their homes in cases of parental substance abuse. Through the waiver, Kentucky sought to meet three overarching goals: (1) reduce the need for OOHC placements, (2) shorten the duration of any necessary OOHC placements, and (3) prevent occurrences of repeat maltreatment.

To achieve these goals, Kentucky's waiver initiative included two separate, yet interconnected programs**:** START and KSTEP. START was an existing program targeting families with children

under the age of six who are at moderate or imminent risk of entering OOHC and whose parents have substance abuse risk factors. Through Kentucky's waiver, START was expanded into additional locations throughout the state.

KSTEP was a new prevention program designed to address a gap in the existing array of in-home services by serving families (1) with children under the age of 10 who are at moderate to imminent risk of entering OOHC and (2) whose parents are substance abusing. KSTEP was intended to stabilize and support families by providing intensive, strengths based, in-home services and will intervene with appropriate EBPs.

Through the expansion of START and the implementation of KSTEP, the state anticipated that more families would receive intervention services, more families would stabilize with increased family functioning, fewer families would experience a foster care placement, and there would be fewer instances of repeat maltreatment.

During the timeframe before the state's title IV-E waiver demonstration project application, Kentucky was in the midst of a substance misuse disorder/opioid use disorder crisis. According to the U.S. Department of Health and Human Services (HHS) in 2014, of the 353,040 children found to be victims of maltreatment, more than one in four (or 91,903) were reported as having caregivers with drug abuse problems. While the problem exists in every state in the country, Kentucky led the nation in the use of prescription drugs for non-medical purposes during the last year, according to the state's Office of Drug Control Policy. Officials stated that prescription drug abuse is particularly acute. In 2015, at least 485 people died in Kentucky from prescription drug overdoses, according to the state's Cabinet for Health and Family Services (CHFS/cabinet Medical examiners' records indicate the drugs most commonly found in those death cases were methadone, painkillers oxycodone and hydrocodone, alprazolam (Xanax), morphine, diazepam (Valium), and fentanyl.

Opioid use disorder/substance use disorder (OUD/SUD) was a growing concern the state's child welfare agency, DCBS, as parental substance abuse is a recognized risk factor for child maltreatment and child welfare involvement (Institute of Medicine and National Research Council, 2013). Parental substance misuse and parental experience of an SUD can have negative effects on children, both immediate and long term. Studies have shown that children with a parent who has an SUD are more likely than children who do not have a parent with an SUD to have a lower socioeconomic status and increased difficulties in academic and social settings and family functioning (Peleg-Oren & Teichman, 2006). Other studies have shown that once a child welfare report has been substantiated, children of parents who misuse substances are more likely to be placed in OOHC and more likely to have longer stays in OOHC compared to other children (Barth, Gibbons, & Guo, 2006, HHS 1999).

In Kentucky, data from the State Agency Child Welfare Information System (SACWIS), The Worker's Information SysTem (TWIST) indicated that substance misuse was either directly contributed or indirectly contributed in 50.7% of all substantiated/services needed reports of child maltreatment involving children under the age of 10 (TWS-272) in calendar year 2013. As of June 2, 2013, there were 7,343 children in care (TWIST, TWS-W058), which was an all-time high at that time for Kentucky. That was an increase from 6,940 children in care in June 2012 (TWIST, TWS-W058). Factors that contributed to the increase in the OOHC population included older children

languishing in OOHC as result of increasingly complex needs, an increase in the number of children exiting that re-enter, and an increase in first time entries (data from Casey Family Programs). It was hypothesized that with readily accessible preventative services, children could be diverted from coming into care.

DCBS looked to leverage its internal capacity and position within CHFS, the state government agency charged with administering programs and services designed to enhance the health, safety, and well-being of all people in the Commonwealth of Kentucky, to address the increasing numbers of children entering OOHC through a comprehensive approach. DCBS is the largest department within the cabinet and administers the state's array of protective and program support services to families including prevention activities and services to support family self-sufficiency; child protection; foster care; adoption; adult services; and many others. The cabinet's structure affords DCBS unique opportunities to collaborate and better coordinate with providers of mental health, developmental disabilities, and addiction services; health care providers of children with special needs; public health; Medicaid services, long-term care providers and aging services; school-based family resource centers; volunteer services; and income supports, such as child support. DCBS' direct service delivery is provided by nine service regions, which cover all 120 Kentucky counties. Each region, led by a service region administrator (SRA), implements the cabinet's programs and manages resources to meet regional needs. The cabinet's organizational structure provides an opportunity to maximize resources, leveraging additional funds, and evolving of the overall child welfare service continuum in Kentucky. The cabinet also collaborates with other external state agencies and community resources to assist in providing efficient and timely services to families and children.

Prior to the state's title IV-E waiver application, several initiatives had taken place within CHFS and outside which situated Kentucky well as a successful title IV-E waiver demonstration project site. From strengthening partnerships with key state agencies and community partners for more effective service delivery to revamping the Assessment and Documentation Tool (ADT) used in child protection investigations, Kentucky's DCBS was moving in a positive direction to better meet the needs of families and children.

Examples of these initiatives included:

Managed Care Organizations (MCOs)-In November 2011, Kentucky moved to a statewide managed care system for Medicaid to improve coordination of care and reduce costs for the state's Medicaid program. Kentucky's Department for Medicaid Services (DMS) entered into contracts with three MCOs, and expanded to five in January 2013. These were established under an 1115 waiver and a 1915(b) waiver. In addition to physical health care, the MCOs became responsible for behavioral health services that fall under the title V state plan, psychiatric residential treatment facilities (PRTFs), and inpatient psychiatric hospitalizations. DCBS also administers its own title V Medicaid agreement for behavioral rehabilitation services for children in the custody of DCBS.

Behavioral Health Redesign-In 2013, DCBS worked in partnership with the Department for Behavioral Health and Developmental and Intellectual Disabilities (DBHDID) to redesign the state's behavioral health system. Through this initiative, DCBS developed processes to better coordinate services in order to create a more seamless service delivery system. The existing system was

fragmented due to categorical funding streams, separate regulatory requirements, and unique state agency mandates.

Changes in the ADT for Child Protection-Throughout 2012 and 2013, DCBS researched, designed, tested, and implemented a new documentation tool for the assessments completed by social services workers. This was done in attempt to have a more effective, accurate tool to assess maltreatment findings and risks of future harm. In addition to risk factors, the new tool included the five categories of "protective factors" which serve as the foundation of the Strengthening Families approach (Center for the Study of Social Policy, U.S. Department of Health and Human Services, Administration for Children and Families). The new ADT was implemented for use by DCBS staff in January 2014.

Project Screening and Assessment For Enhanced Service Provision to All Children Everyday (SAFESPACE)-Project SAFESPACE was a collaborative initiative of the Commonwealth's public child welfare, mental/behavioral health and Medicaid agencies, the court system, and a public university to enhance child welfare services to children and families. This 2013 federally funded project addressed the need to better provide mental and behavioral health services to children in Kentucky's child welfare system. Prior to Project SAFESPACE, the child welfare population was not systematically screened for mental/behavioral health needs. The standardized front-end assessment tool, the Child and Adolescent Needs and Strengths (CANS) assessment, was implemented to be administered in conjunction with the DCBS front line staff's assessment tool which workers use to identify protective and risk factors present in the family. The combination of assessments was intended to guide workers in making appropriate referrals to necessary community and in-home services including crisis intervention, behavioral health counseling, substance abuse treatment programs, etc. resulting in more families receiving evidence-based treatment/services, and the rate of children being placed in OOHC was expected to decrease.

These and other initiatives laid the groundwork for the state's title IV-E waiver demonstration project.

2.2 Purpose of the Waiver Demonstration

The purpose of Kentucky's title IV-E waiver demonstration project was to address the complex needs of families experiencing challenges with substance misuse who are involved in the child welfare system. Kentucky's title IV-E waiver project had the following goals:

- Reduce the number of children entering OOHC.
- Reduce the amount of time children in the target population spend in OOHC.
- Reduce the occurrence of repeat maltreatment.
- Increase permanency for all infants, children, and youth by reducing the time in foster placements when possible.
- Increase positive outcomes for infants, children, youth, and families in their homes and communities, including tribal communities, and improve the safety and well-being of infants, children, and youth.

To achieve these goals, Kentucky's title IV-E waiver initiative included two separate, yet interconnected programs**:** START and KSTEP. START was an existing program targeting families

with children under the age of six who are at moderate or imminent risk of entering OOHC and whose parents have substance abuse risk factors. Through Kentucky's waiver, START was expanded into additional locations throughout the state. KSTEP was a new prevention program designed to address a gap in the existing array of in-home services by serving families (1) with children under the age of 10 who are at moderate to imminent risk of entering OOHC and (2) whose parents are misusing substances. KSTEP was intended to stabilize and support families by providing intensive, strengths based, in-home services, and intervene with appropriate EBPs.

Through the expansion of START and the implementation of KSTEP, the state anticipated that more families would receive intervention services, more families would stabilize with increased family functioning, fewer families would experience a foster care placement, and fewer would experience repeat maltreatment.

The remainder of this report will focus on the evaluation of the KSTEP intervention. A separate evaluation report for the START program is available.

2.3 Target Population(s)

The target population for the KSTEP program consists of families with at least one child under the age of 10 who is at moderate to imminent risk of entering OOHC and whose families have a primary risk factor of substance misuse. KSTEP is for new child welfare investigations without a current ongoing case.

3. EVALUATION FRAMEWORK

3.1 Theory of Change/Logic Models

The theory of change that informed this waiver project included the expansion of in-home and community-based services through the creation of KSTEP. This was hypothesized to result in more families receiving substance misuse prevention, early intervention and treatment services, more families stabilizing with increased family functioning, and a decrease in families experiencing initial and repeat maltreatment. By providing reunification and aftercare services to families of children returning home, reunifications would not be disrupted. The results would be a decrease in children returning to care. The theory of change model for KSTEP is illustrated in Figure 1. Figure 2 presents the logic model for KSTEP which covers the intended and anticipated background, inputs, activities outputs, and outcomes for the interventions.

Figure 1: KSTEP Theory of Change

KSTEP THEORY OF CHANGE

Kentucky Strengthening Ties and Empowering Parents (KSTEP)

So That

Community partners (including judiciary) are engaged and KSTEP strategies are communicated; AND the provider community and child welfare staff received additional certifications and training in needed services/evidence-based programs including: Solution Based Casework, Part Child Interaction Therapy, Motivational Interviewing, Cognitive Behavioral Therapy, and Family Behavior Therapy (Adult Focused);

So That

Families with co-occurring child maltreatment and substance abuse, with at least one child in the home under the age of 10 at the time of referral who is at imminent or moderate risk of removal, receive (immediate) intensive in-home services utilizing Solution Based Casework (SBC) through a contracted provider;

So That

Families are partners in the assessment, planning, and service delivery processes; family team meetings occur, comprehensive assessments are conducted, safety plans are implemented, individualized treatment needs are identified, treatment plans are created (in alignment with DCBS case plans)

So That

Children can remain safely in the home as families are receiving services and participating in treatment programs

And

Funding through KSTEP is provided for needed supportive (concrete) services to families (e.g., transportation, childcare, utilities, etc.) to meet basic needs and remove barriers that could prevent families from participating in services;

So That

Families actively participate in appropriate and timely evidence-based services/treatment programs delivered with fidelity to the models;

So That

Parental capacity improves, sobriety is achieved and maintained, safety risks are eliminated/reduced family functioning improves, and child well-being improves;

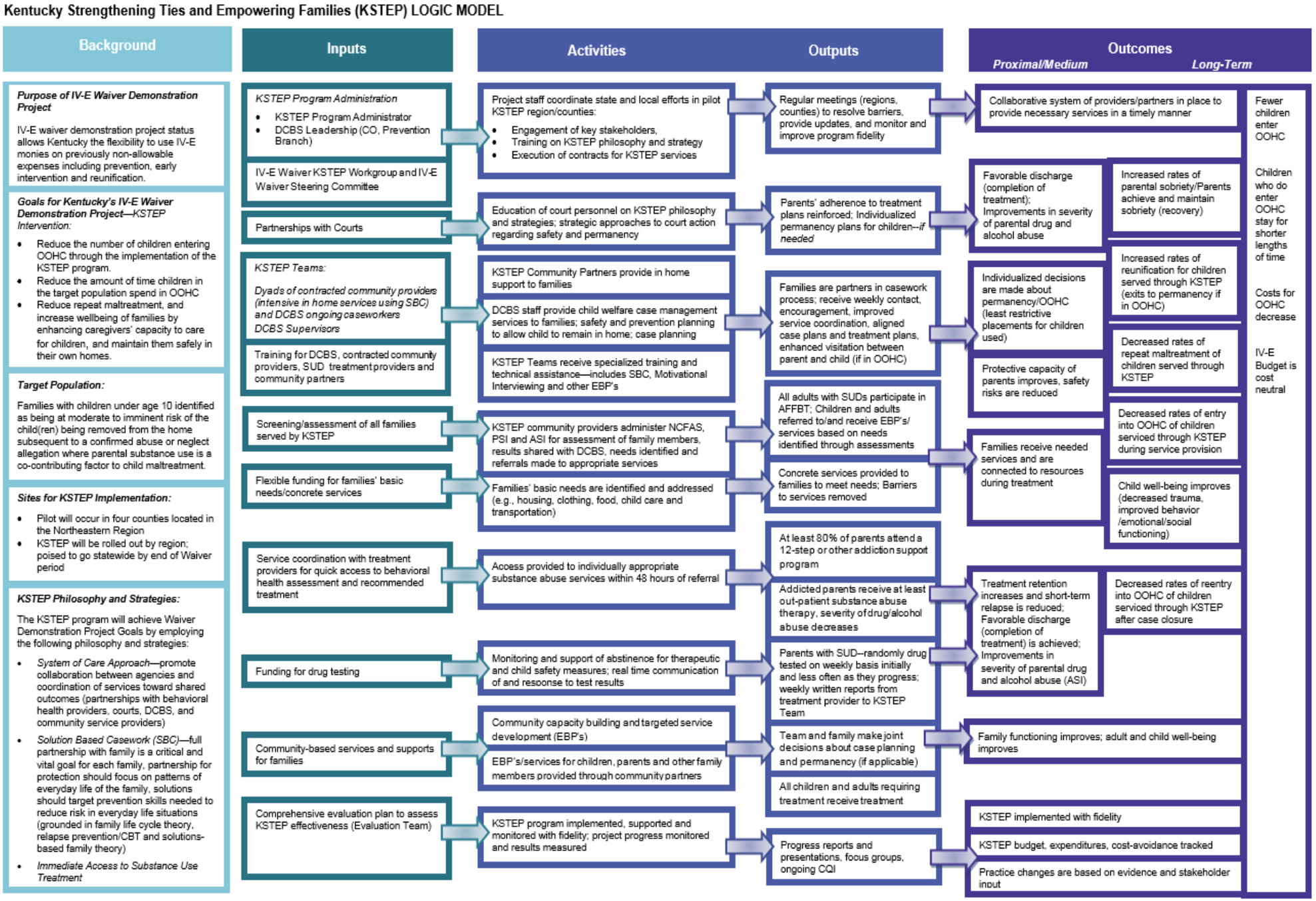
So That

Repeat maltreatment decreases in families receiving KSTEP services; Children are able to remain safely in the home during and after KSTEP services; Children who do have to enter OOHC during provision of KSTEP achieve permanency in a timely matter;

So That

Fewer children enter/reenter OOHC, Kentucky's OOHC costs decrease, AND title IV-E Budget cost is neutral.

Figure 2: KSTEP Logic Model



3.2 Overview of the Evaluation

An evaluation was conducted to test the hypothesis that the flexible use of title IV-E funds to increase KSTEP services available to families with co-occurring child maltreatment and substance misuse will result in improved safety, permanency, and well-being outcomes for targeted children. This evaluation served multiple purposes during the course of the waiver period and beyond. First, evaluation efforts guided early decision-making through the assessment of agency capacity/readiness, monitoring of program implementation, and informing program improvements. Second, evaluation efforts examined program effectiveness by defining and measuring anticipated program outcomes as well as identifying factors associated with positive outcomes. Lastly, evaluation efforts provided information on program costs and future (long-term) cost avoidance realized through the achievement of anticipated program outcomes. The evaluation for the title IV-E waiver consisted of three components: an outcome evaluation, a process evaluation, and a cost analysis. An overview of each is provided in this report.

Although the outcome evaluation for KSTEP did not avail an opportunity for a random control study (RCT), it did employee a strong quasi-experimental design and feature propensity score matching (PSM) similar to START.

> Hypothesis 1: By increasing services to families experiencing co-occurring child maltreatment and substance abuse through the KSTEP program, children will experience a lower rate of entry into OOHC.
>
> Hypothesis 2: Participation in KSTEP will result in increased family functioning and child and adult well-being.
>
> Hypothesis 3: By decreasing the rate of entry in OOHC through KSTEP, expenditures associated with OOHC will decrease.

3.3 Data Sources and Data Collection Methods

To assess the program impact of KSTEP, primary data were collected from KSTEP families at a variety of intervals throughout the life of the case. Indubitably, the length of time a case remained open varied. The following paragraphs tersely outline what measures were administered, at what interval, and by whom.

The North Carolina Family Assessment Scale (NCFAS) was administered to KSTEP families by contracted private providers upon entry into KSTEP, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and upon completion (usually at the end of eight months).

The Addiction Severity Index (ASI) was administered to primary caretaking adults (indicating substance misuse) residing in the home at the time the case is accepted to KSTEP by contracted private service providers. As indicated above, the ASI was administered upon entry into KSTEP, three to four months after entry into KSTEP, and at the conclusion of the eight month KSTEP service period.

Similar to the ASI, the Parenting Stress Index (PSI) was administered to all primary caretaking adults residing in the home at the time of the maltreatment report is substantiated. The instrument was administered at the outset of acceptance in KSTEP, at the end of the fourth month in KSTEP, and at the conclusion of KSTEP services. For KSTEP families, the PSI was administered by contracted private service providers.

All individuals, i.e., contracted private providers, involved in collecting primary data, no matter the measure, were trained in appropriate data collection procedures. Data collection occurrences were expected to take between one and two hours. Please note that these times may vary depending on factors such as the size of the family, etc.

Secondary data was collected on all families receiving KSTEP services (both adults and children) through two sources: TWIST and the KSTEP database. TWIST data was be used to establish a matched comparison group for the KSTEP sites, as well as safety and permanency data for all families in the KSTEP control and comparison conditions.

3.4 Sampling Plan

Families are eligible for the KSTEP program when they meet the following conditions: have a current finding of substantiated child maltreatment; substance misuse is a primary child safety risk factor; at least one child under 10 years of age; and prior CPS cases (if applicable) are closed at the time the present case is referred to KSTEP.

The evaluation team used TWIST data to establish a matched comparison group for families receiving KSTEP services. PSM techniques were used to ensure that KSTEP and comparison families are comparable.

3.5 Data Analysis Plan

Data analysis consisted of descriptive statistics, comparative analysis, and cost-benefit analysis. Data was analyzed using statistical software such as STATA 14.0 and IBM SPSS software, and included testing of differences between experimental and control/comparison groups.

Outcome evaluation for KSTEP cases and their pre-post growth analyzed data using statistical software such as IBM SPSS software, including repeated measure mean comparisons across different administrations of the tests, and descriptive analyses for some KSTEP families.

3.6 Limitations

As with any evaluation endeavor, KSTEP encountered several significant logistical challenges and limitations. First, the evaluation and implementation teams experienced significant employee turnover in key positions during the evaluation period. Whilst these instances were handled appropriately in terms of transitioning responsibilities, etc., these occurrences indubitably impacted efficacy associated with data collection procedures, etc.

Second, while perhaps for an initial program implementation, enrollment in KSTEP was somewhat lower than anticipated. It is likely that this challenge was associated with the afore-referenced employee turnover. Program personnel attempted to address enrollment issues through several strategic education and training initiatives for community partners, namely court stakeholders.

Third, the sheer number of community partners involved in program implementation and evaluation brought about challenges. KSTEP did adhere to an aggressive communication protocol that included regular meetings with all providers.

Methodological limitations include those interest to PSM. Though appropriate for an evaluation of this type, there is the possibility that differences related to program participation (e.g., control vs treatment groups) may be caused by variable that may predict treatment. Thus, interpretations associated with the outcome data should be considered carefully and critically.

3.7 Evaluation Timeframe

The KSTEP program began accepting families on July 1, 2017 in Rowan, Carter, Mason and Greenup counties. The tracking of outcomes (safety, permanency, and well-being) of KSTEP families also began in July 2017 as family members completed the initial administrations of the NCFAS, ASI, and PSI. Families' outcomes (safety and well-being) continued to be assessed throughout the lifetime of their cases until case closure. KSTEP expanded into four additional counties (Bath, Lewis, Fleming, and Montgomery) in July of 2019 at which time those families were added to the evaluation. Recurrences of repeat maltreatment and child placement in OOHC for each KSTEP case (and the PSM identified control cases) were assessed at the end of the waiver period through the analysis of secondary data entered into TWIST.

Outcome data on families accepted into KSTEP through December 2019 are included in this report with the exception of the fiscal/cost analysis. As KSTEP program expenditures and OOHC costs incurred for children in KSTEP cases served were provided through September 30, 2019, the fiscal/cost analysis is based on numbers of families accepted/served through September 30, 2019.

4. THE PROCESS STUDY

The process evaluation for the waiver program is informed by research in the areas of empowerment evaluation (Barbee, Christensen, Antle, Wandersman, & Cahn, 2011, Fetterman, Deitz, & Gesundheit, 2010), implementation science (Mowbray, Holter, Teague, & Bybee, 2003; Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Durlak & DuPre, 2008; Fixsen, Blasé, Naoom, & Wallace, 2008, Wandersman, Katz & Chien, 2012), and organizational change/development (Glisson & Hemmelgarn, 1998; Glisson & Green, 2010; Aarons, Hurlburt, & Horowitz, 2010).

Accordingly, the process evaluation engaged key stakeholders throughout the evaluation process to assess the community context in which Kentucky's title IV-E waiver is implemented, core

intervention components and core implementation components (implementation drivers), and each set of components' impact on implementation and program outcomes.

The structure of the process evaluation, variables assessed, and outputs tracked are intended to provide the necessary information for which stakeholders can make decisions. The process evaluation is designed to provide the necessary data, to the necessary stakeholders, in a usable manner to effectively make decisions for the program's successful implementation and sustainability.

The process evaluation provides the following:

- Description of the context (system and organization) in which the KSTEP intervention was implemented;
- Operationalized core intervention components and indicators;
- Methods for the monitoring and reporting of key aspects of the implementation process and the achievement of progress toward achieving anticipated program outcomes; and
- Insight into the impact of community context, intervention core components and implementation core components on program implementation, and outcomes.

The process analysis used a combination of primary and secondary data as well as administrative data/information provided by DCBS. Multiple groups of stakeholders were engaged in various process evaluation activities including program staff (KSTEP), DCBS frontline staff, community partners, KSTEP clients, etc.

The first section of the Process Study contains information and data related to the context (system and organization). Intervention specific (KSTEP) process evaluation activities and results follow.

System and Organizational Context for KSTEP Implementation

Understanding the context in which EBPs are implemented is critical. Studies in the area of implementation science demonstrate that there are several common organizational contextual factors which are important to the implementation process. These include organizational culture; networks and communication; leadership; resources; evaluation, monitoring, and feedback; and champions. There are also sub-features at play which are important including collaboration, teamwork, communication, financial resources, time, staffing/workload, and education/training. As part of the process evaluation, information was gathered on DCBS' operating structure, employees' perceptions of organizational culture and climate, and relationships and communication between stakeholders.

Organizational Profile of the Department for Community Based Services

The START program was expanded/implemented in additional sites within the structure of DCBS. The department is comprised of more than 4,400 employees in five divisions with offices in every county, and one central office leadership team managing staff and operations. DCBS services are administered through nine service regions and offices serving all 120 Kentucky

counties. In addition, DCBS uses a network of contracted officials to deliver services, such as childcare. Service is enhanced through a close relationship and coordination with community partners. The department provides family support, child care, child and adult protection, eligibility determinations for Medicaid and food benefits, and administration of an energy cost-assistance program. The department administers the state foster care and adoption systems, and recruits and trains foster parents to care for the state's children who are waiting for a permanent home.

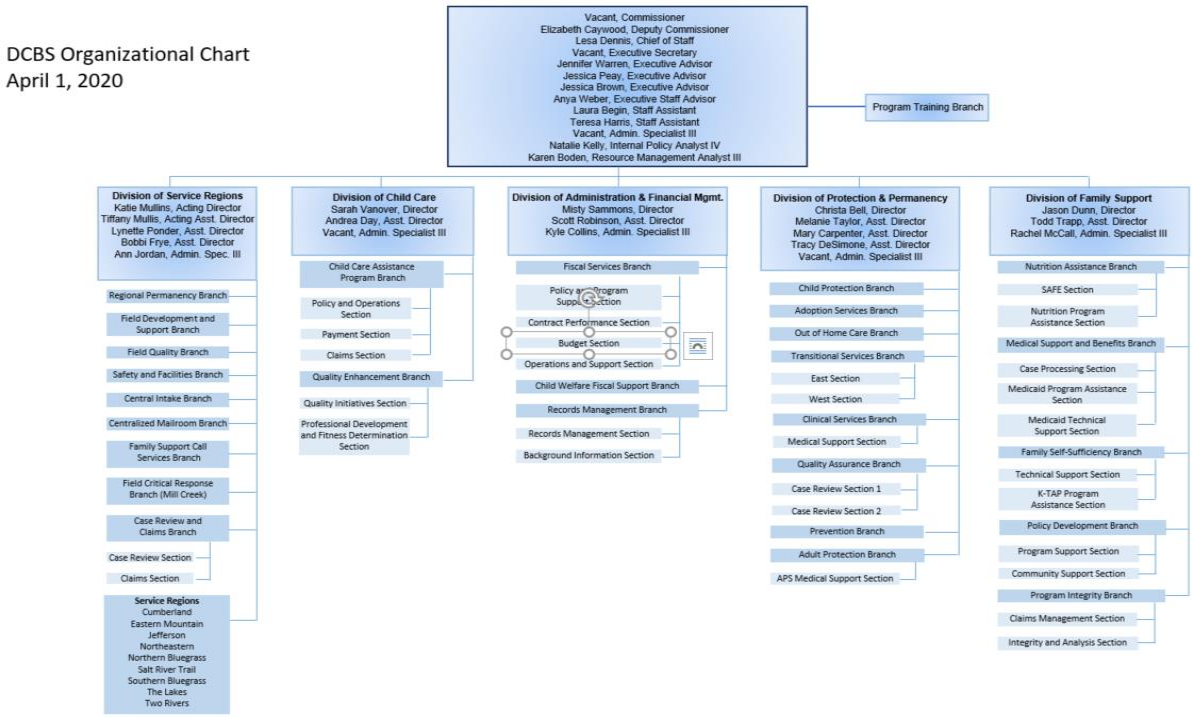
With offices in every county, the department provides services and programs to enhance the self-sufficiency of families, improve safety and permanency for children and vulnerable adults, and engage families and community partners in a collaborative decision-making process. The department was formed within CHFS in 1998 to give local offices more decision-making authority and the ability to collaborate more effectively with other community service providers.
The Division of Protection and Permanency (DPP/division) within the department coordinates the state's child welfare and violence prevention efforts. The division coordinates more than 180 contracts with vendors that provide a variety of services statewide and for specific service regions to enhance family violence prevention and intervention services. DPP provides consultative services and technical assistance to local offices regarding child and adult protection cases, coordinates permanency services including the coordination of state efforts to recruit and certify adoptive homes for children in foster care, creates standards of practice for local office operation, and implements statewide changes in coordination with state and federal legislation. The division also gathers data and creates reports to monitor the state's progress toward federal goals in child welfare services.

Division of Protection and Permanency's Vision
DPP's vision is to protect children and vulnerable adults and to promote self-sufficiency and permanency by providing the best regulatory framework and state plan structure possible. The mission is to ensure maximum flexibility for interpretation and implementation of policy and procedures, which best meet the needs of the community.

DPP recognizes the importance of a safe, secure, and nurturing environment for each Kentucky child, adult, and family. Within such an environment, it is believed that families and their individual members become the most critical component of a strong society. The division is:

- Focused on families, children and vulnerable adults;
- Committed to families as partners in decision making;
- Proactive, responsive and accessible to all members of the community;
- Sensitive to cultural and community differences;
- Committed to innovation, continuous improvement, shared accountability and measurable outcomes;
- Community focused and partnership-oriented; and
- Recognized as the best human service delivery organization in the nation.

Figure 3: DCBS Organizational Chart



Assessing DCBS' Organizational Readiness for Change

An initial assessment of DCBS' organizational readiness for change was conducted in the summer of 2016. From July 19, 2016 through Aug 9, 2016, DCBS invited 2,199 employees to complete an online organizational readiness assessment that resulted in 801 valid responses for a 36.4% response rate. The survey and scoring methodology included a modified version of the Texas Christian University Institute of Behavioral Research 4-Domain Assessment for Organizational Readiness for Change (TCU ORC-D4) and maintained a focus on important implementation drivers including self-efficacy, organizational support, and physical work environment. Internal consistency testing was performed on all survey domains resulting in 24 items being removed from analysis due to low internal consistency as measured by Cronbach's alpha.

An initial examination of the data revealed strengths in the domain of self-efficacy, while highlighting areas of concern within organizational support and staffing (Appendix A). Although findings are not KSTEP specific, they do provide insight into employee perceptions within the division that KSTEP is being implemented. Open-ended comments, of which 284 DCBS staff provided as part of the survey, have validated the quantitative data and support several key themes/areas for improvement. These include, but are not limited to, levels of staffing, workload demands, turnover, organizational support, resources, communication, training, performance evaluation criteria, and work-related stress. Respondents' comments were grouped by theme with all identifying information removed and were reported to CHFS and DCBS leadership on December 1, 2016.

Comment themes included:

- Insufficient staffing levels
- Lack of organizational support
- Lack of resources necessary to do job
- Disconnect between DCBS management and the field staff
- Personal health concerns related to job stress
- Work/family life balance
- Lack of employee voice in decision-making
- Dissatisfaction with amount/quality of communication coming from management
- Unmanageable caseloads/workloads
- Training/new employee preparation
- Concerns over quality of work/ethical issues
- Currently looking for other employment
- Performance evaluation criteria
- State/DCBS hiring process
- Employee compensation and benefits
- Inadequate physical office facilities

Statewide Focus Groups on Staff Challenges

At the request of DCBS leadership, Eastern Kentucky University's (EKU's) Facilitation Center conducted focus groups with DCBS staff (frontline workers, supervisors, and office support staff) in each of the nine regions during the Winter/Spring of 2017 guided by data obtained from the organizational readiness assessment. A total of 1,322 staff (DPP and Division of Family Support (DFS)) participated in a focus group. The purpose of the focus group was to gather information from staff regarding the "challenges" they are currently facing in their jobs, as well as what staff felt were priorities for leadership to address. For DPP staff, key challenges included high caseloads, organizational inefficiencies, high staff turnover, worker safety, and training. An executive report was produced, as well as regional reports, and shared with DCBS leadership on July 17, 2017.

Assessing Employee Engagement/Satisfaction

In collaboration with DCBS, revisions to the readiness assessment administered in 2016 led to the development of an annual employee engagement/satisfaction survey. A unique link to the survey was sent via email to 4,751 DCBS employees from all DCBS divisions on October 15, 2017 and remained active through November 24, 2017. After subtracting the 125 employees who "opted out" (actively declined) and removing the 294 partial responses caused by participants opening a survey link, answering at least one demographic question, but not providing a response to any other survey item (passive decline), an analyzable sample of 2,171 DCBS employees was obtained. The resulting 46.9% response rate (including those who passively declined) was substantially larger than the prior year. Additional survey items were specific to ongoing training and supervision needs with specific items added that would be recognizable by individuals working within DFS (44.8%, 956) and those working within DPP (50.6%, 1,078). Although all

data were collected anonymously through Qualtrics Survey software, flyers advertising an anonymous link and QR code were also distributed and displayed in all DCBS offices providing additional options for those DCBS employees that may not have trusted the link provided by email.

A comparison of data collected from the 2016 DPP organizational readiness assessment was completed using results from the 2017 DPP sample allowing exploration of change in strengths, areas of improvement, and any areas of concern related to key implementation drivers. The 2017 and 2016 DPP respondents' results were compared using t-tests. The largest improvements for DPP were found in the areas of supervision and offices. A significant reduction in scores occurred for agency needs and influence.

Of the DPP employees who responded, 49% (n = 530) reported being employed with DCBS five years or less, 87.3% were female, and 27.5% (n = 296) indicated a Master's Degree was the highest level of education they had obtained.

Five open-ended questions were asked of survey respondents of which DCBS staff provided feedback. The five items were:

1. In an effort to meet the ongoing training needs of all staff please list the top three areas (for further knowledge or skill development) you would benefit from receiving additional training.
2. What suggestions do you have to build office morale in efforts to promote a more positive attitude, work environment, and staff retention?
3. What can management (supervisors and/or regional staff) do to ensure success in your current position?
4. What specific actions do you think DCBS should take to improve as an organization in the next five years?
5. Do you have any additional comments and/or suggestions?

DCBS employees provided 5,917 comments to the open-ended questions. For this analysis, IBM SPSS Text Analytics for Surveys computer software was employed to assist with the identification of major themes among the responses. This was accomplished by grouping together various concepts and response patterns using linguistic algorithms. A further manual refinement of response categories was also performed to ensure consistency and to categorize any responses that were not categorized by the software. Comments containing multiple themes were placed into multiple categories for any one of the questions.

Although the open-ended items were structured into the five specific items during the 2017 survey administration, similar themes to the 2016 survey emerged. Themes included:

- Pay needs to be increased/need better benefits
- Better supervision/leadership needed
- More employee incentives/recognition
- Lower caseloads/less workload needed
- Need better communication
- Hire more staff

- Equitable treatment of employees needed
- More training needed in areas of computers/operating systems, available resources and programs, policy, client mental health/substance abuse, and training related to family support program areas

The 2017 DCBS employee engagement survey results/reports were shared with DCBS leadership in June 2018.

The DCBS employee engagement survey was administered to all DCBS staff again in September 2018 using the same 2017 tool and an additional seven items related to continuous quality improvement (CQI). The survey was again administered through Qualtrics and was accompanied by a cover letter from DCBS Commissioner Eric Clark.

Results of survey scales used in both 2017 and 2018 were compared. A total of 889 DCBS DPP employees responded to the survey. Below are highlights from the 2018 survey administration.

- Almost half (n = 428, 48.1%) of DPP respondents have been employed with the agency five years or less. Less than a quarter (n = 208, 23.4%) of survey respondents have been employed with the agency 16 years or more.
- The majority of DPP respondents have a Bachelor's Degree or Master's Degree (n = 789, 88.7%). One hundred thirty-five (135) of respondents are Public Child Welfare Certification Program (PCWCP) graduates and 95 are MSW stipend program graduates.
- Comparison of 2017 and 2018 survey scale data demonstrate a significant increase in one sub-domain, pay, and benefits.
- DPP respondents indicated moderate levels of job satisfaction (scale mean = 3.62, SD = .813).
    - 62.6% either agreed or strongly agreed with the item, "You are satisfied with your present job".
    - 67.0% either agreed or strongly agreed with the item, "You are proud to tell others where you work".
- Staffing remains a concern (scale mean 2.56, SD = .779) for DPP respondents with 87.5% agreeing or strongly agreeing with the item, "Frequent staff turnover is a problem for your program".

Figure 4 provides mean scores for each of the four major survey domains and their sub-domains for all DPP respondents. Each overall domain score is constructed by determining the combined mean for the related sub-domains (e.g., offices, staffing, training, and supervision combine to form institutional resources). Findings are displayed in terms of mean scores for each scale from the 2017 survey compared to mean scores from the 2018 survey. The KY score is created by multiplying the domain mean by 10; the scores greater than 30 are in the "moderately favorable" zone and can be considered agency strengths, while scores of 20 and below are a concern and should be given consideration for improvement. Arrows in the final column depict the direction of change and those with an asterisk (*) are statistically significant. One significant increase between the 2017 and 2018 scale means was found in the sub-domain of pay and benefits.

Figure 4: DCBS Employee Engagement Survey – Division of Protection & Permanency Scores

DCBS Employee Engagement Survey--Division of Protection & Permanency Scores								
Survey Domain	N 2018	2017 Mean	2017 Standard Deviation	2017 Score	2018 Mean	2018 Standard Deviation	2018 Score	Amount & Direction of Change
Agency Needs	**822**	3.4213	.869	34.2	**3.3748**	**.819**	**33.7**	**-0.5↓**
Institutional Resources	**889**	3.0560	.644	30.6	**3.1000**	**.620**	**31.0**	**+0.4↑**
Offices	**889**	3.5988	.920	36.0	**3.5791**	**.915**	**35.8**	**-0.2↓**
Staffing	**889**	2.4389	.738	24.4	**2.3853**	**.699**	**23.9**	**-0.5↓**
Training	**889**	3.2702	.943	32.7	**3.3937**	**.859**	**33.9**	**+1.2↑**
Supervision	**889**	3.4603	.938	34.6	**3.4441**	**.930**	**34.4**	**-0.2↓**
Pay and Benefits	**888**	2.5840	.749	25.8	**2.7464**	**.739**	**27.5**	**+1.7↑***
Staff Attributes	**819**	3.9989	.467	40.0	**4.0138**	**.465**	**40.1**	**+0.1↑**
Self-Efficacy	**867**	4.2722	.534	42.7	**4.2767**	**.529**	**42.8**	**+0.1↑**
Influence	**818**	3.8243	.822	38.2	**3.8681**	**.800**	**38.7**	**+0.5↑**
Adaptability	**819**	4.0092	.609	40.1	**3.9585**	**.580**	**39.6**	**-0.5↓**
Satisfaction	**818**	3.5813	.839	35.8	**3.6198**	**.813**	**36.2**	**+0.4↑**
Organizational Climate	**822**	3.0024	.692	30.0	**2.9827**	**.695**	**29.8**	**-0.2↓**
Mission	**888**	3.4945	.838	34.9	**3.4825**	**.849**	**34.8**	**-0.1↓**
Cohesion	**821**	3.3134	.938	33.1	**3.2582**	**.950**	**32.6**	**-0.5↓**
Communication	**821**	2.9908	.870	29.9	**2.9672**	**.848**	**29.7**	**-0.2↓**
Stress	**818**	1.9332	.886	19.3	**1.9629**	**.871**	**19.6**	**+0.3↑**
***Pay and Benefits**: t(1961) = -4.812, p < .005*								

Statewide Administration of DCBS Staff OUD/SUD Attitudes and Beliefs Survey

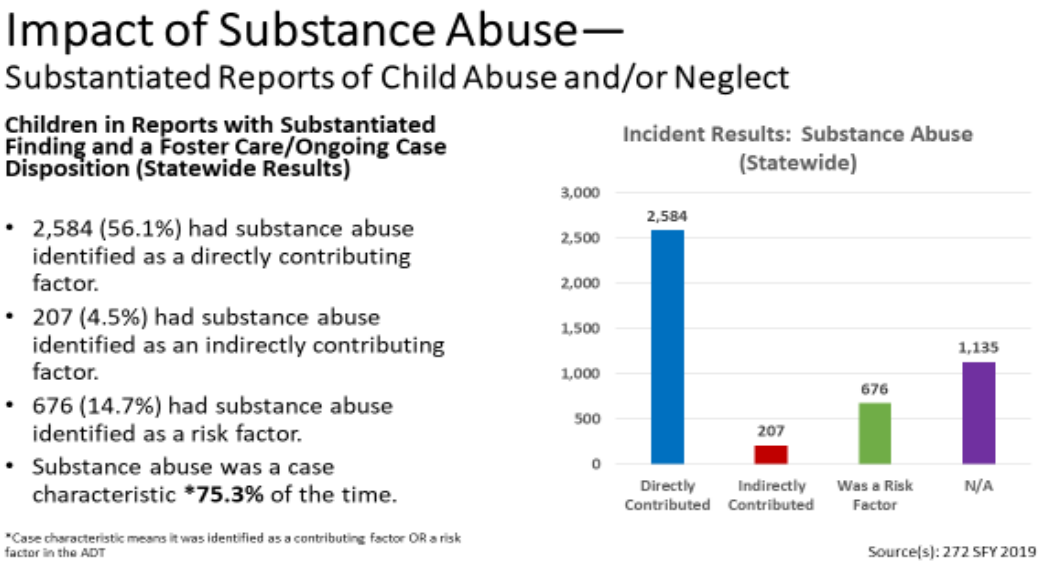
During the summer of 2019 (June/July), a comprehensive statewide survey designed to gauge (baseline) DCBS employees' attitudes and beliefs related to OUD/SUD and affected families was administered to all DCBS staff. Over 1,800 survey responses were completed representing a 41% response rate. The survey was part of the state's overall Kentucky Opioid Response Effort (KORE initiative) designed to implement a targeted response to Kentucky's opioid crisis by

expanding access to a full continuum of high quality, evidence-based opioid prevention, treatment, recovery, and harm reduction services and supports in high-risk geographic regions of the state. DCBS received monies through the KORE initiative to expand programming and develop a training program for DCBS child welfare staff, foster parents, and community partners to prepare them with the necessary knowledge, skills and attitudes to effectively serve families and children.

Preliminary data was shared at each of the KORE child welfare and OUD/SUD regional training events in combination with data from Kentucky's SACWIS. Examples of data shared at the events and included in the report are below. The full report was provided to DCBS Leadership in September 2019. This report is available upon request.

Figure 5: Examples of Survey Domains and DCBS DPP Regional Means

Example



1 Example

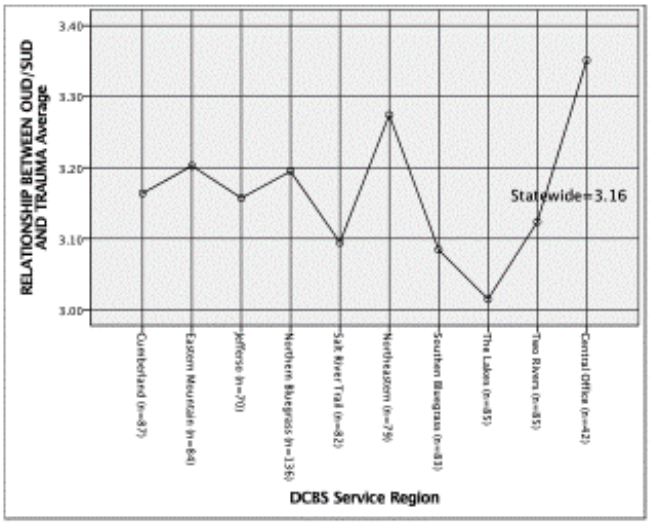
2

OUD/SUD Attitudes and Beliefs Survey

Division of Protection & Permanency, All Regions

'Relationship Between OUD/SUD and Trauma' Scale; Statewide Mean = 3.16, Northeastern Region Mean = 3.27

- The higher the scale mean (average score), the more respondents perceive a relationship exists between OUD/SUD and trauma.
- Despite the differences shown in this line graph, the differences in scale means across the regions were not statistically significant.



Example 3

OUD/SUD Attitudes and Beliefs Survey

Division of Protection & Permanency, All Regions

'Disease Regarding Addiction' Scale; Statewide Mean = 3.13, Northeastern Region Mean = 3.03

- The higher the scale mean (average score), the more respondents perceive that OUD/SUD can be a disease.
- Despite the differences shown in this line graph, the differences in scale means across the regions were not statistically significant.

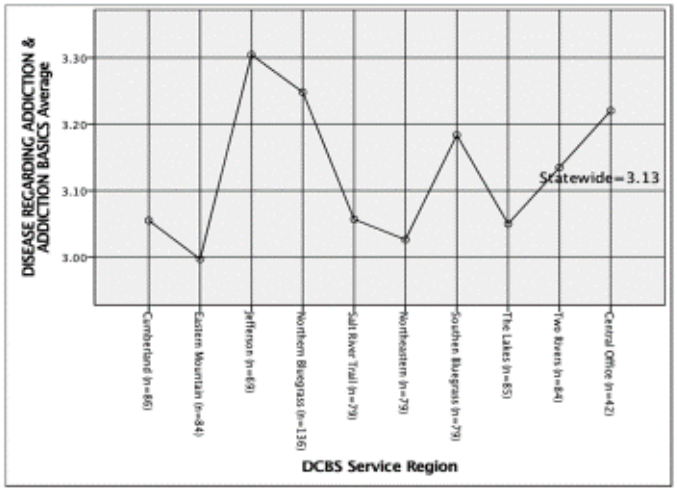


Figure 6: Criticism Toward Pregnant and Parenting Mothers with OUD/SUD Scale Averages of Division of Permanency and Protection by Region

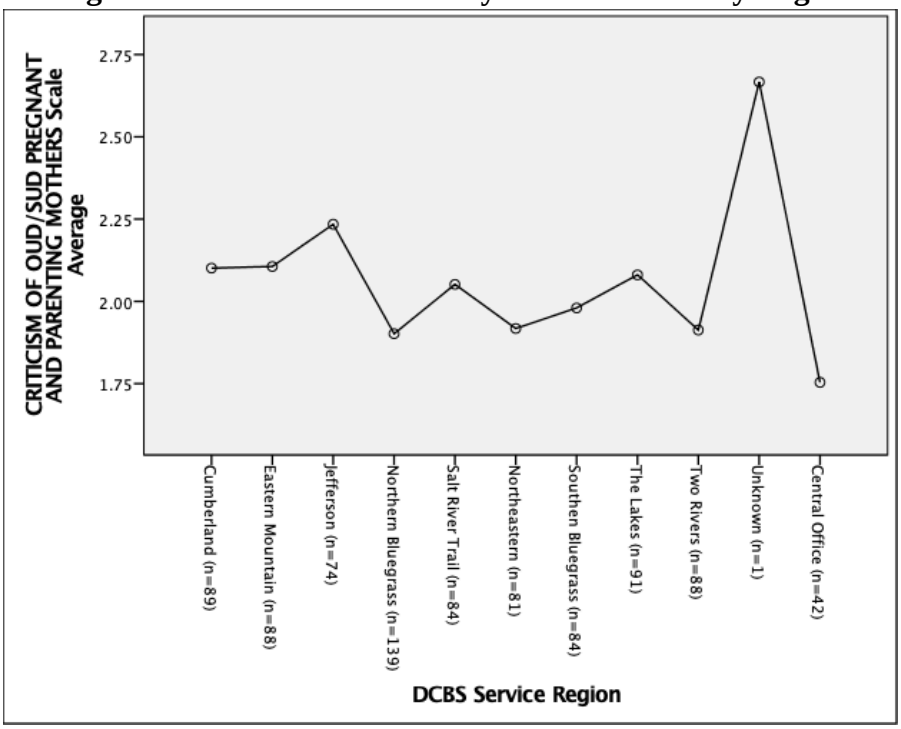


Figure 7: Support of Pregnant and Parenting Mothers with OUD/SUD Scale Averages of Division of Permanency and Protection by Region

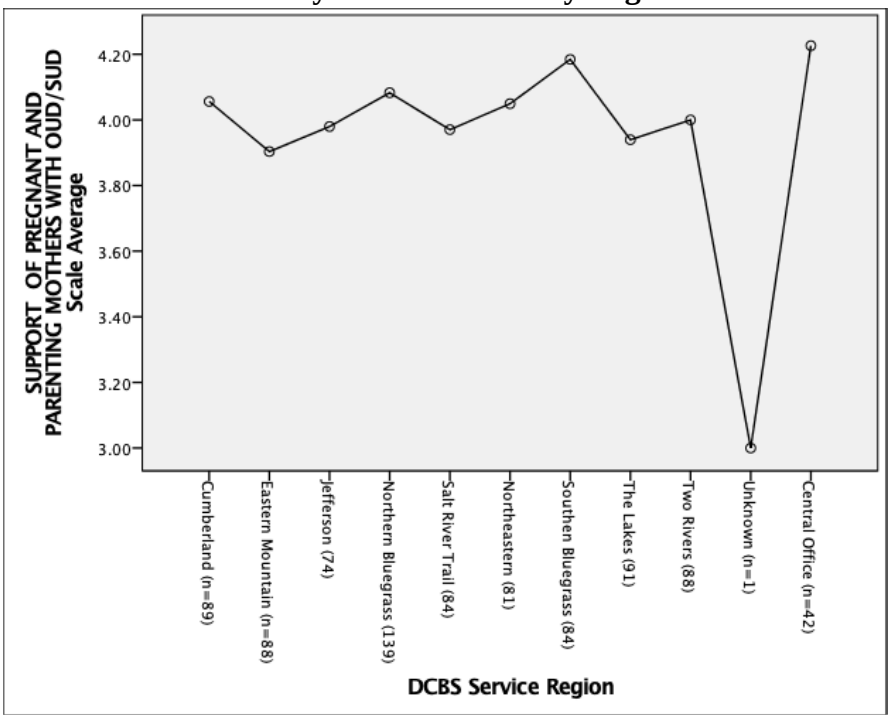


Figure 8: Negativity Toward MAT Scale Averages of Division of Permanency and Protection by Region

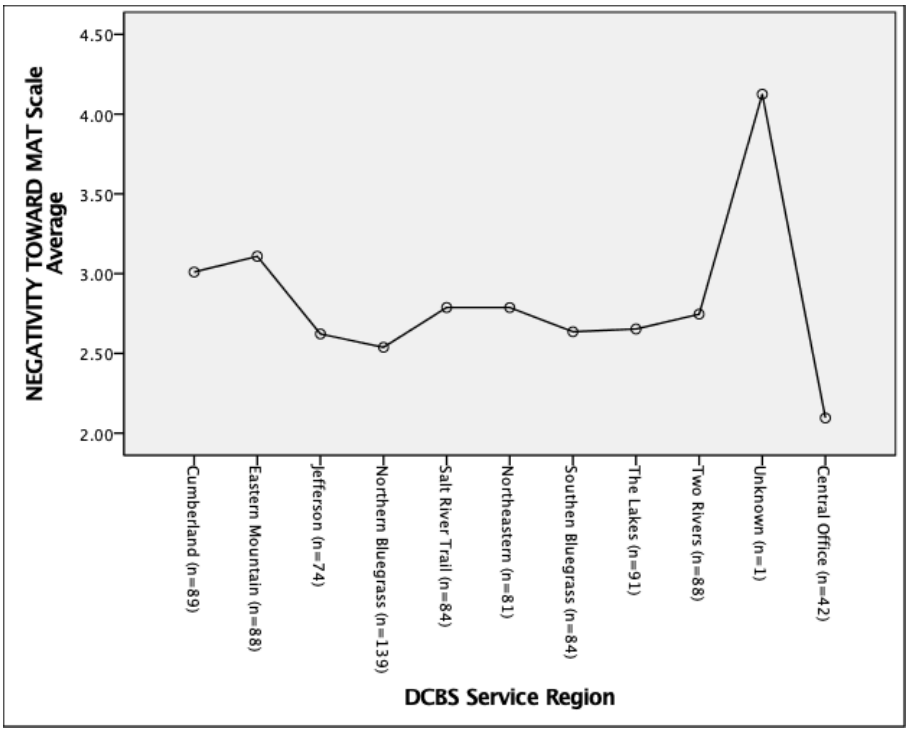


Figure 9: Relationship Between OUD/SUD and Trauma Scale Averages of Division of Permanency and Protection by Region

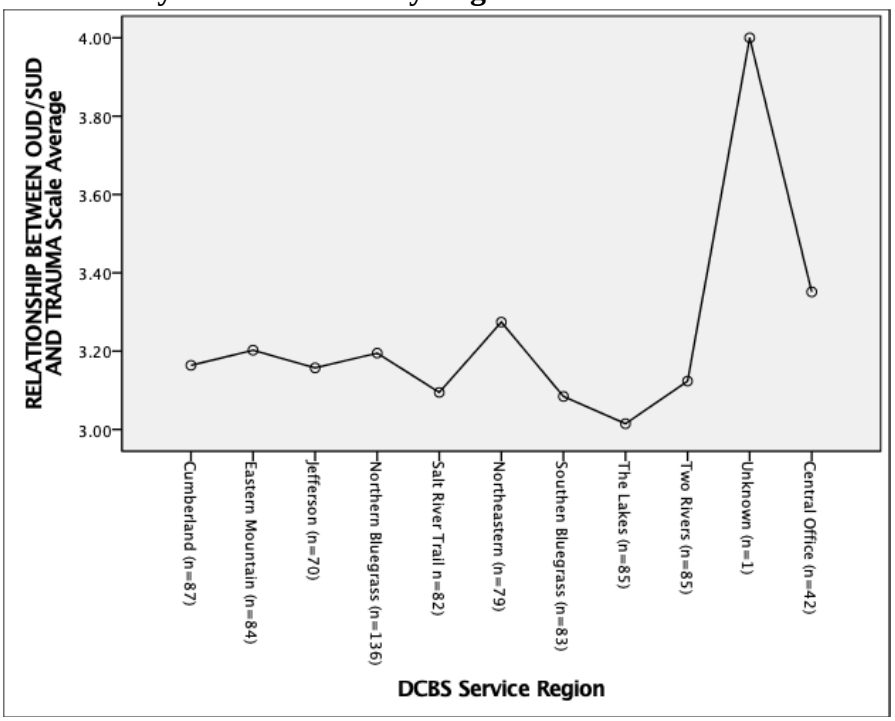
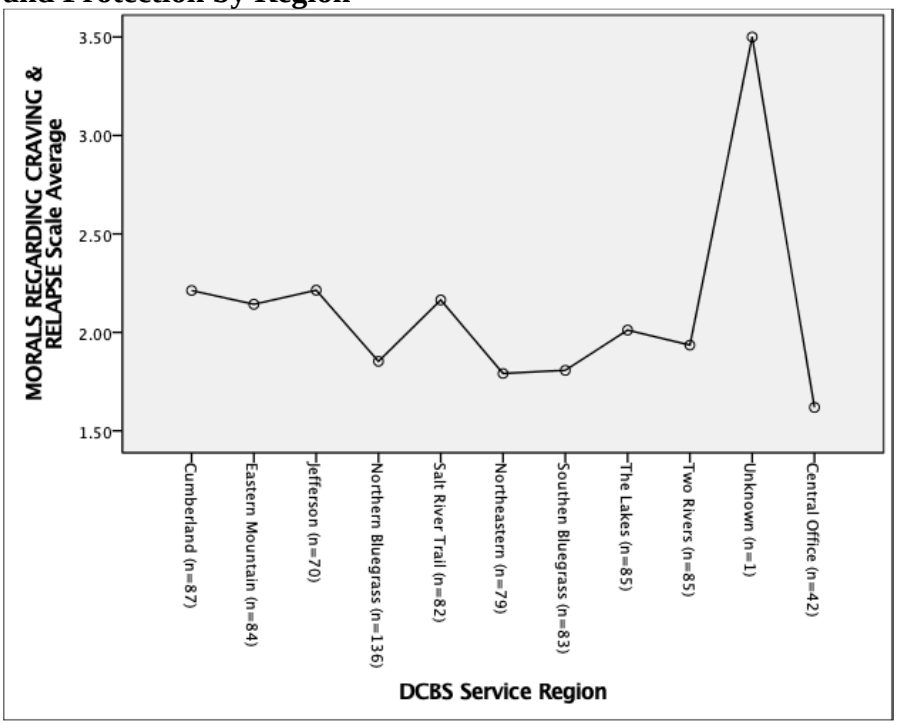


Figure 10: Morals Regarding Craving & Relapse Scale Averages of Division of Permanency and Protection by Region



KORE OUD/SUD Training Events and Changes in Attitudes/Beliefs

During the summer of 2019, DCBS staff (including KSTEP staff and partners), community partners, and foster/adoptive participated in regional kick-off training events which provided information on the latest research, EBPs, and the critical role DCBS staff have in addressing the opioid use/substance use disorder epidemic in Kentucky. The KORE training program utilized subject matter experts in the fields of medicine, behavioral health, and child welfare and was funded through a SAMHSA award received by DCBS. The purpose of the funding was to revise existing child welfare curricula to reflect the most recent research and best practices, as well as develop new training opportunities for DCBS staff.

The impact of the training on participants' attitudes, values, and beliefs related to OUD/SUD was evaluated at the completion of the training. Evaluations assessed perceptions of how applicable the symposium was to their job, changes in beliefs and attitudes regarding different facets of OUD/SUD that occurred as a result of the training, progress made on the trainings primary learning objectives, and input on how the training could have been more useful. Overall, participants felt that the training was relevant to their jobs. Significant differences were found between the pre- and post-assessment of attitudes and beliefs related to OUD/SUD.

The following are examples of the statewide results (all nine DCBS service regions).

Figure 11: Representativeness of KORE Kickoff Survey Respondents by Region

Region	Number & Percent (Valid) Completed Kickoff Survey
Cumberland	184 (14.5)
Eastern Mountain	143 (11.2)
Jefferson	137 (10.8)
Northern Bluegrass	166 (13.1)
Salt River Trail	114 (9.0)
Northeastern	106 (8.3)
Southern Bluegrass	139 (10.9)
The Lakes	82 (6.4)
Two Rivers	159 (12.5)
Central Office	22 (1.7)
Not Applicable	6 (.5)
Missing	14 (1.1)
Total	1272 (100.0)

Figure 12: Applicability of KORE Kickoff Symposium to Job

Scale Items	1 = Strongly Disagree	2 = Disagree	3 = Neutral	4 = Agree	5 = Strongly Agree	0 = Not applicable	N	Mean	Standard Deviation
This symposium was timely to problems or issues in my organization overall.	1.1	1.8	12.1	37.1	46.2	1.7	1252	4.20	.993
This symposium was relevant to problems or issues in my organization overall.	.8	1.0	7.7	36.2	53.0	1.4	1253	4.35	.901
This symposium was timely to my job duties in particular.	1.4	3.8	14.5	39.6	38.8	1.8	1251	4.05	1.048
This symposium was relevant to my job duties in particular.	1.0	3.2	12.0	38.4	43.6	1.8	1246	4.15	1.026
This symposium will help me perform my job more effectively.	1.4	3.5	16.8	38.7	37.9	1.6	1248	4.03	1.036
I expect to apply much of what I learned from this symposium to my work.	1.0	3.5	16.2	40.6	36.9	1.8	1253	4.04	1.022
My organization will benefit from my having completed this symposium program.	1.2	2.4	15.2	36.7	42.8	1.6	1249	4.13	1.013
Overall							**1255**	**4.14**	**.866**

Figure 13: Applicability of KORE Kickoff Symposium to Job - Scale Averages by Region

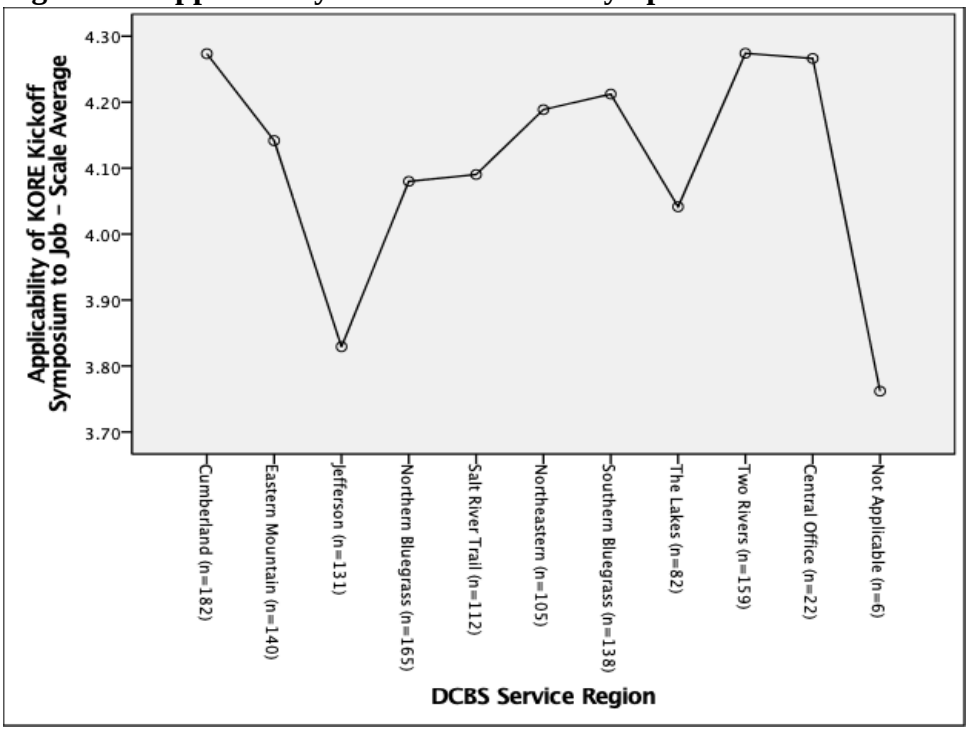
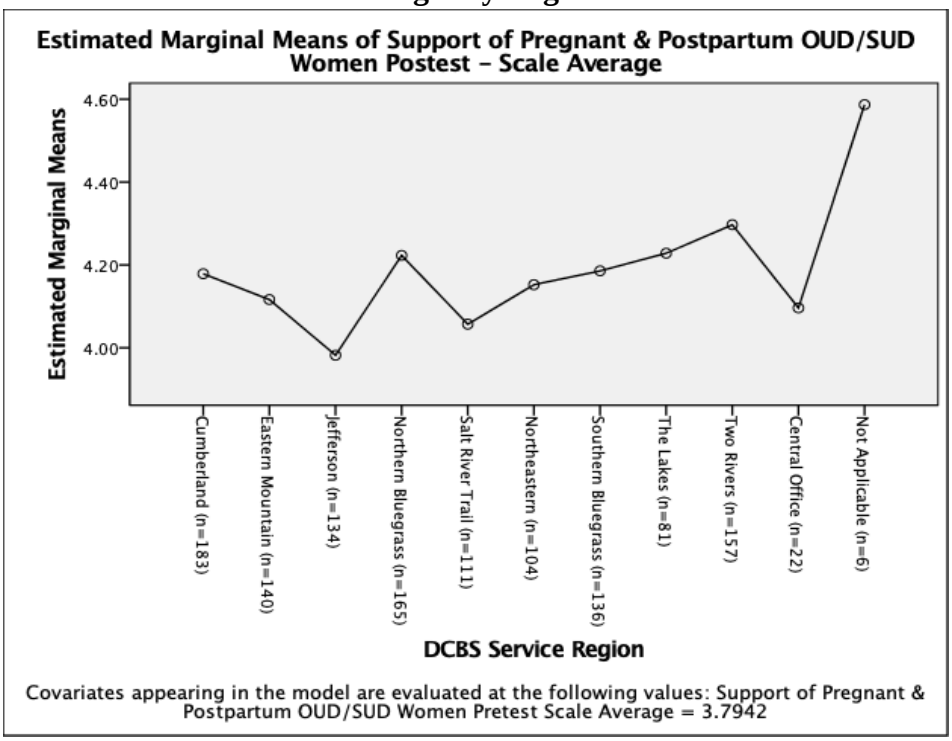


Figure 14: Support of Pregnant & Postpartum OUD/SUD Women

Scale Items		1 = Strongly Disagree	2 = Disagree	3 = Neither Agree Nor Disagree	4 = Agree	5 = Strongly Agree	N	Mean	Standard Deviation	Paired t, df, p
I am supportive and nonjudgmental about pregnant and postpartum women with OUD/SUD.	Pre	2.5	11.8	23.4	44.1	18.2	1255	3.64	.992	=-19.90, df=1243, p≤.001
	Post	1.0	2.7	13.0	53.4	29.8	1250	4.08	.791	
I believe in practices and policies that are designed to reduce stigma, minimize barriers, and improve access to services and outcomes for pregnant and postpartum women with OUD/SUD.	Pre	.8	4.4	20.2	48.1	26.5	1240	3.95	.845	
	Post	.8	1.5	9.5	49.2	38.9	1243	4.24	.749	=-15.72, df=1227, p≤.001
Overall	**Pre**						**1258**	**3.79**	**.803**	**t=-21.06 df=1251, p≤.001**

Figure 15: Estimated Marginal Means of Support of Pregnant & Postpartum OUD/SUD Women Posttest - Scale Averages by Region



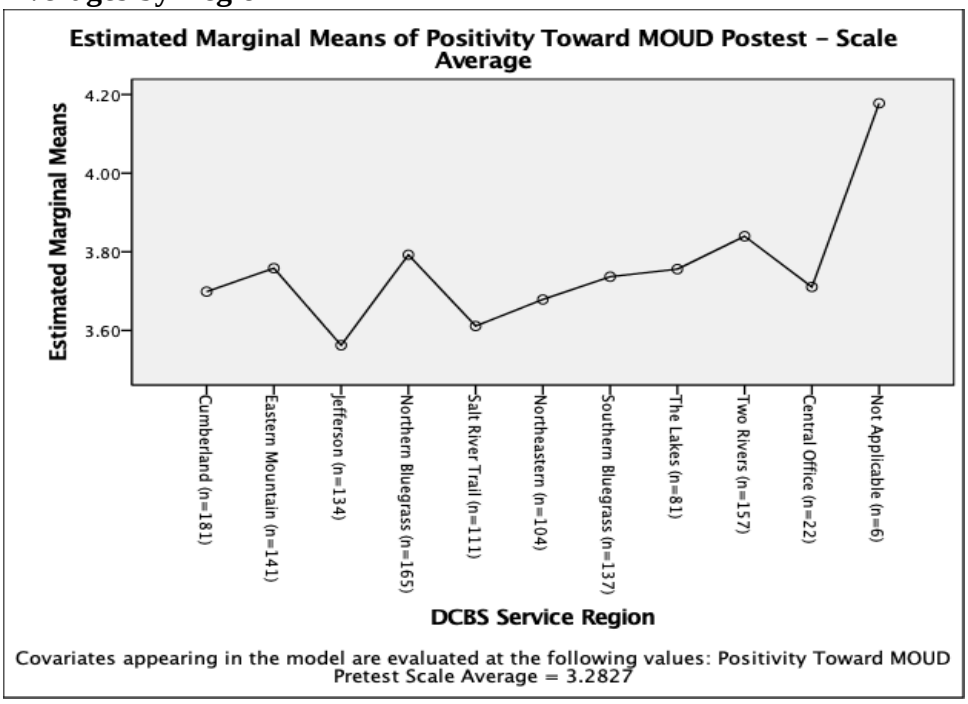
μ=4.16

Figure 16: Positivity Toward MOUD

Scale Items		1 = Strongly Disagree	2 = Disagree	3 = Neither Agree Nor Disagree	4 = Agree	5 = Strongly Agree	N	Mean	Standard Deviation	Paired t, df, p
MOUD help clients engage in recovery.	Pre	1.8	6.3	38.5	41.1	12.3	1242	3.56	.852	t=-21.24, df=1232, p≤.001
	Post	.5	1.4	18.5	54.6	25.0	1242	4.02	.732	
MOUD clients are easier to track toward abstinence.	Pre	1.9	9.8	51.8	29.7	6.9	1239	3.30	.809	t=-17.16, df=1226, p≤.001
	Post	1.4	4.2	35.7	44.6	14.2	1234	3.66	.822	
MOUD are less likely to be abused	Pre	4.9	20.4	47.0	23.3	4.5	1230	3.02	.900	t=-16.41, df=1220, p≤.001
	Post	2.8	12.8	36.7	37.6	10.1	1237	3.39	.931	
MOUD offer a sense of normalcy to clients in a physically safe and monitored way.	Pre	1.4	10.1	43.8	36.4	8.4	1232	3.40	.833	t=-22.06, df=1218, p≤.001
	Post	.6	2.4	23.1	55.6	18.4	1231	3.89	.740	
The most effective way to treat opioid dependency is through MOUD.	Pre	4.8	12.9	52.1	24.5	5.7	1232	3.13	.881	t=-21.08, df=1225, p≤.001
	Post	1.5	5.6	37.5	41.9	13.5	1240	3.60	.845	
Clients need MOUD to avoid cravings and other suffering that causes issues in	Pre	2.5	11.5	47.6	32.7	5.7	1231	3.28	.833	t=-22.27, df=1225, p≤.001
	Post	.6	3.8	29.8	49.6	16.1	1240	3.77	.785	

treatment.					
Overall	**Pre**	**1254**	**3.28**	**.651**	**t=-26.10 df=1252, p≤.001**

Figure 17: Estimated Marginal Means of Positivity Toward MOUD Posttest - Scale Averages by Region



μ=3.72

Staffing KSTEP

Competent staff with the knowledge, skills, attitudes, as well as necessary resources to perform their job functions are critical to the success of any program. The KSTEP model uses a combination of internal DCBS employees and contracted provider resources (in-home services and behavioral health services) to deliver services to families.

Once a family is referred and accepted to the KSTEP program (has been determined to meet program criteria), services are delivered to families through a collaboration between DCBS, private providers of in-home services, and behavioral health treatment agencies. Each family is assigned an ongoing DCBS caseworker and an in-home services case manager who work together and in partnership with the family to assess, make appropriate referrals, coordinate services, and provide appropriate services (e.g., EBPs). The following figures demonstrate the key personnel involved in the delivery of KSTEP services, required qualifications for the positions, roles/responsibilities and the training necessary to perform job duties.

Figure 18: DCBS Personnel

DCBS Position	**Education/**	**Roles/Responsibilities**	**Training**

	Experience		
DCBS investigative worker	Graduate of a college or university with a bachelor's degree in social work, sociology, psychology, marriage and family therapy or a related field.	1. Investigate allegations of child abuse, neglect, and/or dependency. 2. Assesses child safety and risk and then makes appropriate safety plans. 3. Makes KSTEP referral and sends required documents to the in home provider 4. Attends FTMs and reviews weekly updates before the case moves to ongoing	• Academy training-includes intake, assessment, court, case planning, and sexual abuse training • KSTEP web-based training onsite follow up training with program lead • Solution Based Casework overview • Basic Motivational Interviewing-recommended
DCBS ongoing worker	Graduate of a college or university with a bachelor's degree in social work, sociology, psychology, marriage and family therapy or a related field.	1. Reviews weekly updates from in-home provider and makes case decisions accordingly. 2. Assesses child safety and adjusts child placement accordingly. 3. Attends monthly FTMs. Attends home visits with the in-home providers, when possible.	• Academy training-includes intake, assessment, court, case planning, and sexual abuse training • KSTEP web-based training onsite follow up training with program lead • Solution Based Casework overview • Basic Motivational Interviewing-recommended
DCBS supervisor (FSOS)	Four-year degree, 2 yrs. related experience	1. Reviews weekly updates from in-home provider 2. Provides case consults with the investigative and ongoing worker for case decision making; consults with worker regarding risk and safety issues, if they can be mitigated and if the family/child meets criteria for KSTEP 3. Attends FTMs, when possible 4. Attends bimonthly direct line meetings.	• Academy training includes intake, assessment, court, case planning, and sexual abuse training • Supervisory and personnel training • KSTEP web-based training with onsite follow up training with program lead • Solution Based Casework overview • Basic Motivational Interviewing-recommended

Figure 19: In Home Provider Personnel

In-Home Provider Position	**Education/ Experience**	**Roles/Responsibilities**	**Training**
Clinical	Graduate of a	1. Completes initial and	• KSTEP web based training

staff/ therapist	college or university with a master's degree in social work, counseling, or psychology. Maintain all required licensure (LCCC, LPCA, MSW)	ongoing assessments with the family. Completes ASI to determine appropriate referrals based on the level of care. 2. Provides therapy and other clinical services. 3. Provides EBPs to clients. 4. Completes NCFAS and PSI to determine family functioning and assess further recommendations.	• Solution Based Casework • Basic Motivational Interviewing • Advanced Motivational Interviewing- recommended • Cognitive Behavioral Therapy training • Parent-Child Interaction Therapy- optional
Case coordinator/ case manager	Graduate of a college or university with a bachelor's degree in social work, counseling, or psychology.	1. Provides in home case management-main point of contact for family. 2. Assists in the removal of barriers. 3. Provides weekly update to the social workers and arranges routine and emergency FTMs. 4. Provides in-home parenting skills to family. 5. Completes NCFAS and PSI to determine family functioning and assess further recommendations.	• KSTEP web based training • Solution Based Casework • Basic Motivational Interviewing • Advanced Motivational Interviewing- recommended • CARES training
Supervisor	Master's Degree in social work, counseling, or psychology and shall demonstrate professional experience providing treatment services to families and providing supervision; Bachelor's Degree may be considered with a least 3 years related work experience	1. Provides oversight and case consultation. 2. Ensures data is entered into the database. 3. Organized initial and ongoing trainings for workers.	• KSTEP web based training • Solution Based Casework • Basic Motivational Interviewing • Advanced Motivational Interviewing- recommended

Figure 20: Treatment Center Personnel

Treatment Center Position	**Education/ Experience**	**Roles/Responsibilities**	**Training**

Coordinator	Graduate of a college or university with a master's degree in social work, counseling, or psychology.	1. Makes initial appointment for CMHC assessment. 2. Links client with other needed supports (peer support, self-help meetings, community supports). 3. Acts as a liaison between the client, in-home provider, and therapist to schedule appointments, provide weekly updates, and attend FTMs.	• KSTEP web based training • Basic Motivational Interviewing • Advanced Motivational Interviewing- recommended
Therapist	Graduate of a college or university with a master's degree in social work, counseling, or psychology. Maintain all required licensure.	1. Completes initial and ongoing assessments to recommend substance abuse or mental health treatment. 2. Provides treatment planning recommendations and information in weekly updates to in home provider. 3. Provides substance abuse treatment including individual therapy and group therapy.	• KSTEP web based training • Basic Motivational Interviewing • Advanced Motivational Interviewing- recommended • Behavioral Therapy Training • Parent-Child Interaction Therapy- Optional

KSTEP Training

Multiple trainings for staff (DCBS, in-home service providers, treatment providers) occurred throughout the waiver period, with several occurring prior to implementation to prepare employees with the necessary knowledge, skills, and attitudes to effectively delivery services required in the KSTEP model. Staff trainings include: Solution Based Casework Initial Training (private providers), Solution Based Casework for Supervisors (private providers), Solution Based Casework Overview (DCBS staff), Motivational Interviewing: Basic Skills Proficiency, Motivational Interviewing: Core Skills, and Motivational Interviewing: Advanced.

Figure 21: KSTEP Training for Staff

Training Title	# Participants
Solution Based Casework: Initial	42
Solution Based Casework: Overview	51
Solution Based Casework for Supervisors	9
Solution Based Casework: Supervisor Booster	27
Motivational Interviewing: Advanced	1
Motivational Interviewing: Basic Skills Proficiency	116
Motivational Interviewing: Core Skills	98

Training Title	# Participants
KSTEP Web-Based Training	61

A new KSTEP specific web-based training was also developed for KSTEP staff and partners. This training includes an overview of the KSTEP project and a review of Solution-Based Casework; Stages of Readiness for Change and Motivators for Change; Motivational Interviewing; and Substance Abuse Dynamics and Interventions. This training is followed by an in-person training where participants practice the intervention strategies taught in the web based training. During the waiver period, 61 DCBS staff completed the KSTEP WBT.

DCBS and KSTEP provider training attendance/completion was tracked through the Training Record Information System (TRIS) throughout the waiver period. The trainings were evaluated using the standard DCBS Level 1 tool which includes items related to trainees' satisfaction with various aspects of the programs including content, instructors, facilities, etc., as well as open ended questions asking about their perceptions of the most important things they learned in the training and what other topics or information would help them do their job more effectively. Training evaluation results were reported to the trainers and training mangers, as well as the KSTEP project administrator.

Below are highlights from the Level 1 training evaluations for KSTEP trainings.

Solution Based Casework Initial Training (private providers), March 1-3, 2017 (20 responses)

90% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement, "I was able to relate each of the learning objectives to the learning I achieved".
90% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement "I will be able to apply what I learned during this session on the job".

What were the three most important things you learned from this training?

- Breakdown of each component, how each component worked, and how each step impacts the family.
- Division of family and individual problems, how information gathered, normalizing and exception and intentions affect family buy-in, documentation ideas, how to document client success in a more efficient way.
- Identifying problems within the home, action plans.
- Importance of building support, understanding family situations, and documentation. Interviewing skills, the four milestones, consensus building.
- Milestones, the importance of gaining detailed information, and proper documentation. Model concepts, approach, techniques.
- New skills for interviewing and talking with clients. New skills for working/interviewing families.
- New style for gathering same/similar information, developing family and individual level objectives, PIE strategies. New therapy interventions/techniques.

- Practice model, collaboration, family engagement.
- Safety being most important reason to stay, and not get caught up in day to day. That you focus on safety of the children, you build a good rapport with the family.
- The four interviewing techniques, the milestones, how the family consensus is developed. What SBC is and how to utilize, ways to utilize technology, the importance of this model. What solution-based casework is, how to implement SBC, documentation techniques.

What other topics or information might help you more effectively perform your job?

- Better preparation and understanding of the program (KSTEP) and how we are implementing it. Difficult to begin implementing skills effectively based on program start-up.
- Discuss more regarding motivation; specifically, with substance abuse. How this will work for our agency.
- Love the trainer.
- More discussion on how to implement in different settings. More practice on techniques introduced.
- More time on documenting and celebrating. More training on application.
- Refresher course on SBC further down the road. This was the best training presentation I have ever attended. Somewhat agree that my questions and concerns were adequately addressed - not trainers' fault.

Solution Based Casework for Supervisors (private providers), March 21-22, 2017 (8 responses)

100% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement, "I was able to relate each of the learning objectives to the learning I achieved".
87.5% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement "I will be able to apply what I learned during this session on the job".

What were the three most important things you learned from this training?

- Being aware and reminded that safety is first, not to fall into traps and/or other distractions when safety isn't being addressed, there are no stupid questions. Case consult, action plans.
- How to apply, how to teach, how to use tools of model.
- Learning how to gather information from the genogram and gathering a consensus.
- Proficient genogram, how to determine safety risk, how to supervise and use case consultation agenda.
- That supervision and casework can be a parallel process using SBC, improved my ability to write consensus statements, FLO's, ILO's, etc. How to lead an SBC case consultation.

What other topics or information might help you more effectively perform your job?

- How to implement SBC specific to agency policy/protocol.
- I thought the materials were adequate.

- Lisa is "the bomb.com" aka best trainer ever.

Solution Based Casework Overview (DCBS staff), March 20, 2017 (35 responses)

97% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement, "I was able to relate each of the learning objectives to the learning I achieved".
97% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement "I will be able to apply what I learned during this session on the job".

What were the three most important things you learned from this training?

- Action plan, family level objectives/individual level objectives, documentation.
- Action plan, heart of case work, ILO and FLO.
- Action planning, normalizing, partnering/engaging with clients and families. Be specific, address, (prev/interrupt/escape).
- Being specific.
- Case planning, specific goods, celebration. Celebrate the small things, make it specific. Documentation techniques, writing objection. Everything was helpful/useful.
- How to develop an action plan, ILO's and FLO.
- Implementing new plans, interacting with the family and indirect in developing their plan. KSTEP will focus prevent, interrupt, and escape.
- Personalize, document, celebrate change.
- Solution based practices, action plan, ILO and FLO.
- Talk to family more, point out strong, document how completed. Tasks need a way to be documented, focus on ever day life events.
- To be client specific, relapses offer opportunities, measurable progress.

What other topics or information might help you more effectively perform your job?

- Action plan. More one on one. Addiction.
- Differences of family level objectives and individual level objectives. Documenting. More examples.
- Everything was good-easy to understand. Houser training.
- Learning more/communication.
- More time hands on working through the material. Transportation to service sight. Better tech workings

KSTEP Web-Based Training, 61 Responses (available ongoing through DCBS Learning Management System)

93.4% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement, "I was able to relate each of the learning objectives to the learning I achieved".
91.8% of respondents either 'Strongly Agreed' or 'Somewhat Agreed' with the statement "I will be able to apply what I learned during this session on the job".

What were the three most important things you learned from this training?

- SBC Interview Techniques
- Approaches to interviewing/helpful interviewing techniques, how substance abuse progression effects individuals, and in-depth symptoms of substance abuse.
- Benefits of Solution Based Casework, rather than methods used in the past, that do not appear to work. Recognizing the different levels of substance use, and being able to pinpoint the problem. Also, the stages that a client can go through, when contemplating change, to the end where the temptation is no longer a concern.
- Different aspects of substance use, using positive case work, and powering forward.
- Guidelines, models, and policies.
- How solution-based therapy can help prevent higher levels of Out of Home Care, reducing longer time frames of services, and the years of research that have went into these practices.
- Interviewing techniques, stages of substance abuse, levels of substance abuse
- Refresher on MI and SBC
- Skills in motivational interviewing
- That keeping a family together is extremely important. Also, what to look for with a child if their home life is bad. Also, how to help the children better.

What other topics or information might help you more effectively perform your job?

- Maybe something related to the effects of substance abuse on children, and the family as a whole. There tends to be secondary trauma, on the family, and
- I think that needs to be addressed, as part of the greater whole, as there is a lot of anger/hurt, on the part of the family.
- None at this time
- Practice models and Prevention Skills.
- Ways to relate to the children better.
- More of the effects on OOHC

KSTEP Partner Communication and Collaboration

Collaboration with stakeholders is essential to being responsive, innovative, and effective in program implementation. The KSTEP process analysis included the assessment of collaboration capacity amongst DCBS, providers, community partners, etc. Collaboration capacity was operationalized using the Wilder Collaboration Factors Inventory's (Mattessich.et. al, 2001) six factors of environment, membership characteristics, communication, process and structure, purpose and resources.

To determine a baseline measure of collaboration capacity, a modified version of the Wilder instrument was administered to all program staff, partners, administrators, and service providers in September 2017. Stakeholders were invited via email to complete the KSTEP Communication Collaboration Survey. The survey, a modified version of the *Wilder Collaboration Factors Inventory* (Mattessich.et. al, 2001), was completed by 35 individuals from KSTEP (47.9% response rate, Results were shared during KSTEP direct line meetings and generated strong conversation.

A second administration of the KSTEP Communication Collaboration Survey occurred in January 2019. The survey was sent to 44 individuals from the four counties who collaborated on the KSTEP program: Carter, Greenup, Rowan, and Mason. Data from the second administration (2019) was analyzed and compared to the 2017 data. Over the period 2017-2019, the overall factor scores of the collaborative communities showed notable improvements on two out of the 20 factors, Appropriate Cross Section of Members, and Adaptability, as the scores on both factors exceeded 4.0 in 2019, indicating a strength. In contrast, the overall score on the factor Ability to Compromise dropped under 4.0, suggesting the factor quality was borderline and might require attention and further discussion among collaborating partners.

In 2019, five categories of the WCFI (i.e., environment, membership characteristic's, process and structure, communication, and purpose) showed overall scores higher than 4.0, indicating a strength in that area. RESOURCES yielded a mean score of 3.82, suggesting minor concern. Findings from the 2019 iteration seem to indicate improvement, when compared to data from 2017, when only communication and purpose showed overall scores higher than 4.0. However, it is also worth noting that overall category mean score on RESOURCES experienced a drop by .17 between the 2017 and the 2019 administrations.

Over the period 2017-2019, the overall factor scores of the collaborative communities showed notable improvements on two out of the 20 factors, Appropriate Cross Section of Members, and Adaptability, as the scores on both factors exceeded 4.0 in 2019, indicating a strength. In contrast, the overall score on the factor Ability to Compromise dropped under 4.0, suggesting the factor quality was borderline and might require attention and further discussion among collaborating partners.

At the county level comparison (See Figure 22), Rowan and Mason counties displayed notable increases across all the factors and/or categories, while Carter and Greenup counties showed some decrease on certain categories. For instance, Rowan County's category score increase on ENVIRONMENT reached .05 statistical significances, whereas Greenup County's category score decrease on RESOURCES was also statistically significant at $p < .05$.

Figure 22: Comparison of Descriptive Statistics across the Four Counties in the Six Categories of Collaboration.

Collaboration Category	**2019 vs. 2017**				
Environment	**Overall** ***M Diff /t(df)***	**Carter County** ***M Diff /t(df)***	**Greenup County** ***M Diff /| t(df)***	**Rowan County** ***M Diff / t(df)***	**Mason County** ***M Diff /t(df)***
Membership Characteristics	.16 / 1.36 (76)	-.09 / .53 (28)	.02 / .10 (30)	.42 /2.09 (29)*	.24 / 1.08 (22)
Process & Structure	.14 / 1.10 (76)	.12 / .69 (28)	.12 / .72 (30)	.32 / 1.50 (29)	.33 / 1.21 (22)
Communication	.14 / 1.15 (76)	0 / - (28)	.09 / .57 (30)	.34 / 1.66 (29)	.36 / 1.28 (22)
Purpose	.10 / .73 (76)	.12 / .61 (28)	-.06 / .36 (30)	.35 / 1.71 (29)	.12 / .44 (22)
Resources	.12 / 1.04 (76)	-.09 / .46 (28)	.11 / .75 (30)	.33 / 1.82 (29)	.28 / 1.51 (22)
Environment	-.17 / 1.11	-.12 / .46 (28)	-.50 / 2.10	.19 / .95 (29)	.21 /.79 (22)

	(76)		(30)*		

***Note.* *p < .05.**

KSTEP Program Communication and Collaboration Activities

During development of KSTEP, administrators recognized the need for regular communication and collaboration of stakeholders for successful implementation. Modeled after the START program's collaboration and engagement strategies, KSTEP instituted a series of meetings designed to engage multiple stakeholders. The meetings are regularly occurring and serve a purpose in supporting the KSTEP teams and families with which they serve. Regular meeting attendance by members of the evaluation team provides an ongoing platform for reviewing KSTEP program numbers and other process evaluation data with team members, behavioral health providers, and program administrators.

Figure 23: KSTEP Program Meetings

Meeting	**Frequency**	**Stakeholders Involved**	**Purpose/Topics/Agenda Items**
KSTEP direct line meetings	Monthly/every two months	All direct line staff (DCBS and KSTEP providers), supervisors, and regional management	Discussions of service delivery, communication, data, reviews, clarification of roles/protocols, case consults, and model fidelity.
KSTEP workgroup meetings	Monthly	DCBS DPP leadership (central office and regional), DBHDID children's branch, KSTEP providers (KVC and Ramey), behavioral health providers, and evaluation team	Guidance on development of the model, updates on implementation of KSTEP, proposed solutions, and action steps.
Title IV-E waiver steering committee meetings	Monthly	KSTEP and START program administrators, DCBS leadership (DPP, DAFM, IQI, quality assurance), and evaluation team	Program and progress updates, review of evaluation data, barriers encountered, and solutions.

Client Satisfaction with Services

To assist with measuring key processes and underlying principles of the KSTEP model, (e.g., family involvement in decision-making), the evaluation team in collaboration with program staff created a survey using modified items from the Youth Services Survey for Families (YSS-F).

The YSS-F has been widely used to measure client satisfaction with services in behavioral health settings including Kentucky's DBHDID. Given the collaboration with behavioral health substance misuse and in-home service providers, the modified YSS-F was essentially a great fit.

Once approved by CHFS' Institutional Review Board (IRB), staff from KSTEP began to provide a copy of the survey to program participants as they exit from services along with a self-addressed postage paid envelope for anonymous completion and return. In addition, the front page of the survey allows for participants with a computer or smart phone to take the survey without completing it on paper. Clients who leave services prior to completion of KSTEP were also mailed a survey with postage paid return envelope to their last known address of record. Due to the less than desirable response rate reported in the interim evaluation, evaluation and program staff strategized alternate methods of administration that include allowing an opportunity during the final contact with the family for the survey to be completed while the family is still at the office. To eliminate potential bias, respondents were allowed to complete the survey in private and subsequently return it to a neutral party in a sealed envelope as they leave the agency rather than hand the survey to the person they may be rating.

Nine client satisfaction surveys were completed during the waiver period. The majority of survey responses are positive and respondents feel as if their needs are being met by the services provided. One major limitation is that the surveys are only given at the completion of services and, therefore, may likely be affected by a response bias if consideration is given to the absence of responses given from families who abruptly stop services or can no longer be located.

Figure 24: KSTEP Client Satisfaction Survey Respondents by County

		Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Valid	Carter County	1	12.5	16.7	16.7
	Greenup County	3	37.5	50.0	66.7
	Rowan County	2	25.0	33.3	100.0
	Total	6	75.0	100.0	
Missing	System	2	25.0		
Total		8	100.0		

General Satisfaction

Clients reported scores that suggest they were satisfied with the services that they received. However, due to the low number of responses, these numbers cannot be generalized. A score of 1 meant a client strongly disagreed with a statement and a score of 5 meant a client strongly agreed with a statement.

Figure 25: General Satisfaction with KSTEP Program

General Satisfaction with the KSTEP Program (N = 5)		
Question	Mean Score*	SD
Overall, I am satisfied with the services my family has received.	4.40	.548
I helped to choose my family's services.	3.40	.894
Our family had a plan with clear goals and objectives.	4.60	.548
I helped to choose my family's goals.	4.40	.548
I felt supported by the people working with my family.	4.60	.548
I was satisfied with the Family Team Meetings (FTMs) for my family.	4.40	.548
The services my family received were the right fit for us.	4.60	.548
Appointments and services were available at times that were convenient for us.	4.60	.548
My family got the help we wanted.	4.40	.548
My family got as much help as we needed.	4.40	.548
I am satisfied with my family life right now.	4.20	.837
I would recommend KSTEP to other families in need of services.	4.60	.548

*(1 = Strongly Disagree – 5 = Strongly Agree)

Client Experiences with Their KSTEP Social Workers and KSTEP Providers

Additionally, clients were asked to comment on the quality of their experiences with the KSTEP team members that worked their cases with them. They were asked to respond to the same seven questions twice; once to comment on the performance of their social worker and another time to comment on the performance of their KSTEP provider. These items were also rated on a scale of 1 = Strongly Disagree to 5 = Strongly Agree. Due to the extremely low number of responses, this data cannot be generalized. These results are presented in the figures below.

Figure 26: Client Experiences with Their KSTEP Social Workers and KSTEP Providers

DCBS Social Worker (N = 5)

Question	Mean Score	SD
My social worker helped me get services from others.	4.80	.837
My social worker treated me and my family with respect.	4.80	.447
My social worker respected my family's religious/spiritual beliefs.	4.40	.894
My social worker spoke with me in a way that I understood.	4.80	.447
My social worker was sensitive to my cultural/ethnic background.	5.00	.707
My social worker listened to my ideas.	5.00	.000
I know what my social worker expects me to do.	4.80	.447

KSTEP In-Home Provider #1 Worker (N = 1)

Question	Mean Score	SD
My KSTEP Worker helped me get services from others.	4.0	-

My KSTEP Worker treated me and my family with respect.	4.0	-
My KSTEP Worker respected my family's religious/spiritual beliefs.	4.0	-
My KSTEP Worker spoke with me in a way that I understood.	4.0	-
My KSTEP Worker was sensitive to my cultural/ethnic background.	4.0	-
My KSTEP Worker listened to my ideas.	4.0	-
I know what my KSTEP Worker expects me to do.	4.0	-

KSTEP In-Home Provider #2 Worker (N = 3)

Question	Mean Score	SD
My KSTEP Worker helped me get services from others.	4.67	.577
My KSTEP Worker treated me and my family with respect.	4.67	.577
My KSTEP Worker respected my family's religious/spiritual beliefs.	5.00	1.00
My KSTEP Worker spoke with me in a way that I understood.	4.67	.577
My KSTEP Worker was sensitive to my cultural/ethnic background.	5.00	1.00
My KSTEP Worker listened to my ideas.	4.67	.577
I know what my KSTEP Worker expects me to do.	4.67	.577

Clients were asked to respond to two additional items:

How long has DCBS been working with you and your family?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One to two months	1	12.5	20.0	20.0
	Three to six months	3	37.5	60.0	80.0
	Six months to a year	1	12.5	20.0	100.0
	Total	5	62.5	100.0	
Missing	System	3	37.5		
Total		8	100.0		

Were your children ever removed and placed in state custody?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, never	4	50.0	80.0	80.0
	Yes, but they are with me now	1	12.5	20.0	100.0
	Total	5	62.5	100.0	
Missing	System	3	37.5		
Total		8	100.0		

Client Satisfaction Survey Open-Ended Responses

Respondents were asked to use their own words to respond to three open-ended questions. These three questions were:

1. What has been the most helpful thing about the KSTEP services you and your family have received?
2. What do you think would improve KSTEP services in Kentucky?
3. Please provide any additional comments. We are interested in both positive and negative feedback. Remember your name or contact information will not be attached to this in any manner.

Comments provided in this section were broadly favorable with clients voicing a genuine sense of gratitude and appreciation for the services they received. Below are comments received in response to question 1:

- They helped me with appointments and getting the services I needed. They also helped me by providing knowledge, emotional help through what I was dealing with, being very compassionate.
- Step by Step on staying clean, setting goals, following thru them and helping me thru on our bad days as well as our good days.
- everything
- The financial support
- Placement with a program coordinator w/extensive one-on-one time.

Consequently, many respondents reported they could not offer much to improve the program. One client mentioned that KSTEP could consider not placing high expectations on clients when they are new to the program. Below are responses to question #2 to illustrate this dynamic.

- To go over more material that was helpful to my situation.
- N/A Our workers were awesome and quick to help out where and when they could.
- I think it's just fine :)
- I'm not sure

Finally, when asked for additional comments, many clients gave helpful feedback about their experience receiving the KSTEP intervention. Below are responses that were given.

- My case worker was {Name Removed} and I just wanted to say that I felt she did a very good job with my case.
- Our workers were outstanding!! They helped our family set goals and keep on track and follow thru them which helped us get our Children back home in just a Short amount of time,
- The workers have been great. {Name Removed} is very good at her job. {Name Removed} as well. They are both very kind, and take their jobs seriously. Great people in general!

<u>KSTEP Fidelity</u>

Data entry into the KSTEP database by the in-home KSTEP providers posed some challenges. In addition to the KSTEP database, the in-home KSTEP providers were also providing updates on

cases/case activity through a weekly KSTEP log maintained on an Excel spreadsheet. It is hypothesized that during early implementation, the log was updated weekly by the providers, however, not all of the data was being entered into the KSTEP database. This improved throughout the waiver. For the example below, of the cases entered into the KSTEP database, 87.8% that identified as having closed successfully having a sufficient ratio of NCFAS assessments to the number of months the case was open, indicating that the NCFAS assessment findings were being entered into the KSTEP database. Reports on missing data were generated throughout the implementation of the waiver and were shared with KSTEP in-home providers and DCBS staff.

Figure 27: KSTEP Fidelity

			Agency Id		
			Private Provider 1	Private Provider 2	Total
Low Ratio of NCFAS to Months Open	no	Count	54	76	130
		% within AgencyId	87.1%	88.4%	87.8%
	yes	Count	8	10	18
		% within AgencyId	12.9%	11.6%	12.2%
Total		Count	62	86	148
		% within AgencyId	100.0%	100.0%	100.0%

5. KSTEP OUTCOME STUDY

The KSTEP evaluation monitored outcomes in three overarching areas: safety, permanency, and child/adult wellbeing. These outcomes were assessed using primary and secondary data sources, from both the KSTEP and comparison groups. Data collection procedures were summarized in the paragraphs that follow.

Over the three year time span from July 2017 to December 2019, 366 families were enrolled in the KSTEP program and constituted a total of 1,667 KSTEP referred participants. By December 29th, 2019, 952 of these KSTEP cases were successfully completed, accounting for 57.1% of the total. While the remaining cases were closed for various other reasons, such as “Incomplete Referral” or “Family Choice to Leave Services Prior to Completion”, etc. (See the details in Table 1).

Table 1: Descriptive Statistics of KSTEP Cases Implemented During the 2017-2019 Period

Reasons for KSTEP Case Closure	Frequency	Percent	Valid Percent	Cumulative Percent
Successful Completion	952	40.2	57.1	57.1
Incomplete Referral	60	2.5	3.6	60.7
Assessment Only	129	5.4	7.7	68.4
Child(ren) Removed to OOHC	7	0.3	0.4	68.9
Permanent Relative/Kinship Placement	46	1.9	2.8	71.6
Family Choice to Leave Services Prior to Completion	101	4.3	6.1	77.7
Family Unable to Meet Program Requirements	284	12	17	94.7
Other	88	3.7	5.3	100
Total	1667	70.3	100	

Outcome Measures

The primary, overarching measures KSTEP seeks to impact are safety, permanency, and child/adult wellbeing, which are congruent with foci of the CFSR.

Safety

Safety was measured in several ways including analysis of primary data measures of the NCFAS domains: Environmental, Parental Capabilities, and Family Safety. Improvements in domain scores were deemed as an improvement in familial safety. The NCFAS was administered to families upon entry into KSTEP, around the mid-point of the KSTEP services (usually three to four months into the service cycle), and finally upon completion of the eight-month KSTEP service period. Further, child domains of distractibility, hyperactivity, adaptability, reinforces parent, demandingness, mood and parent domains of competence, isolation, attachment, health, role restriction, depression, and spouse/parenting partner relationship of the PSI were also used to assess safety. The PSI was administered upon entry into KSTEP, four months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. Again, improvements on these domain scores were deemed as an improvement in familial safety.

Additionally, the ASI was employed as a safety metric. Score decreases on this metric were considered an improvement in familial safety. The ASI was administered based on face-to-face interviews to involved adults upon entry into KSTEP, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and finally upon completion of the eight-month KSTEP service period.

Permanency

Permanency was measured primarily by presenting group demographics and comparisons for the KSTEP and matched-up, non-KSTEP families on child removals or whether children who were removed were reunited at case closure using the PSM method.

Wellbeing

KSTEP evaluators also assess child(ren) and adult wellbeing. Child wellbeing is operationalized using scores on the Child Wellbeing domain of the NCFAS. This measure has been used in a myriad study and has been observed to have appropriate psychometric properties. The NCFAS was administered at entry into the KSTEP program, then around the mid-point of KSTEP services (usually three to four months into the service cycle), and again at the completion of the eight-month KSTEP service period. An increase in child wellbeing as evidenced by improvements on the Child Wellbeing domain score of the NCFAS was deemed as an improvement.

Adult wellbeing was assessed using two measures. First, the Environment, Parental Capabilities, Family Interactions, and Family Safety domains of the NCFAS were analyzed. Improvements on these domain scores were deemed as an improvement in adult wellbeing.

Second, the ASI was employed to assess the severity of parental drug and alcohol abuse. A reduction in addiction severity, as evidenced by this metric, was deemed as an improvement for the purposes of this evaluation. The ASI was administered upon entry into KSTEP, three to four months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period.

Third, PSI, parent domains of competence, isolation, attachment, health, role restriction, depression, and spouse/parenting partner relationship were utilized to assess adult wellbeing. The PSI was administered upon entry into KSTEP, four months after entry into KSTEP and at the conclusion of the eight-month KSTEP service period. Improvements on these domain scores were deemed as an improvement in adult wellbeing.

Data Sources and Collection Procedures

To assess the program impact of KSTEP, primary data were collected from KSTEP families at a variety of intervals throughout the life of the case. Indubitably, the length of time a case remained open varied. The following paragraphs tersely outline what measures were administered at what interval, and by whom.

The NCFAS was administered to KSTEP families by the private providers upon entry into KSTEP, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and upon completion (usually at the end of eight months). The NCFAS was administered to KSTEP families by contracted private service providers.

The ASI was administered to primary caretaking adults (indicating substance misuse) residing in the home at the time the case is accepted to KSTEP. As indicated above, the ASI was administered upon entry into KSTEP, three to four months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. The ASI was administered by contracted private service providers.

Similar to the ASI, the PSI was administered to all primary caretaking adults residing in the home at the time of the maltreatment report is substantiated by contracted private service providers. The instrument was administered at the outset of acceptance in KSTEP, at the end of the fourth month in KSTEP, and at the conclusion of KSTEP services.

All individuals, (i.e., contracted private providers) involved in collecting primary data, no matter the measure, were trained in appropriate data collection procedures. Data collection occurrences were expected to take between one and two hours. Please note that these times may vary depending on factors such as the size of the family, etc.

Data Analyses

For the part of the outcome evaluation focused only on the KSTEP cases and their pre-post growth, data were analyzed using statistical software such as IBM SPSS software, including repeated measure mean comparisons across different administrations of the tests, and descriptive analyses for some KSTEP families. Additional details for each design are provided below.

Safety

Safety was measured by primary data collected from the NCFAS, the ASI, and the PSI. First, data in the Environmental, Parental Capabilities, and Family Safety domains (score ranges from -3 to 2, where -3 = serious problem, -2 = moderate problem, -1 = mild problem, 0 = baseline/adequate, 1 = mild strength, and 2 = clear strength) of the NCFAS scale were analyzed. A total of 231 families (which successfully completed the KSTEP services) were recorded to have received the NCFAS tests at least twice, both upon entry into KSTEP and upon completion of the eight-month KSTEP service period. The mean scores of the pre- and post-tests were then compared for these families using paired samples *t* test for possible significant differences in the above-listed 3 NCFAS domains (See Table 2 below).

Table 2: Descriptive Statistics and t-test Results for Environmental, Parental Capabilities, and Family Safety

	Pretest		Posttest			95% CI for Mean			
Outcome	*M*	*SD*	*M*	*SD*	*n*	Difference	*r*	*t*	*df*
Environmental	-1.01	1.40	-.18	1.45	231	-1.04, -.63	.38**	-7.94**	230
Parental Capabilities	-1.73	1.15	-.41	1.56	231	-1.51, -1.14	.50**	-14.38**	230
Child Wellbeing	-1.01	1.26	-.05	1.39	228	-1.15, -.77	.38**	-9.81**	227
Family Interaction	-1.10	1.29	-.24	1.48	231	-1.05, -.66	.43**	-8.71**	230
Family Safety	-1.45	1.24	-.25	1.54	231	-1.40, -1.23	.45**	-12.34**	230

* $p < .01$.

As shown in Table 2, results of the paired-samples t-test suggested that the mean scores in the environmental domain differ significantly before KSTEP (M = -1.01, SD = 1.40) and after eight months in KSTEP (M = -.18, SD = 1.45) at the .05 level of significance (t = -7.94, df = 230, p < .001). On average, the Environmental scores were about 0.83 points higher after participating in the KSTEP program. Likewise, regarding the Parental Capabilities domain, the mean scores differ significantly before (M = -1.73, SD = 1.15) and after the KSTEP program (M = -.41, SD = 1.56) at the .05 level of significance (t = -14.38, df = 230, p < .001), showing an average increase of 1.32 points. Similarly, on the Child Wellbeing domain, a significant improvement of 0.96 points were found on the mean scores before (M = -1.01, SD = 1.26) and after the KSTEP program (M = -.05, SD = 1.39) at the .05 level of significance (t = -9.81, df = 227, p < .001). Further, for the Family Interaction domain, significant differences also appeared in the mean scores before (M = -1.10, SD = 1.29) and after the KSTEP program (M = -.24, SD = 1.48) at the .05 level of significance (t = -8.71, df = 230, p < .001), implying an average improvement of 0.86 points. Finally, pre- and post- mean scores on the Family Safety scores also showed significant differences by an increase of 1.20 points.

Moreover, the ASI was employed as a safety metric and improvements, a shown decrease in scores, were considered an improvement in familial safety.

According to the ASI manual (McLellan et al., 1992), there are two ways to interpret ASI scores for outcome evaluation: *objective* scores and *subjective* scores across the 7 ASI domains (including Medical Status, Employment Status, Drug Use, Alcohol Use, Legal Status, Family/Social Status, and Psychiatric Status). *Objective* scores refer to a set of composite scores for each of the seven domains calculated based on the interviewees' self-reported data using psychometrically designed formulas, with higher composite scores indicating higher level of addiction severity. Whereas *subjective* scores are taken from the interviewers' feedback based on their overall personal observation (scores range from 0 to 7, where 0-1 = "No real problem, treatment not indicated", 2-3 = "Slight problem, treatment probably not necessary", 4-5 = "Moderate problem, some treatment indicated", and 6-7 = "Considerable problem, treatment necessary 8-9 Extreme problem, treatment absolutely necessary") for each of the seven domains. However, the two KSTEP service providers failed to provide interviewers' subjective ratings on the 0-7 scale across the ASI domains. Thus, only the *objective* scores were analyzed for the KSTEP outcomes based on the ASI ratings.

By December 2019, among the 599 KSTEP adults enrolled in the KSTEP program, 326 received the intake ASI interviews, but only 78 of them were interviewed at least twice into the program. Therefore, intake point data were used for exploratory analyses (See Table 3); and mean scores from the different administrations of the ASI form for the smaller sample (N = 78) were compared using the paired samples *t* tests for any possible significant differences (See Table 4).

Table 3: Descriptive Statistics for the Intake ASI Objective Scores

Outcome	N	Minimum	Maximum	*Mean*	*SD*
Medical Status	325	.000	1.000	.182	.292
Employment Status	121	-4.617	.395	-2.735	1.042
Drug Use	317	.000	.636	.027	.088
Alcohol Use	326	.000	.410	.075	.079
Legal Status	321	.000	.600	.050	.128
Family/Social Status	259	.000	.778	.111	.170
Psychiatric Status	326	.000	.818	.251	.214

As implied in Table 3, among the seven domains, the three highest ratings appeared in Psychiatric Status (M = .251, SD = .214), Medical Status (M = .182, SD = .292), and Family/Social Status (M = .111, SD = .170), indicating these areas needed the most intense attention and care following KSTEP program implementation.

Table 4: Descriptive Statistics and t-test Results for the ASI Objective/Composite Scores

	Pretest		Posttest			95% CI for			
Outcome	*M*	*SD*	*M*	*SD*	*n*	Mean Difference	*r*	*t*	*df*
Medical	.26	.37	.16	.26	14	-.01, .21	.88**	2.06	13
Employment	-2.80	.87	-3.01	.73	19	-.17, .60	.51*	1.18	18
Drug Use	.09	.09	.04	.06	77	.03, .07	.34**	4.76**	76
Alcohol Use	.04	.12	.02	.06	78	-.01, .05	.26*	1.59	77
Legal	.06	.13	.05	.12	76	-.01, .04	.69**	1.29	75
Family/Social	.29	.06	.13	.06	10	.07, .25	.76**	4.03**	9
Psychiatric	.28	.20	.21	.18	78	.03, .11	.61**	3.64**	77

* $p < .05$, ** $p < .01$.

As shown in Table 4, three out of the seven ASI domains showed significant improvement (indicated as significant decrease in the ASI *objective* scores) after participating in the KSTEP program, including Drug Use, Family/Social Status, and Psychiatric Status (in the descending order of significant improvements).

Lastly, data from the child domains of Distractibility, Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood, and Acceptability and the parent domains of Competence, Isolation, Attachment, Health, Role Restriction, Depression, and Spouse/Parenting Partner Relationship in the PSI were also analyzed to assess safety. The PSI was administered upon entry into KSTEP, 4 months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. By December 2019, 85 out of 122 parents received more than one PSI administrations.

According to the PSI scoring manual, the PSI raw scores were transferred into percentile scores based on the provided standard rubric. Scores that fall within 16th to 84th percentiles are considered normal; scores from 85th to 89th percentiles are considered high, and those above 90th percentiles are flagged for clinically significant parental stress (See details in Tables 5 and 6).

Table 5: Descriptive Statistics for the Intake and Follow-Up PSI Percentile Scores

	N		Range		Min		Max		M		SD	
	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up
DI Pct	122	85	100	100	0	0	100	100	49.14	47.07	25.42	29.19
AD Pct	122	85	99	101	1	-1	100	100	49.96	49.21	24.66	27.19
RE Pct	122	85	93	90	6	10	99	100	45.61	49.11	23.38	23.83
DE Pct	122	85	97	98	3	2	100	100	43.79	49.61	26.44	26.87
MO Pct	122	85	99	100	1	0	100	100	55.14	56.73	26.98	27.09
AC Pct	122	85	90	91	9	9	99	100	47.55	52.12	21.81	21.56
Child Pct	122	85	100	101	0	-1	100	100	46.05	47.19	23.24	26.88
CO Pct	122	85	98	100	2	0	100	100	54.15	54.75	25.09	26.07
IS Pct	122	85	95	95	5	5	100	100	59.89	61.92	28.53	25.52
AT Pct	122	85	75	79	10	10	85	89	47.10	49.88	23.12	23.74
HE Pct	122	85	97	95	3	5	100	100	59.69	59.79	28.86	27.13
RO Pct	122	85	97	100	1	0	98	100	42.45	46.55	27.64	29.54
DP Pct	122	85	94	86	6	6	100	92	59.31	52.45	25.80	23.36
SP Pct	122	85	101	95	-1	5	100	100	50.91	47.16	29.63	27.42
Parent Pct	122	85	101	96	-1	2	100	98	51.76	51.80	25.75	26.15
Total Pct	122	85	101	101	-1	-1	100	100	48.81	49.09	24.94	27.21
LS Pct	122	85	100	82	0	18	100	100	74.57	67.72	20.36	21.91
Valid N (listwise)	122	85										

Note: DI Pct (percentage score) = Child Distractibility; AD Pct = Child Adaptability; RE Pct = Child Reinforces Parent; DE Pct = Child Demandingness; MO Pct = Child Mood; AC Pct = Child Acceptability; Child Pct = Total Percentage Score of the Child Domains; CO Pct = Parent Competence; IS Pct = Parent Isolation; AT Pct = Parent Attachment; HE Pct = Parent Health; RO Pct = Parent Role Restriction; DP Pct = Parent Depression; SP Pct = Parent Spouse/Parenting Partner; Parent Pct = Total Percentage Score of the Parent Domains; Total Pct = Combined Total Percentage Score of both the Child and Parent Domains; LS Pct = Parent Life Stress

As indicated in Table 5, the mean PSI percentile scores across all the domains fell within low to medium percentile range (range: 42.45% - 74.57), suggesting none of the KSTEP families demonstrated notably high parental stress (above 85%) at both the intake tests and the following interim/discharge tests. It was noted, however, percent scores (74.57% for the intake tests and 67.72% for the later follow-up tests) on life stress seemed the highest among all domains.

Table 6: Descriptive Statistics for the High PSI Percentile Scores (Above the 85th Percentile)

	N		84-89 Percentile (count)		84-89 Percentile (Percentage)		Above 90 Percentile (count)		Above 90 Percentile (Percentage)	
	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up	Intake	Follow-Up
DI Pct	122	85	6	2	4.9	2.4	9	11	7.4	12.9
AD Pct	122	85	8	3	6.6	3.6	3	7	2.5	8.2
RE Pct	122	85	2	4	1.6	4.7	5	5	4.1	5.9
DE Pct	122	85	7	2	5.7	2.4	3	10	2.5	11.8
MO Pct	122	85	8	4	6.6	4.8	12	13	9.8	15.3
AC Pct	122	85	2	2	1.6	2.4	2	3	1.6	3.6
Child Pct	122	85	1	1	0.8	1.2	3	6	2.4	7.1
CO Pct	122	85	7	2	5.7	2.4	7	9	5.7	10.6
IS Pct	122	85	8	2	6.6	2.4	23	17	18.9	20.0
AT Pct	122	85	4	2	3.2	2.4	0	0	0	0
HE Pct	122	85	10	13	8.2	15.3	22	10	18.0	11.8
RO Pct	122	85	3	3	2.4	3.6	7	13	5.7	15.3
DP Pct	122	85	10	4	8.2	4.7	13	3	10.7	3.6
SP Pct	122	85	5	1	4.1	1.2	19	12	15.6	14.1
Parent Pct	122	85	2	1	1.6	1.2	5	8	4.1	9.4
Total Pct	122	85	3	1	2.4	1.2	2	6	1.6	7.1
LS Pct	122	85	14	12	11.5	14.1	26	10	21.3	11.8

Note: DI Pct (percentage score) = Child Distractibility; AD Pct = Child Adaptability; RE Pct = Child Reinforces Parent; DE Pct = Child Demandingness; MO Pct = Child Mood; AC Pct = Child Acceptability; Child Pct = Total Percentage Score of the Child Domains; CO Pct = Parent Competence; IS Pct = Parent Isolation; AT Pct = Parent Attachment; HE Pct = Parent Health; RO Pct = Parent Role Restriction; DP Pct = Parent Depression; SP Pct = Parent Spouse/Parenting Partner; Parent Pct = Total Percentage Score of the Parent Domains; Total Pct = Combined Total Percentage Score of both the Child and Parent Domains; LS Pct = Parent Life Stress

Table 6 suggested that in child domains, highest percent scores appeared in mood, 9.8% (at the intake point) and 15.3% (at the follow-up tests) of the participants scored above 90%, and distractibility, 7.4% (at the intake point) and 12.9% (at the follow-up tests) scored above 90%. Whereas in parent domains, isolation, 18.9% (at the intake point), and 20.0% (at the follow-up tests) of the participants scored above 90%; and health, 18.0% (at the intake point) and 11.8% (at the follow-up tests) scored above 90%, showed notable high parental stress. However, the total domain percent scores, only 1.6% (intake), and 7.1% (follow-up) of the participants scored above 90%, including both child and parent domains seemed much less alarming. Additionally, the life stress domain showed the highest percent of the participants scoring in the high range of stress: 11.5% (at the intake) and 14.1% (at the follow-up) scored between the 85th and 89th percentiles; and 21.3% (at the intake) and 11.8% (at the follow-up) scored above the 90th percentiles. The

slight to medium increases across the majority of the domains after the intake test may be due to the incompletion of many open KSTEP cases at the point of the report.

Permanency

Data for the PSM matching procedures were drawn from TWIST. Possible comparison families in TWIST consisted of families within Kentucky counties referred to social work services similar to that offered by the KSTEP program. PSM takes place in two steps. The first step utilizes a probit regression model to calculate individuals' propensity for being in the KSTEP program. The basis of this logistic regression analysis is as follows: participation in the KSTEP program serves as the dependent measure and the measures of an individual's child, family, and case-level characteristics serve as the independent measures. The algebra for the propensity score is as follows (Rosenbaum & Rubin, 1983):

$$p(T)=pr\{T=1 \mid S\}=E\{T \mid S\},(1)$$

Here, p(T) is the propensity score for participating in KSTEP, T indicates that an individual is a particular participant, and S is the vector that contains the covariates, pr stands for the probability, and E refers to error. A probit regression model is used to adjust the propensity score for the participation in KSTEP.

The covariates for the probit regression are as follows: the presence of at least one child under six years of age, the same time frame for the referral (within the same calendar year), a substantiated finding, overall risk rating, the presence of substance abuse as a risk factor, poverty, age, race, and a report from the same or an contiguous county. These covariates are selected based on the KSTEP eligibility criteria (age; substance misuse as a risk factor; substantiated finding) and other individual/contextual (risk rating; poverty), historical (same time frame as KSTEP referral), and geographic (same or contiguous county) factors to ensure a good match.

The second step of the PSM process is the matching procedure. A number of matching procedures are available to researchers to use. Each provides a different set of assumptions, but they potentially arrive at the same outcome—a balanced data set between the KSTEP and comparison groups. This study used a nearest-neighbor matching procedure. This procedure was used because it provided a balanced data set that closely mimics a randomized controlled trial. Further, the nearest-neighbor put individuals that are close to one another in the dataset together and provide quick convergence of the matching process. To avoid introducing bias using nearest neighbor, individuals were randomized in the data. This process eliminated individuals that were not alike based on the propensity score, but retained only those individuals that were similar to one another across the two groups based on an exact and/or closest match of the propensity scores.

When this step is complete, the bias in the covariates should be significantly reduced. The calculation of the standardized bias provides an assessment of the overall bias in the covariates. Rosenbaum and Rubin (1985) argued that standardized bias that is below ten indicates the proper matching has occurred. After propensity score matching has taken place, a number of regression analyses are performed to determine the effectiveness of the programs. For those outcome measures that are dichotomous, logistic regression analysis is performed. All of the analyses are

performed using STATA 14.0, which allows for seamless movement of the data between PSM and regression.

First described are the results for the balanced KSTEP vs. non-KSTEP data set based on the PSM matching, followed by regression results for service quality and permanency highlighting the effects of the KSTEP program after the PSM matching.

Wellbeing

KSTEP evaluators also assess child(ren) and adult wellbeing. Child wellbeing is operationalized using scores on the Child Wellbeing domain of the NCFAS. This measure has been used in a myriad study and has been observed to have appropriate psychometric properties. The NCFAS was administered at entry into the KSTEP program, and again at the completion of the eight-month KSTEP service period. An increase in child wellbeing as evidenced by improvements on the Child Wellbeing domain score of the NCFAS was deemed as an improvement.

As shown in Table 2, results of the paired-samples t-test suggested that there was a significant improvement of 0.96 points in the Child Wellbeing mean scores before (M = -1.01, SD = 1.26) and after the KSTEP program (M = -.05, SD = 1.39) at the .05 level of significance (t = -9.81, df = 227, $p < .001$).

Adult wellbeing was assessed using three measures. First, the Environment, Parental Capabilities, Family Interactions, and Family Safety domains of the *NCFAS Scale* (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001) were analyzed.

Based on Table 2, results of the paired-samples t-test suggested that the mean scores in the Environmental domain differ significantly before KSTEP (M = -1.01, SD = 1.40) and after eight months in KSTEP (M = -.18, SD = 1.45) at the .05 level of significance (t = -7.94, df = 230, $p < .001$). On average the environmental scores were about 0.83 points higher after participating in the KSTEP program. Likewise, regarding the Parental Capabilities domain, the mean scores differ significantly before (M = -1.73, SD = 1.15) and after the KSTEP program (M = -.41, SD = 1.56) at the .05 level of significance (t = -14.38, df = 230, $p < .001$), showing an average increase of 1.32 points. Similarly, on the Child Wellbeing domain, a significant improvement of 0.96 points were found on the mean scores before (M = -1.01, SD = 1.26) and after the KSTEP program (M = -.05, SD = 1.39) at the .05 level of significance (t = -9.81, df = 227, $p < .001$). Further, for the Family Interaction domain, significant differences also appeared in the mean scores before (m = -1.10, sd = 1.29) and after the KSTEP program (M = -.24, SD = 1.48) at the .05 level of significance (t = -8.71, df = 230, $p < .001$), implying an average improvement of 0.86 points.

Second, the ASI is employed to assess the severity of parental drug and alcohol abuse. A reduction in addiction severity, as evidenced by this metric, was deemed an improvement for the purposes of this evaluation. The ASI was administered upon entry into KSTEP, four months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period.

As indicated in Table 4, three out of the seven ASI domains showed significant improvement (indicated as significant decrease in the ASI *objective* scores) after participating in the KSTEP

program, including drug use, family/social status, and psychiatric status (in the descending order of significant improvements).

Third, PSI parent domains of Competence, Isolation, Attachment, Health, Role Restriction, Depression, and Spouse/Parenting Partner Relationship were utilized to assess adult wellbeing. The PSI was administered upon entry into KSTEP, four months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. Improvements on these domain scores were as an improvement in adult wellbeing.

As suggested in Table 6, descriptive statistics based on the PSI pre- and post-test results indicated that in parent domains, isolation and health showed notable high parental stress. However, the total domain percent scores of the parent domains seemed much less alarming.

PSM Matched KSTEP and Non-KSTEP Data (Bias Reduction at the Baseline across the Conditions)

As mentioned in the data analysis section, a list of covariates were entered into a probit regression model to estimate the propensity scores for a particular case to be served by the KSTEP program. The covariates include date of case referral, geographical region of the clients, whether or not maltreatment is involved, targeted service type, age category at the referral year, race, total number of risk factors, and presence of income issues. The model results showed all covariates were significant predictors of whether or not a case was served by the KSTEP program. Table 7 displays the probit model statistics for the covariates.

Table 7: Probit Regression Results for the PSM Matching Covariates

Covariates	**Coef.**	**S.E.**	**z**	***p***	**95% Confidence Interval**	
Referral Date	.0004	.0001	6.45	<.0001	.0003	.0005
Region	-.1564	.0078	-20.14	<.0001	-.1716	-.1412
Maltreatment	.5447	.1827	2.98	.003	.1866	.9028
Targeted Service Type	-.0970	.0043	-22.55	<.0001	-.1054	-.0885
Age Category	-.1591	.0139	-11.45	<.0001	-.1863	-.1318
Race	.1041	.0070	14.81	<.0001	.0903	.1179
No. of Risk Factors	.2410	.0131	18.37	<.0001	.2153	.2667
Income Issues	.0881	.0348	2.53	.011	.0198	.1564
Constant	-10.8636	1.3584	-8.00	<.0001	-13.5261	-8.2011

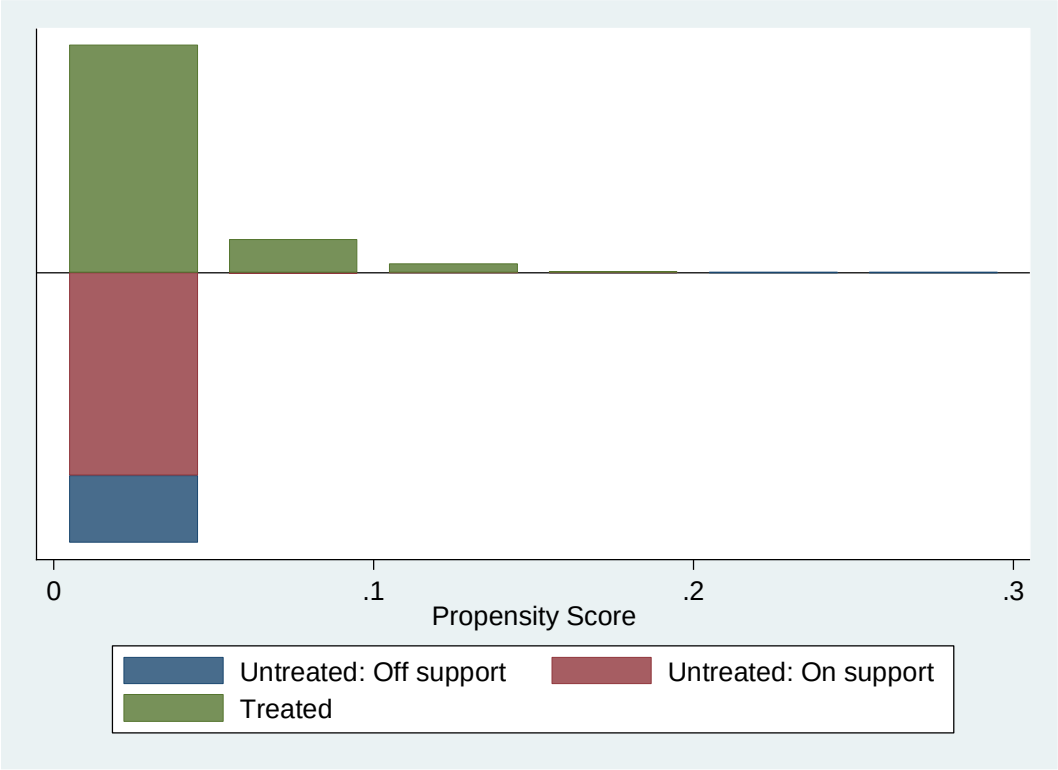
The nearest-neighbor matching using common support yields a matched sample (n =1,322), including 423 KSTEP cases and 899 non-KSTEP cases. In order to further check the degree of improved balance in the matched sample, propensity score tests were performed to estimate the mean differences on all the covariates across the two conditions and the resulting bias reduction. Table 8 presents the results of the test for bias reduction in the PSM matched sample.

Table 8: Propensity Score Test Results for the Balance on the Matching Covariates across the Conditions

Covariates	KSTEP Mean	Non-KSTEP Mean	%Bias	*t*	*p*
Referral Date	21354	21356	-0.8	-0.16	0.875
Region	3.0616	3.0187	2.4	0.68	0.496
Maltreatment	.9960	.9947	1.1	0.38	0.705
Targeted Service Type	3.8956	3.822	2.3	0.43	0.667
Age Category	2.2985	2.2383	6.1	1.16	0.246
Race	2.3748	2.261	6.1	0.99	0.321
No. of Risk Factors	1.6225	1.5676	5.6	1.03	0.302
Income Issues	.21017	.22892	-4.8	-0.87	0.382

According to Table 8, although only two out of the eight covariates reduces the baseline bias across the service conditions (a bias decrease of 0.8% on *referral date*, and 4.8% decrease on *income issues*), none of the mean differences on the eight covariates turn out to be statistically significant. In other words, the selection of the eight covariates were effective in producing propensity scores for matching cases across the conditions in this data set. The following figure shows the histogram of the matching ranges for the KSTEP and non-KSTEP cases based on their estimated propensity scores.

Figure 28: The PSM Matching Ranges for the KSTEP and non-KSTEP cases



PSM Matched KSTEP and Non-KSTEP Data (Demographic Factors)

During the 2017-2019 period, a total of 220,350 cases were referred to child welfare services in Kentucky, including 1,267 (0.6%) KSTEP participants and 219,083 (99.4) non-KSTEP cases. Table 9 below provides additional demographic data for these participants.

Table 9: Demographic Data for KSTEP and Non-KSTEP Cases before and after the PSM Matching

Variable	Total N (%)		KSTEP n (%)		Non-KSTEP n (%)	
	Before	After	Before	After	Before	After
Female	106,798 (48.5)	664(47.9)	369(29.1)	206(48.7)	106,429(48.6)	458(50.9)
Age Category						
Infant	21,008(9.5)	196(13.9)	150(20.1)	86(20.3)	20,858(9.5)	110(12.2)
1 through 5 Years	66,437(30.2)	464(34.9)	305(40.8)	155(36.6)	66,132(30.2)	309(34.4)
6 through 10 years	63,110(28.7)	355(26.2)	191(25.6)	132(31.3)	62,919(28.7)	223(24.8)
11 through 17 years	67,493(30.6)	307(23.22)	96(12.9)	50(11.8)	67,397(30.8)	257(28.6)
Race						
Caucasian	163,410(74.3)	930(70.6)	516(69.1)	291 (68.7)	162,894(74.4)	639(71.1)
African American	21,610(9.8)	105(9.3)	4(0.5)	N/A	21,606(9.9)	105(11.7)
Others	692(0.3)	6(0.5)	2(0.3)	2(0.4)	690(0.3)	4(0.5)
Two or More	19,044(8.7)	70(6.0)	18(2.4)	3(0.8)	19,026(8.7)	67(7.4)
Unknown	15,074(6.9)	211(13.6)	207(27.7)	127(30.1)	14,867(6.8)	84(9.3)

Referral Finding						
Close Assessment	2,084(0.9)	8(0.7)	N/A	N/A	2,084(1.0)	8(0.9)
Services Declined	2(.00)	N/A	N/A	N/A	2(.00)	N/A
Human Trafficking Confirmed	44(.00)	N/A	N/A	N/A	44(.00)	N/A
Human Trafficking Not Confirmed	68(.00)	1(0.1)	N/A	N/A	68(.00)	1(0.1)
In Home Going Case	1,308(0.6)	3(0.1)	3(0.3)	1(0.4)	1,305(0.6)	1(0.1)
Services Accepted	2(.00)	N/A	N/A	N/A	2(.00)	N/A
No Finding	28(.00)	N/A	N/A	N/A	28(.00)	N/A
Out of Home Ongoing Case	1,970(0.9)	1(0.1)	N/A	N/A	1,970(0.9)	1(0.1)
Services Needed	7424(3.4)	54(3.8)	47(3.7)	24(5.7)	7,377(3.4)	30(3.3)
Substantiated	57,408(26.1)	574(40.2)	499(39.4)	275(65.0)	56,909(26.0)	299(33.3)
Unable to Locate	3,297(1.5)	14(1.3)	1(0.1)	N/A	3,296(1.5)	14(1.6)
Unsubstantiated	146,195(66.3)	667(44.8)	197(15.5)	122(28.9)	145,998(66.6)	545(60.6)
Year Case Assessment Completed						
2017	46709(21.2)	226(16.6)	138(18.5)	84(19.9)	46,571(21.3)	142(15.8)
2018	107,092(48.7)	660(49.7)	378(50.6)	215(50.8)	106,714(48.7)	445(49.5)
2019	66,029(30.0)	436(33.6)	231(30.9)	124(29.3)	65,798(30.0)	312(34.7)
Total Number of Risk Factors						
None	105,787(48.1)	375(31.0)	102(13.7)	53(12.6)	105,685(48.2)	322(35.8)
One	58,712(26.7)	446(31.6)	240(32.1)	198(46.7)	58,472(26.7)	248(27.6)
Two	34,797(15.8)	302(23.3)	243(32.5)	84(19.9)	34,554(15.8)	218(24.2)
Three	20,534(9.3)	199(14.1)	162(21.7)	88(20.7)	20,372(9.3)	111(12.4)
Income Issues						
Yes	36,871(16.8)	257(19.3)	157(21.0)	86(20.3)	36,714(16.8)	171(19.0)
No	182,959(83.2)	1,065(80.7)	590(79.0)	337(79.7)	182,369(83.2)	728(81.0)
Maltreatment Involved						
Yes	214,422(97.5)	1,310(99.1)	744(99.6)	421(99.6)	213,678(97.5)	889(98.9)
No	5,408(2.5)	12(0.9)	3(0.4)	2(0.4)	5,405(2.5)	10(1.1)
Targeted Service Type						
Basic Neglect	29,905(13.6)	479(32.6)	430(33.9)	247(58.5)	29,475(13.5)	232(25.8)
Dependency	5,408(2.5)	12(0.9)	3(0.3)	2(0.4)	5,405(2.5)	10(1.1)
Emotional Injury	2,193(1.0)	19(1.7)	N/A	N/A	2,193(1.0)	19(2.1)
Environment	19,669(8.9)	115(10.1)	7(0.6)	2(0.4)	19,662(9.0)	113(12.6)
Exploitation	548(0.2)	3(0.3)	1(0.1)	N/A	547(0.2)	3(0.3)
Medical Neglect	7,222(3.3)	40(3.4)	9(0.7)	3(0.8)	7,213(3.3)	37(4.1)
Physical Assault/Injury	47,668(21.6)	200(15.6)	67(5.3)	52(12.2)	47,601(21.7)	148(16.5)
Risk of Harm – Neglect	74,505(33.8)	362(28.5)	171(13.5)	86(20.3)	74,334(33.9)	276(30.7)
Risk of Harm - Substance	5,277(2.4)	55(3.8)	47(3.7)	27(6.5)	5,230(2.4)	28(3.1)
Sexual Abuse	10,797(4.9)	19(1.6)	5(0.4)	2(0.4)	10,792(4.9)	17(1.9)
Supervision	16,638(7.6)	18(1.5)	7(0.6)	2(0.4)	16,631(7.6)	16(1.8)

At the baseline, only about 1/3 of the KSTEP sample individuals (29.1%) identify themselves as female, in contrast to about half of the non-KSTEP sample (48.6%). The PSM nearest-neighbor matching is able to mitigate this baseline gender differences to an average 49.8%, 48.7% female for the KSTEP cases and 50.9% for the non-KSTEP cases.

Similarly, participants in the pre-matching total sample are predominantly Caucasian (74.3%). The same pattern is observed across both KSTEP and non-KSTEP cases before the PSM matching. Thus, the adjustment effect of the matching is minimal in terms of racial composition.

Only 39.7% of the participants in the baseline total sample are children under the age of six, with comparable percentages of KSTEP (60.9%) and non-KSTEP group (39.7%) participants reporting this status. The PSM matching yields a more balanced sample, with comparable percentages of KSTEP (56.9%) and comparison group (46.6%) participants identified as children under six years old.

In terms of case referral findings, the largest difference overall at the baseline between the KSTEP and non-KSTEP group is within the substantiated status, with observed percentages being higher for the KSTEP (39.4%) versus the non-KSTEP group (26.0%). This imbalance is slightly adjusted by the PSM matching, resulting in an increased percentage of substantiated cases for the non-KSTEP group (33.3%).

The bias reduction of the PSM matching on the year of case assessment completed, total number of risk factors, income issues, and maltreatment involved appear minimal.

With regards to the targeted service type, the largest differences at the baseline exist in the basic neglect category (33.9% for the KSTEP cases vs. 13.5% for the non-KSTEP cases), in the physical assault/injury category (5.3% KSTEP vs. 21.7% non-KSTEP), and in the risk of harm – neglect category (13.5% KSTEP vs. 33.9% non-KSTEP). The PSM matching yields a better-balanced sample in all the three categories: 58.5% KSTEP vs. 25.8% non-KSTEP in the basic neglect category, 12.2% KSTEP vs 16.5% non-KSTEP in the physical assault/injury category, and 20.3% KSTEP vs. 30.7% non-KSTEP in the risk of harm – neglect category.

PSM Matched KSTEP and Non-KSTEP Data (Outcome Measures)

In addition to demographic data, the primary measures administered through the KSTEP evaluation include the ASI, the NCFAS, and the PSI. However, the primary data collected for the PSI measure is missing in the 2017-19 data set. Furthermore, the ASI and NCFAS data were collected only for the KSTEP cases. Therefore, the primary data collected for all the three standardized outcome measures cannot be used for the PSM matching.

Based on the limitations mentioned above, the investigators chose to create two binary outcome variables from the available program administrative information: Repeated Referral and OOHC. The former has two values, with “0” denoting “single referral” and “1” denoting “repeated referrals” for a particular case during the 2017-2019 service period; while the latter indicates the end-of-service case outcome for the referred cases, with “0” referring to “no out-of-home placement needed” and “1” suggesting “out-of-home placement needed”.

Table 10: Average Treatment Effects of the KSTEP Program on the Treated (ATT) Based on the Nearest-Neighbor Matching Method for the Repeated Referrals/Subsequent Reports and OOHC Placement (at the end of service during the 2017-19 period)

	N_{KSTEP}		$N_{NON-KSTEP}$		ATT Coefficient	Odds Ratio	S.E.	t
	Yes	No	Yes	No				
Repeated Referral	279	144	481	418	0.168	1.183	0.026	6.48***
OOHC	21	402	84	815	-0.029	0.971	0.013	-2.30*

Note. * p<.05, ** p<.01, *** p<.001

As shown in Table 10, rates of repeated case referrals during the 2017-2019 period differ considerably between the KSTEP and non-KSTEP services (t = 6.48, df = 1, p < .001). The ATT coefficient is 0.168, suggesting a positive association between the KSTEP condition and the status of receiving repeated referrals for some clients. The odds ratio is 1.183, indicating that the KSTEP program is 1.183 times (or 18.3%) more likely to receive repeated referrals for its clients than the non-KSTEP programs. This may be due to the targeted service objectives and concentrated resource allocation of the KSTEP program, compared to other sources of child welfare services.

In contrast, the proportion of OOHC placements at the end of service during the 2017-2019 period also differ significantly between the KSTEP and non-KSTEP services (t = -2.30, df = 1, p < .05). The ATT coefficient is -0.029, suggesting a negative association between the KSTEP condition and the probability of closing the case with OOHC placement. The odds ratio is 0.971, indicating that the non-KSTEP services is 1.03 times (or 2.9%) more likely to have OOHC placements for their clients than the KSTEP program. In other words, after the PSM matching, the KSTEP program appears to have yielded slightly better permanency results in terms of OOHC placements than the non-KSTEP programs.

6. THE FISCAL/COST STUDY

Based on data received, the cost analyses for the Kentucky study are focused on average costs associated with the KSTEP intervention as compared to the PSM group constructed as part of the outcome study. Two broad categories of costs are being analyzed. First, there are direct per-diem costs of OOHC. These costs are incurred only when children are removed from the home. There are no OOHC costs for families where children are not removed. Second, there are administrative costs of case management. These costs are incurred for all existing cases. So, there are two types of cases, defined as follows:

Type 1 Case – Involves Removal from Home

Average Cost = Average OOHC Cost + Average Administrative Cost

Type 2 Case – Does not Involve Removal from Home

Average Cost = Average Administrative Cost

Average OOHC Costs by Child ID Number

DCBS' Division of Financial and Administrative Management (DAFM) provided a set of Excel spreadsheets with direct board costs for all child ID numbers in their system from July 1, 2011, through 2019.[1] Dr. Jay Miller provided an Excel spreadsheet with the child ID numbers for the 1,322 cases used in the evaluation of the KSTEP intervention. This includes cases that were part of the KSTEP intervention test group and cases that were part of the PSM group.

There are 219 matching child ID numbers between the set of files from DAFM and the file from Dr. Miller. These are Type 1 cases that all include OOHC costs. Of these Type 1 cases, 48 are in the KSTEP intervention group, and 171 are in the PSM group. The remaining 1,103 cases are Type 2 cases which are those that do not involve removal from the home and include no OOHC costs.

OOHC Costs for Type 1 Cases – Include Removal from Home

Table 11, shown below, provides a summary of the direct per-diem costs for the children who were removed from their homes during the waiver period. The OOHC costs are summed from the date of the initial report to no more than 365 days from that date. The average cost per case for the whole intervention sample is the average over the entire sample and is not weighted according to the number of cases from each county. The direct costs per child are much higher for the PSM group than for the KSTEP intervention group.

Table 11: OOHC Costs

KSTEP Intervention		
Number of Cases	**Average Cost per Case**	**County**
2	6,396.00	Boyd
5	1,320.68	Carter
8	11,691.36	Greenup
17	5,179.09	Mason
2	21,289.81	Montgomery
14	9,386.20	Rowan
48	**$8,004.40**	**ALL**

Propensity-Score-Matched Group		
Number of Cases	**Average Cost per Case**	**County (49 different counties)**
171	**$26,373.09**	**ALL**

[1] From the Kentucky Department for Community Based Services *Standards of Practice Manual*, these direct costs include the following: housing expenses, food-related expenses, and school expenses; routine hair care and incidentals such as first aid supplies, baby oil and powder, deodorants, sanitary napkins, and other personal toiletries; and, money for social and/or school-related activities (*e.g.*, clubs, ballgames, participation in dance class, gymnastics, karate, church, team sports, school supplies, school pictures, band, SAT/ACT testing, etc.). This allows all foster children to participate in normal activities and empowers the foster parent to make these decisions. (https://manuals.sp.chfs.ky.gov/chapter%2012/24/Pages/1224PerDiemRates(Including%20Specialized%20Foster%20Care).aspx, accessed March 18, 2020

Descriptive statistics for each of these groups are provided below in Table 12. The PSM group included cases with higher direct costs based on every statistic except the minimum value which is the same for both groups. All of the rest of the values are significantly higher for the PSM group than for the KSTEP treatment group. Also, and not surprisingly, the standard deviation for the PSM group is twice the standard deviation for the KSTEP group.

Table 12: Descriptive Statistics

Statistic	KSTEP Value	PSM Value
Mean Value	$8,004.40	$26,373.09
Median Value	$2,144.90	$7,880.70
Modal Value	$44.82	$2,458.20
Minimum Value	$44.82	$44.82
Maximum Value	$130,007.50	$352,645.60

OOHC Costs for Type 2 Cases – No Removal from Home

There are no OOHC costs for the 1,103 Type 2 cases.

Average Administrative Costs per Child ID Number

KTEP intervention cases

For a complete average cost per child, an estimate of average administrative costs per case is needed. DAFM has provided "ZFES" files (Excel spreadsheets) for SFY 2017, 2018, 2019, and 2020, and these include salaries/wages, overtime, fringe benefits, travel, operating expenses, vendors/contractors, and indirect operating costs. Expenses were reported on a state fiscal year (SFY) basis. The KSTEP intervention program began serving families under the waiver in SFY 2017, and there were no cases with initial report dates later than SFY 2019. The administrative costs and number of individual child cases served by state fiscal year are provided below in Table 13. The average cost per case for the whole KSTEP intervention period is the average over the entire sample and is not weighted according to the number of cases from each state fiscal year. Therefore, it is the Total Costs divided by the total number of cases and not the average of individual state fiscal year average annual costs per case.

Table 13: Administrative Costs by State Fiscal Year

State Fiscal Year	Total Costs for KSTEP Cases	Number of Individual Child Cases	Average Annual Cost per Case
SFY17 KSTEP Total ZFES 4-E Waiver	$194,155.28	506	$383.71
SFY18 KSTEP Total ZFES 4-E Waiver	$1,262,662.75	371	$3,403.40
SFY19 KSTEP Total ZFES 4-E Waiver	$1,395,899.96	232	$6,016.81
SFY20 KSTEP Total ZFES 4-E Waiver	$684,416.33	128	$5,347.00
Total	**$3,537,134.32**	**1,237**	**$2,859.45**

The case numbers provided in the table above are numbers of children served during each state fiscal year. Of course, some children were served in multiple years. For an average cost per child

over the course of the waiver time period, only the 591 unique cases served were included and it was determined that the average cost per child is $5,985.00. This number provides an estimate of the amount of investment made in a specific individual over the life of the waiver. For the purposes of this analysis, this average administrative cost per child was used since the OOHC costs are also measured similarly.

To compare this average cost per case with usual services, a measure of administrative costs for a typical case is needed, including the average yearly cost of a P&P frontline worker (which includes an average salary and fringe, and an average value for travel and miscellaneous operating costs). This value of $94,463.02 divided by the average case load of 19 cases yields $4,971.74 for the average administrative cost per case for a case that receives services as usual. In order to convert this to a comparable average cost per child, this cost is divided by the average number of children per case. According to DAFM, the average number of children per case where children remain in the home is 2.2, while the average number of children per case where children are removed from the home is 1.9. Therefore, the average administrative cost per child for in-home cases is $2,259.88, and the average administrative cost per child for out-of-home cases is $2,616.71.

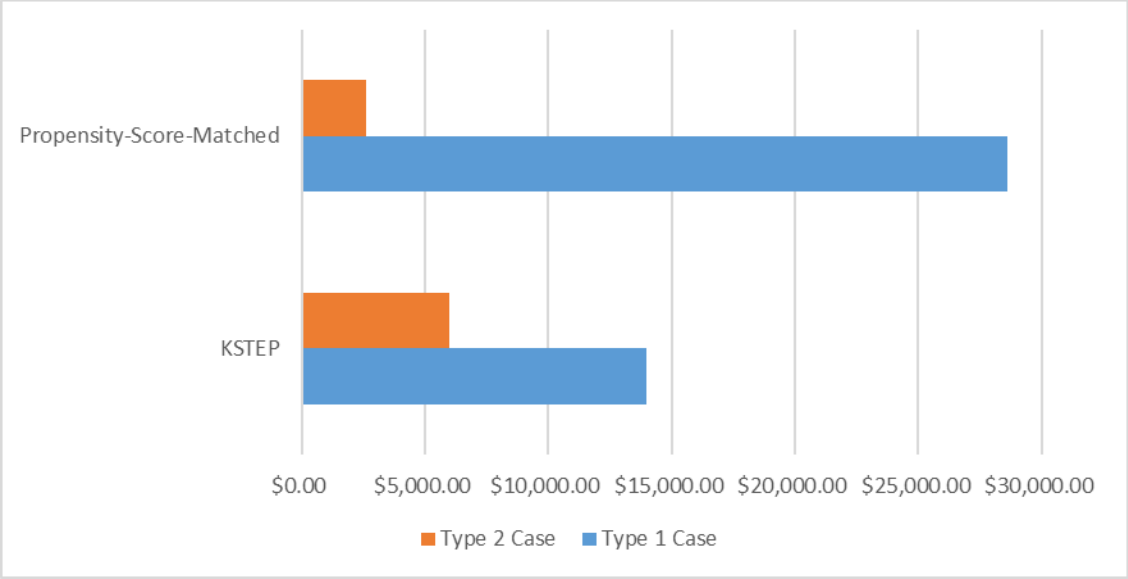
Average Cost per Child Including both Direct Costs and Administrative Costs

The average cost of a Type 1 case is the sum of the average OOHC cost and the average administrative cost and the average cost of a Type 2 case is only the average administrative cost. The values for KSTEP cases and PSM cases are provided in Table 14 and Figure 29 and show that the average cost of a Type 1 case is lower for the KSTEP intervention cases, while the average cost of a Type 2 case is higher for the KSTEP intervention cases.

Table 14: Average Costs of Type 1 and Type 2 Cases for KSTEP and PSM Cases

	KSTEP Intervention Cases	**PSM Cases**
Average Cost of Type 1 Case (with OOHC Costs)	$8,004.40 + $5,985.00 = $13,989.40	$26,373.09 + 2,259.88 = $28,632.97
Average Cost of Type 2 Case (without OOHC Costs)	$5,985.00	$2,616.71

Figure 29: Average Costs per Child for KSTEP and PSM Cases



Weighted Average Costs

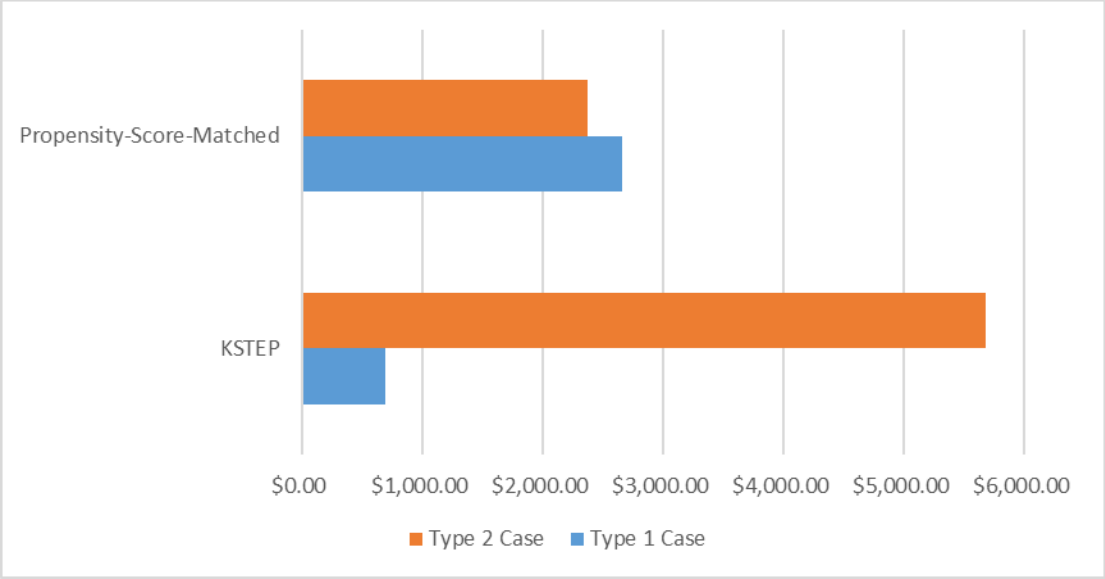
While the table and figure above illustrate how the average costs differ between Type 1 and Type 2 KSTEP cases and PSM cases, it is important to account for differences in the proportion of Type 1 cases and Type 2 cases for the two groups in order to improve the accuracy of comparisons.

For the KSTEP intervention cases in the sample, 5.0% of the cases involved removal from the home and are Type 1 cases, while the remaining 95.0% are Type 2 cases with no OOHC costs. For the PSM cases in our sample, 9.3% of the cases involved removal from the home (Type 1 cases) while the remaining 90.7% of the cases did not (Type 2 cases). Taking this into account, the weighted average costs are provided below in Table 15 and illustrated in Figure 30.

Table 15: Weighted Average Costs of Type 1 and Type 2 Cases for KSTEP and PSM Cases

	KSTEP Intervention Cases	**PSM Cases**
Average Cost of Type 1 Case (with OOHC Costs)	(.05) ($8,004.40 + $5,985.00) = $699.47	(.093) ($26,373.09 + $2,259.88) = $2,662.87
Average Cost of Type 2 Case (without OOHC Costs)	(.95) ($5,985.00) = $5,685.75	(.907) ($2,616.71) = $2,373.36

Figure 30: Weighted Average Costs per Child for KSTEP and PSM Cases



Taking into account the proportion of cases that remained in the home for each group and comparing the weighted average costs, differences in average costs for both the KSTEP treatment group and the PSM group change significantly. Since there are so few Type 1 cases in the KSTEP group, in particular, the weighted average cost of the Type 2 cases is significantly larger than the weighted average costs of the Type 1 cases for this group. This is particularly observable for the KSTEP group since the percentage of cases removed from the home is only 5%. The lower percentage of direct costs in the weighted average for the KSTEP group reflects the small percentage of children that were removed from the home. That percentage was higher for the PSM group where the actual average direct costs per child were also three times higher than for the KSTEP group.

7. SUMMARY

This evaluation report detailed program, process, and outcome data associated with KSTEP. As indicated, findings suggest that KSTEP was positively impactful for families who participated in the program. Below are but a few of the summative findings associated with data contained in this report.

For clarity and ease of reading, the brief summation is delineated by afore-referenced hypothesis.

As explicated in Section 3.2, the evaluation sought to examine two distinct, yet interconnected hypotheses related to OOHC, safety, and wellness:

Hypothesis 1: By increasing services to families experiencing co-occurring child maltreatment and substance abuse through the KSTEP program, children will experience a lower rate of entry into OOHC.

Overall, findings suggest that KSTEP participants experienced significantly fewer OOHC placements than the comparison group. In short, those not participating in KSTEP were 2.9%, or 1.03 times, more likely to experience OOHC. Note: these findings apply to families who completed the program between 2017-2019.

Hypothesis 2: Participation in KSTEP will result in increased family functioning and child and adult well-being.

Data indicate that over the 2017-2019 period, the KSTEP families demonstrated statistically significant improvements in their overall wellbeing, including child wellbeing, family environment, parental capabilities, and family interactions (as measured by the NCFAS scale); drug use, family/social status and psychiatric status of the parents/care-givers (as measured by ASI); and, isolation and health of the parents/care-givers (as measured by PSI).

In terms of improvement in safety, the KSTEP program has shown positive impacts in several areas, including family safety, family environment, parental capacities (as measured by the NCFAS scale); family/social status of parents/care-givers (as measured by ASI); and, life stress of the parents/care-givers (as measured by PSI).

Indubitably, these findings illustrate that during the evaluation period KSTEP had positive impacts on meeting programmatic goals. As such, families were supported in addressing risk behaviors whilst safely caring for their children.

7.1. Evaluation Protocol Lessons Learned

A key lesson learned with regard to the waiver evaluation, more generally, relates to the challenges of collecting primary data from families involved with child welfare. Despite a vibrant partnership between the local and state child welfare entities, universities, and contracted program providers, issues collecting and managing data persisted. Perhaps personnel dedicated solely to data collection may assuage some of these challenges. As well, continuing to examine and support flexible data infrastructures is warranted. Structures that allow for data integration, that is an approach where one-time data entry could be used across multiple platforms/systems, would be ideal. Additional steps include continuing to train practitioners on efficient data collection procedures, etc.

In terms of methodology, a true experiment with random group assignment would be a more rigorous design. In an effort to have a robust population of eligible cases on which to match, the evaluation team elected to create geographic clusters that included contiguous counties to KSTEP sites. While this approach was successful in delivering a closely matched comparison group on the selected indicators, as previously indicated, it may have introduced possible bias into the evaluation's outcomes. If there are notable differences in counties' protocol or decision-making related to OOHC, comparing children exclusively from one county to children from multiple other counties could introduce bias. In the future, considerations should be given to matching criteria associated to matches from the same geographic counties.

7.2 Program Lessons Learned

KSTEP program staff learned numerous valuable lessons during implementation of the KSTEP program. As the KSTEP model did not exist prior to the title IV-E waiver, but was developed to address a gap in the current service array, program staff experienced the full range of assessment, model design and development, implementation, and evaluation. The following are some of the key lessons learned throughout the process:

- Interagency competition affects collaboration even for a common goal.
- Adjustments to the initial model design were needed to include another (the 4th) phase and a larger focus on aftercare.
- Relationships with other outside providers are critical.
- It is both difficult and financially burdensome to implement new EBPs into a program.
- A structured approach for data entry with staff is needed. There were many issues with data not being entered timely, at all, or correctly.
- Early staff training is needed on which referrals meet criteria to avoid ineligible referrals.
- There was a learning curve with provider selection and the relationship child welfare has with those providers.

Addendum- 2/9/2020

The Outcome Evaluation Study KSTEP

Evaluation associated with KSTEP monitored outcomes in three overarching areas: safety, permanency, and child/adult wellbeing. These outcomes were assessed via the collection and rigorous evaluation of primary and secondary data sources, from both the KSTEP and comparison groups. Data collection procedures were summarized in the paragraphs that follow.

Over the 2.5-year time span from July 2017 to January 2020, 366 families were enrolled in the KSTEP program and constituted a total of 1,667 KSTEP-referred cases, serving 1,290 individuals (783 adults and 507 children**)** in total. By April 2020, 952 of these KSTEP cases were successfully completed, accounting for 57.1% of the total. While the remaining cases were closed for various other reasons, such as "*Incomplete Referral*" or "*Family Choice to Leave Services Prior to Completion*", etc. (See the details in Table 1).

Table 1 *Descriptive Statistics of KSTEP Cases Implementation during the 2017-2019 Period*

Reasons for KSTEP Case Closure	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Successful Completion	952	40.2	57.1	57.1
Incomplete Referral	60	2.5	3.6	60.7
Assessment Only	129	5.4	7.7	68.4
Child(ren) Removed to OOHC	7	0.3	0.4	68.9
Permanent Relative/Kinship Placement	46	1.9	2.8	71.6
Family Choice to Leave Services Prior to Completion	108	4.6	6.5	77.7
Family Unable to Meet Program Requirements	284	12	17	94.7
Other	88	3.7	5.3	100
Total	1667	70.4	100	

Outcome Measures

The primary, overarching measures that KSTEP seeks to impact are Safety, Permanency, and Child/Adult Wellbeing. These outcomes are congruent with foci of the Child Family Service Reviews (CFSR), among which Safety and Child/Adult Wellbeing are operationalized in the following ways for this evaluation report:

Safety

Safety was measured in several ways.

Primary data measures were used to assess Safety. Environmental, Parental Capabilities, and Family Safety domains of the *North Carolina Family Assessment Scale* (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001) were analyzed. Improvements on these domain scores were deemed as an improvement in familial safety. The NCFAS was administered to families upon entry into KSTEP, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and finally upon completion of the eight-month KSTEP service period. Further, child domains of Distractibility, Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood and Acceptability and parent domains of Competence, Isolation, Attachment, Health, Role Restriction, Depression and Spouse/Parenting Partner Relationship of the Parenting Stress Index (PSI) were also used to assess safety. The PSI was administered upon entry into KSTEP, four (4) months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. Again, improvements on these domain scores were deemed as an improvement in familial safety.

Additionally, the *Addiction Severity Index, Self-Report Form* (ASI Self-Report Form; McLellan et al., 1992) was employed as a safety metric. Score decreases on this metric were considered an improvement in familial safety. The ASI was administered based on face-to-face interviews to involved adults upon entry into KSTEP, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and finally upon completion of the eight month KSTEP service period.

Wellbeing

KSTEP evaluators also assess child(ren) and adult wellbeing. Child wellbeing is operationalized using scores on the child wellbeing domain of the *North Carolina Family Assessment Scale* (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001). This measure has been used in a myriad study and has been observed to have appropriate psychometric properties. The NCFAS was administered at entry into the KSTEP program, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and again at the completion of the eight-month KSTEP service period. An increase in child wellbeing as evidenced by improvements on the child wellbeing domain score of the NCFAS was deemed as an improvement.

Adult wellbeing was assessed using two measures. First, the Environment, Parental Capabilities, Family Interactions, and Family Safety domains of the *North Carolina Family Assessment Scale* (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001) were analyzed. Improvements on these domain scores were deemed as an improvement in adult wellbeing.

Second, the *Addiction Severity Index, Self-Report Form* (ASI Self-Report Form; McLellan et al., 1992) was employed to assess the severity of parental drug and alcohol abuse. A reduction in addiction severity, as evidenced by this metric, was deemed as an improvement for the purposes of this evaluation. The ASI was administered upon entry into KSTEP, three (3) to four (4) months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period.

Third, Parenting Stress Index (PSI), parent domains of Competence, Isolation, Attachment, Health, Role Restriction, Depression and Spouse/Parenting Partner Relationship were utilized to assess adult wellbeing. The PSI was administered upon entry into KSTEP, four (4) months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. Improvements on these domain scores were deemed as an improvement in adult wellbeing.

Permanency

Permanency was measured primarily by presenting group demographics and comparisons for the KSTEP and matched-up, non-KSTEP families on child removals or whether children who were removed were reunited at case closure using the Propensity Score Matching method (PSM).

Data Sources and Collection Procedures

To assess the program impact of KSTEP, primary data were collected from KSTEP families at a variety of intervals throughout the life of the case. Indubitably, the length of time a case remained open varied. The following paragraphs tersely outline what measures were administered at what interval, and by whom.

The NCFAS was administered to KSTEP families by the private providers upon entry into KSTEP, then around the mid-point of the KSTEP services (usually three to four months into the service cycle), and upon completion (usually at the end of eight months). The NCFAS was administered to KSTEP families by contracted private service providers.

The ASI was administered to primary caretaking adults (indicating substance misuse) residing in the home at the time the case is accepted to KSTEP. As indicated above, the ASI was administered upon entry into KSTEP, three (3) to four (4) months after entry into KSTEP, and at the conclusion of the eight-month KSTEP service period. For KSTEP families. The ASI was administered by contracted private service providers.

Like the ASI, the PSI was administered to all primary caretaking adults residing in the home at the time of the maltreatment report is substantiated. The instrument was administered at the outset of acceptance in KSTEP, at the end of the fourth month in KSTEP, and at the conclusion of KSTEP services. For KSTEP families, the PSI was administered by contracted private service providers.

All individuals (i.e., contracted private providers) involved in collecting primary data, no matter the measure, were trained in appropriate data collection procedures. Data collection occurrences were expected to take between one (1) and two (2) hours. Please note that these times may vary depending on factors such as the size of the family, etc.

Data Analyses

The outcome evaluation consisted of two parts: (1) only program effect related to part of the *safety* and *permanency* assessment were evaluated using propensity score matching methods over the program life span plus a 6 month follow-up period (September 2019 – March 2020), in order to approximate the quasi-experimental design in an post hoc manner, while (2) for the other *safety* measures and the overall *wellbeing* assessment, the outcome evaluation focused only on the KSTEP cases and their pre-post growth since the related primary data were only collected for the KSTEP cases. Data were analyzed using statistical software programs such as STATA 16 and IBM SPSS, including propensity score matching, repeated measure mean comparisons across different administrations of the tests, and descriptive analyses for some KSTEP families. Additional details for each design are provided below.

PSM on Safety and Permanency Measures

Data for the PSM matching procedures were drawn from TWIST. Possible comparison families in TWIST consisted of families within Kentucky counties which were provided with typical service plans for child welfare referrals. PSM takes place in two steps. The first step utilizes a probit regression model to calculate individuals' propensity for being in the KSTEP program. The basis of this logistic regression analysis is as follows: participation in the KSTEP program serves as the dependent measure and the measures of an individual's child, family, and case-level characteristics serve as the independent measures. The algebra for the propensity score is as follows (Rosenbaum & Rubin, 1983):

$$p(T)=pr\{T=1 \mid S\}=E\{T \mid S\},(1)$$

Here, p(T) is the propensity score for participating in KSTEP, T indicates that an individual is a particular participant, and S is the vector that contains the covariates, pr stands for the probability, and E refers to error. A probit regression model is used to adjust the propensity score for the participation in KSTEP.

The covariates for the probit regression are as follows: the presence of at least one child under 6 years of age, the same time frame for the referral (within the same calendar year), a substantiated finding, overall risk rating, the presence of substance abuse as a risk factor, poverty, age, race, and a report from the same or an contiguous county. These covariates are selected based on the KSTEP eligibility criteria (age; substance use as a risk factor; substantiated finding) and other individual/contextual (risk rating; poverty), historical (same time frame as KSTEP referral), and geographic (same or contiguous county) factors to ensure a good match.

Although theoretically confounding can still be a potential issue and can never be fully eradicated for any quasi-experimental design, the above-listed covariates are carefully selected for the PSM matching as exhaustively as possible from the available data related to possible confounding factors directly contributing to the program impact, after a review of research literature regarding substance abuse interventions for parents involved in child welfare (Brook & McDonald, 2007; Guo, Barth, & Gibbons, 2006; Oliveros & Kaufman, 2011; Osterling & Austin, 2008).

The second step of the PSM process is the matching procedure. A number of matching procedures are available to researchers to use. Each provides a different set of assumptions, but

they potentially arrive at the same outcome—a balanced data set between the KSTEP and comparison groups. This study used a nearest-neighbor matching procedure. This procedure was used because it provided a balanced data set that closely mimics a randomized controlled trial. Further, the nearest-neighbor matching method put individuals that are close to one another in the dataset together and provide quick convergence of the matching process. To avoid introducing bias using the nearest-neighbor method, individuals were randomized in the data. This process eliminated individuals that were not alike based on the propensity score but retained only those individuals that were similar to one another across the two groups based on an exact and/or closest match of the propensity scores.

When this step is complete, the bias in the covariates should be significantly reduced. The calculation of the standardized bias provides an assessment of the overall bias in the covariates. Rosenbaum and Rubin (1985) argued that standardized bias that is below 10 indicates the proper matching has occurred. After propensity score matching has taken place, several regression analyses are performed to determine the effectiveness of the programs. For those outcome measures that are dichotomous, logistic regression analysis is performed. All the analyses are performed using STATA 16, which allows for seamless movement of the data between PSM and regression.

We first describe the results for the balanced KSTEP vs. non-KSTEP data set based on the PSM matching, followed by regression results for service quality and permanency highlighting the effects of the KSTEP program after the PSM matching.

PSM Matched KSTEP and Non-KSTEP Data (Bias Reduction at the Baseline across the Conditions)

As mentioned previously, a list of covariates were entered in a probit regression model to estimate the propensity scores for a particular case to be served by the KSTEP program: date of case referral, geographical region of the clients, whether or not maltreatment is involved, targeted service type, age category at the referral year, race, total number of risk factors, and presence of income issues. The model results showed all the covariates were significant predictors of whether or not a case was served by the KSTEP program. Table 2 below displayed the probit model statistics for the covariates.

Table 2. Probit Regression Results for the PSM Matching Covariates

Covariates	**Coef.**	**S.E.**	**z**	***p***	**95% Confidence Interval**	
Referral Date	.0004	.0001	6.45	<.0001	.0003	.0005
Region	-.1564	.0078	-20.14	<.0001	-.1716	-.1412
Maltreatment	.5447	.1827	2.98	.003	.1866	.9028
Targeted Service Type	-.0970	.0043	-22.55	<.0001	-.1054	-.0885
Age Category	-.1591	.0139	-11.45	<.0001	-.1863	-.1318
Race	.1041	.0070	14.81	<.0001	.0903	.1179

No. of Risk Factors	.2410	.0131	18.37	<.0001	.2153	.2667
Income Issues	.0881	.0348	2.53	.011	.0198	.1564
Constant	-10.8636	1.3584	-8.00	<.0001	-13.5261	-8.2011

The nearest-neighbor matching using common support yields a PSM matched sample (n =1,265), including 599 KSTEP cases and 666 non-KSTEP cases at the end of the service delivery and for 6-months post service follow-up. Because the PSM matching is a post hoc method to select from the large data pool a sample of matched KSTEP and non-KSTEP cases based on complete data information on outcome variables (i.e. repeated maltreatment & OOHC) as well as the list of covariates (see Table 3 below), the issues related to participant attrition and/or data missingness become irrelevant here.

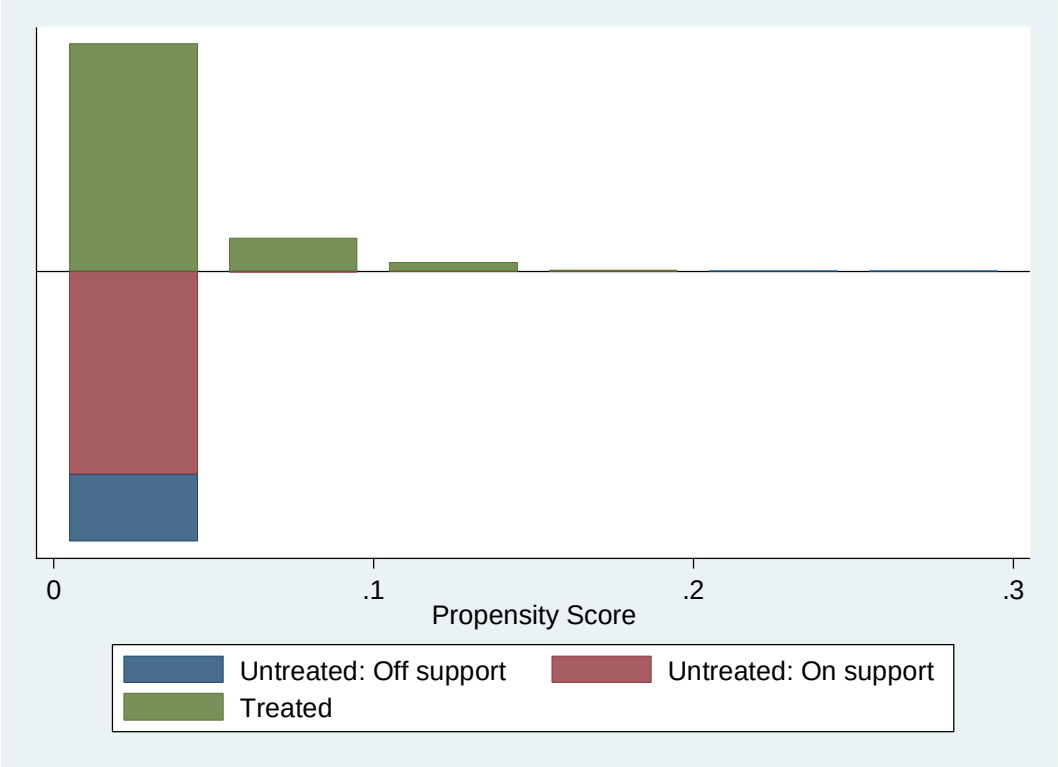
In order to further check the degree of improved balance in the matched sample, propensity score tests were performed to estimate the mean differences on all the covariates across the two conditions and the resulting bias reduction. Table 3 presents the results of the test for bias reduction in the PSM matched sample.

Table 3. Propensity Score Test Results for the Balance on the Matching Covariates across the Conditions

Covariates	KSTEP Mean	Non-KSTEP Mean	%Bias	*t*	*p*
Referral Date	21354	21356	-0.8	-0.16	0.875
Region	3.0616	3.0187	2.4	0.68	0.496
Maltreatment	.9960	.9947	1.1	0.38	0.705
Targeted Service Type	3.8956	3.822	2.3	0.43	0.667
Age Category	2.2985	2.2383	6.1	1.16	0.246
Race	2.3748	2.261	6.1	0.99	0.321
No. of Risk Factors	1.6225	1.5676	5.6	1.03	0.302
Income Issues	.21017	.22892	-4.8	-0.87	0.382

According to Table 3 results, although only two out of the eight covariates reduces the baseline bias across the service conditions (a bias decrease of 0.8% on *referral date*, and 4.8% decrease on *income issues*), none of the mean differences on the eight covariates turn out to be statistically significant. In other words, the selection of the eight covariates were effective in producing propensity scores for matching cases across the conditions in this data set. The following Figure 1 shows the histogram of the matching ranges for the KSTEP and non-KSTEP cases based on their estimated propensity scores.

Figure 1. The PSM Matching Ranges for the KSTEP and non-KSTEP cases



PSM Matched KSTEP and Non-KSTEP Data (Demographic Factors)

During the 2017-2019 period, a total of 252,779 individuals were referred to child welfare services in Kentucky, including 1,290 (0.01%) referred to KSTEP services and 251,489 (99%) non-KSTEP services. Table 4 below provides additional demographic data for these individuals.

Table 4. Demographic Data for KSTEP and Non-KSTEP Served Individuals before and after the PSM Matching

Variable	Total N (%)		KSTEP n (%)		Non-KSTEP n (%)	
	Before	After	Before	After	Before	After
Female	106,798 (48.5)	664(47.9)	369(29.1)	206(48.7)	106,429(48.6)	458(50.9)
Age Category						
Infant	21,008(9.5)	196(13.9)	150(20.1)	86(20.3)	20,858(9.5)	110(12.2)
1 through 5 Years	66,437(30.2)	464(34.9)	305(40.8)	155(36.6)	66,132(30.2)	309(34.4)
6 through 10 years	63,110(28.7)	355(26.2)	191(25.6)	132(31.3)	62,919(28.7)	223(24.8)
11 through 17 years	67,493(30.6)	307(23.22)	96(12.9)	50(11.8)	67,397(30.8)	257(28.6)
Race						
Caucasian	163,410(74.3)	930(70.6)	516(69.1)	291 (68.7)	162,894(74.4)	639(71.1)
African American	21,610(9.8)	105(9.3)	4(0.5)	N/A	21,606(9.9)	105(11.7)
Others	692(0.3)	6(0.5)	2(0.3)	2(0.4)	690(0.3)	4(0.5)
Two or More	19,044(8.7)	70(6.0)	18(2.4)	3(0.8)	19,026(8.7)	67(7.4)
Unknown	15,074(6.9)	211(13.6)	207(27.7)	127(30.1)	14,867(6.8)	84(9.3)
Referral Finding						
Close Assessment	2,084(0.9)	8(0.7)	N/A	N/A	2,084(1.0)	8(0.9)
Services Declined	2(.00)	N/A	N/A	N/A	2(.00)	N/A
Human Trafficking Confirmed	44(.00)	N/A	N/A	N/A	44(.00)	N/A
Human Trafficking Not Confirmed	68(.00)	1(0.1)	N/A	N/A	68(.00)	1(0.1)
In Home Going Case	1,308(0.6)	3(0.1)	3(0.3)	1(0.4)	1,305(0.6)	1(0.1)
Services Accepted	2(.00)	N/A	N/A	N/A	2(.00)	N/A
No Finding	28(.00)	N/A	N/A	N/A	28(.00)	N/A
Out of Home Ongoing Case	1,970(0.9)	1(0.1)	N/A	N/A	1,970(0.9)	1(0.1)
Services Needed	7424(3.4)	54(3.8)	47(3.7)	24(5.7)	7,377(3.4)	30(3.3)
Substantiated	57,408(26.1)	574(40.2)	499(39.4)	275(65.0)	56,909(26.0)	299(33.3)
Unable to Locate	3,297(1.5)	14(1.3)	1(0.1)	N/A	3,296(1.5)	14(1.6)
Unsubstantiated	146,195(66.3)	667(44.8)	197(15.5)	122(28.9)	145,998(66.6)	545(60.6)
Year of Case Assessment Completed						
2017	46709(21.2)	226(16.6)	138(18.5)	84(19.9)	46,571(21.3)	142(15.8)
2018	107,092(48.7)	660(49.7)	378(50.6)	215(50.8)	106,714(48.7)	445(49.5)
2019	66,029(30.0)	436(33.6)	231(30.9)	124(29.3)	65,798(30.0)	312(34.7)
Total Number of Risk Factors						
None	105,787(48.1)	375(31.0)	102(13.7)	53(12.6)	105,685(48.2)	322(35.8)
One	58,712(26.7)	446(31.6)	240(32.1)	198(46.7)	58,472(26.7)	248(27.6)
Two	34,797(15.8)	302(23.3)	243(32.5)	84(19.9)	34,554(15.8)	218(24.2)
Three	20,534(9.3)	199(14.1)	162(21.7)	88(20.7)	20,372(9.3)	111(12.4)
Income Issues						
Yes	36,871(16.8)	257(19.3)	157(21.0)	86(20.3)	36,714(16.8)	171(19.0)
No	182,959(83.2)	1,065(80.7)	590(79.0)	337(79.7)	182,369(83.2)	728(81.0)
Maltreatment Involved						

Yes	214,422(97.5)	1,310(99.1)	744(99.6)	421(99.6)	213,678(97.5)	889(98.9)
No	5,408(2.5)	12(0.9)	3(0.4)	2(0.4)	5,405(2.5)	10(1.1)
Targeted Service Type						
Basic Neglect	29,905(13.6)	479(32.6)	430(33.9)	247(58.5)	29,475(13.5)	232(25.8)
Dependency	5,408(2.5)	12(0.9)	3(0.3)	2(0.4)	5,405(2.5)	10(1.1)
Emotional Injury	2,193(1.0)	19(1.7)	N/A	N/A	2,193(1.0)	19(2.1)
Environment	19,669(8.9)	115(10.1)	7(0.6)	2(0.4)	19,662(9.0)	113(12.6)
Exploitation	548(0.2)	3(0.3)	1(0.1)	N/A	547(0.2)	3(0.3)
Medical Neglect	7,222(3.3)	40(3.4)	9(0.7)	3(0.8)	7,213(3.3)	37(4.1)
Physical Assault/Injury	47,668(21.6)	200(15.6)	67(5.3)	52(12.2)	47,601(21.7)	148(16.5)
Risk of Harm – Neglect	74,505(33.8)	362(28.5)	171(13.5)	86(20.3)	74,334(33.9)	276(30.7)
Risk of Harm - Substance	5,277(2.4)	55(3.8)	47(3.7)	27(6.5)	5,230(2.4)	28(3.1)
Sexual Abuse	10,797(4.9)	19(1.6)	5(0.4)	2(0.4)	10,792(4.9)	17(1.9)
Supervision	16,638(7.6)	18(1.5)	7(0.6)	2(0.4)	16,631(7.6)	16(1.8)

At the baseline, only about 1/3 of the KSTEP sample individuals (29.1%) identify themselves as female, in contrast to about half of the non-KSTEP sample (48.6%). The PSM nearest-neighbor matching is able to mitigate this baseline gender differences to an average 49.8%, 48.7% female for the KSTEP cases and 50.9% for the non-KSTEP cases.

Similarly, participants in the pre-matching total sample are predominantly Caucasian (74.3%). The same pattern is observed across both KSTEP and non-KSTEP cases before the PSM matching. Thus, the adjustment effect of the matching is minimal in terms of racial composition.

Only 39.7% of the participants in the baseline total sample are children under the age of six, with comparable percentages of KSTEP (60.9%) and non-KSTEP group (39.7%) participants reporting this status. The PSM matching yields a more balanced sample, with comparable percentages of KSTEP (56.9%) and comparison group (46.6%) participants identified as children under six years old.

In terms of case referral findings, the largest difference overall at the baseline between the KSTEP and non-KSTEP group is within the *substantiated* status, with observed percentages being higher for the KSTEP (39.4%) versus the non-KSTEP group (26.0%). This imbalance is slightly adjusted by the PSM matching, resulting in an increased percentage of *substantiated* cases for the non-KSTEP group (33.3%).

The bias reduction of the PSM matching on the Year of Case Assessment Completed, Total Number of Risk Factors, Income Issues, and Maltreatment Involved appear minimal.

With regards to the Targeted Service Type, the largest differences at the baseline exist in the *basic neglect* category (33.9% for the KSTEP cases vs. 13.5% for the non-KSTEP cases), in the *physical assault/injury* category (5.3% KSTEP vs. 21.7% non-KSTEP), and in the *risk of harm – neglect* category (13.5% KSTEP vs. 33.9% non-KSTEP). The PSM matching yields a better balanced sample in all the three categories: 58.5% KSTEP vs. 25.8% non-KSTEP in the *basic neglect* category, 12.2% KSTEP vs 16.5% non-KSTEP in the *physical assault/injury* category, and 20.3% KSTEP vs. 30.7% non-KSTEP in the *risk of harm – neglect* category.

PSM Matched KSTEP and Non-KSTEP Data (Outcome Measures)

In addition to demographic data, the primary measures administered through the KSTEP evaluation include the Addiction Severity Index (ASI), the North Carolina Family Assessment Scale (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001), and the Parenting Stress Index (PSI). However, the primary data collected for the PSI, ASI, and NCFAS measures were collected only for the KSTEP cases. Consequently, the primary data collected for all these three standardized outcome measures cannot be used for the PSM matching.

Based on the limitations mentioned above, the investigators choose to create two binary outcome variables from the available program administrative information: RepeatedMaltreat and OOHC. The former can be regarded as a *safety* measure which has two values, with "0" denoting "single reported and substantiated child maltreatment" and "1" denoting "multiple reported and substantiated child maltreatments" for a particular case during the service period plus the 6-month follow-up upon the case closure; while the latter can be regarded as a *permanency* measure, and indicates a specific type of case status related to the disruption of child(ren)'s previous in-home placement (at the end-of-service and/or plus 6-months post service follow-up), with "0" referring to "child(ren) NOT removed for out-of-home placement" and "1" suggesting "child(ren) removed for out-of-home placement".

Tables 5.1 and 5.2 report the logistic regression results of the matched sample for at the end of the service delivery and 6-months post services follow-up on the treatment effects of the KSTEP program based on the nearest-neighbor matching method for the two outcome measures: *repeated maltreatment reports* and *out-of-home placement at the end of service* during the 2017-2020 period.

Table 5.1 Summary of Logistic Regression Results on the Treatments Effects of the KSTEP Program Based on the PSM Matching (Upon the End of the Service Delivery)

	N_{KSTEP}		$N_{NON\text{-}KSTEP}$		B	Odds Ratio	S.E.	*p*
	Yes	No	Yes	No				
Repeated Maltreatment	64	535	72	594	.253	1.288	.178	.156
OOHC	17	582	44	622	-.680	.507	.251	.007**

Note. * $p<.05$, ** $p<.01$, *** $p<.001$

As shown in Table 5.1, rates of repeated maltreatment reports per case upon the end of the service delivery during the 2017-2020 period do NOT differ significantly between the KSTEP and non-KSTEP services ($B = .253$, $df = 1$, $p = .156$). In contrast, the proportion of OOHC placements at the end of service during the 2017-2020 period differ significantly between the KSTEP and non-KSTEP services ($B = -.680$, $df = 1$, $p < .01$). The logistic regression coefficient for the KSTEP program placement is -.680, suggesting a negative association between the KSTEP condition and

the probability of closing the case with OOHC placement upon the end of the service delivery. The odds ratio is .507, indicating that the non-KSTEP services is 1.507 times (or 50.7%) more likely to have OOHC placements for their clients than the KSTEP program. In other words, after the PSM matching, the KSTEP program appears to have yielded better permanency results upon the end of the service delivery in terms of OOHC placements than the non-KSTEP programs.

Table 5.2 Summary of Logistic Regression Results on the Treatments Effects of the KSTEP Program Based on the PSM Matching (6-Months Post Services Follow-Up)

	N_{KSTEP}		$N_{NON\text{-}KSTEP}$		B	Odds Ratio	S.E.	*p*
	Yes	No	Yes	No				
Repeated Maltreatment	59	540	70	596	.194	1.214	.374	.604
OOHC	7	592	41	625	-.812	.444	.269	.003**

Note. * $p<.05$, ** $p<.01$, *** $p<.001$

As shown in Table 5.2, rates of repeated maltreatment reports per case for 6-months post services follow-up during the 2017-2020 period do NOT differ significantly between the KSTEP and non-KSTEP services ($B = .194$, $df = 1$, $p = .604$). In contrast, the proportion of OOHC placements for 6-months post services follow-up during the 2017-2020 period differ significantly between the KSTEP and non-KSTEP services ($B = -.812$, $df = 1$, $p < .01$). The logistic regression coefficient for the KSTEP program placement is -.812, suggesting a negative association between the KSTEP condition and the probability of closing the case with OOHC placement. The odds ratio is .444, indicating that the non-KSTEP services is 1.444 times (or 44.4%) more likely to have OOHC placements for their clients for 6-months post services follow-up than the KSTEP program. In other words, after the PSM matching, the KSTEP program appears to have yielded slightly better permanency results for 6-months post services follow-up in terms of OOHC placements than the non-KSTEP programs.

Safety

Safety was measured by primary data collected from (a) the *North Carolina Family Assessment Scale* (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001), (b) the *Addiction Severity Index, Self-Report Form* (ASI Self-Report Form; McLellan et al., 1992), and (c) the Parenting Stress Index (PSI).

First, data in the Environmental, Parental Capabilities, and Family Safety domains (score ranges from -3 to 2, where -3 = serious problem, -2 = moderate problem, -1 = mild problem, 0 = baseline/adequate, 1 = mild strength, and 2 = clear strength) of the NCFAS scale were analyzed. A total of 231 families (which successfully completed the KSTEP services) were recorded to have received the NCFAS tests at least twice, both upon entry into KSTEP and upon completion of the eight month KSTEP service period. The mean scores of the pre- and post-tests were then

compared for these families using paired samples *t* test for possible significant differences in the above-listed 3 NCFAS domains (See Table 5 below).

Table 5

Descriptive Statistics and t-test Results for Environmental, Parental Capabilities, and Family Safety

Outcome	Pretest		Posttest		*n*	95% CI for Mean Difference	*r*	*t*	*df*
	M	*SD*	*M*	*SD*					
Environmental	-1.01	1.40	-.18	1.45	231	-1.04, -.63	.38**	-7.94**	230
Parental Capabilities	-1.73	1.15	-.41	1.56	231	-1.51, -1.14	.50**	-14.38**	230
Child Wellbeing	-1.01	1.26	-.05	1.39	228	-1.15, -.77	.38**	-9.81**	227
Family Interaction	-1.10	1.29	-.24	1.48	231	-1.05, -.66	.43**	-8.71**	230
Family Safety	-1.45	1.24	-.25	1.54	231	-1.40, -1.23	.45**	-12.34**	230

* $p < .01$.

As shown in Table 5, results of the paired-samples t-test suggested that the mean scores in the Environmental domain differ significantly before KSTEP (M = -1.01, SD = 1.40) and after eight months in KSTEP (M = -.18, SD = 1.45) at the .05 level of significance (t = -7.94, df = 230, p < .001). On average the Environmental scores were about 0.83 points higher after participating in the KSTEP program. Likewise, regarding the Parental Capabilities domain, the mean scores differ significantly before (M = -1.73, SD = 1.15) and after the KSTEP program (M = -.41, SD = 1.56) at the .05 level of significance (t = -14.38, df = 230, p < .001), showing an average increase of 1.32 points. Similarly on the Child Wellbeing domain, a significant improvement of 0.96 points were found on the mean scores before (M = -1.01, SD = 1.26) and after the KSTEP program (M = -.05, SD = 1.39) at the .05 level of significance (t = -9.81, df = 227, p < .001). Further, for the Family Interaction domain, significant differences also appeared in the mean scores before (M = -1.10, SD = 1.29) and after the KSTEP program (M = -.24, SD = 1.48) at the .05 level of significance (t = -8.71, df = 230, p < .001), implying an average improvement of 0.86 points. Finally, pre- and post- mean scores on the Family Safety scores also showed significant differences by an increase of 1.20 points.

Moreover, the *Addiction Severity Index, Self-Report Form* (ASI Self-Report Form; McLellan et al., 1992) was employed as a safety metric. Improvements on this metric (shown as decrease in the domain scores) were considered an improvement in familial safety.

According to the ASI manual (McLellan et al., 1992), there are two ways to interpret ASI scores for outcome evaluation: *objective* scores and *subjective* scores across the 7 ASI domains

(including Medical Status, Employment Status, Drug Use, Alcohol Use, Legal Status, Family/Social Status, and Psychiatric Status). *Objective* scores refer to a set of composite scores for each of the 7 domains calculated based on the interviewees' self-reported data using psychometrically designed formulas, with higher composite scores indicating higher level of addiction severity. Whereas *subjective* scores are taken from the interviewers' feedbacks based on their overall personal observation (scores range from 0 to 7, where 0-1 = "No real problem, treatment not indicated", 2-3 = "Slight problem, treatment probably not necessary", 4-5 = "Moderate problem, some treatment indicated", and 6-7 = "Considerable problem, treatment necessary 8-9 Extreme problem, treatment absolutely necessary") for each of the 7 domains. However, the two KSTEP services providers failed to provide interviewers' subjective ratings on the 0-7 scale across the ASI domains. Thus, only the *objective* scores were analyzed for the KSTEP outcomes based on the ASI ratings.

By March 2020, among the 1,281 KSTEP adults enrolled in the KSTEP program, 697 received the intake ASI interviews, but only 167 of them were interviewed at least twice into the program. Therefore, intake point data were used for exploratory analyses (See Table 6); and mean scores from the different administrations of the ASI form for the smaller sample (N = 167) were compared using the paired samples *t* tests for any possible significant differences (See Tables 7).

Table 6

Descriptive Statistics for the Intake ASI Objective Scores

Outcome	N	Minimum	Maximum	*Mean*	*SD*
Medical Status	696	.000	1.000	.182	.292
Employment Status	521	-4.617	.395	-2.735	1.042
Drug Use	377	.000	.636	.027	.088
Alcohol Use	526	.000	.410	.075	.079
Legal Status	437	.000	.600	.050	.128
Family/Social Status	468	.000	.778	.111	.170
Psychiatric Status	660	.000	.818	.251	.214

As implied in Table 3, among the 7 domains, the three highest ratings appeared in Psychiatric Status (M = .251, SD = .214), Medical Status (M = .182, SD = .292), and Family/Social Status (M = .111, SD = .170), indicating these areas needed the most intense attention and care during the following KSTEP program implementation.

Table 7

Descriptive Statistics and t-test Results for the ASI Objective/Composite Scores

Outcome	Pretest		Posttest		*n*	95% CI for Mean Difference	*r*	*t*	*df*
	M	*SD*	*M*	*SD*					
Medical	.26	.37	.16	.26	142	-.01, .21	.88**	2.06	13
Employment	-2.80	.87	-3.01	.73	119	-.17, .60	.51*	1.18	18
Drug Use	.09	.09	.04	.06	150	.03, .07	.34**	4.76**	76
Alcohol Use	.04	.12	.02	.06	166	-.01, .05	.26*	1.59	77
Legal	.06	.13	.05	.12	161	-.01, .04	.69**	1.29	75
Family/Social	.29	.06	.13	.06	50	.07, .25	.76**	4.03**	9
Psychiatric	.28	.20	.21	.18	158	.03, .11	.61**	3.64**	77

* $p < .05$, ** $p < .01$.

As shown in Table 4, three out of the seven ASI domains showed significant improvement (indicated as significant decrease in the ASI *objective* scores) after participating in the KSTEP program, including Drug Use, Family/Social Status, and Psychiatric Status (in the descending order of significant improvements).

Lastly, data from the child domains of Distractibility, Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood and Acceptability and the parent domains of Competence, Isolation, Attachment, Health, Role Restriction, Depression and Spouse/Parenting Partner Relationship in the Parenting Stress Index (PSI) were also analyzed to assess safety. The PSI was administered upon entry into KSTEP, four (4) months after entry into KSTEP, and at the conclusion of the eight month KSTEP service period. By March 2020, 403 out of 579 parents received more than one PSI administrations.

According to the PSI scoring manual, the PSI raw scores were transferred into percentile scores based on the provided standard rubric. Scores that fall within 16th to 84th percentiles are considered normal; scores from 85th to 89th percentiles are considered high, and those above 90th percentiles are flagged for clinically significant parental stress (See details in Tables 8 and 9).

Table 8 *Descriptive Statistics for the Intake and Follow-Up PSI Percentile Scores*

	N		**Range**		**Min**		**Max**		**M**		**SD**	
	Intake	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**
DI Pct	579	403	100	100	0	0	100	100	49.14	47.07	25.42	29.19
AD Pct	579	403	99	101	1	-1	100	100	49.96	49.21	24.66	27.19

RE Pct	579	403	93	90	6	10	99	100	45.61	49.11	23.38	23.83
DE Pct	579	403	97	98	3	2	100	100	43.79	49.61	26.44	26.87
MO Pct	579	403	99	100	1	0	100	100	55.14	56.73	26.98	27.09
AC Pct	579	403	90	91	9	9	99	100	47.55	52.12	21.81	21.56
Child Pct	579	403	100	101	0	-1	100	100	46.05	47.19	23.24	26.88
CO Pct	579	403	98	100	2	0	100	100	54.15	54.75	25.09	26.07
IS Pct	579	403	95	95	5	5	100	100	59.89	61.92	28.53	25.52
AT Pct	579	403	75	79	10	10	85	89	47.10	49.88	23.12	23.74
HE Pct	579	403	97	95	3	5	100	100	59.69	59.79	28.86	27.13
RO Pct	579	403	97	100	1	0	98	100	42.45	46.55	27.64	29.54
DP Pct	579	403	94	86	6	6	100	92	59.31	52.45	25.80	23.36
SP Pct	579	403	101	95	-1	5	100	100	50.91	47.16	29.63	27.42
Parent Pct	579	403	101	96	-1	2	100	98	51.76	51.80	25.75	26.15
Total Pct	579	403	101	101	-1	-1	100	100	48.81	49.09	24.94	27.21
LS Pct	579	403	100	82	0	18	100	100	74.57	67.72	20.36	21.91
Valid N (listwise)												

Note: DI Pct (percentage score) = Child Distractibility; AD Pct = Child Adaptability; RE Pct = Child Reinforces Parent; DE Pct = Child Demandingness; MO Pct = Child Mood; AC Pct = Child Acceptability; Child Pct = Total Percentage Score of the Child Domains; CO Pct = Parent Competence; IS Pct = Parent Isolation; AT Pct = Parent Attachment; HE Pct = Parent Health; RO Pct = Parent Role Restriction; DP Pct = Parent Depression; SP Pct = Parent Spouse/Parenting Partner; Parent Pct = Total Percentage Score of the Parent Domains; Total Pct = Combined Total Percentage Score of both the Child and Parent Domains; LS Pct = Parent Life Stress

As indicated in Table 8, the mean PSI Percentile Scores across all the domains fell within low to medium percentile range (range: 42.45% - 74.57), suggesting none of the KSTEP families demonstrated notably high parental stress (above 85%) at both the intake tests and the following interim/discharge tests. It was noted, however, percent scores (74.57% for the intake tests and 67.72% for the later follow-up tests) on Life Stress seemed the highest among all domains.

Table 9 *Descriptive Statistics for the High PSI Percentile Scores (Above the 85th Percentile)*

	N		**84-89 Percentile (count)**		**84-89 Percentile (Percentage)**		**Above 90 Percentile (count)**		**Above 90 Percentile (Percentage)**	
	Intake	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**	**Intake**	**Follow-Up**
DI Pct	579	403	6	2	4.9	2.4	9	11	7.4	12.9
AD Pct	579	403	8	3	6.6	3.6	3	7	2.5	8.2
RE Pct	579	403	2	4	1.6	4.7	5	5	4.1	5.9

DE Pct	579	403	7	2	5.7	2.4	3	10	2.5	11.8
MO Pct	579	403	8	4	6.6	4.8	12	13	9.8	15.3
AC Pct	579	403	2	2	1.6	2.4	2	3	1.6	3.6
Child Pct	579	403	1	1	0.8	1.2	3	6	2.4	7.1
CO Pct	579	403	7	2	5.7	2.4	7	9	5.7	10.6
IS Pct	579	403	8	2	6.6	2.4	23	17	18.9	20.0
AT Pct	579	403	4	2	3.2	2.4	0	0	0	0
HE Pct	579	403	10	13	8.2	15.3	22	10	18.0	11.8
RO Pct	579	403	3	3	2.4	3.6	7	13	5.7	15.3
DP Pct	579	403	10	4	8.2	4.7	13	3	10.7	3.6
SP Pct	579	403	5	1	4.1	1.2	19	12	15.6	14.1
Parent Pct	579	403	2	1	1.6	1.2	5	8	4.1	9.4
Total Pct	579	403	3	1	2.4	1.2	2	6	1.6	7.1
LS Pct	579	403	14	12	11.5	14.1	26	10	21.3	11.8

Note: DI Pct (percentage score) = Child Distractibility; AD Pct = Child Adaptability; RE Pct = Child Reinforces Parent; DE Pct = Child Demandingness; MO Pct = Child Mood; AC Pct = Child Acceptability; Child Pct = Total Percentage Score of the Child Domains; CO Pct = Parent Competence; IS Pct = Parent Isolation; AT Pct = Parent Attachment; HE Pct = Parent Health; RO Pct = Parent Role Restriction; DP Pct = Parent Depression; SP Pct = Parent Spouse/Parenting Partner; Parent Pct = Total Percentage Score of the Parent Domains; Total Pct = Combined Total Percentage Score of both the Child and Parent Domains; LS Pct = Parent Life Stress

Table 9 suggested that in Child Domains, highest percent scores appeared in Mood, 9.8% (at the intake point) and 15.3% (at the follow-up tests) of the participants scored above 90%, and Distractibility, 7.4% (at the intake point) and 12.9% (at the follow-up tests) scored above 90%. Whereas in Parent Domains, Isolation, 18.9% (at the intake point) and 20.0% (at the follow-up tests) of the participants scored above 90%; and Health, 18.0% (at the intake point) and 11.8% (at the follow-up tests) scored above 90%, showed notable high parental stress. However, the total domain percent scores, only 1.6% (intake) and 7.1% (follow-up) of the participants scored above 90%, including both Child and Parent Domains seemed much less alarming. Additionally, the Life Stress domain showed the highest percent of the participants scoring in the high range of stress: 11.5% (at the intake) and 14.1% (at the follow-up) scored between the 85th and 89th percentiles; and 21.3% (at the intake) and 11.8% (at the follow-up) scored above the 90th percentiles. The slight to medium increases across the majority of the domains after the intake test may be due to the incompletion of many open KSTEP cases at the point of the report.

Wellbeing

KSTEP evaluators also assess child(ren) and adult wellbeing. Child wellbeing is operationalized using scores on the child wellbeing domain of the *North Carolina Family*

Assessment Scale (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001). This measure has been used in a myriad studies and has been observed to have appropriate psychometric properties. The NCFAS was administered at entry into the KSTEP program, and again at the completion of the eight month KSTEP service period. An increase in child wellbeing as evidenced by improvements on the child wellbeing domain score of the NCFAS was deemed as an improvement.

As shown in Table 6, results of the paired-samples t-test suggested that there was a significant improvement of 0.96 points in the Child Wellbeing mean scores before (M = -1.01, SD = 1.26) and after the KSTEP program (M = -.05, SD = 1.39) at the .05 level of significance (t = -9.81, df = 227, $p < .001$).

Adult wellbeing was assessed using three measures. First, the Environment, Parental Capabilities, Family Interactions, and Family Safety domains of the *North Carolina Family Assessment Scale* (NCFAS; Reed-Ashcraft, Kirk & Fraser, 2001) were analyzed.

Based on Table 6, results of the paired-samples t-test suggested that the mean scores in the Environmental domain differ significantly before KSTEP (M = -1.01, SD = 1.40) and after eight months in KSTEP (M = -.18, SD = 1.45) at the .05 level of significance (t = -7.94, df = 230, $p < .001$). On average the Environmental scores were about 0.83 points higher after participating in the KSTEP program. Likewise, regarding the Parental Capabilities domain, the mean scores differ significantly before (M = -1.73, SD = 1.15) and after the KSTEP program (M = -.41, SD = 1.56) at the .05 level of significance (t = -14.38, df = 230, $p < .001$), showing an average increase of 1.32 points. Similarly on the Child Wellbeing domain, a significant improvement of 0.96 points were found on the mean scores before (M = -1.01, SD = 1.26) and after the KSTEP program (M = -.05, SD = 1.39) at the .05 level of significance (t = -9.81, df = 227, $p < .001$). Further, for the Family Interaction domain, significant differences also appeared in the mean scores before (M = -1.10, SD = 1.29) and after the KSTEP program (M = -.24, SD = 1.48) at the .05 level of significance (t = -8.71, df = 230, $p < .001$), implying an average improvement of 0.86 points.

Second, the *Addiction Severity Index, Self-Report Form* (ASI Self-Report Form; McLellan et al., 1992) is employed to assess the severity of parental drug and alcohol abuse. A reduction in addiction severity, as evidenced by this metric, was deemed an improvement for the purposes of this evaluation. The ASI was administered upon entry into KSTEP, four (4) months after entry into KSTEP, and at the conclusion of the eight month KSTEP service period.

As indicated in Tables 7, three out of the seven ASI domains showed significant improvement (indicated as significant decrease in the ASI *objective* scores) after participating in the KSTEP program, including Drug Use, Family/Social Status and Psychiatric Status (in the descending order of significant improvements).

Third, Parenting Stress Index (PSI), parent domains of Competence, Isolation, Attachment, Health, Role Restriction, Depression and Spouse/Parenting Partner Relationship were utilized to assess adult wellbeing. The PSI was administered upon entry into KSTEP, four (4) months after entry into KSTEP, and at the conclusion of the eight month KSTEP service period. Improvements on these domain scores were as an improvement in adult wellbeing.

As suggested in Table 9, descriptive statistics based on the PSI pre- and post-test results indicated that in Parent Domains, Isolation and Health showed notable high parental stress. However, the total domain percent scores of the Parent Domains seemed much less alarming.

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